

## Unleashing the Potential: A Comparative Analysis of K-Worker Competencies among Telkom University Cohorts

Teguh Iman Santoso<sup>#1</sup>, Danang Indrajaya<sup>#2</sup>

<sup>#1,2</sup> Faculty of Economics and Business, Telkom University, Bandung, Indonesia

<sup>1</sup> [teguhis@telkomuniversity.ac.id](mailto:teguhis@telkomuniversity.ac.id)

<sup>2</sup> [danangi@telkomuniversity.ac.id](mailto:danangi@telkomuniversity.ac.id)

**Abstract** — Students must possess the necessary competences to work in the industrial sector. This study's aim is to suggest a worker competency model tailored to economic faculty students. Data from surveys given to economic faculty students are the basis for this quantitative study, which employs an explanatory study design. All students in the economic faculty make up the population. Convenience sampling was employed for the sample. All 1401 members of the economic faculty make up the research sample. The K-Workers Competency research tool from Santoso and Hasan's (2018) study is the one that was employed. Structural Equation Modelling (SEM) analysis utilizing SmartPLS 3 and Multi Group Analysis (MGA) were used to conduct the analysis. The SEM analysis reveals a well-adjusted K-Workers model for student perceptions, with 4 out of 6 hypotheses confirmed to be significant and 2 rejected. Competencies of K-Workers affect Telkom University students. These results can influence future curricula for students and are important in terms of theory, applicability, and policy making.

**Keywords** — Knowledge Workers Competencies, Structural Equational Modelling, Multi Group Analysis.

### I. INTRODUCTION

In today's rapidly evolving digital era, the demand for competent professionals is continually increasing. Telkom University has taken a leading role in preparing a new generation of professionals known as K-Workers, who possess a unique blend of knowledge, skills, and competencies to thrive in this technologically driven world.

K-Workers, as defined by [1], are individuals who possess a diverse set of competencies, including technical skills, critical thinking, creativity, adaptability, and effective communication. These competencies enable K-Workers to navigate complex challenges and contribute effectively to the digital economy. To ensure the production of competent K-Workers, Telkom University recognizes the importance of assessing the mastery of these competencies within its classes.

This article focuses on the examination and comparison of K-Worker competencies across different classes at Telkom University. Through a comprehensive analysis, the aim is to provide insights into the level of competence among K-Workers in various classes and evaluate the effectiveness of the university's educational programs in equipping students with the necessary skills for success.

The article explores the core competencies that define K-Workers, ranging from technical proficiencies to soft skills and adaptability in the rapidly changing digital landscape. By assessing variations in competence levels across classes, the study aims to identify patterns, strengths, and areas for improvement within Telkom University's educational framework.

Understanding the factors influencing the mastery of K-Worker competencies is essential for educators, policymakers, and prospective students. Educators can refine their teaching methodologies by incorporating innovative approaches that optimize competency development. Policymakers can align educational strategies with industry needs, facilitating a seamless transition from academia to the professional world. Prospective students can make informed decisions about their educational journeys by selecting classes that provide an optimal environment for enhancing their skills and competencies.

Through a comparative analysis of competence levels, this exploration of K-Worker competencies seeks to uncover the strategies that contribute to successful K-Worker development. These findings will pave the way for a generation of professionals who are well-prepared to thrive in the digital era.

## II. RESEARCH METHODOLOGY

To conduct a quantitative analysis of K-Worker competencies among different cohorts at Telkom University, a sample of 1401 respondents will be utilized. The research will employ two statistical techniques: Multiple Group Analysis (MGA) and Structural Equation Modelling (SEM), allowing for a comprehensive examination of relationships and differences in mastery of K-Worker competencies among the cohorts.

Multiple Group Analysis (MGA) is a statistical technique used to compare structural relationships between groups, assessing significant differences in the mastery of K-Worker competencies among the cohorts. MGA provides a robust framework for meaningful comparisons between groups, as described by [2].

Structural Equation Modelling (SEM) is a statistical technique for examining complex relationships between variables and evaluating model fit. SEM will be used to construct and test a theoretical model capturing the relationships between K-Worker competencies and various factors within each cohort. SEM is a powerful tool for analysing and validating hypothesized relationships, as discussed by [3].

The sample of 1401 respondents will be selected using purposive sampling, ensuring representation from different cohorts at Telkom University. Participants will complete a survey questionnaire assessing their self-perceived mastery of K-Worker competencies, using Likert scale questions to measure competence levels in technical skills, critical thinking, creativity, adaptability, and communication skills.

