

School Partnership Management with Industry and the World of Work to Improve Student Automotive Skills Competency

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Abstrak

Kemitraan mempunyai peranan penting dalam peningkatan mutu dan mutu pendidikan namun masih banyak SMK yang belum maksimal dalam mengembangkan kemitraan praktek kerja industri. Dalam hal ini peran kebijakan kemitraan dalam lingkup pendidikan vokasi harus melibatkan tiga komponen penting yaitu dewan sekolah, dunia usaha industri dan sekolah menengah kejuruan. Penelitian ini bertujuan untuk menganalisis pengaruh pengelolaan kemitraan sekolah dengan industri dan dunia kerja terhadap peningkatan kompetensi keterampilan otomotif siswa. Jenis penelitian ini yaitu penelitian esperimen semu dengan desain penelitian adalah Post-test Only Control Group Design. Sampel yang digunakan dalam penelitian ini terdiri dari 72 siswa kelas XI SMK. Metode pengumpulan data menggunakan tes. Instrumen pengumpulan data menggunakan soal tes. Teknik analisis data yang digunakan dalam penelitian ini adalah uji t dan ANOVA. Hasil penelitian menunjukkan terdapat pengaruh antara pengelolaan kemitraan sekolah dengan industri dan dunia kerja terhadap terhadap terhadap pengaruh antara pengelolaan kemitraan sekolah dengan industri dan dunia kerja terhadap peningkatan kompetensi keterampilan otomotif siswa. Dampak manajemen kemitraan dalam pendidikan kejujuran mempunyai implikasi antara lain, menuntut pengembangan kompetensi peserta didik tidak hanya sekedar memperoleh pengetahuan, namun mampu mengintegrasikan keterampilan dan sikap dalam dunia kerja.

Kata Kunci: Manajemen Kemitraan Sekolah, IDUKA, Kompetensi Siswa

Abstract

Partnerships play an important role in improving the quality of education. However, many vocational schools must be more optimal in developing industrial work practice partnerships. In this case, the role of partnership policy in the scope of vocational education must involve three important components: the school board, the industrial business world, and vocational high schools. This research aims to analyze the influence of school partnership management with industry and the world of work on increasing students' automotive skills competency. This type of research is quasi-experimental, with the research design being Post-test Only Control Group Design. The sample used in this research consisted of 72 class XI vocational school students. The data collection method uses tests. The data collection instrument uses test questions. The data analysis techniques used in this research are the t-test and ANOVA. The research results show an influence between the management of school partnerships with industry and the world of work on increasing students' automotive skills competency. The impact of partnership management in honesty education has implications, including requiring the development of students' competencies not only to acquire knowledge but also to integrate skills and attitudes in the world of work.

Keywords: School Partnership Management, IDUKA, Student Competencies

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1. INTRODUCTION

Along with the development of technology in the 21st century, humans are required to be able to compete in all fields (Arifin, 2020; Rahayuningsih, 2022). Today's biggest challenge is to compete globally, which requires quality and adequate education. Quality education is an important pattern that must be considered because competition in work today demands the ability to compete in the real world. Therefore, education is not just a formality; it is a way to gain skills to place oneself in a decent work position. One of the developments in education that needs attention is the level of skill performance related to education in vocational schools (Danuarta, 2024; Maritsa, 2021).

Vocational High School is an educational institution formed to produce competent and quality human resources to compete in the world of work in the future. Vocational high school is a secondary education unit that prepares students to work in a particular field. In developing education in this vocational high school, each student needs to develop the quality of their performance to improve their skills. Vocational High School is one form of a unit of vocational secondary education organizers domiciled in the Directorate General of Vocational Education, which organizes education that is oriented towards the formation of life skills, training students to master what is needed by the world of work, including the world of business and industry, providing education about entrepreneurship, and developing life skills (Ai Asiah et al., 2022; Yahya, 2023). Given the increasing technological progress, vocational schools should not teach subjects irrelevant to the demands of the world of work. Therefore, it is necessary to develop a learning model that can be adjusted to the needs of the world of work. Learning is less relevant and unable to adapt to changes in the job market in vocational education that are only school-based and do not include input from the world of work (Harris, 2021; Triwahyudi, 2020). This is also caused by the disparity between education output and employment and the availability of formal employment, and educational development continues to face high unemployment rates, according to existing facts (Harahap, 2023; Lestari & Pardimin, 2019).

