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Tripartite Interconnection to Serve High Quality and Competitiveness of Vocational School Students in Industry

Suryaman[1], Achmad Zaki[2], Suharyanto[3], Suhadi Winoto[4]

Abstract

Most vocational high school (SMK) graduates do not have high financial competitiveness and are still unemployed, even contributing to the highest unemployment rate compared to graduates from other schools. This study aims to identify resource sharing between schools, vocational training agencies, and industry in preparing vocational high school graduates to be ready to work and highly competitive. The research design adopted by the study is qualitative research combined with percentage descriptive research. The study was conducted in Malang. The study subjects consisted of students, teachers, school principals, heads and staff of vocational training centers, and industrial managers who were used as places for industrial work practices. The study results show that vocational high schools cannot produce highly competitive graduates without job training institutions and large industries' support. Resource sharing in the form of laboratories, workshops, internships, and human resources should be made between vocational high schools, vocational training centers, and industry.

Keywords: resource sharing, competitiveness, schools, industry, and job training centers

Introduction

Currently, the competence and competitiveness of vocational high school graduates are very low (Allen, 2007). The slogan "SMK can" (Vocational School Can) could not make vocational high school graduates highly competitive. Data in East Java show that the number of vocational high school graduates currently unemployed is 87.2% of the total graduates (Prabowo, 2022). This means that the business and industry world employ 12.8% of SMK graduates only. Many experts say that graduates of vocational high schools do not yet have the abilities expected by the industry (Adelman & Taylor, 2015). Vocational high school graduates are not ready to work but are only prepared to be trained for work. Vocational high school graduates still need 150–200 hours of training before they are truly prepared to work (Capasso et al., 2005). The low quality of the curriculum shows the low competency of vocational high school graduates. The developed

[1]*Prof. Dr. Universitas PGRI Adi Buana, Surabaya, Indonesia, Email: suryaman@unipasby.ac.id*
[2]*Dr. Universitas Nahdhotul Ulama Sidoarjo, Indonesia, Email: zaki400.mnj@unusida.ac.id*
[3]*Dr. Universitas PGRI Adi Buana, Surabaya, Indonesia, Email: suharyanto@unipasby.ac.id*
[4]*Prof. Dr. UIN KHAS, Jember, Indonesia, Email: s.winoto57@gmail.com*

curriculum does not include the world of work (Nevhudoli & Olive Netshandama, 2023; Istiningsih, 2021).

Blueprint for Smart and Competitive Indonesian People explained that all Indonesians, as of 2025, including vocational high school graduates, must have high competitiveness, which must be equipped with high competence with long work experience, which can be obtained through internships in the industry. This is also in accordance with the Joint Decree of the Ministry of Education and Culture and the Ministry of Trade and Industry Number 0217/U/1994 & 044/SKEP/KU/VIII/1994 concerning the role of the Vocational Education Council in Indonesia with the primary task being to increase the competency of vocational high school graduates in a better direction. This needs to be pursued to meet the link and match the master plan for research, training, and the world of work (Prabowo, 2022).

Likewise, there are no practitioners from the business world who are actively involved in teaching at vocational high schools during the learning process in the classroom. There is no resource sharing for industrial human resources to be actively engaged in teaching in vocational high schools. Teachers with no industrial background have also never had internships in the industrial world (Matabane et al, 2022; Nwosu et al., 2023). As a result, they teach more theoretically than experience-based in the business world. As a result, graduates of vocational high schools do not have the expected qualifications in the business world (Chong & Quek, 2022; Kapitzke & Hay, 2008; Turgumbayeva et al., 2023). Another expert (Lvina, 2015) mentioned the cause of the low quality of vocational high school graduates, namely, the absence of cooperation between SMKs and regional work training centers that could enter MoUs and cooperation agreements to share resources. Vocational teachers and students can practice work at the Vocational Training Center (in Indonesian term BLK). Vocational high school teachers can also teach at vocational training centers according to their competence (Mulyasa, 2013). Meanwhile, the vocational training center can prepare all available resources, such as machines, workshops, for workshops and training for vocational high school students. Vocational training center can also prepare reliable tutors who can facilitate teachers and vocational high school students to practice their skills well (Murniati & Usman, 2009). Table 1 shows the employment statistics in Malang.

