



TECHNIUM
SOCIAL SCIENCES JOURNAL

Vol. 32, 2022

**A new decade
for social changes**

www.techniumscience.com

ISSN 2668-7798



9 772668 779000

The Graduates' 21st Century Skills Performance at Workplace: A Challenge and Reflection for Universities in Revolution Industry 4.0 Era

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Abstract. Revolution industry 4.0 expects universities to endow graduates with 21st century skills performance at a workplace. The 21-century skills that are categorized into Soft Skills, Hard Skills, and Competitiveness (SHC). These skills enable to promote faster institutional enterprise and industrial growth as well as advancement in the economic sector. Therefore, the purpose of this study was to investigate how graduates' SHC performance skills contribute to productivity at the workplace in Indonesia. The survey questionnaire was used to collect data from government institutions and enterprises, including industries. The questionnaires were categorized into three, including None-state-enterprises, State-Owned enterprise, and government institution, though out of 500 only 162 were returned. The results showed that graduates' performance of soft skills, hard skills, competitiveness, and overall SHC were at a medium level. An inferential analysis found that the social science group exhibited better soft skills, competitiveness, and overall SHC performance than the pure science group with no difference in hard skills performance. Graduates from the none-state-enterprises and state-owned enterprises group showed better SHC performance than those working directly for the government. Moreover, none-state-enterprises had a higher SHC performance than graduates from state-owned enterprises. However, there was no any correlation between soft graduate skills, competitiveness, and overall SHC performance and graduates' CGPA. There was a relatively smaller correlation between hard skills performance and graduates' CGPA. Therefore, university graduates are ill-prepared to meet the SHC performance needed at the workplace. The current Higher education curriculum, though built to emphasized SHC for a decade, did not achieve its purpose to produce quality graduates due to poor implementation.

Keywords. 21st-century skills, graduates' competitiveness, employability skills, graduates work readiness, Higher Education Curriculum

1. Introduction

Integrating soft skills and hard skills in higher education curriculum has been long time ago before the 1990s, with many studies examining some aspects of this issue. For instance, Bennett (2000) investigated employees' and graduate's key and generic skills, finding that universities need to help students meet the speed of advancement in technology, social economy, and others aspect. Furthermore employers are experiencing dissatisfaction with graduates' soft skills, hard skills, and competitiveness that could be advanced at the universities

(Kovalevsky, 2020, Khong, et al. 2016, and Ahlstrom, et al., 2014). Currently, universities are under intense pressure to equip graduates with better soft skills, hard skills, and competitiveness, thus enabling private and government institutions to face the complexity and challenges of globalization and revolution industry 4.0 (Md Pazil and Razak, 2019; Abas-Mastura et al.2013).

Indonesia is grappling with several educational issues, including rising unemployment among graduates and declining the quality, as it faces rising global competitiveness and the private industry's needs in this era (Ristekdikti, 2016). Furthermore, Directorate General of Higher Education Indonesia (DIKTI 2020) underscored the need for graduates to acquire excellent soft skills, hard skills, and competitiveness if Indonesia meets the global and revolution industry 4.0 demand of the job market (DIKTI, 2020; Dikti 2016).

Indonesia has been making strides to gradually change its curriculum to align with the current need for development. The process began in 2003 when the Indonesian Higher Education Curriculum was revised to accommodate current development issues, covering three aspects: soft skills, competitiveness, and hard skills. However, the current curriculum did not make major changes on independent campus and independent learning (Dikti 2016; 2020; KKNI 2011). The focus remains the same, emphasizing students' 21st century skills to endow graduates with soft skills and hard skills to compete locally and globally. One study suggests that building graduates' soft skills practices through the learning process will enable students to acquire hard skills and be competitive in the global labor market (Author et al., 2001a; Bialik, 20015).

Though Indonesian Higher education had implemented a curriculum focusing on graduates' high soft skills, knowledge, and major competencies from 2003, further research needs to be conducted to align it with the changing workforce environment for better performance. Therefore, this study aims to search graduates' SHC performance at the University and government institutions.

The Need of Graduate High SHC Performance

Employers favor graduates' soft skills in work performance more than other specific occupational skills or technical knowledge. This is because graduates with high soft skills can easily learn technical knowledge and skills at the workplace. Soft skills also enable graduates to develop innovative ideas and actions required to determine an employee's competitiveness at the workplace (Kovalevsky, 2020; Sin et al., 2015; Khong, 2016; ILO, 2014).

Some of the soft skills graduates ought to acquire to improve performance at the workplace include communication skills and interpersonal skills essential for teamwork and networking, proactive mindsets, and competencies necessary for seeking, evaluating, processing, and applying new skills and knowledge. (Green 2021, Author, et al., 2001b). Since the world is undergoing rapid digital and technological development, such as online applications and high competitiveness in today's global market, it is important that graduates continually adapt to new and challenging situations. High soft skills, hard skills, and competitiveness performance are some of the qualifications that enterprises and institutions need for survival in the competitive world (Khan, 2018; Khong et al., 2016).

