DESAIN KONSEPTUAL PENYIAPAN TENAGA KERJA LULUSAN PENDIDIKAN VOKASIONAL MENGGUNAKAN PENDEKATAN *SOCIO-TECHNICAL SYSTEM*

Diajukan untuk Memperoleh Gelar Doktor Pendidikan Teknologi dan Kejuruan

DISERTASI

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PROGRAM STUDI S3 PENDIDIKAN TEKNOLOGI DAN KEJURUAN
SEKOLAH PASCASARJANA
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LEMBAR HAK CIPTA

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Sebuah Disertasi yang diajukan untuk memenuhi salah satu syarat memperoleh
Gelar Doktor Pendidikan Teknologi dan Kejuruan

HALAMAN PENGESAHAN DISERTASI

SUGENG RIFQI MUBAROQ

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ABSTRAK

Sugeng Rifqi Mubaroq (1907002), "Desain Konseptual Penyiapan Tenaga Kerja Lulusan Pendidikan Vokasional Menggunakan Pendekatan *Socio-Technical System*". dibawah bimbingan Prof. Dr. Ade Gafar Abdullah, M.Si. dan Dr. Eng. Agus Setiawan, M.Si.

Penelitian ini bertujuan untuk menghasilkan model penyiapan tenaga kerja lulusan Pendidikan Vokasi khususnya SMK dengan pendekatan *socio-technical system*. Sebagai institusi penghasil tenaga kerja, Pendidikan kejuruan harus mengikuti perkembangan, baik perkembangan sosial maupun perkembangan teknologi. Revolusi digital sangat berpengaruh pada semua bidang, termasuk bidang Pendidikan Kejuruan. Kebutuhan keterampilan, pengetahuan, dan kompetensi baru untuk mengelola teknologi dan lingkungan kerja yang lebih fleksibel menjadi kebutuhan baru. Perubahan perilaku para pencari kerja juga menjadi dampak dari revolusi industri 4.0. Indonesia juga diperkirakan akan mengalami bonus demografi pada tahun 2030-2040 dengan 64% atau sekitar 297 juta penduduk Indonesia berusia minimal 15 tahun, yang termasuk pada angkatan kerja. SMK harus mampu beradaptasi dengan situasi yang terus berkembang ini, sehingga bisa menjawab berbagai persoalan yang terjadi. SMK harus terus berkembang secara dinamis dan mampu menyelenggarakan pendidikan berbasis kompetensi, oleh karena itu, dibutuhkan komitmen yang tinggi agar SMK mampu menghasilkan lulusan yang kompeten. Pemerintah melalui kebijakan lintas kementerian dan lembaga mengeluarkan berbagai kebijakan, salah satu kebijakan yang telah dibuat pemerintah adalah revitalisasi pendidikan kejuruan, revitalisasi SMK dengan berkolaborasi antara industri, praktisi perguruan tinggi, dan sekolah untuk melakukan penataan pada kurikulum, guru, sarana, daya serap, dan manajemennya agar menjadi lembaga yang unggul dalam menyongsong perubahan. Teknologi harus membuat SMK mampu menyiapkan segala hal dalam menghadapi transisi ini. SMK saat ini dituntut untuk memperbaiki kualitas, mampu menghadapi iklim yang semakin kompetitif, serta partisipasi masyarakat yang mengharapkan biaya rendah namun dengan tuntutan yang tinggi. Sesuai arahan presiden dalam mewujudkan sumber daya manusia yang berkualitas dan unggul melalui pendidikan vokasi baik di tingkat sekolah kejuruan maupun pendidikan tinggi vokasi menuju Indonesia emas 2045. Untuk mewujudkan hal tersebut lembaga pendidikan vokasi di Indonesia harus dihubungkan dengan industri pasangan agar tercipta kualitas lulusan yang bisa bersaing secara nasional maupun secara global dengan bangsa lain di dunia.