Table 1 shows that the working-age population (15 years and over) is divided into the labor force and the non-labor force. The total workforce and non-workforce numbers in Malang in 2022 are 424,229249,229, respectively. The labor force participation rate, which is the percentage of the

total workforce to the working age population, e in 2022 is 62.96%. The portion of unemployment to the total workforce is illustrated by the 2022 open unemployment rate of 6.78%.

Table 1
Employment Statistics in Malang

Description	2021	2022
Working-age population	666.374	673.836
Workforce	428.395	424.229
Not the labor force	237.979	249.607
Labor force participation rate (%)	64.29	62.96
Male	78.84	78.54
Female	49.12	46.79
Open unemployment rate (%)	8.16	6.78
Male	8.61	5.20
Female	7.40	9.52

Source: Central Bureau of Statistics, City of Malang

The number of unemployed people in Malang, East Java, is 45,686, which means that open unemployment in East Java has reached 6.78% of the total workforce of 424,229 people. The details about the number of unemployment figures in Malang are shown in Table 2.

Table 2
Number of Unemployed in Malang City

Level of education	Unemployment number	%
Primary school	2.165	4,74
Junior high school	7.931	7,18
Senior high school	9.402	7,58
Vocational high school	21.878	10.20
Bachelor	4.308	8,43
Amount	45.686	100

Source: East Java in figures 2022

Table 2 shows that vocational high school graduates have the highest unemployment rate, with 21,878 people and with a rate of 10.20%. The results of previous research (Sagala, 2011) show that the absence of industry in vocational high schools causes the competitiveness of vocational high school graduates to be low. The low number of graduates from vocational high schools is due to a curriculum that does not match the world of work (Murniati & Usman, 2009). In the process of preparing the vocational high school curriculum, it is not fully in line with the curriculum outlined by the industrial world. Vocational high schools do not have a budget to pay teaching practitioners at Vocational High Schools. Many practitioners do not have the time and are not allowed by the company to work part-time teaching at vocational high schools in the context of transmitting their practical knowledge. Vocational high schools have not cooperated with vocational training centers to improve student skills (Pillay et al., 2013).

This research's novelty is evident in resource sharing, involving three parties: Vocational High Schools, Vocational Training centers, and large industries. Most previous studies, including Anggraeni (2016) and Dardiri (2016), only involved vocational high schools and vocational training centers. Other studies, such as Ginanjar (2017) and Rahayu et al. (2020), only examined vocational high schools and the industrial world, which have not been studied by previous researchers. Likewise, the resource sharing involved is human resources and supporting resources such as machines, workshops, workshops, laboratories, and others.

Research questions

1. What is the form of resource sharing between vocational high schools and vocational training centers, and large companies in increasing the competitiveness of vocational high school graduates?
2. What is the form of resource sharing between vocational high schools and large companies in increasing the competitiveness of vocational high school graduates?
3. What is the form of resource sharing between vocational high schools, vocational training centers, and large companies in increasing the competitiveness of vocational high school graduates?

Review of Literature

Competitiveness

Competitiveness is the ability possessed by resources to compete with competitors in perfect competition (Sulaiman, 2015). Human resources which have high competence will win the competition. Competitiveness is affected by several aspects such as competency, work experience, network, experience of opening an independent business, owned capital, dedication, and innovation. Human resources with high innovation and commitment can improve one's scientific power (Brown, 2008).

Skills appropriate to the field of work to be addressed are also a determining factor for competitiveness (Wahjosumidjo, 2011). High skills will impact the level of competition. They will win the competition because, from the start, the level of competition will only be filled by those who are tenacious, diligent, serious, focused, and highly committed (Carey & Hanley, 2008).

The competitiveness of Vocational High School graduates today is still inferior to people who have work experience because current vocational high school graduates have poor experience, do

not have high dedication to progress, and do not have a reliable competitive spirit. They are still childish. They still like to play online games, and they still like to have fun, so their persistence in a job, based on their skill program, is very low (Geser, 2007).

The low competitiveness of vocational high school alums is because they do not match the expertise programs studied at school with their apprenticeship programs. The place for the internship chosen is not in accordance with the area of expertise occupied. The final impact is that SMK graduates do not master the expected competencies because they do not have practical experience in the field (Boyle, 2003).

