Optimizing The Service Of Teaching Factory For Industrial Chemistry At Vocational High Schools In Indonesia Using The System Of Local Public Service Agency

Heru Mursanyoto[a*], Djoko Kustono[a], Yoto[a], Setiadi Cahyono Putro[b]

[a]Graduate School of Vocational Education, Universitas Negeri Malang, Indonesia
[b]Department of Electrical and Informatics Engineering, Universitas Negeri Malang, Indonesia
*Corresponding Author: herumursanyoto17@gmail.com; yoto.ft@um.ac.id

Abstract

The Government of Indonesia has tried to implement the system for public service with a flexible financial management pattern by using the system of Local Public Service Agency (LPSA) in an effort to optimize service at Public Vocational High Schools (PVHS) in Indonesia since 2018. To oversee its implementation and analyze its impact, this research tried to explore some efforts to optimize the service of teaching factory for industrial chemistry using the system of local public service agency for VHS using a flexible financial management. This research used the descriptive method of research with the qualitative approach. It was conducted at 20 PVHS in the province of East Java, Indonesia which implement the system of LPSA by involving school principals, financial management officers, treasurers, and teachers involved in the LPSA's management. The result of the research shows that the optimization of the service of teaching factory for industrial chemistry went down some steps, including teaching students' particular academic subjects, grouping students for production practices to develop their senses of

responsibility, estimating the cost in accordance with the budget, manufacturing products to the developed design, and doing both direct marketing and online marketing by making use of social media. Eventually, PVHS succeeded in optimizing teaching factory for industrial chemistry by using the system of LPSA to improve the facilities and infrastructure of students' learning processes.

Keywords: Industrial Chemistry, Service Agency, Teaching Factory, Vocational High Schools.

INTRODUCTION

Vocational High Schools (VHSs) are high or secondary schools responsible for the provision of prospective workers ready to enter the Labor market and to cope with future challenges in the working world (Coenen et al., 2015). In the same way, Naziz (2019) explained that Technical and Vocational Education and Training (TVET) combine education, training, and the development of skills related to any field of production jobs, service provision and livelihood. Thus, TVET is considered to create an efficient way to enhance skills with which to improve workers' productivity when they are in the working world and an effective way to boost formal and informal economy.

The success of vocational educational institutions can be assessed from their graduates' readiness to get a job and satisfy the demand of industries. In this light, those institutions are prompted to forge and strengthen collaboration and partnership with outside parties as governed in the Regulation of the Ministry of National Education of the Republic of Indonesia number 19 of 2007 on education management standard. The partnership with the general public, industries, alumni, and other educational institutions must be established well. It was in an effort to implement link and match between VHSs and industries that the government developed a learning model based on Teaching Factory (TF). The Presidential Instruction No. 9 of 2016 on the Revitalization of VHSs in order to

improve the quality and competitiveness of indonesian human resources instructed the Minister of Industry to compel industries to support the development of TF and infrastructure. TF is a project of industries in collaboration with VHS, in which the industries are directly involved in learning processes.

The main target of TF is the provision of products and services which can be offered or marketed. For this reason, the Indonesian government issued the Regulation of the Ministry of Home Affairs No. 79 of 2018 on LPSA (Indonesian: Badan Layanan Umum Daerah/BLUD). LPSA is a system deployed by the technical executive unit of local agencies in an effort to provide community members with adequate services. Unlike the local management in general, this system improves a flexible financial management. Flexibility is the exercise of discretion over the financial management at VHS implementing a fair business practice without commercial orientation but, instead, with the purpose of improving the good services of VHS for community members to improve the public welfare and to advance the intellectual life of the people. The good business practice is the fulfillment of the primary function of an organization.

In actual fact, VHS aims to provide graduates with competencies which the general public and industries consider to be great. This suggests that production learning should be promoted at schools, which means that schools should facilitate marketable product-based learning processes. This is worth implementing given the fact that the government budget for VHS is limited while the schools' need in their effort to improve their students' competencies progressively increases. Such condition forces schools to find alternative sources of funding. In this case, one of the ways to be taken is to involve students' parents in a decision-making process at the school level. The involvement will help get the parents motivated to show their commitment on supporting the school's student competence program. Parents' support may be financial supports or their involvement in designing educational policy of the school.