Based on the report of the Central Statistics Agency (BPS) for the past three years, the unemployment rate reviewed from the level of education is more dominant towards the increase in vocational education. The results of the BPS data report review regarding the open unemployment rate for vocational education since 2020 reached 13.55%, in 2021 it reached 11.13%, and in 2022 it reached 9.42%. The results of the BPS report data prove that the unemployment rate for vocational school graduates is still high compared to other levels of education. The current unemployment cases require more in-depth handling. One of them is increasing students' competence in the world of education to balance their education with the world of work.

The Organisation for Economic Cooperation and Development (OECD) notes that globally, almost all vocational systems suffer from problems to varying degrees, ranging from inadequate partnerships with labor market actors, employers, and trade unions. This leaves vocational systems ill-equipped to respond to employer needs and transition young people into good jobs by equipping them with relevant skills (Kintu, 2019). Improving the quality of vocational school graduates who are ready to work is certainly inseparable from the management of education implemented in the related vocational school. Several educational management analyses are related to programs that produce quality input for competent graduates (Edi, 2024; Yurnalissa & Maria, 2019). Problems concerning asynchronous skills possessed by vocational high school students competing with the real world require quality and competent educational guidance. Observation results at SMK Taman Karya Madya Mining Kebumen show that automotive light vehicle engineering is one of the most popular skills competency interests among students. The number of classes in the tenth grade consists of five people with a total of 201 students, then the eleventh grade consists of four classes with a total of 161 students, and in the twelfth grade, there are four groups with a total of 143 students. The observation results prove that the number of people interested in automotive light vehicle engineering expertise has increased yearly. Therefore, educators must make deeper improvements regarding their expertise competencies. This aims to support future work skills for students who have graduated so that they can compete with the future work environment and reduce unemployment. Educators not only apply a theory in learning activities but must also be able to produce competent human resources. This requires good management of school partnerships with industry and the world of work through various improvements in skills and competencies within themselves. Competence is the

capacity to perform specific activities that often require a combination of knowledge, skills, and values. Competence development theory emphasizes that students must acquire and integrate knowledge, skills, and attitudes to achieve vocational competence (Harris, 2021; Sumbodo et al., 2019).

The observation results also show that SMK Taman Karya Madya Mining Kebumen has established several school partnership collaborations with the business and work world industry (IDUKA) in large industries. SMK Taman Karya Madya Mining Kebumen has a partnership relationship with the business and work world industry (IDUKA), which is proven by the existence of a Memorandum of Understanding between the school and the business and work world industry (IDUKA). In a written memorandum of understanding on cooperation between the school and the industrial world of business and the world of work (IDUKA), cooperation was agreed in developing education consisting of eleven points, including (1) development of school curriculum, (2) development of real project-based learning, (3) training of teachers or other employees as needed, (4) implementation of fieldwork practices (PKL), student internships and teacher internships, (5) guest teachers/guest instructors in mining geology, (6) teacher and student competency certificates, (7) development of applied research and teaching factories, (8) provision of qualified prospective workers and absorption of mining geology graduates, (9) scholarship assistance or education costs for students, (10) assistance with learning facilities (CSR), and (11) improvement of management (governance) and work culture based on industry.

Field findings show that so far, the level of student competency has yet to be able to compete easily in the world of work. The results of the field review prove that many vocational high school alumni in Kebumen Regency still need to realize the potential they have obtained during school in the world of work. This is due to the need for more creativity and ability to do so. The results of the field review are in contrast to the conditions experienced by students previously, where all facilities and implementation of practices to achieve knowledge have been able to meet all student needs (Edi, 2024; Fata, 2023). However, it was also found that the low level of student expertise in industrial performance was not caused by competence but was influenced by the interest in doing so. Previous studies showed a gap between what researchers had done and where school partnerships with industry and the world of work had not been able to compete in the world of work because of the lack of work readiness. As mentioned, activity readiness refers to a collection of certain activities, including psychological, physical, and willingness to act (Lie & Darmasetiawan, 2018; Maulana et al., 2023; Pratama et al., 2018). Other findings also show that the knowledge and skills required by the business world and industry are not only based on work skills that are appropriate to the required field of expertise but also work skills that include personal qualities (Hanafi, 2013; Munthe, 2021).