Multitasking is also an essential skill that employees should quickly and continually learn to succeed in today's changing work environment that requires new skills. The current job market requires graduates who can handle multiple jobs, such as use IT and digital applications, work in a team, communicate with other people, quickly learn to use various resources, and find solutions to problems arising from their work. Maripaz Abas-Mastura et al. (2013) showed that

employees have to continually learn new skills, such as safety working, adaptability, IT literacy and application, gain more responsibility, management skills, problem-solving, and corporation skills for quality performance. Kovalevsky (2020) stated that soft skills coupled with personal values, knowledge, technical or hard skills, such as language, literacy, and numeracy enhances work performance.

Adopting high-quality competency skills should help graduates to improve their SHC performance at the workplace. SHC performance is important in helping employees produce quality work that promotes productivity since the employees will adapt quickly to the working environment and learn new skills with little or no training. Employers expect the University to endow graduates with high soft skills, hard skills, and competitiveness that will enable them to integrate faster into the workplace (Author et al. 2001b, Kovalevsky, 2020; Kahirol Mohd Salleh, 2016; Maripaz Abas-Mastura, 2013).

2. Soft Skills, Hard Skills, and Competitiveness

The subject of graduates' soft skills in helping improve performance at the workplace is a hot topic in Indonesia. Though 'soft skills' terms used in these discussions may vary, the essence of the issues remains the same, such as a graduate's ability to cultivate key skills, adaptive skills, generic skills, life skills, and interpersonal skills. Additional soft and hard skills that have been published in journals and books include continual learning, employability skills, and good citizenship (Author, et. al 2001b; Roziana Shaari1, 2018; Yorozu, (2017). Sin, et. al, 2015, Bialik at, al 2015, Ristekdikti, 2015, ILO, 2014, and Partnership for 21st Century Skills. 2008 revealed that a combination of soft skills, hard skills, and competitiveness among university graduates is key to their success in an organization. Universities graduates should acquire SHC skills to work and excel in today's global job market in the future. This study focuses on communication skills, information technology skills, numeracy skills, learning skills, problem-solving skills, and teamwork skills. This study's hard skills are categorized into specific subject knowledge and technical skills, while competitiveness includes employability, lifelong learning, and entrepreneurship capacity (Author et al., 2001a).

Employers are looking for employees with good soft skills, hard skills, and competitiveness to improve productivity and increase the enterprise's competitiveness nationally and globally, thus meeting the industry needs (Wang et al., 2018; Thiel, 2017; ILO, 2014). Rajadurai et al. (2015) and Sin et al. (2015) argued that employees could only succeed in the global jobs environment if they combine skills and intensity. The study showed that combining the skills will help the graduate meet broadening job scopes, such as inter and intra-personal skills, communication skills, IT skills, critical thinking skills, and adaptive skills. Although employers and employees may not refer to these skills as soft and hard skills, there is a general agreement that demonstrating such skills enhances an employee's competitiveness and contributes to better institution and industry performance.

2.1 Soft Skills

Soft skills are employees' essential skills necessary to complete tasks at the workplace since it enables them to work faster and efficiently. These soft skills are developed and acquired through the university learning process guided by a current curriculum (Author et al., 2001b; Khong, 2016; Laura et al., 2015).

Communication skills are essential in helping employees maintain a successful work performance. This skill enables employees to freely express their idea as an individual or a group member even if they may come from varied backgrounds, thus enabling the team to come

out with a well-informed decision, solution, and negotiations (Steward & Marciniac, 2016; Dikti, 2015; Ahlstorm et al., 2014; Marando, 2012). This study defines communication skills as the ability to express and exchange ideas through verbal and non-verbal media, including speech and written text, to help synthesize information gained from relevant sources (Author, 2001a; Hisham et al., 2016).

Information technology is a soft skill that creates a powerful synergy with other soft skills that a graduate applies to accomplish tasks faster, easier, more efficient, and effectively. The application of IT Skills by graduates at the workplace would provide many lifelong learning opportunities as technology grows and diversifies (Author, 2001). This study defines graduates' IT skills as their ability to utilize the computer, internet, WEB, online conference, necessary applications, database, video, and other digital technology to accomplish tasks set before them. IT skills also enable graduates to gather data, optimize the usage of Microsoft Office, email, communication tools, messenger, and online conferences to create and manage information (The Ontario Public Services, 2016; Ahlstrom et al., all 2014).

Numeracy skills enable graduates to apply basic mathematic calculation, interpret graphical information, timing, and prioritize tasks for better job sequencing. The accompanying skills related to numeracy include time management, identifying relevant and irrelevant information, and decision-making skills. Additionally, numeracy skills involve risks prediction and task reporting using tables, charts, graphs, and numbers (Author, 2001; Khan, 2018; Laura et al., 2016).