To increase competitiveness, it is necessary to reorganize the apprentice program implemented while still prioritizing the suitability of the field of expertise with the field of the chosen internship (Koper & Tattersall, 2005). It is also essential to carry out tripartite cooperation that can link SMKs, vocational training centers, and industry. High competitiveness is also possessed by human resources who consistently maintain quality, innovation, and commitment. Those who are inconsistent with themselves will be swallowed up by the times because they are not ready to compete with their competitors. High competitiveness will provide certainty to the sustainability of the resources owned (Baraniuk, 2008).

Reading the theoretical description above, it can be concluded that competitiveness is the ability of resources to compete with their competitors and will always try to win the competition while maintaining competence, quality, creativity, and innovation in actors who want to maintain consistency toward true sustainability.

Resource Sharing

Resource sharing is a cooperative activity in utilizing resources owned by both HR and other non-HR resources owned by two or more parties (Krämer & Zobel, 2008). Sharing human resources is in the form of exchanging experiences, benchmarking, and exchanging work locations to provide challenging work experience for increasing HR competencies (Murthy, 2002).

Resource sharing in machine and equipment resources owned by two or more parties can be realized in the form of shared use by mutually maintaining the integrity of existing equipment (Yonus, 1989). Schools that have sophisticated laboratories can share resources with work training centers for testing. Vocational high schools with sophisticated laboratories can also share resources with companies requiring product testing or other tests (Kaul, 1999).

Company human resources with high experience can teach at vocational high schools for several meetings in the form of teaching practitioners so that students get knowledge and skills directly from practitioners who work in that field every day (Wiley, 2001). Teachers without practical experience in the industry can also participate in a special teacher apprenticeship program guided by tutors at the company so that a teacher grows practical experience of working in the industry which will be taught directly to vocational high school students.

Resource sharing can be done when there is already a cooperation agreement between two or more parties. This MoU will become the umbrella for implementing resource sharing of resources owned by each party. The implications of financing that both parties must bear can be included in the contents of the cooperation agreement. Likewise, income or profits can be shared between two or more parties so that each party can guarantee mutual benefits.

Resource sharing provides an important meaning for the parties. If it is practiced in vocational high schools and companies, both parties must also get mutual benefits, both material and immaterial. Resource sharing will end if it is not mutually beneficial and harms one party.

At a practical level, resource sharing can be temporary and multi-year. In essence, when resource sharing does not harm either party, the activity can be performed until the end of the MoU. The MoU relating to resource sharing can be terminated by each party when no more resources are shared.

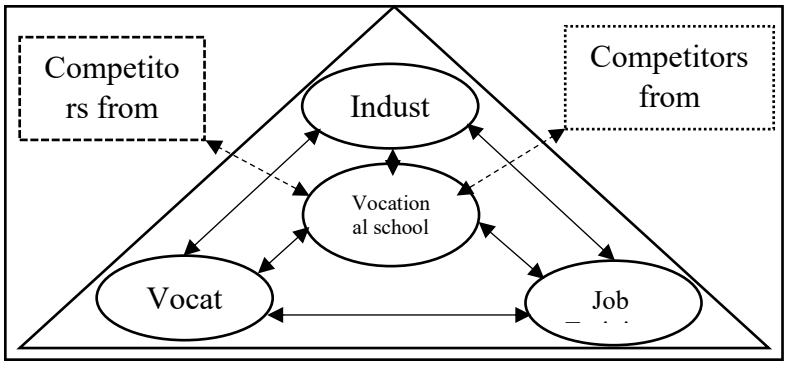
Presidential Regulation No. 8/2012 explains the Indonesian National Qualification Framework that graduates of vocational high schools must have national competencies per the needs of the business and industrial worlds. Accordingly, graduates of vocational high schools must take a competency test according to their field. Reading the description above, it can be understood that resource sharing is a very good step to improve the quality of the resources of the two parties who entered an MoU in the framework of resource sharing.

Methods

Research design

The study used ethnography design with qualitative approach (Creswell, 2009). This study focuses on the exploration of a tripartite partnership in vocational high schools, vocational training centers, and industry to increase the competitiveness and performance of vocational high school graduates. When depicted in the form of a diagram, it looks as follows.

