

## Management model of industry-integrated education financing (MPTI) to improve education quality in vocational schools

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**Abstract:** In 2023, vocational high schools (VHS) accounted for the largest amount of unemployment above 9.2%. Unemployment occurs because the quality of education is still low. Improving the quality of vocational education that is integrated with industry is very important in supporting national economic development and reducing unemployment. By integrating industry needs in the education financing model, it is expected to create a learning environment/climate that is in accordance with industry standards and needs. The purpose of this research is to design an education financing management model that is integrated with industry needs. The design of a well-implemented industry-integrated VHS financing model is expected to improve the quality of education so as to reduce the unemployment rate of VHS graduates. The research design used adopted the research and development (R&D) design of Richey and Klein by taking 3 stages, namely needs analysis, model design and validation. The research was conducted at SMK N 1 Trucuk Klaten and SMK Muhammadiyah Pakem with the research subjects being the principal, treasurer, automotive engineering vocational teachers and industry practitioners. Data collection techniques used non-test data with interview instruments through FGD activities and validation/feasibility questionnaires for experts. Data analysis used quantitative analysis and formulated the results with categorization. The results concluded that the industry-based education financing model (MPTI) has very good feasibility with an average score of 3.71 on a scale of 4. This model is considered very appropriate to the needs, effective, able to collaborate with industry, sustainable, provides significant benefits, and is easy to use.

**Keywords:** management model; education quality; education financing; vocational education (SMK); industry integrated



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### INTRODUCTION

The financing model applied to vocational high school (VHS) has so far not been integrated with industry needs, resulting in a gap between the skills taught in VHSs and the demands of the evolving job market (Kellard et al., 2023; Wesselbaum, 2024; Yadav et al., 2024). A separate financing management system from the industry often fails to anticipate changes in technology and market needs. As a result, VHS graduates often lack skills that are relevant and in line with current industry needs, making it difficult for them to find decent jobs (BABA, 2024; Zhang & Sun, 2024). This creates a major obstacle for VHS graduates to achieve the expected work readiness competencies. Therefore, there is a need for better integration between VHS financing models and industry needs to improve the quality of skills and employment opportunities for VHS graduates (Petrus et al., 2024; Saryadi et al., 2024; Vallée & Arutkin, 2024; Zhu et al., 2023).

In addition, financing models that are not integrated with industry can also lead to imbalances in the distribution of educational resources and opportunities. VHSs that do not involve industry in their financing tend to experience limitations in the provision of facilities, equipment and training. This hampers their ability to offer high quality educational programs. Students in VHSs with limited financing do not have the same access to educational opportunities as students in better-financed educational institutions (Januszewski et al., 2024; Kellard et al., 2023; Ruff et al., 2023).

The unavailability of adequate resources also negatively impacts the quality of teaching and learning in VHSs. Teachers and instructors are expected to teach skills and knowledge that are in line with industry developments (Dias-Oliveira et al., 2024; Herlinawati et al., 2024; Molefi et al., 2024). However, lack of access to professional training and modern equipment hinders their ability to deliver effective education. A financing model that is not well integrated with industry is a major impediment

to improving the quality of education in VHSs, as teachers and instructors are unable to deliver materials that are relevant to industry needs (Han, 2024; Wahyuni et al., 2024; Yan, 2024).

One of the major weaknesses of the current financing model is the lack of industry engagement and synergy (Alkaraan et al., 2023; Purnomo et al., 2023; Zafar et al., 2024). Financing that comes solely from the government and society is often insufficient to meet the needs of modernizing the necessary equipment and facilities to match the latest industry standards. As a result, VHS graduates often lack practical skills that are relevant to industry needs. The lack of cooperation with industry also hinders opportunities for students to gain real work experience through internship or practical work programs (Jinhao & Shengying, 2024; Suhartanta et al., 2024; et al., 2024; Yfantidou et al., 2024).

An industry-integrated education financing model, known as the Integrated Education Financing Model (MPTI), involves the implementation of systematic management stages. At the planning stage, needs and resources are identified together with industry to design a comprehensive financing plan. Organizing involves establishing a management team that coordinates the allocation of funds and provision of facilities. Implementation involves the implementation of relevant education and training programs with industry contributions, as well as active communication between the school and industry. Controlling involves monitoring and evaluating the implementation of the plan to ensure goals are achieved and making adjustments where necessary. Thus, this model ensures an improvement in the quality of education and job readiness of VHS graduates.

With better integration between education financing models and industry needs, VHS graduates will have skills that are relevant and in line with labor market demands (L. Li, 2024; M. Li & Rohayati, 2024; Saryadi et al., 2024; Y. Wang, 2024). This will increase their chances of securing decent jobs that meet industry expectations. Therefore, there is a need for improvement and enhancement in the education financing model to ensure that VHS graduates are ready to face the challenges and opportunities in the modern world of work.