Learning skills enable graduates to use and evaluate working strategies, assess weaknesses, and establish a better way to complete the task for improved output. It involves acquiring general and detailed information, knowledge, and skills for better quality, efficiency, and work effectiveness. (Author, et. al. 2001b; Bialik, 2015).

A graduate's ability to solve problems will greatly impact their success in a "real life" out-of-school environment. Laura et al. (2016) and Ahlstrom et al. (2014) argued that an employee's ability to resolve business or operational problems leads to reduced 'downtime' and increased system efficiency needed in all occupational levels. However, developing these skills requires an individual to focus on the whole production and delivery process to understand better the scope and the significance of a task at hand. These skills also require independence of thought and action to be resourceful in identifying and solving problems. *Problem-solving skills* empower employees to tackle a problem systematically and appropriately to arrive at an optimal result that benefits the enterprise (Author et al., 2001a; Kahirol Mohd Salleh et al. 2016, Laura et al., 2016; Ahlstrom et al., 2014).

Teamwork skills (working with others) enable employees to develop new ideas and solve every situation in real work life. This study investigates WWO development concerning graduates' collaborative and cooperative activities to promote project completion. The WWO skills encourage group members to help each other, distribute roles, and communicate freely without fear of judgment based on race, ability, personal interest, or conflict. It also enhances a person's ability to interact effectively with other people both on a one-to-one basis and in groups, to achieve the organization's set goals (Author et al. 2001a; Luara et al., 2016; Ahlstrom et al., 2014; ILO, 2014),

2.2. Hard Skills

Hard skills refer to subject content knowledge, ideas, core concepts, values, and facts that a graduate acquires depending on their area of study and can be practiced in the real workplace. This study defines hard skills as a person's ability to use and generate specific

knowledge through learning that can be used in the working environment when coupled with soft skills (Author, 2001; Chan et al., 2015; UNJA, 2020; Ahlstrom et al., 2014).

The University should equip these skills into graduates to make them useful to the job market that depends on hard skills. Hard skills will improve the graduate's productivity at the workplace as they contribute to the discussion, developing concepts, giving ideas, and implementing the decision. The graduates should know how to interpret and utilize hard skills to help accomplish the task at hand. Therefore, there is a need to build hard skills through specific knowledge and technical skills to enhance the graduates' competitiveness in the global working environment. The current jobs are more complex and demand the extraordinary ability to transfer knowledge into practice in offline and online work, hence the need for appropriate hard skills (Kovalevsky, 2020; Author, 2001a).

Competitiveness

Competitiveness is the employee's eagerness and effort to apply, maintain, improve and promote their soft and hard skills in the work environment through consistent learning. It is categorized into three capacities; lifelong learning, entrepreneurship, and employability which were assumed to be affected by soft and hard skills (Author, 2001; UNJA, 2020; Kumar, 2017).

Lifelong learning refers to an employee's desire to continue acquiring knowledge beyond college education to meet the current and future challenges at a workplace. An example of lifelong learning includes taking advantage of the company's multi-resource and comparing resources, friends, environment, ICT, and digital information systems to continually learn things one does not know (Author et al., 2001a; Yorozu, R. (Ed.), 2017).

Entrepreneurship is defined as the employees' ability to create, promote, propose, build, and explore new ideas that can benefit the company improves its profitability, such as new product or improvement of the old product (Yuan et al., 2020; Author, 2001; OECD, 2015; Alberta, 2011, Jane, 2009; Partnership for 21st-century skills., 2008). Employability involves combining technical skills, soft skills, and hard skills to enable an employee to adapt and meet the changing needs of employers and customers and the ability to be self-employed (Dikti, 2020; Hisham et al., 2016; Sin et al., 2015).

4. Research Method

This study used survey design and quantitative methods to collect and analyze data. Graduates from state universities in Indonesia employed by government institutions and enterprises were used as the target population. The current University population consists of 35295 students, 940 lecturers, and 324 tutors. An average of 90 to 100 thousand students has graduated from the University since it began. The sample was randomly chosen from five institutions, including provincial government institutions (BAPEDA), two state-own enterprises, and three non-state-own enterprises. The sample also involved graduates from the past 10 years to see the impact of curriculum, emphasizing soft and hard skills in the job market (Dikti, 2020; Dikti, 2016, Ristekdikti, 2015, Indonesian Basic Framework, 2003). Five hundred questionnaires were equally distributed among the past 10 years of graduates from the five institutions, and 162 questionnaires were returned. This means that the staff in each company where a questionnaire was sent 3 to 7 ten-year graduates of the target university were not interested in filling the questionnaire. However, the filled questionnaires represent the past 10 years of university graduates who work at the five institutions.