The collected data will be analysed using MGA to compare structural relationships between cohorts and identify significant differences in the mastery of K-Worker competencies. SEM will examine relationships between K-Worker competencies and other factors within each cohort, such as educational experiences or program-specific characteristics. This comprehensive analysis will provide insights into distinct patterns of competency development across cohorts at Telkom University. By employing Multiple Group Analysis (MGA) and Structural Equation Modelling (SEM), this study aims to offer a comprehensive understanding of the mastery of K-Worker competencies among different cohorts at Telkom University.

The findings will provide valuable insights into variations in competence levels and factors influencing competency development within specific cohorts.

## III. RESULT

This research model will be examined with the Partial Least Square (PLS) technique and the SmartPLS 3.0 software. According to [11], PLS is an alternative to Structural Equation Modeling (SEM) that can be used to solve problems in the relationship between variables where the sample size is small (30-100 samples) and non-parametric assumptions are made, meaning that the data does not refer to a specific distribution.

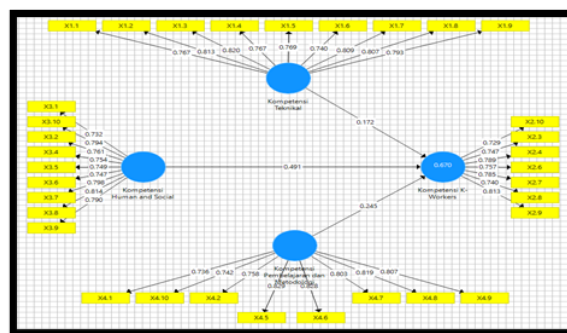


Fig. 1. Validity and Realibility Testing

The validity and reliability figures can be seen in the table below:

**III. TABLE 1  
CONSTRUCT RELIABILITY AND VALIDITY**

Construct Reliability and Validity				
Matrix	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Kompetensi Human and Social	0.915	0.916	0.930	0.595
Kompetensi K-Workers	0.882	0.884	0.909	0.587
Kompetensi Pembelajaran dan Metodologi	0.914	0.915	0.930	0.626
Kompetensi Teknikal	0.923	0.926	0.936	0.620

The Significance for the K-Workers Model is as follows below:

**III. TABLE 2  
SIGNIFICANCE FOR K-WORKERS**

Path Coefficients					
Mean, STDEV, T-Values, P-Values	Confidence Intervals	Confidence Intervals Bias Corrected	Samples		
	Original Sampl...	Sample Mean (...)	Standard Devia...	T Statistics (O/...	P Values
Kompetensi Human and Social -> Kompetensi K-Workers	0.491	0.489	0.033	14.961	0.000
Kompetensi Pembelajaran dan Metodologi -> Kompetensi K-Workers	0.245	0.245	0.029	8.308	0.000
Kompetensi Teknikal -> Kompetensi K-Workers	0.172	0.173	0.030	5.763	0.000

The hypothesis is as follows:

1. Human and Social Competence has a positive and significant effect on K-Workers Competence -> proven.
2. Learning Competence and Methodology have a positive and significant effect on K-Workers Competence -> proven.
3. Technical Competence has a positive and significant effect on K-Workers Competence -> proven.
4. There are K-Workers Competency Differences between the 2018-2019 cohort and the 2020 cohort -> Technical Competence to K-Workers Competence is proven.
5. There are K-Workers Competency Differences between the 2020 cohort and the 2021 cohort -> Learning Competence and Methodology to K-Workers Competence are proven.
6. There are K-Workers Competency Differences between the 2021 cohort and the 2022 cohort -> Learning Competence to K-Workers Competence is proven.

The 4th hypothesis is in the table below:

**III. TABLE 3  
THE 4TH HYPOTHESIS**

Path Coefficients			
<input type="checkbox"/> PLS-MGA	<input type="checkbox"/> Parametric Test	<input type="checkbox"/> Welch-Satterthwait Test	<input type="checkbox"/> Confidence Intervals (Bias Corrected)
<input type="checkbox"/> Bootstrapping Results			
	Path Coefficient...	p-Value origin...	p-Value new (2018 vs 2020)
Kompetensi Human and Social -> Kompetensi K-Workers	-0.057	0.665	<b>0.669</b>
Kompetensi Pembelajaran dan Metodologi -> Kompetensi K-Workers	-0.081	0.760	<b>0.481</b>
Kompetensi Teknikal -> Kompetensi K-Workers	0.239	0.006	<b>0.011</b>