Figure 1
Tripartite Relationship Between Vocational High Schools, Vocational Training Center, Industrial World



Source: 2021–2022 research results

Diagram 1 illustrates that graduates of vocational high schools are required to have superior competence and high competitiveness, which can win the competition for job search, or the opportunity to open up employment opportunities by establishing a new place of business.

Research subjects

The subjects of this study included vocational high school students (40), both currently studying (20) and those who had just graduated (20), vocational high school teachers (10), the world of industry (10), and staff at vocational training centers (10), in total .70. The subjects were selected in purposive sampling. They are the ones who will provide primary data that will be used in answering the research questions. Vocational high school students who are still studying and have just graduated from the schools are selected because they already understand the various advantages and disadvantages of the 1:1 learning process (theory: practice) and their competencies and competitiveness when they seek or create jobs.

Research location

The research location of the study is Malang, East Java, Indonesia. The choice of location was motivated by the fact that Malang City is a large city in East Java with a large number of vocational high schools and relatively large and medium and large industries, but the number of unemployed is quite high. Therefore, the researcher chose East Java as the only research location.

Data collection

The study data were collected using participatory observation and in-depth interviews with newly graduated vocational high school students, management of medium and large companies, leaders, and staff of the East Java Vocational Training Center.

The research instrument is the researchers themselves (Singh & Nath 2007), who were equipped with an interview and observation guide (Twumasi 2001) as a guide in conducting research so that it does not depart from the research theme included in the research questions.

In order to focus the interview process according to the research theme compiled in the research problem formulation, the interview guide used for the research appears in the **appendix 1**.

During the research process, the researchers used this interview guide. Likewise, when interview, the researchers first selected key informants (Twumasi, 2001), supporting informants and forming a snowball. The more key informants and supporters were interviewed, the broader and more profound the data that could be extracted (Herdiansyah, 2010). Finally, data were complete and makes it possible to conclude validly, free of bias, and answer the research question properly. Observation guide to collect data in this study appears in **appendix 2**.

Research data were also collected through the documentation method by observing and gathering sources of information directly related to the research theme (Dunne & Akyeapong, 2007; Kamal et al., 2005).

Data analysis

After the data were collected from observations, interview transcripts, and related documents, they were double-checked and cross-checked (Moleong, 2005) so that the data at hand are credible. To increase credibility, researchers also try to stay longer in the field to hope that the data obtained will be deeper and that the observations recorded will be more valid.

Data analysis started when the researchers received various data in the field but has not yet reached a conclusion. Researchers continue to conduct analyses in the field as there is more incoming data. The classification process based on research themes and data reduction to sort and select truly accurate data were carried out while the researcher was in the field (Miles & Huberman, 1992).

After saturating the data are at hand (Denzin & Lincoln. 2009), conclusions are drawn based on the themes. To avoid mistakes in concluding, the research results that have been neatly arranged

are read out to several key informants with adequate education and literacy; thereby, feedback emerges that can be used to refine research findings.

Results and Discussion

Resource Sharing for Vocational High Schools and the Industry

Table 3 shows that the various strategies implemented to improve the competence and competitiveness of SMK graduates are most impressed when compiling a joint curriculum, conducting industrial internships, and receiving job offers as employees at student apprentices.

Table 3

Strategy to Improve the Quality of Resource Sharing Between SMK and Industry

Number	Strategy	Yes (%)	No (%)	Abstain (%)
1	Develop curriculum jointly between vocational high schools and industry	98,4	1,4	0,2
2	Facilitating work apprenticeships for vocational high school graduates	96,2	3,4	0,4
3	Placing apprentice students according to the chosen expertise program	85,6	11,8	2,6
4	Providing reliable tutors or trainers to train apprentice students	89,3	10,1	0,6
5	Provide opportunities for students to practice operating modern machines that are not out of date	84,1	14.7	1,2
6	Providing opportunities for graduates of vocational high schools to work in the industry where apprentices are held	98,6	1,3	0,1
7	Open industry-specific classes that receive scholarships from industry and, after graduation, are recruited by industry	91,4	6,3	2,3
8	Provide opportunities for teachers to visit similar companies abroad	90,6	9,3	0,1
9	Through CSR funds, it provides venture capital for vocational high school graduates to become stone entrepreneurs.	91,4	8,3	0,3
Average		91,7	5,7	0,8