PVHS with LPSA's system can be a center for providing students with

entrepreneurial skills and improving their competencies. To have this status, PVHS have to develop particular marketable products to be offered and adequate facilities and infrastructure. Those products will be offered and distributed to community members. The school management will handle the profits from the sale to be managed for operational expenses of the school and the quality improvement of the school by adopting the school-based management.

Based on the aforementioned explanation, this research focuses on the efforts to optimize the service of teaching factory for industrial chemistry at PVHS with LPSA's system in East Java, Indonesia, through flexible financial management. Hopefully, the finding of the research will provide an accurate guide and give a real picture to other PVHS which have not implemented this effective system.

METHOD

This descriptive research used the qualitative approach. It involved 20 PVHS which have implemented the LPSA system in East Java, Indonesia as its research subjects. The data sources in qualitative research are divided into primary and secondary data sources. The primary data were collected through interviews with school principals, commitment making officials, the treasurers of LPSA, and the related teachers; meanwhile, the secondary data were obtained fro observation and documents. The data collection technique used in this research was participatory observation, in which the researcher observed the TF learning activities but did not directly partake in the activities.

Besides, the interviews conducted in this research were structured in accordance with an interview guide focusing on optimizing the service of teaching factory for industrial chemistry at PVHS with LPSA's system. For example, one of the research focuses was on the TF curriculum.

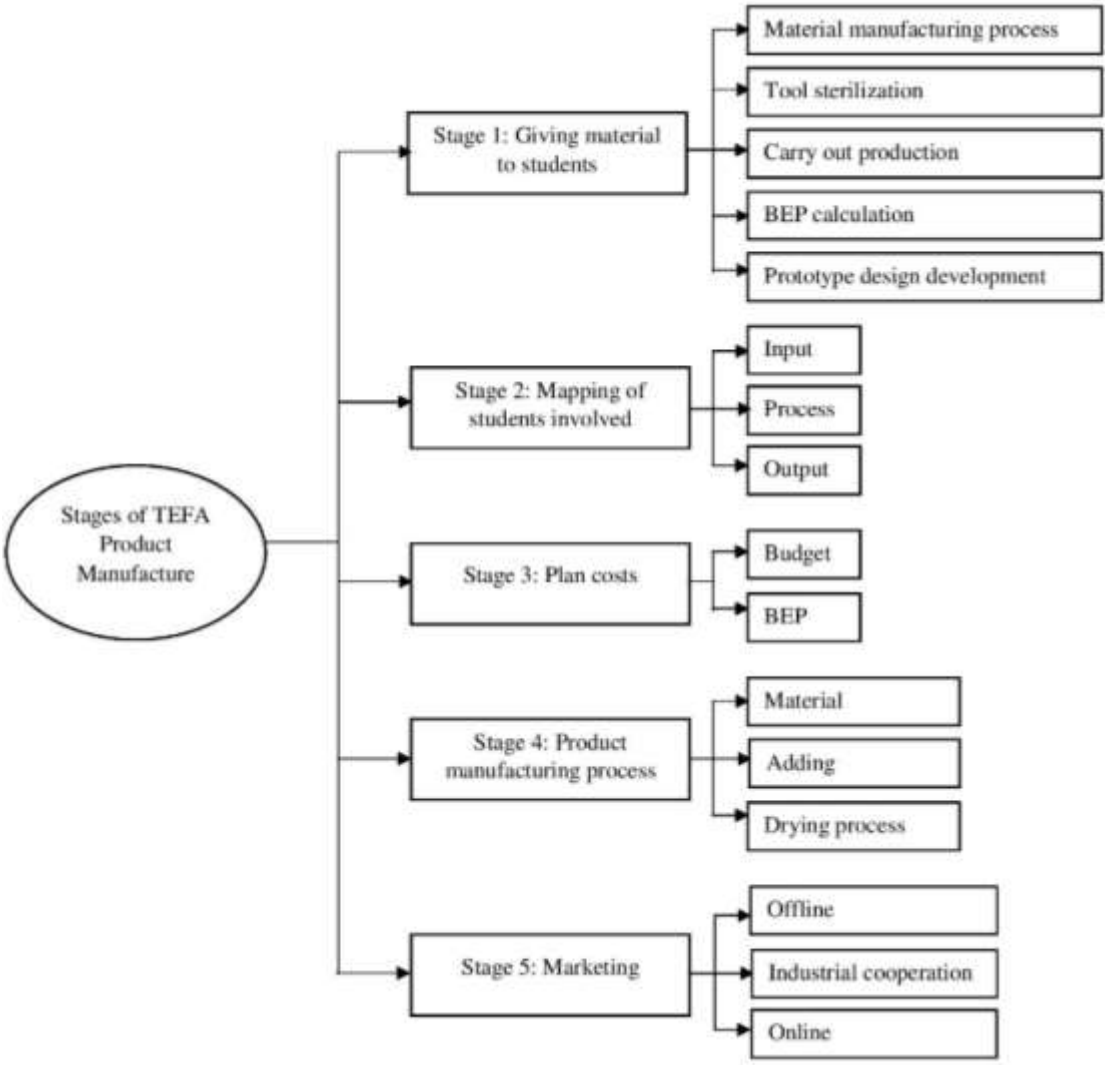
Subsequently, the data analysis was carried out to make it easy for the data to be understood and interpreted. The interactive technique used in this analysis moved through four stages: Data