Partnerships play an important role in improving the quality of education, but many vocational schools still need to maximize their efforts in developing partnerships. Industrial work practice partnerships are often limited to the school's surroundings without developing broader partnerships, thus opening up opportunities for students to develop their limited abilities (Anugerah et al., 2022; Supardi, 2023). The competencies or skills students acquire when they undertake theoretical learning can be implemented in the business world in which they are involved (Fata, 2023; Meirawan et al., 2022). In addition, one of the efforts vocational schools can make to improve the efficiency and effectiveness of education in producing quality education is by utilizing all available resources and sharing power with stakeholders in the framework of cooperation with the industrial world. By implementing School-Based Quality Improvement Management, vocational schools must be able to see the achievement of educational quality more sharply, especially regarding the targets and objectives of vocational education and its relevance to the world of work (Arifin, 2012;

Sungkowo, 2019). The achievement of the quality of education for students at the vocational education level by implementing school partnership management with industry and the world of work can guide teachers and students to synergize in improving their competence (Komara, 2023; Sukma, 2021).

Partnership policies in vocational education, such as SMK, involve three important components: the school board, the business world and industry, and vocational high schools. Through a dual system education mechanism, such as the implementation of industrial work practices in the business world and industry, the three important components in these schools are expected to be able to improve the quality of Indonesian human resources. In addition, cooperation between vocational education (SMK) and the business world and industry is the key to the success of vocational education, where education is designed, implemented, and evaluated together. So that the competence of student graduates with the demands of the world of work is balanced and increased. In addition, the community will view vocational education as proof of the relevance of education to the world of business and industry. In implementing partnerships between the business world and the industry with SMK, many partnership activities can be developed with this program, including (a) management of joint activity programs between education providers and partner institutions and (b) utilization of infrastructure owned by partner institutions. , (c) financing programs to realize the programs to be implemented, and (d) Utilization/placement of graduates of educational institutions to the world of work or commodities needed by partner institutions (Harris, 2021; Ubaidah et al., 2021).

Previous studies on school partnership management with industry and the world of work support this study. The interests of school partnership cooperation with IDUKA can influence student competence in the world of work. Based on the problems described previously, this study aims to determine the effect of school partnership management with industry and the world of work on improving student competence in automotive skills.

2. METHODS

The method used in this study is a quantitative approach with an experimental research type. Experimental research tests an idea, practice, or procedure to determine whether it affects the outcome or dependent variable. Experiments are used when you want to know the possibility of cause and effect between the independent and dependent variables (Creswell, 2012; Putri, 2023; Rahmi, 2023). The researcher controls all variables that affect the outcome except the independent variable. Then, when the independent variable affects the dependent variable, we can say the independent variable "causes" or "may cause" the dependent variable. The type of experiment used in this study is a quasi-experiment, and the research design chosen is Post-test Only Control Group Design. The design used in this study can be seen in Table 1.

	Treatment	Postest (Competency)
Light Vehicle Engine Maintenance (PMKR)	Х	HAI $_1$
Light Vehicle Chassis and Power Transmission Maintenance (PSPKR)	Х	HAI ₂
Light Vehicle Electrical Maintenance (PKKR)	Х	HAI 3
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 Table 1. Research Design Post-test Only Control Group Design

Sumber: (Sugiyono, 2018)

The population in this study were all eleventh-grade students of SMK Taman Karya Tambang Madya Kebumen. Meanwhile, the sampling technique used in this study was a saturated sample. So, the number of samples used in this study was 72 eleventh-grade

students of SMK Taman Karya Tambang Madya Kebumen. The instrument used in this study was the final exam questions, the final exam score data for the 2023/2024 academic year for eleventh-grade students. The exam score data was collected from three subjects: light vehicle engine maintenance (PMKR), light vehicle chassis and power transfer maintenance (PSPKR), and light vehicle electrical maintenance (PKKR). The data collection technique was through the results of the final exam scores for eleventh-grade students' 2023/2024 academic year. The data analysis technique used in this study began with the classical assumption test (prerequisite test), the normality test, and the homogeneity test. After conducting the prerequisite test, the next step was to conduct a descriptive statistical test, then conduct a t-test (one sample t-test) and ANOVA.