Source: data analysis 2022

Based on the results of interviews and observations, various methods can be applied in resource sharing between vocational high schools and medium and large industries, namely: 1) Developing a curriculum jointly between vocational high schools and industry, 2) Facilitating work apprenticeships for vocational high school graduates, 3) Placing apprentices according to the chosen expertise program, 4) Providing reliable tutors or trainers to train apprentice students, 5) Providing opportunities for students to practice operating modern machines that are not out of date, 6) Providing opportunities for vocational high school graduates to work in industry place for internships, 7) Open industry-specific classes that receive scholarships from industry and after

graduation are recruited by industry, 8) Provide opportunities for teachers to visit similar companies abroad, 9) Through CSR funds provide business capital to vocational high school graduates to become stone entrepreneurs, and other productive activities.

The results of interviews with the heads of vocational high schools in Malang regarding resource sharing between vocational high schools and industry are as follows:

> "Vocational High Schools that build partnerships with industry and send their students for industrial internships will make students have no more difficulties implementing link and match. When a school chooses an internship location, it will usually match the study program and skills needed, but when students choose their own industry, sometimes it doesn't match, the important thing is to have a location for industrial work practice."

The results of interviews with one Vocational High School teacher in Malang also as follows:

> "Many vocational high schools collaborate with the business and industrial worlds but are not used for industrial work practices. Students search for industrial work practice locations themselves, as a result, they do not match the skills program being pursued at school. In the future, industries that have collaborated with vocational high schools should be used as industrial work practice locations to achieve the initial goal of industrial work practice."

Interviews were also conducted with the manager of industry in East Java, which also happened to be the location for industrial work practices, who stated that:

> "Many vocational high school students do not work in accordance with their expertise program, many accounting students are not in the finance department, and many marketing students work practices in offices. Also, many children with computer network expertise programs do not practice industrial work in the computer department. This is what causes industrial work practices not to provide significant benefits."

The results of an in-depth interview with one of the marketing managers related to industry work practices detailing as follows:

> "Industry work practice is very profitable for schools and students. Various theories taught in schools can be applied directly when they work in the industry. Resource sharing between vocational high schools and industry can increase its role through various activities that are mutually beneficial to both parties. Companies where industrial work practices will benefit from preparing labor cheaply, without having to train prospective workers, it is enough to recruit vocational high school students who have had internships at their companies."

The results of the research above are in accordance with the findings (Rahayu et al., 2020), which state that industrial work practices can increase the link and match of vocational high school graduates with industry needs. Another study (Priambudi et al., 2020) concluded that the apprenticeship program reduced the unemployment rate because alums of vocational high schools

who already had high competence would have high competitiveness when they had to compete with other job seekers.

The results of this study are also in line with previous research by Mahmudah & Santosa (2021), reporting that resource sharing gives the meaning of mutually utilizing the resources owned and mutually benefits collaborative activities in the form of preparing quality human resources.

Resource sharing for Vocational High Schools and Vocational Training Center

The results of interviews and participation observations found various forms of resource sharing between vocational high schools and vocational training center vocational high school improve the competence and competitiveness of vocational high school students, including: 1) Conduct training for vocational high school students for certain skills for which tutors and tools are available at vocational training center, 2) Provide opportunities for vocational high school teachers to participate in training at vocational training center in special sessions for vocational high school teachers, 3) Provide opportunities for SMK teachers who have rare skills to teach at vocational training center, 4) Provide opportunities for vocational training center tutors to teach in vocational high school, 5) Conduct work placements for graduates of vocational high school who have high competence, 6) Provide opportunities for outstanding students to become technicians at workshops in vocational training center, 7) Assign vocational training center tutors to be the assessment team during tests certification or competency test, and other activities m benefit both parties.

Data in Table 4 show that the enthusiasm of students and teachers in implementing cooperation between vocational high school and vocational training center is very visible. The aspect that impressed me the most was during skills training at vocational training center when I was trained by upper-level students who had successfully worked in established industries and became trainers at vocational training center, and when they were recruited to become technical employees at vocational training center and were assisted in being placed in vocational training center partner industries.