collection, data reduction, data presentation, and conclusion or verification. The data collection was done by carefulling taking field notes in detail, while the data reduction was done by checking, classfichecking, classifying, and coding the data obtained. The data coding process involved using particular codes representing particular meanings. For example, the coding process involved using the code of F1a/WK-W/02-01-2022. 'F1a' represents the part 'a' of the research focus numbered one. 'WK' means that the data source was the vice principal of the curriculum. The code 'W' indicates that the data collection technique used was an interview. And the code '02-01-2022' indicates the date when the data was obtained in the field. The data was then presented in the form of a short description by still taking into consideration the research focuses and purposes. Meanwhile, conclusion or verification was done by making the final analysis to summarize the findings of this research.

RESULTS AND DISCUSSION

Based on the finding of this research, efforts to optimize the service of TF for industrial chemistry at PVHS implementing the flexible financial management of LPSA in the province of East Java, Indonesia, followed some steps, teaching students particular academic subjects, grouping students involved in TF learning activities, estimating the production cost, manufacturing products to the developed design, and doing TF product marketing. The operating procedure can be seen in detail in Figure 1. The products manufactured in the implementation of TF for industrial chemistry included dried yogurt, soap made from used cooking oil, wall relief made from recycled styrofoamr, and dried aloe vera.

Figure 1. The Chart of the Product Development Process in TF for



Industrial Chemistry

The five stages of the service of TF for industrial chemistry at PVHS in the province of East Java shown in Figure 1 can be described in detail as what follows.

Step 1: Teaching Students Particular Academic Subjects

The step of teaching particular subjects to students majoring Industrial Chemistry at PVHS consisted of five activities. The first was the material manufacturing process. This process is the implementation of the curriculum in the subject of microbiology, chemical technical operations, and creative products and entrepreneurship. The purpose of this activity is to provide students

with technical information and instruction before they go into the working practice.

Another subject matter to be taught was the way to sterilize tools and equipment. This is instrumental in establishing the standard of students' competencies after internship programs. Afterwards, students underwent the production process, namely manufacturing TF products. Subsequently, they calculated break event point of the products and their prototype designs. Such calculation was aimed at determining the level of sales volume and its relation to the possibility generation of profits from the sales.

In this step, the subject matters taught to students are relevant to the working cycle of TF, which consists of six steps called TF-6S (Asriati, Sulistyarini, Ulfah, & Purwaningsih, 2018). The TF-6M include: Step 1: receiving messages, students are assigned to receive orders and communicate with those customers giving the order related to the products or services offered; Step 2: analyzing orders, students serve as technicians who make an analysis of the order in relation to the time and cost for service fulfillment processes, while teachers serve as supervisor; Step 3: demonstrating the readiness for the order execution, students declare their readiness for taking the orders as demanded by the ones giving the order; Step 4: executing the order, students perform the task according to the job specification written by the order givers; Step 5: improving the quality control, students with the help of their teachers make an assessment of service fulfillment by comparing the parameter of the services provided with the data on the parameter of specified orders; and The last step 6: handing customers back the order, students fulfilling the service ordered after ensuring that all specified orders have been completed.

This is in line with the statement of Mukhlisin et. al., (2017), stating that TF is a business conducted at schools. In the business, schools produce, assemble, sell, and provide services for commercial purposes. Nurtanto, et al. (2017) also stated that TF is a combination between competency-based learning approaches and productivity, in which the existing learning processes resemble practices in the business world by making business transactions,

either in product sections or in services, at schools. At this rate, TF can be considered to bridge the gaps between the business world and learning processes at PVHS.