Instrumentation

The self-evaluation questionnaires were developed by analyzing previous research instruments, literature review, and 10 recruitment systems for Indonesian enterprises. The questionnaires had three main components: soft skills, hard skills, and competitiveness, with each main component possessing sub-components for finer details. The questionnaires guided respondents using a 5-point Likert scale, responding either as Very unconfident, unconfident, average, confident, and very confident. A reliability analysis demonstrated that the overall Cronbach alpha yielded α of .956, meaning that the instrument obtained consistent data as depicted in Table 1. According to the data, soft and hard skills and all components obtained Cronbach alpha coefficient at >0.7 and corrected-item correlation $>.300$ (Pallant, 2011).

Table 1 Reliability of the Instrument

Main Components and Sub-Component	Code of Items	No. of Items	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Communication Skills	A1 – A10	10	.428 - .704	.868
It Skills	B1 – B6	6	.388 - .485	.715
Numeracy Skills	C1 – C8	8	.321 - .461	.695
Learning Skills	D1 – D11	11	.366 - .479	.775
Problem Solving Skills	E1 – E7	7	.391 - .442	.727
Team Work Skills	F1 – s F8	8	.496 - .594	.823
Overall Soft Skills	A1 – F8	50	-	.903
Subject Specific Knowledge	G1 – G5	5	.539 - .615	.791
Subject Specific Skills	G6 – G10	5	.464 - .564	.742
Overall Hard Skills		10	.459 - .634	.857
Entrepreneurship	H1 – H7	7	.327 - .550	.686
Lifelong learning	I1 – I6	6	.359 - .691	.774
Employability	J1 – J7	7	.405 - .457	.709
Total Competitiveness	H1 – J7	20	-	.850
SHC	A1 – J7	80	-	.926

Data analysis

This study used descriptive and inferential statistics for data analysis. The descriptive statics were used to report employed-graduate performance based on SHC at the workplace, and the results were interpreted in three levels, as shown in Table 2.

Table 2. Mean Interpretation of SHC

Mean Score	Level
1.00 – 2.33	Low
2.34 – 3.66	Medium
3.67 – 5.00	High

Table 3 shows a mean score, with a value between 1.00 and 2.33, signifying a low level of soft and hard skills, a mean score between 2.34 and 3.66 represents the medium level, and a mean score between 3.67 and 5.00 shows a high level of soft s and hard skills.

This study also used inferential static MANOVA and t-test to investigate SHC performance differences across sciences groups; however, MANOVA was more appropriate than t-test and ANOVA. This is because the sample size is > 30 in each cell, making it easier to compare the means score of each group with more than one dependent variable. Additionally, MANOVA helped reduce the standard error in analyzing variances to produce an accurate result (Pallant, 2011; Hair et al., 2006). The collected data were analyzed using multiple regression by running a stepwise regression method to determine the relationship between the three main dependent variables: soft skills, hard skills, and competitiveness. The stepwise method helped search on and select independent variables that were significantly associated with dependent variables, thus eliminating any insignificant dependents variables from the regression model (Pallant, 2021).

Respondents Demography

A total of 162 respondents used in this study graduated from six faculties of a University in Jambi Indonesia and are distributed as follows: twenty-seven respondents (16.7%) from faculty of farming, 35 (21.6%) from faculty of economics, 31 (19.1%) faculty of law, 28 (17.3%) faculty of science and technology, 30 (18.5%) from the faculty of agriculture, and 11 (6.8%) from faculty of teaching and education. The respondents' faculties can also fall under the science dichotomy: 79 (48.8%) under social science and 83 (51.2) under pure sciences. The division according to the gender of the respondent is 84 (51.9%) male and 78 (48.1%), females, while the workplace difference had 56 (34.6%) working at none-state-enterprises, 49 (30.2%) working at state-owned enterprises, and 57 (35.2%) working at a provincial government institution.

5. Research Findings

Table 4 shows s the descriptive findings of graduates' SHC performance in Jambi, with a mean score of 3.64 (Medium level). All components and sub-components of SHC yielded a medium level of mean score ranging between 2.34 – 3.66 except for teamwork skills. The result shows that no component or sub-components of SHC had a confidence performance mean score of 4.00 and above.

Table 4 Employed-graduates SHC performance at works place

Main Components and Sub-Component	Mean	Std,	Level
Soft Skills	3.54	.226	Medium
Communication Skills	3.51	.411	Medium
IT Skills	3.57	.354	Medium

Numeracy Skills	3.43	.292	Medium
Learning Skills	3.55	.292	Medium
Problem Solving Skills	3.43	.313	Medium
Team Work Skills	3.76	.367	High
Hard Skills	3.60	.387	Medium
Specific Discipline Knowledge	3.46	.428	Medium
Technical Discipline Skills	3.44	.418	Medium
Competitiveness	3.48	.324	Medium
Entrepreneurship	3.41	.356	Medium
Lifelong learning	3.61	.451	Medium
Employability	3.44	.382	Medium
SHC	3.54	.226	Medium

a. Graduate SHC Performance across Science Groups

This section examines the report's analysis of MANOVA in determining the differences in SHC performance across the science group, assuming BOX's M and Leven's test. BOX's. The BOX's M test investigates equal variants across a group to determine the overall cooperation, while Leven's test homogeneity of independent variables (Pallant, 2011). The result of Box's M test ($p .00 < .001$) and Leven's test ($p .00 < .001$) signify that the sample did not have equal variants across group and independents variables. Nevertheless, this study meets the assumption of a big sample size $> .30$ and is relatively balanced across a group of comparisons. Since the requirement of equal variant and homogeneity are difficult to meet in most studies, it can be ignored once the other assumptions are met (Pallant, 2011 and Hair et al., 2006)