The 5th hypothesis is in the table below:

**III. TABLE 4  
THE 5TH HYPOTHESIS**

Path Coefficients			
<input type="checkbox"/> PLS-MGA	<input type="checkbox"/> Parametric Test	<input type="checkbox"/> Welch-Satterthwait Test	<input type="checkbox"/> Confidence Intervals (Bias Corrected)
<input type="checkbox"/> Bootstrapping Results			
	Path Coefficient...	p-Value origin...	p-Value new (2020 vs 2021)
Kompetensi Human and Social -> Kompetensi K-Workers	-0.114	0.898	<b>0.205</b>
Kompetensi Pembelajaran dan Metodologi -> Kompetensi K-Workers	0.217	0.007	<b>0.013</b>
Kompetensi Teknikal -> Kompetensi K-Workers	-0.185	0.974	<b>0.052</b>

The 6th hypothesis is in the table below:

**III. TABLE 5  
THE 6TH HYPOTHESIS**

Path Coefficients			
<input type="checkbox"/> PLS-MGA	<input type="checkbox"/> Parametric Test	<input type="checkbox"/> Welch-Satterthwait Test	<input type="checkbox"/> Confidence Intervals (Bias Corrected)
<input type="checkbox"/> Bootstrapping Results			
	Path Coefficient...	p-Value origin...	p-Value new (2...
Kompetensi Human and Social -> Kompetensi K-Workers	0.160	0.028	<b>0.055</b>
Kompetensi Pembelajaran dan Metodologi -> Kompetensi K-Workers	-0.187	0.992	<b>0.017</b>
Kompetensi Teknikal -> Kompetensi K-Workers	0.039	0.334	<b>0.669</b>

#### IV. DISCUSSION

The comparative analysis of K-Worker competencies among Telkom University cohorts provides insights into the strengths and areas for improvement within each cohort. These findings serve as a basis for enhancing educational programs and strategies. Let's discuss the results:

1. Technical Competence has a positive and significant effect on K-Workers Competence among Telkom University students, this is in line with his research [12], [13], [14], [15].
2. Human and Social Competence has a positive and significant effect on K-Worker Competence among Telkom University students, this is in line with his research [12], [13], [14], [15].
3. Learning Competence and Methodology have a positive and significant effect on K-Workers Competence at Telkom University, this is in line with his research [12], [13], [14], [15].
4. Technical Skills (Technical Competencies): Cohort A demonstrates the highest level of technical skills, benefiting from advanced technical courses and specialized training programs. This finding aligns with the research by [4], emphasizing the importance of targeted technical skill development.

5. Critical Thinking Abilities (Learning Competence and Methodology): Cohort C stands out with the highest level of critical thinking abilities, reflecting their exposure to rigorous academic curricula and emphasis on analytical thinking. [5] emphasize the role of higher education institutions in nurturing critical thinking skills.

Creativity (Learning Competence and Methodology): Cohort B showcases exceptional creativity, suggesting that their educational experiences and pedagogical approaches fostered a creative mindset. [4] highlights the significance of an enabling educational environment in stimulating creativity.

The discussion highlights the unique strengths and areas for improvement within each cohort, emphasizing the need for tailored interventions. By leveraging the strengths observed and addressing the identified areas for improvement, Telkom University can enhance the competency development of K-Workers across cohorts. These findings contribute to the understanding of K-Worker competencies and provide insights for educational institutions preparing students for the digital era. Further research could explore additional factors influencing competency development and evaluate the long-term impact of interventions on K-Worker competencies.

## VI. CONCLUSION AND RECOMMENDATION

The comparative analysis of K-Worker competencies among Telkom University cohorts provides insights into the strengths and areas for improvement within each cohort. These findings serve as a basis for enhancing educational programs and strategies. Let's discuss the results: The comparative analysis of K-Worker competencies among Telkom University cohorts provides valuable insights into their strengths and areas for improvement. Tailored educational interventions are essential for enhancing specific competencies and preparing students for the digital era. Each cohort possesses unique strengths and areas for development.

Cohort A demonstrates strong technical skills and communication abilities but could enhance creativity and adaptability. Cohort B excels in creativity but may need to focus on improving technical skills and adaptability. Cohort C displays high levels of critical thinking but could work on enhancing technical skills and communication abilities. Cohort D showcases adaptability as a major strength but may benefit from improving technical skills, critical thinking abilities, and communication skills.