Step 2: Grouping Students Involved in TF Learning Activities

In this step, student grouping can be conducted through three activities: (1) input assessment, (2) process assessment, and (3) result assessment. What was assessed from the aspect of input was the completion of facilities and infrastructure supporting TF, the readiness and competencies of teachers, and the acceptable standard operating procedure in the implementation of TF. What was assessed from the aspect of process included the suitability of the implementation of teaching factory for lesson plans, job sheet, the established schedule of the block-system learning, student attendance, and the implementation of the Quality Control of teaching factory. Meanwhile, what was assessed from the aspect of output included the suitability of TF products for industrial demands, product feasibility, and the achievement of the TF program.

The three forms of assessment were carried out to group the whole of the students into a system (Adhar, 2018). Muryadi (2017) mentioned the student grouping model oriented towards the decision makers, which can be conducted through four activities: (1) the context evaluation, which is made to make choices and decisions, acknowledge essential needs to be fulfilled, and formulate the objectives of the program; (2) the input evaluation, which is made to control the decisions on available resources, alternatives to be taken, plans and strategies to be adopted to meet the needs, and the operating procedures to accomplish the the set objectives; (3) the evaluation process, which is made to help assess how effectively the program is implemented; and (4) the product evaluation, which is made to recognize the excellence of the dynamic work system.

The grouping of students was conducted to identify their needs and potentials so that the TF program can offer an enjoyable and valuable learning experience which students will remember. To

serve this purpose, the grouping process needs to involve teachers who can map out the needs and characterisitics of each student. According to Darodjat (2015), the grouping process is a process of harmonizing what will be implemented from a program with what has been done on the basis of the defined standard.

Step 3: Estimating the Production Cost

The step of calculating the cost for the production process is mmade to estimate the budget for an industry to spend for production processes. The purpose of calculating the production cost is to anticipate possible mistakes in spending costs during the implementation of production.

The focus of the products is sharpened on the ones which can increase the industry's competitiveness in the market by manufacturing more competitive products. This plan was developed on the basis of economic principles embraced by industry, namely earning greater profits, and paying lower costs (Affiqah & Fuadi, 2019). Such explanation was also given by Ghaleb, Taghipour, Sharifi, and Zolfagharinia (2020) who said that the challenges which the market creates is not to reduce the quality of products but, instead, to take into consideration the performing of the calculation of efficient costs and effective time.

Subsequently, to stimulate the optimization process, the TF programs at PVHS should make the cost planning for the running year and propose the targeted income to the provincial government through the Local Financial and Asset Managament Board (LFAMB) to forge a partnership with the provincial government. BPKAD will explain it starget and the level of the budget absorption. The budget will subsequently be proposed by the Regional Development Planning Agency. After the budget planning list is received by LFAMB and schools, the schools can spend the budget in accordance with the school's workplans and budget (Sabardiman, Afrizal, & Nurmaesah, 2020).

Step 4: The Process of Manufacturing Products

The teaching factory for industrial chemsitry is the impelementation of leaning process which uses project-based

learning methods. In this method, studens are assigned to project-based learning which forces them to manufacture creative products in a condition the same as that of in industry. Industrial chemistry has a number of creative products to be massively produced and offered as the product of TF.

The implementation of TF learning is proved by the involvmenet of the students of industrial chemistry in a number of steps in the manufacturing of TF products, including planning, manufacturing products, checking the quality of products, and marketing the products. One of the products whose manufacturing process involved students of industrial chemistry was yogurt powder, like the one shown in Figure 2. Yogurt is a processed dairy product which makes use of such bacteria as Streptococcus Thermaphillus and Lactobacillus Bulgaricus. Furthermore, Yogurt can be produced either in the form of liquid products or in the form of dried products (powder).

Figure 2. The Product of Yogurt Powder from TF for Industrial Chemistry

The steps that students took in manufacturing this product include raw material production, material addition, and drying processes. The detailed information about the three steps is given as what follows.