Social science and pure science had a difference in value for their SHC performance with an F of 39.777, $P < .05$ (see Table 4). This result shows a significant difference in SHC performance between social science and pure science graduates. The difference across dependent and independent variables is displayed in Table 5.

Table 5. MANOVA. The difference level of SHC Across science group

effect	Wilks' Lambda	F	DF1	DF2	Sig.	Eta Squared
Science Group	.500	39.277	4.000	157.000	.000	.500

The significant level at 0.05

Table 6 shows that there is a significant difference in SHC performance between social science and pure science in soft skills with ($F = 183,78, p < .05$), competitiveness ($F = 19.814, p .000 < .05$) and overall SHC ($F = 81,328, p < .05$). However, the results did not significantly differ in hard skills performance ($F = 40.81, p < .05$). Social science students had better soft skills, competitiveness, and overall SHC than pure sciences students.

Table 6. The difference of SHC Performance Across Science Group

Dependent Variable	Independent Variable	N	Mean	Sum Mean Square	F	Sig.	Eta Squared
Soft Skills	Social Science	79	3.70	4.410	183.783	.000	.535
	Pure Science	83	3.39				
Hard Skills	Social Science	79	3.62	.099	.660	.418	.004
	Pure Science	83	3.57				
Competitiveness	Social Science	79	3.59	1.863	19.814	.000	.110
	Pure Science	83	3.38				
SHC	Social Science	79	3.67	2.457	81.328	.000	.337
	Pure Science	83	3.43				

*. The mean difference is significant at the .05 level.

b. Graduate SHC Performance across Type of Institution

The Box's M test results ($p < .001$) shows that the groups' sample did not have equal variants. Leven's test ($p < .001$) also indicated a lack of homogeneity across all groups and independents variables, except for the Hard Skills variable ($p > .005$) Pallant (2011 and Hair et al., 2006). Nevertheless, this study meets the sample size > 30 in each group, meaning the MANOVA is still appropriate to use.

The difference in values based on the type of institution; none-state-enterprises, state-owned enterprises, and government on SHC performance had an F value of 7.69, $p < .05$. This showed that statistically, there was a significant difference in SHC performance scores between these groups. Table 7 helps investigate the difference analysis in detail for each dependent variable.

Table 7. MANOVA The difference of Graduate SHC Performance across Type of Institutions

Effect	Wilks' Lambda	F	DF1	DF2	Sig.	Eta Squared
Working Place	.697	7.699	6.000	312.000	.000	.165

The significant level at 0.05

The difference of SHC performance for none-state-enterprises, state-owned enterprises and government in various skills are as follows: soft skills ($F = 22,447$ and $\text{sig.} = .000 < .05$), Hard Skills ($F = 7.858$ and $\text{sig.} = .000 < .05$), Competitiveness ($F = 4,922$ and $\text{sig.} = .000 < .05$) and overall SHC ($F = 21.601$ and $\text{sig.} = .00 < .05$). Table 8 shows the post hoc test difference across the group

Table 8. Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
	Soft skills	1.816	2	.908	22.447	.000	.220

Type of Institution	Hard skills	.935	2	.467	3.197	.044	.039
	Competitiveness	.986	2	.493	4.922	.008	.058
	SHC	1.105	2	.552	14.197	.000	.152

Table 9 illustrates the post hoc test across a group from different types of institutions. Levene's Test of Equality of Error Variances indicates no homogeneity between the group's soft skills ($F = 8.191, p < .05$), therefore, Pallant (2010) suggests using post hoc Test Games-Howel to establish homogeneity. The result from Games-Howel's post hoc test shows that graduates at none-state-enterprises have better soft skills than graduates at government (mean difference = .2598, $p < .05$). The test also showed that graduates working at state-owned enterprises groups exhibit p better soft skills than those with the government group (mean difference = .1763, $p < .05$). However, there was no significant difference between non-state enterprises and state-owned enterprises.

Levene's Test of Equality of Error Variances shows homogeneity between the groups on hard skills ($F = 2.056, p > .05$). Pallant (2010) suggests the use of statistical analysis by Bonferroni for homogeneity obtained across the group. Bonferoni's post-hoc shows that graduates at none-state-enterprises have better soft skills than graduates at state-owned enterprises (mean difference = .1763, $p < .05$). However, the test did not indicate any significant difference in hard skills performance between non-state enterprise and government (mean difference of .0209, $p > .05$), and non-state enterprise and government with a (mean difference of .1469, $p > .05$).