3. RESULTS AND DISCUSSION

Result

Based on the results of previous research, the prerequisite test, a normality test, can be analyzed first. The purpose of the normality test is to ensure whether a data distribution is normal or not. The normality test also aims to determine whether there are residual or confounding variables in the regression model with normally distributed data. The results of the normality test in this study can be seen in Table 2.

	Subject	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Subject	Statistic	df	sig.	Statistic	df	sig.
Compotonov	PMKR	0.115	72	0.019	0.935	72	0.001
Competency	PSPKR	0.237	72	0.000	0.810	72	0.000
Results	PKKR	0.167	72	0.000	0.844	72	0.000

 Table 2. Normality Test

Table 2 shows the results of the analysis of the normality test of student competencies reviewed from three subjects: Light Vehicle Engine Maintenance (PMKR), Light Vehicle Chassis and Power Transfer Maintenance (PSPKR), and Light Vehicle Electrical Maintenance (PKKR). Based on the test results, the significance score (Sig) of all data in both the Kolmogorov-Smirnov test and the Shapiro-Wilk test is > 0.05, so it can be concluded that the research data is normally distributed. Descriptive Analysis in Table 3.

Table 3. Descriptive Analysis (Average Improvement of Student Competence)

Subject	Ν	Berarti	Standard Deviation	Standard Error
Light Vehicle Engine Maintenance (PMKR)	72	43.13	14.360	1.692
Light Vehicle Chassis and Power Transfer Maintenance (PSPKR)	72	65.21	16.737	1.973
Light Vehicle Electrical Maintenance (PKKR)	72	68.25	18.485	2.178
Total	216	58.86	19.984	1.360

Based on the results of the analysis of the average (mean) of the three subjects, the highest average was in the Light Vehicle Electrical Maintenance (PKKR) subject, with an average of 68.25, and the lowest was in the Light Vehicle Engine Maintenance (PMKR) subject with an average score of 43.13. The results prove that the increase in student competence is more dominant in the Light Vehicle Electrical Maintenance subject. However, the average student answer score does not meet the applicable KKM requirements of \geq 80. After knowing the results of the normality test analysis and descriptive test (mean), the next

step is to conduct a homogeneity variance test analysis. The test results can be seen in Table 4.

Table 4. Results of the Analysis of the Homogeneity of Variance
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Levene Statistics	df1	df2	sig.
0.547	2	213	0.579

Based on the SPSS output "Homogeneity of Variance Tests," the significance score (Sig) is 0.579. Because the significance score is 0.579 > 0.05, it can be concluded that the three subjects being compared are the same or homogeneous. The analysis results prove that the assumption of homogeneity in the one-sample t-test and One-Way ANOVA test has been met. The results of the test analysis can be seen in Table 5 below.

Table 5. Results of One Sample Test Analysis

	Т	df	Sig. (2- tailed)	Significant Differences	95% Confidence Interval of the Difference	
					Lower	Тор
Light Vehicle Engine Maintenance (PMKR)	21.790	71	0.000	36.875	40.25	33.50
Light Vehicle Chassis and Power Transfer Maintenance (PSPKR)	7.499	71	0.000	14.792	18.72	10.86
Light Vehicle Electrical Maintenance (PKKR)	5.394	71	0.000	11.750	16.09	7.41

Table 5 shows the results of the t-test analysis of the three subjects, which obtained a significance score of <0.05, meaning that the average student competency from the three subjects is not the same as the KKM score of 80. The results of the t-test also show that tcount> ttable or 21.790, 7.499, and 5.394> 1.993, meaning that there is an influence of school management partnerships with industry and the world of work on improving student competency in terms of the subjects of Light Vehicle Engine Maintenance (PMKR), Light Vehicle Chassis and Power Transfer Maintenance (PSPKR), and Light Vehicle Electrical Maintenance (PKKR). Therefore, the functioning of partnership management can help improve student competency. Abdullah (2020) expressed that the learning process in industrial-based vocational high schools has a teaching factory where schools plan, work on, and control products according to actual industsasarial standards. In addition, industrial work practices are one way to introduce vocational high school students to the work environment and provide experience in working in the world of work. Through this practice, vocational high school students who have been prepared to become reliable and competitive workers in the world of work after graduating are expected to be able to apply the knowledge they have during the learning process at school. Then, the ANOVA test analysis results can be analyzed in Table 6 below.