## METODE

This research lasted for one year. The research was conducted at SMK N 1 Trucuk Klaten and SMK Muhammadiyah Pakem. Both SMKs have implemented an independent curriculum and have instructors/practice teachers who have undergone teaching factory management training by industry. The subjects involved in this study were the principal, treasurer, VHS automotive engineering teachers and industry practitioners. The industries used are the automotive industry Jogjakarta Center Automotive and Hyundai Motor. The automotive industry was chosen because of its success in managing vehicle maintenance services well.

This research adopts Richey and Klein's research and development (R&D) design, which consists of three main stages: needs analysis, model design, and validation. The research flowchart can be seen in Figure 1.

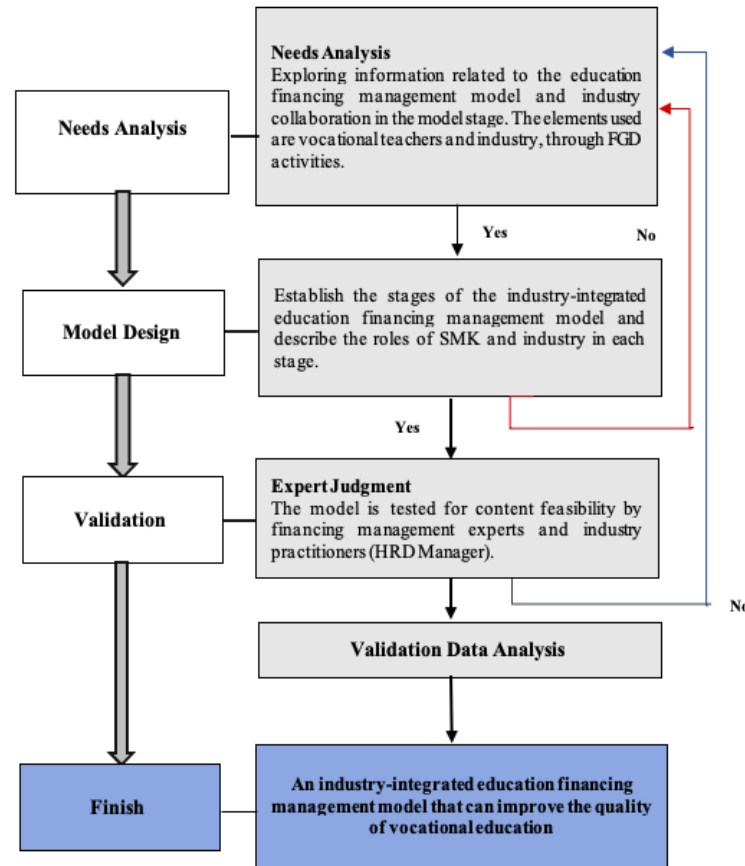


Figure 1: Research Flow Chart

The research stage consists of the needs analysis stage aimed at exploring information related to; (a) education financing management that has been implemented by VHS (including the target competencies of VHS student graduates). (b) to gather information related to the MPTI model design materials to be developed and the required infrastructure. Participants consisted of teachers, VHS managers, and industry. The model design stage aims to create stages and descriptions of the industry-integrated education financing management model including actors and supporting infrastructure needs. The validation stage aims to explore input and test the feasibility of the model from financing management experts and industry practitioners. Validation produces feasibility documents and input on the MPTI model and its tools.

Data collection techniques used non-test data with interview instruments through FGD activities and validation/feasibility questionnaires for experts. Data analysis used quantitative analysis and formulated the results with categorization.

Furthermore, the data from the internal validation results were analyzed descriptively, namely quantitatively, according to the rubric for achieving the criteria referring to the Likert scale in Table 1.

Table 1. Categorization of Model Feasibility Results

Score Range	Criteria
3.01 - 4.00	SB
2.51 - 3.00	B
2.01 - 2.50	K
< 2.00	T

(Mardapi, 2008)

Notes:

Very Good (SB); Good (B); Not Good (K); Not Good (T)

## RESULTS AND DISCUSSION

### Result

#### Development Stage

The first activity in the need assessment is to conduct interviews with VHS teachers. This activity aims to find out the management of industry-integrated education financing that has been implemented and the problems faced. Through this activity, it was revealed that in general, the implementation of industry-integrated education financing management in VHSs is as follows:

- 1) Planning begins with the establishment of the RKAS as the main guideline for school financing, including budget allocations for collaborative activities with industry.
- 2) Each program head leads the coordination of the school management team under the direct supervision of the principal.
- 3) Practical activities are supported by industry sponsors who contribute to curriculum implementation and students' practical experience.
- 4) Monitoring and evaluation are conducted regularly by the principal and treasurer to ensure transparency and efficient use of funds according to the approved RKAS.
- 5) The school has to purchase many of the tools and technologies required to meet industry standards as assistance from industry does not always cover such costs.
- 6) There needs to be increased transparency in the use of school funds, including in budget submissions and regular financial reports.
- 7) There are problems in student discipline during the field work program (PKL), such as unauthorized absences and lack of regular supervision from the industry, such as inconsistent annual visits.
- 8) There is a lack of evaluation and monitoring of the cooperation program to ensure success and conformity with educational objectives.