The raw material production

The process of producing raw materials of yogurt powder follows four steps, the first of which is the producing of yogurt starter culture by starting milk pasteurization. Fresh milk or full cream UHT milk is heated to 90 ^{o}C, and it is kept that way for an hour. During the process, the milk should be frequently stirred to avoid protein coagulation. Then the pasteurization process is continued by the process of heating milk in the temperature between 70 and 80 ^{o}C for 10 to 15 minutes. The pasteurization process is aimed at killing pathogenic microbes and first microbes unwanted in milk. Hopefully, yogurt starter culture can grow in such an optimum way that it evaporates some water and free oxygen so as to create anaerobic condition for the yogurt culture during the fermentation process, break some components of milk, and denaturalize and coagulate albumin and globulin of milk.

The second step in producing yogurt inoculation. The process of inoculation is accelerated after the yogurt starter culter is heated and then cooled down to 37 – 45 ^{o}C. The cooling process is driven in a covered container. The drop in temperature is caused quickly and is directly followed by the inoculation of yogurt starter culture. This is closely related to the oxygen supply which can affect the growth of yogurt culture which is facultative anaerob. The process of inoculation is accelerated in a simple way with or without laminar. Laminar is a tool used to prepare microbiological materials not to be contaminated with air or bacteria and equipped with UV lamps to kill bacteria. The inoculation process without laminar can be accelerated by an aseptic way, getting the yogurt near to the source of fire. If the process of inoculation is accelerated on a table, then candles can be made the source of fire and the table on whoch the inoculation is caused is cleaned up by applying antiseptics like 70% alcohol. The inoculation technique with laminar is almost the same as the one with a simple laminar, only that the inoculation with laminar involves using UV radiation for 24 hours to kill bacteria before the process. Acceleratimg the inoculation process, be it a simple inoculation or the one with laminar, one should wear gloves to prevent the possible contamination, which can caus the failure in yogurt production.

The third step is the process of incubation. Incubation is a method of storing the culture of microbes or bacteria in a particular temperature and for a determined duration to grow a bacterium. When the temperature reaches 37 to 45 ^{o}C, 50 – 60 ml of bacteria is added to each litre of milk. The adition of bacteria is performed by using the aseptic technique (near fire) not to be comtaminated with other bacteria.

The last step in a yogurt production process is the cooling process. The cooling process is the last step in yogurt production. It is aimed at stopping the process of fermentation or starter's activities. It is accelerated in the temperature of 5 ^{o}C. The cooling process is also intrumental in prolonging the storng period of yogurt, in which the lower the temperature, the longer the storing period of yogurt lasts.

Fruit addition to yogurt

Innovation in yogurt production occurs not only in the addition of various bacteria but also in flavor improvement. In general, the original flavor of yogurt is sour, mhich many people may not enjoy. It is for this reason that yogurt producers add the choices in yogurt flavors. Many of them think that the sweetness of fruits will be a good combination for the the sour flavor of yogurt. Fruits which can go in yogurt bowls are commonly the sweet ones, which will create acceptable, delicate balance between the sweetness of fruits and sourness of yogurt. In case of fruits with just a hint of sweetness or sourness, yogurt with the addition of sugar is favored by many consumers.

The addition of fruit extracts to yogurt products can be done before the drying process. To have natural fruit extracts, fruits should be crushed and blended by juicers. The fruit extracts are then pasteurized in the temperature of 72 ^{o}C for 15 seconds, which can help kill pathogenic bacteria.

Drying processes

Yogurt powder is the result of fermented milk which is processed through the drying process. The drying process will streamline the process of reducing the water content on the basis of the different moisture content between drying air and the materials dried. One

of the alternbatives which can help yogurt products to endure a long storage period is to create yogurt in the form of yogurt powder. The production of yogurt powder needs a composite material which can prevent microbes to break down during the drying process. The composites which include such materials as carrageenan are mixed into yogurt. Afterwards, the yogurt is put into vacuum evaporators in the temperature of 60-72 ^{o}C for + 10 hours to the extent that it forms yogurt powder.

Step 5: Marketing

The step of marketing products is taken to know the products' level of popularity in achieving the target of industry. Marketing strategies are employed to maintain the products of companies to keep them competitive and to yield profits (Vernia, et. al., 2019). The similar statement was made by Tull and Kahle (1990) who said that marketing strategies are fundamental for the achievement of the targets and objectives of a business, and for this purpose, industries should constantly rethink their strategies to beat of more and more intense business competition. A school should adopt a marketing strategy enabling it to carry out its plans which can be implemented online, offline or in collaboration with industries.