Table 4

Types of Resource Sharing Between Vocational High Schools and BLK

Number	Strategy	Yes (%)	No (%)	Abstain (%)
1	Conduct training for vocational high school students for certain skills for which tutors and tools are available at vocational training center,	96,1	3,3	0,6
2	Providing opportunities for SMK teachers to participate in training at the vocational training center in a special session for vocational high school teachers,	85,7	11,9	2,4
3	Provide opportunities for vocational high school teachers who have rare skills to teach at vocational training center	89,2	10,1	0,7
4	Provide opportunities for vocational training center tutors to teach at vocational high schools	84,1	14.7	1,2
5	Conduct work placements for SMK graduates who have high competence in vocational training center partner companies	98,2	1,7	0,1
6	Providing opportunities for outstanding students to become technicians at workshops at vocational training center.	98.3	1,6	0,1
7	Assign vocational training center tutors to be the assessment team during the certification test or competency test	90.8	9,2	0,0
8	Bringing together vocational high school students and alums who are already working and ready to become volunteer volunteers at vocational training center	91,2	8,6	0,2
Average		91,2	8,6	0,2

Source: research results during the period 2021–2022

Based on the results of interviews with the heads of vocational high schools regarding resource sharing between vocational high schools and vocational training center, it can be explained as follows.

> "Vocational high schools must build partnerships with all stakeholders so that vocational high schools can have a great opportunity to improve the competence of their graduates. Vocational high schools can work together with vocational training center because vocational training center has many resources, both human resources and infrastructure, that can be used to improve the competency of vocational high schools graduates."

A similar opinion was also expressed by another head of vocational high schools who also stated that:

> "It's time for vocational high schools have various resources so they can share them with partners. Call it the vocational training center. They have sufficient resources and facilities for training students and graduates of SMK to improve their competence. Vocational training center also has reliable human resources, which can be invited to training center to become practitioners who teach at vocational high schools.''

The results of the interview with the head of the vocational training center relating to cooperation and follow-up of the collaboration between Vocational High Schools and BLK can be described as follows.

> "Many Vocational High Schools have built MoUs with vocational training center, and we are wide open as long as it is for the common good. We are welcome, we even pick up the ball by visiting vocational high schools, lest we have resources but are not put to good use to increase the competence and competitiveness of human resources."

Observations show that, from 2021 to 2022, the skills training process for children in vocational high school uniforms is extensive, and even the vocational training center is also conducting training for vocational high school graduates who wish to work at home and abroad. According to observations, the vocational training center also conducts various education and training programs to improve the performance of vocational school teachers. Many vocational training center tutors also offer to become vocational high school teachers.

The results of this study are in line with research conducted by Arfandi & Sampebua (2016), reporting that vocational schools can work with institutions that have resources to improve student competence (Dardiri, 2016), Vocational training center to have various programs to improve skills and will be more meaningful when it can reduce the unemployment rate through increasing the skills of the unemployed, including graduates of vocational high schools (Estriyanto, 2021).

Another study (Mohr et al. 2013) concluded that when vocational high schools can work with vocational training center and perform various training programs, graduates of vocational high schools will have high work skills (Ginanjar, 2017). and have high competitiveness. To improve the ability of vocational high school graduates to be highly competent (Hartanto et al., 2019), the head of the vocational school can be to collaborate with the vocational training center (Anggraeni, 2016).

Resource sharing in a tripartite between vocational high schools, Vocational Training Center, and industry

The form of tripartite cooperation between vocational high schools, vocational training center, and industry provides mutual benefits that all parties can feel. As explained, resource sharing will work well when all parties can contribute and reap the results obtained after the activity. There is a symbiosis mutualism that mutually benefits all parties.

For vocational high schools, resource sharing has advantages such as being able to graduate students with high competence and competitiveness. Vocational high schools also have partners ready to accept graduates with standard competencies per the expected competencies.

For vocational training center, resource sharing provides input for prospective trainees who already have basic competencies, so they are easy to train and have a high chance of success. Thus, the target can be achieved at a lower cost.

This is in accordance with the results of an interview with the head of the Vocational Training Center which stated that:

> "Vocational high schools can enter an MoU with vocational training center to provide opportunities for Vocational High School students to jointly practice various skills at Vocational Training Centers because only vocational high schools that have entered into an MoU with vocational training center can practice together at vocational training center. Unskilled vocational high school teachers can also practice at vocational training center, vocational high school teachers who are highly competent can also become tutors at vocational training center. Conversely, vocational training center tutors can also be visiting or practicing teachers at vocational high schools. vocational training center can also distribute vocational high school graduates to work in vocational training center partner industries."