Namun dalam implementasinya banyak sekali kendala yang dialami SMK dalam proses penyelengaraannya, mengutip dari laporan Badan Pusat Statistik (BPS) 2019 merilis berita berkaitan keadaan ketenagakerjaan Indonesia sebelum pandemi, menyatakan lulusan Sekolah Menengah Kejuruan (SMK) mendominasi jumlah pengangguran di Indonesia, dengan jumlah tingkat pengangguran terbuka (TPT) 8.63%. Hal tersebut diperburuk dengan adanya pandemi yang meningkatkan jumlah TPT dari lulusan SMK mencapai 13.55%. Permasalahan pengangguran selalu menempati tempat teratas dalam dinamika persoalan yang dihadapi oleh suatu negara dengan berbagai kompleksitasnya, ILO memperkirakan jumlah pengangguran di dunia akan meningkat 3 juta dari tahun sebelumnya menjadi 208

juta pada tahun 2023, termasuk di Indonesia. Dari kenyataan ini tentu saja memunculkan berbagai spekulasi terkait penyebab angka penganguran lulusan SMK yang begitu tinggi yang terus berkembang dan dikorelasikan dengan sistem pendidikan yang dilakukan di dunia pendidikan sebagai penghasil lulusan yang akan menjadi angkatan kerja. Masalah dengan pendidikan kejuruan adalah bahwa lulusan tidak sepenuhnya siap untuk bekerja karena mereka tidak memiliki keterampilan yang di butuhkan dunia kerja, lulusan juga tidak mampu bersaing dengan tenaga kerja asing, kurikulum yang tidak sesuai dengan tuntutan dunia kerja sehingga menghasilkan kualitas lulusan SMK yang kurang bersaing menyebabkan tingginya angka pengangguran lulusan SMK. Berbagai penelitian telah dilakukan dalam mengurangi laju pengangguran lulusan SMK ini, akan tetapi masih bersifat parsial antara pendekatan sisi sosial dan sisi teknis. Sehingga perlu dicarikan pendekatan yang lebih kompleks, dengan melihat dua sisi sekaligus.

Penelitian ini bertujuan untuk mengembangkan model penyiapan tenaga kerja lulusan pendidikan kejuruan, khususnya SMK dengan pendekatan sosio-teknis dalam mengurangi laju pengangguran lulusan SMK, yang meliputi profil kompetensi tenaga kerja yang dapat beradaptasi dengan perkembangan saat ini, pengembangan model konseptual, dan pembacaan kesiapan SMK dalam penyiapan tenaga kerja dengan pendekatan sosio-teknis. Penelitian ini menerapkan pendekatan *Design-Based Research* (DBR) yang terbagi dalam 4 tahap, yaitu identifikasi dan analisis masalah, perancangan desain model, pengujian rancangan dan refleksi untuk mendapatkan prinsip desain yang diharapkan dan mengatasi berbagai permasalahan yang dihadapi. Analisis masalah dilakukan dengan mengidentifikasi dan mengkaji berbagai permasalahan terkait dengan tingginya pengangguran khususnya lulusan SMK melalui review terhadap berbagai literatur. Analisis ini juga diperkuat dengan mengidentifikasi gambaran kompetensi tenaga kerja yang dapat beradaptasi dengan perkembangan sosial dan teknologi saat ini melalui *Systematic Literatur Review* model PRISMA. Hasil ini kemudian digunakan untuk membuat model konsep *framework* dengan pendekatan sosio-teknis untuk penyiapan tenaga kerja lulusan SMK dalam mengurangi pengangguran. Selanjutnya, rancangan desain model *framework* sosio-teknis divalidasi ahli sehingga diperoleh rancangan terbaik. Rancangan *framework* berikutnya digunakan untuk membuat indikator komposit dalam menyiapkan tenaga kerja lulusan SMK. Rancangan *framework* digunakan untuk mengidentifikasi penyebab terjadinya pengangguran dari lulusan SMK. Identifikasi ini melibatkan data-data skunder dari bahan online dan data primer melalui wawancara kepada siswa SMK, Guru SMK, Kepala Sekolah dan pengguna lulusan SMK. Indikator komposit berikutnya digunakan untuk membaca kesiapan SMK dalam mengurangi pengangguran dari lulusannya. Dilakukan dengan penyebaran angket kepada Guru-guru SMK baik negeri maupun swasta di Indonesia. Beberapa temuan yang diperoleh dalam penelitian ini yaitu: (1) Socio-technical *framework* berhasil digunakan untuk mengembangkan model konseptual penyiapan tenaga kerja lulusan pendidikan vokasional, begitu juga dengan indikator kompositnya, serta skala dan karakteristik untuk setiap indikator. Terdiri dari indikator internal *goals, people, culture, infrastructure, process* dan *technology*, serta indikator eksternal *stakeholder*, situasi ekonomi dan regulasi. Namun, model ini masih dalam bentuk konseptual model, sehingga perlu dikembangkan sampai pada model implementatif yang lebih kongkrit untuk dilaksanakan. Mengingat sangat bervariasinya kondisi SMK, agar