The development of technology and information systems as well as the globalization also affects marketing competition by establishing online market system. Doing online transactions brings about positive effects on both sellers and buyers because online transactions offer ease, practicality, and fast pace. Nowadays, making use of social media as a means of marketing products is on trend. This allows the general public, especially sellers, to create visual display of the models, types, sizes and materials of their products in detail (Praditya, 2019). This also facilitates business communication between sellers and buyers online. However, buyers unfortunately cannot directly assess the physical condition of the products they will buy; they can only rate the products' quality from the images on display (Hamzah, Arif, & Nisa, 2019). The advantages of online commercial transactions include sellers' lack of necessity to set up sales booth or branch stores, producers' lower expenses, and consumers' easy access to selling goods without

having to meet sellers in person.

In addition to online transactions, offline marketing still needs to be done by buyers' meeting sellers face to face. This also brings positive advantages because buyers can directly assess the quality of products, their types, models, sizes, and materials, and it also allows them to open direct trade negotiations with sellers, hence enabling them to make wise decisions on the commercial transctions. Nevertheless, doing offline marketing should take into consideration the fact that prospective buyers tend to choose locations geographically easy to find by reasons of time, costs, and energy efficiency (Hamzah, Arif, & Nisa, 2019). Besides, sellers have also to select ideal location and broadcast promotional messages to draw the attention of prospective buyers, and they have to do those preparations quickly to win those consumers' trust (Widayati, 2018).

Another marketing strategy for schools to develop is to foster collaboration with industries. This will help streamline the process of making the general public familiar with the products of TF (Sekti & Armayana, 2021). Employing this strategy, schools have to select any industry relevant to the products which students produce. The industry will then help accelerate the process of marketing students' products. The collaboration may be in the form of featuring the name or logo of the industry in the packaging of TF products.

CONCLUSION

The implementation of optimixing the LPSA system at PVHS is based on the fact that PVHS should provide the production-based learning. This results from the fact that the budget of the government for PVHS is limited in comparison with the needs of PVHS from year to year. For this reason, the government adopts the LPSA system to be implemented at PVHS as a center for providing students with entrepreneurial skills.

However, for PVHS that want to implement the LPSA system have to develop particular marketable products to be offered and adequate facilities and infrastructure. Those products will be

offered and distributed to community members. The school management will handle the profits from the sale to be managed for operational expenses of the school and the quality improvement of the school by adopting the school-based management. Efforts to optimize the service of TF teaching students' particular academic subjects, grouping students involved in TF learning activities, estimating the production cost, manufacturing products to the developed design, and doing TF product marketing.

BIBLIOGRAPHY

Adhar, A. (2018). Evaluasi Program fasilitas SMK Rujukan Terhadap SMK Aliansi di Malang Raya Menggunakan Model CIPP. Tesis tidak diterbitkan. Malang: Pascasarjana UM.

Affiqah, C., & Fuadi, R. (2019). Penerapan Metode Target Costing dalam Perencanaan Biaya Produksi untuk Optimalisasi Laba pada UMKM Dendeng Sapi Aceh di Banda Aceh. Jurnal Ilmiah Mahasiswa Ekonomi Akuntansi, 4(2), 317-324.

Asriati, N., Sulistyarini, Ulfah, M., & Purwaningsih, E. (2018). Pengembangan Model Pembelajaran Teaching Factory 6M Menghadapi Revolusi Industri Keempat di SMK Negeri 6 Pontianak. Jurnal Pendidikan Ekonomi, 3(2), 70-86. Doi: 10.31932/jpe.v3i2.334.

BPK Provinsi Jawa Timur. (2017). Sekolah Gagas Perencanaan Bisnis Kejar Status BLUD. Retreived from https://surabaya.bpk.go.id/), accessed June 06th, 2022.

Coenen, J., Heijke, H., & Meng, C. (2015). The labour market position of narrow versus broad vocational education programmes. Empirical Research in Vocational Education and Training, 7(1). Doi:10.1186/s40461-015-0020-x.

Darodjat, D., & Wahyudhiana, W. (2015). Model evaluasi program pendidikan. Islamadina: Jurnal Pemikiran Islam, 14(1), 1-28. Doi: 10.30595/islamadina.v0i0.1665.

Direktorat Pembinaan Sekolah Menengah Kejuruan. (2017). Tata Kelola Pelaksanaan Teaching Factory. Retreived from https://smk.kemdikbud.go.id/konten/2887/ tatakelola-pelaksanaan-teaching-factory, accessed Mei 28th, 2021.