	Sum	df	Mean Score	F	sig.
Between Groups	27076.583	2	13538.292	49.051	0.000
Within Groups	58789.250	213	276.006		
Total	85865.833	215			

Table 6. Results of ANOVA Test Analysis

Table 6 shows that the basis for decision-making in ANOVA analysis is (a) if the significance score (Sig) > 0.05, then the average is the same; (b) if the significance score (Sig) < 0.05, then the average score is different. Based on the ANOVA output results above, the significance score is 0.000 < 0.05, so it can be concluded that the average of the three subjects is significantly different. This means that school partnership management is influenced by industry and the world of work in terms of improving student competence in terms of the three subjects. This proves that schools collaborating with industrial partnerships can form a good achievement pattern for prospective students.

Therefore Oktafiyah & Hariyati (2020), determining the teaching factory program cooperation is influenced by the school's readiness to obtain industrial partnerships in the field of expertise or majors available. However, sometimes, many graduates need to be more absorbed into the world of work due to their low competency and the gap between the competency needs of graduates expected by DUDI and the fields of competency studied by students in higher education Field (Hasan & Nuthihar, 2022).

Discussions

The results of the prerequisite tests in this study are the normality test and the homogeneity test. The test results show that the student competency data is normally distributed and homogeneous, meaning that the student competency score data can be used to conduct t-tests and ANOVA tests. The homogeneity test is carried out to show that the differences in parametric statistical tests (e.g., t-test, Anava, Anacova) occur due to differences between groups, not differences within groups (Sianturi, 2022; Usmadi, 2020). After the prerequisite testing process is fulfilled, a t-test analysis is carried out. The onesample t-test tests a single sample with a working mechanism, the average of a single variable compared to a constant score (Mustafidah et al., 2020; Tumanggung, 2020). In other words, the sample t-test is used to determine whether there is a difference in the population's mean or previous research with the average data in the sample. Based on the results of the test of student competency data at SMK Taman Karya Madya Pertambangan Kebumen, which was reviewed through the influence of school partnership management with industry and the world of work, the results of student competency in three learning activities were tcount> t table or 21.790, 7.499, and 5.394> 1.993. The results of the ANOVA test analysis obtained a significance score of 0.000 < 0.05. This proves the influence of school partnership management with the world of industry and the world of work on improving student competency in the subjects of Light Vehicle Engine Maintenance (PMKR), Light Vehicle Chassis and Power Transmission Maintenance (PSPKR), and Light Vehicle Electrical Maintenance (PKKR).

The study results indicate that managing school partnerships with industry and the world of work affects student competence. This can be seen from the test results of the three subjects obtaining a significance score of <0.05. The test results show the effect of school partnership management with industry and the world of work on the Light Vehicle Engine Maintenance (PMKR) subject obtained tcount> ttable or 21.790> 1.993, meaning that Ha is accepted and Ho is rejected. This proves that school partnership management affects student competence in the Light Vehicle Engine Maintenance (PMKR) subject. This aligns with previous research that the Light Vehicle Engine Maintenance (PMKR) course with work competencies in the automotive industry is mostly relevant. However, it cannot be said to be a good document because some materials in the PMKR course are irrelevant to the work competencies of the automotive industry. Hence, the recall score is greater than the precision. There is a positive relationship between light vehicle engine maintenance and the results of industrial work practices, meaning that the higher the light vehicle engine maintenance in

students, the higher the results of industrial work practices, and vice versa (Furqaan et al., 2018; Ridho et al., 2018)