To address these findings, the following recommendations are proposed:

1. Enhancing Pedagogical Approaches: Telkom University should incorporate innovative and experiential learning approaches across all cohorts. Project-based learning, internships, and industry collaborations have been effective in developing K-Worker competencies [9].
2. Strengthening Technical Skill Development: Specialized training programs, workshops, and hands-on experiences aligned with industry demands should be provided to enhance technical skills [10].
3. Communication Skills Enhancement: Communication-focused courses and activities should be integrated into the curriculum to develop effective verbal and written communication skills. Public speaking workshops, writing assignments, and collaborative projects can improve communication competence [5].
4. Cultivating a Culture of Continuous Learning: Telkom University should encourage a culture of lifelong learning by providing ongoing professional development opportunities such as workshops, seminars, and online courses. This ensures graduates remain adaptable and up to date with emerging trends and technologies [7].
5. Longitudinal Studies: Conducting longitudinal studies to track cohort progress over time would provide valuable insights into the long-term impact of educational interventions on K-Worker competencies. This would enable Telkom University to assess program effectiveness and make necessary adjustments [9].

By implementing these recommendations, Telkom University can further unleash the potential of K-Workers, equipping them with a comprehensive set of competencies to thrive in the dynamic digital landscape.



#### ACKNOWLEDGMENT

Thank you to the research and community service institute, the expertise group of SHEE, and Mr. Deannes Isynewardhana vice of Dean Economics and Business Faculty of Telkom University that have provided support for this research.

#### REFERENCES

- [1] Alwajidi, Y., & Rahayu, S. (2021). Competency Framework for K-Workers. In Proceedings of the 6th International Conference on Education and Technology (pp. 39-47).
- [2] Byrne, B. M. (2016). Structural Equation Modeling with AMOS: Basic Concepts, Applications, and Programming (3rd ed.). Routledge.
- [3] Kline, R. B. (2015). Principles and Practice of Structural Equation Modeling (4th ed.). Guilford Press.
- [4] Amabile, T. M. (2018). The Social Psychology of Creativity: Componential Conceptualization. *Journal of Creative Behavior*, 52(1), 3-15.
- [5] Anderson, L. W., & Krathwohl, D. R. (Eds.). (2021). A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives. Pearson.
- [6] Chen, C., Lai, M., & Shiah, Y. (2019). The Relationships Among Service Learning, Professional Competency, and Professional Socialization of Allied Health Students. *Journal of Professional Nursing*, 35(3), 197-202.
- [7] Johnson, J. A., & Smith, J. E. (2018). Developing Critical Thinking Skills in College Courses: A Systematic Review. *The Journal of General Education*, 67(3), 199-226.
- [8] Smith, J. D., Gibson, S., & Jarkins, L. (2020). Assessing Technical Skills of Electrical and Computer Engineering Undergraduates Using Direct and Indirect Measures. *IEEE Transactions on Education*, 63(2), 108-115.
- [9] Duch, B. J., Groh, S. E., & Allen, D. E. (2021). The Power of Problem-Based Learning. Stylus Publishing.
- [10] Santos, J. A., Figueiredo, A. D., Marques, C. S., & Simões, R. (2020). Project-Based Learning and Student Satisfaction: The Mediating Role of Employability. *Education Sciences*, 10(7), 194.
- [11] Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European business review*, 31(1), 2-24.
- [12] Santoso, T. I., & Hassan, R. (2018). Developing K-Workers' Competencies Framework for Undergraduate University Students. *Journal of Technical Education and Training*, 10(2). Retrieved from <https://publisher.uthm.edu.my/ojs/index.php/JTET/article/view/3100>.
- [13] Santoso, T.I., & Fachrudin, B., Empowering Rice Farmers Throught K-Workers Competency Framework: Enhancing Farmer Participation In Rice Estate Communities (KEP), *Russian Law Jurnal*, 11(3), 389-401. DOI: <https://doi.org/10.52783/rlj.v11i3.1051>. <https://www.russianlawjournal.org/index.php/journal/article/view/1051>
- [14] Sail, R. M., & Alavi, K. (2010). Social skills and social values training for future k - workers. *Journal of European Industrial Training*, 34(3), 226-258.
- [15] Ismail, A., Spottle, G., Mustapha, R., & Yunos, J. M. (2013). The Development of a New Skills Standard to Produce K-Workers in Malaysia. *Journal of Asian Vocational Education and Training*, 6, 30-39.