Regarding resource sharing with the industry, the results of an interview with one of the human resource managers explained that:

> "The apprenticeship program for vocational high school students in industry, followed by opening special industry classes, practicing teachers from the industry teaching at vocational high schools, and industrial work apprenticeships for teachers, can be said to be resource sharing. In this resource sharing, company-owned resources are used jointly, and vocational high schools with good laps can be used together with industry and vocational training center."

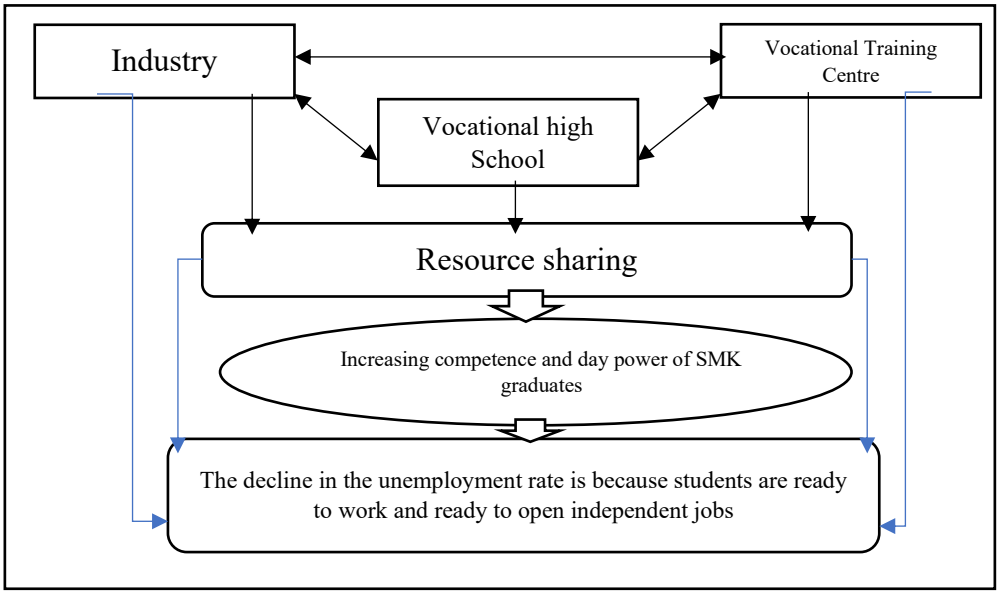
The results of the interview with the head of the vocational high school regarding resource sharing can be explained as follows:

> "Resource sharing between vocational high schools, vocational training center, and industry can occur when Vocational High School students practice skills at vocational training center, followed by apprenticeships in industry, forming a good triangle. The Cooperation Triangle will be more effective when it is filled with positive activities aimed at increasing the competence and competitiveness of vocational high school students."

Figure 2 shows the meaning that resource sharing involving vocational high schools, vocational training center, and industry provides enormous power for improving the quality of vocational high school graduates. The side effect is that graduates have high competitiveness, which can

reduce unemployment because apart from working in companies, they can also open their businesses.

Figure 2
Resource Sharing



The findings above are not much different from the findings of King & Palmer (2010), which state that when vocational high schools can build a network of collaboration with industry, they will be able to increase the competency of vocational high school graduates (Trilling & Fadel, 2010). It is still rare for vocational high schools to collaborate with Vocational Training Center, even though this institution has great resources for training and improving the competence of students and graduates of vocational high schools.

This finding also supports previous research (Trilling & Fadel, 2010), stating that vocational high school graduates with good industrial work experience will not have difficulty in getting a job. Vocational high school graduates who received job training from Vocational Training Center will have a higher level of competitiveness in finding a job or opening an independent workplace, as they will have skills above their peers.

Definitely, interconnection between vocational trainings for secondary school students and industrial immersion programs offers awareness on improving competitiveness for students as indicated as the novelty of this research. The interconnections that appear as the gaps of previous studies include soft skills, critical thinking, and standard demands on the creative skills of

technology and competence on the online job scopes. As schools commonly are not aware of using resources to apply in the collaboration with industrial training centers, it implies that tripartite resources be made optimal at the vocational schools. The novelty of this study is in that the dare of Vocational High Schools to collaborate with industrial training center has been initiated in this research by implementing tripartite resources.