bisa diaplikasikan di semua SMK yang ada di Indonesia sehingga semua peserta didik di Indonesia mempunyai kesempatan yang sama di dalam mendapatkan layanan pendidikan yang berkualitas dan bisa mengurangi jumlah pengangguran lulusan SMK. (2) Dari hasil analisis literatur diperoleh gambaran profil tenaga kerja yang dapat beradaptasi dengan perkambangan sosial dan teknologi saat ini demi keberlanjutan harus memiliki berbagai kompetensi seperti: *sensemaking*, kecerdasan sosial, pemikiran inovatif dan adaptif, kompetensi antar budaya, pemikiran komputasi, literasi digital, keterampilan multidisiplin, mentalitas desain, manajemen pengetahuan, dan kolaborasi virtual. (3) Dari hasil pengukuran terhadap tingkat kesiapan SMK dalam menyiapkan tenaga kerja yang dapat beradaptasi dengan perkembangan teknologi dan sosial saat ini menggunakan pendekatan sosio-teknis berada pada posisi *low level readiness*. Hasil ini juga digunakan untuk melihat hubungan antar indikator sosio-teknis, dan diperoleh bahwa setiap indikator mempunyai korelasi terhadap indikator lainnya. (4) Temuan lain terkait potensi pengangguran lulusan SMK, bahwa jumlah sekolah SMK yang telah terakreditasi hanya 38,27% per Desember 2022, sedangkan SMK yang belum terakreditasi dan tidak terakreditasi sebanyak 2.398 SMK Negeri dan 6.527 SMK Swasta. Jumlah ini juga semakin terasa berat ketika dilihat dari jumlah siswanya, berdasarkan data terdapat 2.546.607 siswa yang bersekolah di SMK berstatus belum terakreditasi dan tidak terakreditasi. Akreditasi menjadi salah satu acuan pemerintah sebagai regulator untuk mengontrol keberjalanan sekolah. Berdasarkan data tersebut maka sangat memungkinkan terjadi lost control terhadap penyelenggaraan sekolah SMK berstatus belum terakreditasi dan tidak terakreditasi. Potensi akan terjadinya pengangguran lulusan pendidikan vokasi khususnya SMK juga semakin besar.

Kata kunci: Pengangguran lulusan SMK, Sistem Sosio-Teknis, Model Konseptual, Penyiapan Tenaga Kerja, *Readiness.*

ABSTRACT

Sugeng Rifqi Mubaroq (1907002), "*Preparing Vocational Education Graduates in Reducing Educated Unemployment with a Socio-Technical System Approach". Under the guidance of* Prof. Dr. Ade Gafar Abdullah, M.Si. dan Dr. Eng. Agus Setiawan, M.Si.

This research aims to develop a model for preparing a workforce for Vocational Education graduates, especially Vocational High Schools, with a socio-technical system approach. As a labor-producing institution, vocational education must keep up with developments, both social developments and technological developments. The digital revolution is very influential in all fields, including the field of Vocational Education. The need for new skills, knowledge and competencies to manage technology and a more flexible work environment is becoming a new requirement. Changes in the behavior of job seekers are also the impact of the industrial revolution 4.0. Indonesia is also expected to experience a demographic bonus in 2030-2040 with 64% or around 297 million Indonesians aged at least 15 years, who are included in the workforce. Vocational High Schools must be able to adapt to this ever-evolving situation, so that they can answer various problems that occur. Vocational schools must continue to develop dynamically and be able to provide competency-based education, therefore, a high level of commitment is needed so that vocational schools are able to produce competent graduates. The government through cross-ministerial and institutional policies issues various policies, one of the policies that has been made by the government is the revitalization of vocational education, revitalization of Vocational Schools by collaborating between industry, university practitioners, and schools to make arrangements for curriculum, teachers, facilities, absorption, and management so that it becomes a superior institution in welcoming change. Technology must make SMK able to prepare everything in facing this transition. Vocational schools are currently required to improve quality, be able to face an increasingly competitive climate, as well as community participation that expects low costs but with high demands. In accordance with the president's directives in realizing quality and superior human resources through vocational education both at the vocational school level and vocational higher education towards golden Indonesia 2045. To realize this, vocational education institutions in Indonesia must be connected with industrial partners so as to create quality graduates who can compete nationally and globally with other nations in the world.