Direktorat Pembinaan Sekolah Menengah Kejuruan. (2018). Panduan Pelaksanaan Teaching factory. Retreived from http://smk.kemdikbud.go.id/kdp, accessed Mei 22th, 2021.

Ghaleb, M., Taghipour, S., Sharifi, M., & Zolfagharinia, H. (2020). Integrated production and maintenance scheduling for a single degrading machine with deterioration-based failures. Computers & Industrial Engineering, 143, 106432.

Hadam, S., Rahayu, N., & Ariyadi, A, N. (2017). Strategi Implementasi Revitalisasi SMK (10 Langkah Revitalisasi SMK). Jakarta: Direktorat Pembinaan Sekolah Menengah, Direktorat Jenderal Pendidikan Dasar dan Menengah, Kementerian Pendidikan dan Kebudayaan.

Hafidi, N., El Barkany, A., El Mhamedi, A., & Mahmoudi, M. (2020). Integrated planning of production and maintenance for imperfect system with subcontracting strategies. International Journal of Engineering Business Management. Doi: 10.1177/1847979020929783

Hamzah, Z., Arif, M., & Nisa, C. (2019). Analisis Komparasi Strategi Pemasaran Dalam Transaksi Jual Beli Online Dan Offline Pada Hijab (STUDI Kasus: Mahasiswa Universitas Islam Riau). Syarikat: Jurnal Rumpun Ekonomi Syariah, 2(1), 16-26.

Kemendikbud. (2016). Pedoman Penyusunan Pola Tata Kelola BLUD SMK. Retreived from http://repositori.kemdikbud.go.id/10581/1/Penyusunan%20Pola%20Tata%20Kelola%20BLUD.pdf, accessed June 06th, 2022

Kristian, D. (2021). Evaluasi Pelaksanaan Teaching factory SMK Swasta di Kota Malang. Skripsi tidak diterbitkan. Malang: Fakultas Teknik UM.

Maksum, H., Arif, A., Sugiarto, T., Purwanto, W., & Setiawan, D. (2020). Pelatihan Peningkatan Kompetensi Teknologi Sepeda Motor Siswa SMK. Automotive Engineering Education Journals, 01(01), 1-6. Retreived from http://ejournal.unp.ac.id/students/index.php/poto/article/view/7808, accessed Mei 26th, 2022.

Mallongi, A., & Manyullei, S. (2019). Analysis of Effectiveness in Addition of Coffee and Brown Sugar on Wastewater Treatment in Regional Public Service Agency (BLUD) Haji Padjonga DG Ngalle Hospital at Takalar Regency. Indian Journal of Public Health Research & Development, 10(4).

Mardiyah, S.U.K. & Supriyadi, E. 2013. Evaluasi Praktik Kerja Industri

Kompetensi Keahlian Pemasaran SMKN 1 Pengasih, Kulon Progo. Jurnal Pendidikan Vokasi, 3(3), 320-333. Doi: 10.21831/jpv.v3i3.1846.

Miler, D., Hoić, M., & Žeželj, D. (2020). Optimisation of Welded Beams: How Cost Functions Affect The Results. Proceedings of the Design Society: Design Conference, 1, 2531-2540. Doi:10.1017/dsd.2020.44

Mourtzis, D., Vlachou, Dimitrakopoulos, G., Zogopoulos, V. 2018. Cyber-Physical Systems and Education 4.0 – The Teaching Factory 4.0 Concept. Journal of Procedia Manufacturing, 23(1), 129-134. Doi: 10.1016/j.promfg.2018.04.005.

Mukhlisin, M., Kardoyo., &., Yulianto, A. (2017). Pembelajaran Prakarya dan Kewirausahaan Dengan Teaching Factory. Jurnal Of Economic Education. 6(1) (2017) 36-42. Retreived from https://journal.unnes.ac.id/sju/index.php/jeec/ article/view/14619), accessed June 06th, 2022.

Muryadi, A. D. (2017). Model Evaluasi Program Dalam Penelitian Evaluasi. Jurnal Ilmiah Penjas (Penelitian, Pendidikan dan Pengajaran), 3(1). Retreived from http://ejournal.utp.ac.id/index.php/JIP/article/view/538.

Naziz, A. (2019). Collaboration for transition between TVET and university: a proposal. International Journal of Sustainability in Higher Education, 20(8), 1428–1443. Doi: 10.1108/IJSHE-10-2018-0197.