The Levene's Test of Equality of Error Variances also showed homogeneity between the groups on soft skills ($F = 4.032$ and $p < .05$), with the suggested Games-Howel's post-hoc, showing that graduates at none-state-enterprises to be more competitive than graduates at government with a (mean difference of .1772 and $p < .05$). It also revealed that graduates at state-owned enterprises were more competitive than those working directly for the government with a (mean difference of .1615 and $p < .05$). Nevertheless, the test found no significant difference between non-state and state-owned enterprises on competitive performance with a mean difference of .0157 and $p > .05$.

The overall analysis of SHC on Levene's Test of Equality of Error Variances showed the lack of homogeneity between the groups with an F value of 10.936 and $p > .05$. The suggested with Games-Howel's post-hoc test shows that graduates at none-state-enterprises had better Overall SHC performance than graduates at government with a mean difference of .2046 and $p < .05$. However, there is no significant difference in hard skills performance between non-state enterprises and state-owned enterprises, giving a mean difference of .0783 and $p > .05$).

Table 9 The Post-hoc with Games-Howel Across Type of Institutions

Dependent Variable		(I) Type of Institution	(J) Working place	Mean Difference (I-J)	Std. Error	Sig.
SOFT SKILLS	Games-Howell	None-state-enterprises	state-owned enterprises	.0835	.04315	.134
			Government	.2598*	.03452	.000

		state-owned enterprises	None-state-enterprises	-.0835	.04315	.134
			Government	.1763*	.03429	.000
		Government	None-state-enterprises	-.2598*	.03452	.000
			state-owned enterprises	-.1763*	.03429	.000
HARD SKILLS	Bonferro ni	None-state-enterprises	state-owned enterprises	.1679	.07194	.063
			Government	.0209	.07479	1.000
		state-owned enterprises	None-state-enterprises	-.1679	.07194	.063
			Government	-.1469	.07449	.151
		Government	None-state-enterprises	-.0209	.07479	1.000
			state-owned enterprises	.1469	.07449	.151
COMPETITIVE NESS	Games-Howell	None-state-enterprises	state-owned enterprises	.0157	.06448	.968
			Government	.1772*	.05866	.009
		state-owned enterprises	None-state-enterprises	-.0157	.06448	.968
			Government	.1615*	.05641	.014
		Government	None-state-enterprises	-.1772*	.05866	.009
			state-owned enterprises	-.1615*	.05641	.014
SHC	Games-Howell	None-state-enterprises	state-owned enterprises	.0783	.04259	.162
			Government	.2046*	.03375	.000
		state-owned enterprises	None-state-enterprises	-.0783	.04259	.162
			Government	.1263*	.03316	.001
		Government	None-state-enterprises	-.2046*	.03375	.000
			state-owned enterprises	-.1263*	.03316	.001

The mean difference is significant at the .05 level.

c. Association of CGPA toward SHC Performance

The assumptions of multiple regressions had been investigated before the analysis with a normal curve probability plot and scatter plot, as illustrated in Figures 1 and 2. The Variance Inflation Factor (VIF) is equal to greater than 1, and tolerance is also equal or greater than 0.1, meaning that this study does not have Collinearity or multicollinearity as seen in Table 4.78 column collinearity statistics (Hair et al. 2006).

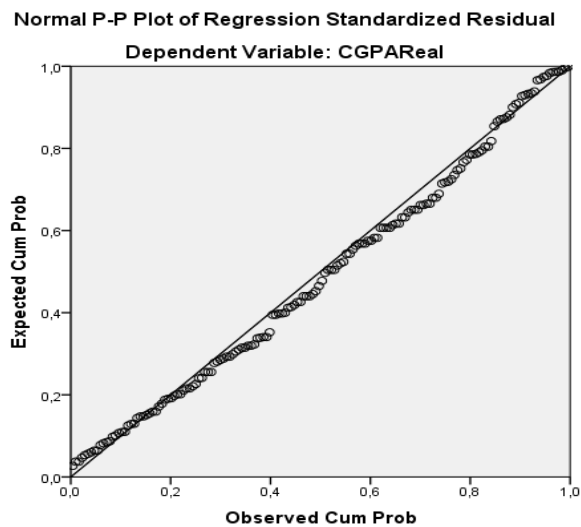


Figure 1 Normal curve probability plot

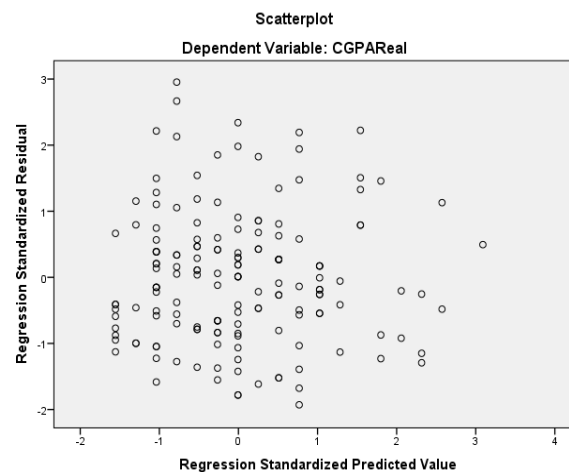


Figure 2 Scattered plot

This study used the Multiple Regressions analysis using the Stepwise Method to find predictors value (soft skills, hard skills, competitiveness, and overall SHC) on graduates' CGPA. The stepwise method favored multiple regressions because it can extract independent variables associated directly with a dependent variable (Green & Salkind 2006; Hair et al. 2006).