However, in its implementation, many obstacles were experienced by SMKs in the implementation process, citing the 2019 Central Statistics Agency (BPS) report which released news regarding the state of Indonesia's workforce before the pandemic, stating that graduates of Vocational High Schools (SMK) dominate the number of unemployed in Indonesia, with the total unemployment rate open (TPT) 8.63%. This was exacerbated by the pandemic which increased the number of TPT from SMK graduates to 13.55%. The problem of unemployment always occupies the top place in the dynamics of problems faced by a country with its various

complexities, the ILO estimates that the number of unemployed in the world will increase by 3 million from the previous year to 208 million in 2023, including in Indonesia. From this fact, of course, raises various speculations related to the causes of the high unemployment rate for SMK graduates which continues to grow and is correlated with the education system carried out in the world of education as a producer of graduates who will become the workforce. The problem with vocational education is that graduates are not fully ready to work because they do not have the skills needed by the world of work, graduates are also unable to compete with foreign workers, the curriculum is not in accordance with the demands of the world of work resulting in less competitive quality SMK graduates causing the high unemployment rate of SMK graduates. Various studies have been carried out to reduce the unemployment rate for vocational high school graduates, but this is still partial between the social and technical approaches. So it is necessary to look for a more complex approach, by looking at two sides at once.

This study aims to develop a model for preparing the workforce for vocational education graduates, especially SMK with a socio-technical approach in reducing the unemployment rate for SMK graduates, which includes competency profiles of the workforce that can adapt to current developments, development of conceptual models, and reading of vocational readiness in preparing the workforce with a socio-technical approach. This study applies the Design-Based Research (DBR) approach which is divided into 4 stages, namely problem identification and analysis, design model design, design testing and reflection to obtain the expected design principles and overcome various problems encountered. Problem analysis is carried out by identifying and studying various problems related to high unemployment, especially vocational graduates through a review of various literature. This analysis is also strengthened by identifying descriptions of workforce competencies that can adapt to current social and technological developments through the PRISMA Systematic Literature Review model. These results are then used to create a framework concept model with a socio-technical approach to prepare a workforce of SMK graduates in reducing unemployment. Furthermore, the design of the socio-technical framework model is validated by experts so that the best design is obtained. The next framework design is used to create composite indicators in preparing a workforce of SMK graduates. The framework design is used to identify the causes of unemployment among SMK graduates. This identification involves secondary data from online materials and primary data through interviews with SMK students, SMK teachers, principals and users of SMK graduates. The next composite indicator is used to read the readiness of SMKs in reducing unemployment from their graduates. It was carried out by distributing questionnaires to SMK teachers, both public and private in Indonesia. Some of the findings obtained in this study are: (1) The socio-technical framework was successfully used to develop a conceptual model for preparing vocational education graduates, as well as the composite indicators, as well as the scale and characteristics for each indicator. Consists of indicators of internal goals, people, culture, infrastructure, process and technology, as well as indicators of external stakeholders, economic situation and regulations. However, this model is still in the form of a conceptual model, so it needs to be developed to a more concrete implementative model to be implemented. Considering the very varied conditions of SMK, so that it can be applied to all SMK in Indonesia so that all students in

Indonesia have the same opportunity to get quality education services and can reduce the number of unemployed SMK graduates. (2) From the results of the analysis of the literature, it is obtained a profile picture of a workforce that can adapt to current social and technological developments for the sake of sustainability, must have various competencies such as: sensemaking, social intelligence, innovative and adaptive thinking, intercultural competence, computational thinking, digital literacy, multidisciplinary skills, design mentality, knowledge management and virtual collaboration. (3) From the results of measuring the readiness level of SMK in preparing a workforce that can adapt to current technological and social developments using a socio-technical approach, it is in a low level readiness position. These results are also used to see the relationship between socio-technical indicators, and it is found that each indicator has a correlation with other indicators. (4) Another finding related to the potential for unemployment for SMK graduates is that the number of accredited SMK schools is only 38.27% as of December 2022, while 2,398 public and non-accredited SMKs have not been accredited and 6,527 private SMKs. This number is also increasingly felt when viewed from the number of students, based on data there are 2,546,607 students attending SMK with unaccredited and non-accredited status. Accreditation is one of the government's references as a regulator to control the running of schools. Based on these data, it is very possible for lost control to occur in the management of SMK schools with unaccredited and non-accredited status. The potential for unemployment for graduates of vocational education, especially vocational schools, is also getting bigger.

Keywords: Unemployment of vocational school graduates, Socio-technical system, Conceptual model, Workforce preparation, Readiness.

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Sugeng Rifqi Mubaroq

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DAFTAR GAMBAR

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