Conclusion

Based on the results of the research and discussion above, the resource sharing between Vocational Schools and Industry varies widely, but what is perceived to be the most impressive is the problem during the process of compiling the curriculum when training vocational high school students in Industry, and when students who graduate from vocational high schools are placed in industries where they are apprentices. Another strategy that is no less effective is the opportunity for vocational high school teachers to do internships in industry and provide opportunities for industrial practitioners to teach in vocational high schools. Through these activities, resource sharing can occur.

The forms of resource sharing between vocational high schools and Vocational Training Center are very varied, it's just that what is perceived as the most important, according to informants, is when vocational high school students are allowed to practice directly at Vocational Training Center workshops, meet seniors who are already working in the industry and part-time becoming a tutor at Vocational Training Center and the process of channeling work for vocational high school alums to Vocational Training Center partner companies that need vocational high school graduates.

In sharing resources in a tripartite form between vocational high schools, Vocational Training Center, and Industry, everything can be said to be mutually beneficial. Vocational high schools can get graduates with high competitiveness, Vocational Training Center gets input that already has provisions, so it's easy to provide training, the industry gets reliable resources without having to provide extra training for a long time.

The novelty of this study lays that this research initiates to use the tripartite resources of Vocational Schools to collaborate with industrial training center to prepare graduates to work in the industry. This study, however, has drawbacks in that indicators to show digital era resources and online skills to serve the industry are not explored. Future research is suggested to elaborate indicators

that are proper to describe the competence of the digital era into its research instruments and focus of results to be investigated.

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Appendix 1

Interview Guidelines

Number	Teacher/principal of vocational high school	Vocational training center tutors	Industry partner
1	What is the process of compiling the curriculum in vocational high schools?	Why do vocational high school children need to be given additional training at vocational training center?	How is the involvement of the industry in the preparation of the curriculum?
2	Does the curriculum development involve industry?	What are the basic competencies of vocational high school children before being given training at vocational training center?	What is the initial ability of SMK students before industrial work practices?
3	How is the practical learning process in the workshop conducted by the teacher?	What is the skills training process for vocational high school children at vocational training center	How is the learning program carried out by the company when there are apprentice students?
4	What competencies are given to SMK students, so they are ready to work?	What skills are possible to be trained for vocational high school students?	What skills are trained by the company when students are apprentices
5	What are the strategies to improve the competence of vocational high school students?	What is the method used to improve the skills of vocational high school students who practice at vocational training center?	How do work assistants in the company apply the method?
6	Is industrial work practice capable of significantly increasing student competence?	Can training at the vocational training center improve students' skills?	Is the apprenticeship program able to improve students' skills?
7	Can apprenticeships at vocational training center improve the competence of vocational high school students?	Can training at vocational training center increase the competitiveness of vocational high school graduates?	To what extent can the apprenticeship program increase the competitiveness of vocational high school graduates?

Source: results of reading theories about industrial apprenticeship

Appendix 2

Observation Guidelines

Number	Vocational high school	Vocational training center	Industry
1	Observe the process of learning theory of vocational high school students at school	Observe the form of cooperation between vocational high school and vocational training center	Observe the practice environment while students are in the industry
2	Observe as students learn to practice in the workshop	Observe the form of training provided by vocational training center to students	Observe the form of training that the industry provides
3	Observe the various student assignments given by the teacher to improve student competence	Observe the competence of vocational training center tutors teaching vocational high school students	Observe the competence of student assistants who are currently practicing in the industry
4	Observe the various competencies students have while studying at school	Observe the various competencies taught to students	Observe the various competencies that students have after completing industrial internships
5	Observe teachers teaching productive subjects	Observe the teaching methods used by vocational training center tutors	Observe the training methods provided by the companion
6	Observe the completeness and quality of workshop facilities and infrastructure owned by the vocational high school	Observe the completeness and quality of vocational training center workshop facilities and infrastructure	Observe the completeness of the production site owned by the company
7	Observe the form of cooperation between vocational high schools and vocational training centers or the business world and the industrial world	Observe other forms of follow-up that have been carried out between vocational high school and vocational training center	Observe other forms of follow-up that have been carried out by companies and vocational high school

Source: results of reading various Industrial Internship theories