Table 10 and Table 11 show the result of Multiple Regression with the Stepwise Method. The result shows a significant variant on hard skills with an F value of 5.869 and $p < .05$ on graduates' CGPA excluding soft skills and competitiveness. Table 4.78 show that hard skills can predict graduates' CGPA with a strength $R^2 = .035$, which means that hard skills contribute to the graduate's CGPA by 3.5%. The predictor yielded $\beta = .137$, $t = 2.423$ at a significant level $p < 0.05$.

Table 10 Variants of SHC across graduates' CGPA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.457	1	.457	5.869	.017
	Residual	12.459	160	.078		
	Total	12.916	161			

The significant level at 0.01

- a. Predictors: (Constant), Hard Skills
- b. Dependent Variable: CGPA

Table 11 Multiple regression SHC toward graduates' CGPA

Predictor	B	Std. Error	Beta	t	Sig.	R2	Contribution	Collinearity Statistics	
								Tolerance	VIF
Constant	2.702	.206		13.142	.000				
Hard Skills	.137	.057	.188	2.423	.017	.035	3.5%	1.000	1.000

R = .188,

R2 = .035

AdjustedR2= .031,

Constant = 2.702

Standard Error = .206

The regression equation with 2 predictors is $Y=2.702+.188X1+.206$

Y= Graduates' CGPA

X1= Hard Skills

6. Discussion

Through the statement of the SHC sub-component, the graduate reflected their overall performance level of softs skills, hard skills, and competitiveness. This study showed that graduates' performance in communication, IT, numeracy, learning, and problem-solving skills were at medium level, and exceedingly excelled in teamwork skills. However, their problem-solving skills, was at high-level performance, with a mean score at the bottom of the level. The graduate also showed an average performance in sub-components of hard skills, specific discipline knowledge, and technical discipline skills. This study also established that graduates' competitive performance in Entrepreneurship, Lifelong learning, and Employability were average.

The limited studies on graduate SHC performance show the value of this study. The assumption that acquiring SHC is an inevitable outcome of time spent studying at University should be re-examined as seen with considerable attention this issue has received within and without institutions of higher learning. University should focus on establishing graduate skills, specifically the graduate performance of SHC. The lecturers should be encouraged to apply

learning strategies and activities to improve students' soft and hard skills to obtain a minimum mean score of 4.20 and above.

Upon completion of the study, the graduates should exhibit high skills of SHC performance to use them at the workplace for better economic growth. (Abas and Imam, 2016). Practicing soft skills and hard skills should be encouraged inside and outside of the classroom to enable students to become more effective and independent learners even after graduation. Therefore, universities should equip graduates with three components of competitiveness: entrepreneurship, employability, and life-long learning (Author et al., 2001a; The Ontario Public Services, 2016).

This study also examined comparative analysis across sciences groups and established that social science performance on soft skills, competitiveness, and overall SHC is better than pure sciences. However, the study did not find any difference in hard skills performance across groups of sciences. Social science students had a better result than pure science because they are more exposed to soft skills activities during their learning at University. Social science causes seem to use learning activities such as interaction, discussion, presentation, socialization, and other activities than pure science, hence the superiority in the soft skill of its graduates. Pure sciences focus more on laboratory learning and ground field, with less interactive sessions, resulting in poor soft skills needed at the workplace. The training of social science graduates while at school makes them interact well with others at the workplace. They keep in touch outside the office and dominantly utilize computers while working. On the other hand, most pure sciences graduates work in the laboratory, ground, and oil fields, which require fewer soft skills practices. Stephens et al. (2014) underscored the need to train soft skills to employees with pure science backgrounds because they lack these skills. Khong et al. (2016) also advocated soft skills organizational training for employees from pure science graduates, indicating that those from social science have superior social skills and may not need the training. Hisham, et.al, (2016), Hazril Izwar Ibrahim et. al. (2016). Moreover, Wang et al. (2018) and Stewart & Marciniac (2016) indicated that social science graduates have a higher confidence level due to their superior soft skills, employability, lifelong learning, and entrepreneurship.