Nurtanto, M., Ramdani, S, D., & Nurhaji, S. (2017). Pengembangan Model Teaching factory di Sekolah Kejuruan. Prosiding Seminar Nasional Pendidikan, 467-493. Retreived from http://jurnal.untirta.ac.id/index.php/psnp/article/view/447-454), accessed Mei 21th, 2022.

Peraturan Pemerintah RI No. 19 Tahun 2005 tentang Standar Nasional Pendidikan.

Praditya, A. (2019). Pengaruh Media Sosial Dan Komunikasi Bisnis Terhadap Perkembangan Bisnis Online Shop. Jurnal Semarak, 2(1), 31-43.

Prianto, A., Winardi., & Qomariyah, U, N. (2021). The Effect of the Implementation of Teaching factory and Its Learning Involvement toward Work Readiness of Vocational School Graduates. International Journal of Instruction, 14(1), 283-302. Doi: 10.29333/iji.2021.14117a.

Putri, Y, E., Nuraina, E., & Styaningrum, F. (2019). Peningkatan Kualitas

Hard skill dan Soft skill Melalui Pengembangan Program Teaching factory (TEFA) di SMK Model PGRI 1 Mejayan. Jurnal Pendidikan Ekonomi UM Metro, 7(2), 26-33. Doi:10.24127/pro.v7i2.2511.

Ramadhan, M. A. & Sugiyono. (2015). Pengembangan Sumber Dana Sekolah Pada Sekolah Menengah Kejuruan. Jurnal Pendidikan Vokasi, 5(3), 340–351. Doi: 10.21831/jpv.v5i3.6488.

Rohmah, W., Sari, D, E., & Wulansari, A. (2019). Pembelajaran Berbasis Teaching factory di SMK Negeri 2 Surakarta. Jurnal Pendidikan Ilmu Sosial, 29(2), 78-85. Doi: 10.23917/jpis.v29i2.9171.

Sabardiman, K., Afrizal, A., & Nurmaesah, N. (2020). Evaluasi Perubahan Puskesmas menjadi Badan Layanan Usaha Daerah (BLUD) Terhadap Tata Pengelolaan Keuangan Daerah. Jurnal Proaksi, 7(2), 194-212.

Sartika, I. O. (2021). Evaluasi Pelaksanaan Program Teaching Factory di SMK Islam 1 Blitar Menggunakan Metode CIPP. Skripsi tidak diterbitkan. Malang: Fakultas Teknik UM.

Sekti, W. B., & Armayana, R. (2021). Analisis SWOT Terhadap Strategi Pemasaran Usaha Mikro Kecil dan Menengah (UMKM) Sentra Industri Gitar dalam Menghadapi Covid-19. Literasi: Jurnal Kajian Keislaman Multi-Perspektif, 1(1), 49-70.

The Presidential Instruction No. 9 of 2016 on the Revitalization of VHS [Salinan Inpres Nomor 9 Tahun 2016. Revitalisasi Sekolah Menengah Kejuruan dalam rangka Peningkatan Kualitas dan Daya Saing Sumber Daya Manusia Indonesia]. Retreived from http://smk.kemdikbud.go.id/kdp, accessed January, 15th, 2020.

Tull and Kahle (1990). Marketing Management. New York: Macmillan Publising Company.

Vernia, D. M., Widiyarto, S., Narsih, D., & Tiwinyanti, L. (2020). Sosialisasi dan pembekalan strategi pemasaran produk olahan pisang pada siswa pondok. Jurnal Pengabdian untuk Mu NegeRI, 4(1), 125-128.

Vu, T. L., & Le T. Q. (2019). Development Orientation for Higher Education Training Programme of Mechanical Engineering In Industrial Revolution 4.0: A Perspective In Vietnam. Journal of Mechanical Engineering Research & Developments (JMERD), 42(1), 71-73. Retrieved from https://pdfs.semanticscholar.org/6c9f/2183dccb033818ea8f4f0b2d50be0dbc3d71.pdf, accessed June 06th, 2022.

Widayati, K. D. (2018). Implementasi SWOT strategi pemasaran online dan

offline pada PT Roti Nusantara Prima cabang Jatiasih, Bekasi. Widya Cipta: Jurnal Sekretari dan Manajemen, 2(2), 209-216.