The study also showed that managing school partnerships with industry and the world of work affected student competence in Chassis Maintenance and Light Vehicle Power Transfer (PSPKR). The test results obtained tcount> ttable or 7.499> 1.993, meaning that Ha was accepted and Ho was rejected. With cooperation, schools can support student competence in both practical activities and theory, especially in chassis maintenance and light vehicle power transfer (PSPKR). This aligns with research conducted by Rojaki et al. (2021), which shows the importance of cooperation between vocational schools and related institutions between schools, universities, and industries in achieving targeted vocational education goals. This approach can be interpreted as a synergistic partnership between schools, DUDI, and universities to produce quality vocational graduates. The study also showed that managing school partnerships with industry and the world of work affected student competence in Light Vehicle Electrical Maintenance (PKKR). The test results obtained tcount> ttable or 5.394> 1.993, meaning Ha was accepted and Ho was rejected. The existence of school partnerships can affect students' abilities in the field of learning Light Vehicle Electrical Maintenance (PKKR). This is in line with previous research that another function of using an electrical trainer is to demonstrate the working principle of the Charging System; with this, it is expected to help students understand the problems of the Charging System. Because these various features will later become a charging system trainer, this is one of the highly recommended training media for testing the ability and solving problems of the charging system in automotive classes that can improve the competence of these students (Putra et al., 2017; Rojaki, 2021).

School partnership management is influenced by industry and the world of work on the automotive skills competency of SMK Taman Karya Madya Mining Kebumen students because the management or partnership program implemented in SMK can involve management functions. Collaborative or partnership management in schools can be interpreted as a unique process consisting of actions involving management functions such as planning, organizing, implementing, and evaluating/controlling carried out to regulate the relationship between educational institutions and IDUKA (Ananta, 2019; Lestari & Pardimin, 2019). The role of the SMK and IDUKA partnership has received support from the government, one of which is the issuance of the Regulation of the Minister of Industry Number 3 of 2017 concerning Guidelines for the Development and Development of Competency-Based Vocational High Schools that Link and Match with Industry. This regulation is a guideline for IDUKA to facilitate guidance to SMK in producing graduates as competent workers, play a role in providing input for curriculum synchronization, provide space for students and teachers to practice or do internships at IDUKA according to their expertise program, provide instructors as practice guides for teachers and students, provide assistance with practice tools and issue certificates for teachers and students (Rojaki, 2023; Susila, 2022). This proves that the collaboration between SMK and IDUKA plays an important role in improving student competency, thus producing competent graduates and reducing unemployment in the future. This proves that the collaboration between SMK and IDUKA is important in improving student competency, thus producing competent graduates and reducing unemployment in the future (Garnadi et al., 2022; Munthe, 2021). Efforts to improve student competency include integrating the learning curriculum in vocational schools with the graduate competencies needed by the Business and Industry World (IDUKA). Alignment is carried out by establishing cooperation with IDUKA, which is committed to sharing knowledge and concerns in accepting vocational school graduates from its partners (Sunawardhani & Casmudi, 2022; Yuanita, 2020). Therefore, cooperation between SMK and IDUKA can be improved through various processes to improve the quality of learning related to the students' competencies.

Based on the findings of field data research and previous research findings, the research in this study only standardizes student competency scores at the subject level, Light Vehicle Engine Maintenance (PMKR), Light Vehicle Chassis and Power Transmission Maintenance (PSPKR), and Light Vehicle Electrical Maintenance (PKKR). This study has implications for expanding work practice opportunities and the importance of expanding opportunities for students to gain work practice experience in the automotive industry. Schools and industries must work together to provide students with more useful and relevant internship opportunities. However, this study still has limitations because there are obstacles in this application, such as the need to study the level of student competency in all aspects of the subject in depth. It is necessary to generalize the benefits of partnerships in increasing student independence and creativity in developing their abilities so that various benefits will emerge from school partnerships.

4. CONCLUSION

The study results showed that school partnership management was influenced by industry and the world of work in improving the automotive skills competency of SMK Taman Karya Madya Mining Kebumen students. The increase in student competency can be seen from the results of the final exam scores in three courses: Light Vehicle Engine Maintenance (PMKR), Light Vehicle Chassis and Power Transfer Maintenance (PSPKR), and Light Vehicle Electrical Maintenance (PKKR). Therefore, cooperation between schools and IDUKA can provide opportunities for students to support their learning abilities through various practical activities. This is because the theoretical activities learned can be used as conceptual in practical activities. Therefore, the role of school partnership management with IDUKA can positively influence students' overall competency.

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