This study also compared graduates across different institutions and established that graduates at none-state-enterprises have higher soft skills performance than graduates working directly for the government. Additionally, this study showed that graduates at state-owned enterprises also have better soft skills than graduates at the government. It was also discovered that none-state enterprises demonstrate better soft skills performance than graduates at state-owned enterprises. Furthermore, this study explained that graduates at none-state-enterprises exhibit better competitiveness than those working with the government. This study also showed that graduates at state-owned enterprises are more competitive than those employed directly by the government. Therefore, graduates at none-state-enterprises have a higher SHC performance than graduates working for the government. This assessment aligns with Khan (2018) and Kahirol et al. (2016), which observed that confidence in graduate employability performance is highly valued at industries than in government institutions due to the high competitiveness across industries.

The industrial world is still struggling to build soft and hard skills and competitiveness among its employees, but they are on the right path to speeding advancement and participating in global competitiveness (Khong, 2016; Stephens, 2014). However, government institutions do not have the pressure to build employee soft skills; thus, their employees lack these necessary skills need for faster economic growth (Sharon, 2020 and Abas & Imam, 2016).

This study found that hard graduate skills contributed to graduates' CGPA by 3.5%, while soft skills and competitiveness capacity did not influence graduates' CGPA. The findings mean that a graduate's soft skills and competitiveness at the workplace cannot be determined by checking at their CGPA. This phenomenon is caused by emphasizing students' soft skills and competitiveness since they will not be assessed on these skills at the University (Kahiroh Mohd Salleh et al., 2017). Razak and Omar (2016) also argued that a graduate GPA is not correlated with their soft skills performance at workplaces since these skills are not core study areas at the University. A study by Author (2001) found that soft skills had not relationship with the graduate CGPA. Another study by Fairuzza et al. (2011) reported that high CGPA does not determine graduates' employability performance at the workplace.

According to the findings of this study, Universities should provide a teaching and learning environment that enhances students' skills and creativity to produce competent graduates that will be effective at work place. Universities should develop a learning system that promote the advancement of graduates' soft skills and competitiveness to meet the current domestic and global demand in the working environment. The larger portion of academic grades should incorporate students' SHC performance than exams since these skills determine employability. The university assessment criteria should reflect students' soft and hard skills through learning activities, thus helping the graduates acquire SHC skills entering the work environment. In this way, the University will contribute to the development and growth of enterprise (Abas & Imam, 2016).

The findings of this study underscore the need for further research in various Universities to determine the gap between graduate quality and employers' expectation by benchmarking with a graduate from the highest rank of Universities and overseas. The Indonesian new paradigm 'independent learning and impendent campus,' aiming to prepare graduates with high employability skills by focusing on SHC might only have the slogan, but fail to address the substance of the matter. Universities teachers' competencies, curriculum design, and assessment items should be reviewed regularly to foster effective collaboration with the industries to address global industrial changes in classrooms practically. Gardono et al. (2016) indicate lecturers do not receive the desired support; rather, they are often met with complicated administration and bureaucracy, unsatisfactory salary, and bad services, contributing to poor teaching quality and education process, which affect the quality of graduates.

This study was based on valuable e information from universities, policymakers, and previous researchers; however, its limitations can hinder its generalized usage from referring to all graduates. This study found it challenging getting volunteers to fill the questionnaire from the graduate at the workplace. Though the targeted respondents were 500 more robust and rigorous results that could lead to generalizable findings could not be obtained because of a limited number of institutions that participated. Another limitation of this study is investigation issues to determine the association in graduate SHC performance across task completion, working experience, and training that was not conducted. The study also did not investigate the graduate performance from employers' perspectives, though its t could make this study more valuable.

7. Acknowledgment

The applied data of this article was part of a study funded by University of Jambi.

8. Conclusion

This study was conducted in Jambi, Indonesia, and aimed to encourage University graduates' SHC performances in various working environments, including government institutions, state-owned enterprises, and non-state enterprises. It observed that graduates' SHC performance was average, failing to meet the confidence level 4.2 and above. The low SHC graduates contribute to slow task completion, resulting in derailed growth and advancements with institutions and enterprises. Such inefficiency has put the University under intense pressure to evaluate and reform the curriculum's implementation to meet the demand for a global and domestic job market that deserves better from graduates. The findings of this study also affirm that though Indonesian curriculum innovation was revised in s 2003 to emphasizes soft skills, hard skills, and employability, it fell sort of this noble goal in implementation. The Universities' emphasis on academic grades than SHC skills leaves graduates ill-prepared for the real world. The University should embed soft skills and hard skills in the curriculum, syllabus, and assessment system so that graduates can be tested using these skills. The pace of scientific, digital technological, and economic advancement in revolution industry 4.0 is changing rapidly and requires that graduates adapt, think and act quickly with a high level of SHC. These graduates can be integrated with these skills at the University level through a well-thought-out e curriculum that should be implemented for better graduate competitiveness, entrepreneurship, employability, and lifelong learning. Focusing on SHC at the institution of higher learning will contribute to a productive generation and a better country with high economic development.

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