After obtaining an overview of the management of industry-integrated education financing that has been implemented by VHS and industry, the next stage is to conduct Focus Group Discussion (FGD) activities consisting of industry instructors and VHS teachers. FGD activities were carried out to formulate a conceptual model of industry-integrated education financing management in VHS. The conceptual MPTI model can be seen in Figure 2.

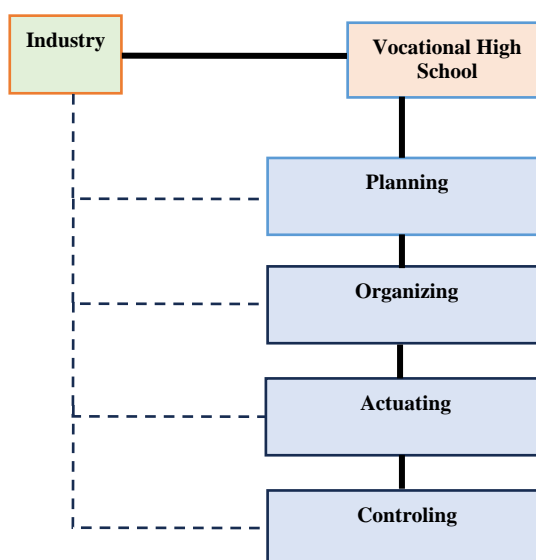


Figure 2. Conceptual Model of Industry-Integrated Education Financing Management in Vocational Schools

#### Validation Stage

The validation stage was carried out to receive input on the feasibility of the MPTI model with participants consisting of school principals, treasurers, teachers and industry instructors. Validation was carried out with FGD activities. The results of the validation questionnaire can be seen in Table 2.

Table 2: Results of Expert Validation Questionnaire

Indicators	Score (f)				Score
	4	3	2	1	
Suitability of the Model to the Needs	7	1			3,875
Model Effectiveness	6	2			3,75
Collaboration with Industry	5	3			3,625
Model Sustainability	7	1			3,875
Benefits and Impacts	4	4			3,5
Model Usage	5	3			3,625
Average					3,71

Based on the results of the validation questionnaire, it can be concluded that the model developed was generally very well received by the respondents. The "Suitability of the Model to Needs" indicator obtained the highest average score of 3.875, indicating that most respondents felt that this model was very suitable for their needs, although there was little room for improvement. The "Model Effectiveness" indicator obtained an average score of 3.75, indicating that respondents felt the model was quite effective, with some aspects that could still be improved.

Collaboration with industry was rated fairly well with an average score of 3.625, indicating that five respondents gave a score of 4, but there were still three respondents who gave a score of 3, indicating that there are some areas in collaboration that require improvement. The sustainability of the model also received an average score of 3.875, indicating that most respondents felt the model was very sustainable, although there was one respondent who gave a score of 3.

In terms of benefits and impact, the model scored an average of 3.5. This indicates that while the model is considered useful by most respondents, there are some areas that need attention to improve its impact. Finally, the use of the model received an average score of 3.625, with five respondents giving a score of 4 and three giving a score of 3, indicating that the use of the model is very good, but still requires some improvement. In addition to the questionnaire data, the expert concluded that: (1) The stages of this model should be in accordance with government policies and regulations as well as education standards; (2) Industry involvement in the education process is also important, including in terms of curriculum and resource provision, so that the skills taught are relevant to industry needs; (3) Validation also includes examining financial resources and the efficiency of their use, the quality of the curriculum and learning programs, and the supporting facilities and infrastructure; (4) Aspects of teaching and training quality, such as teacher qualifications and teaching methods, also need to be evaluated. In addition, the outcomes and impact of the model, including the quality of graduates and employment rates, should be considered along with industry feedback. (5) Sustainability and continuous development of this model should be planned to ensure its ability to adapt to future changes. After receiving validation expert input, the MPTI model was revised and resulted in a hypothetical MPTI model that was feasible to use. The model and stages of the hypothetical MPTI model can be seen in Figure 3 and Table 3.

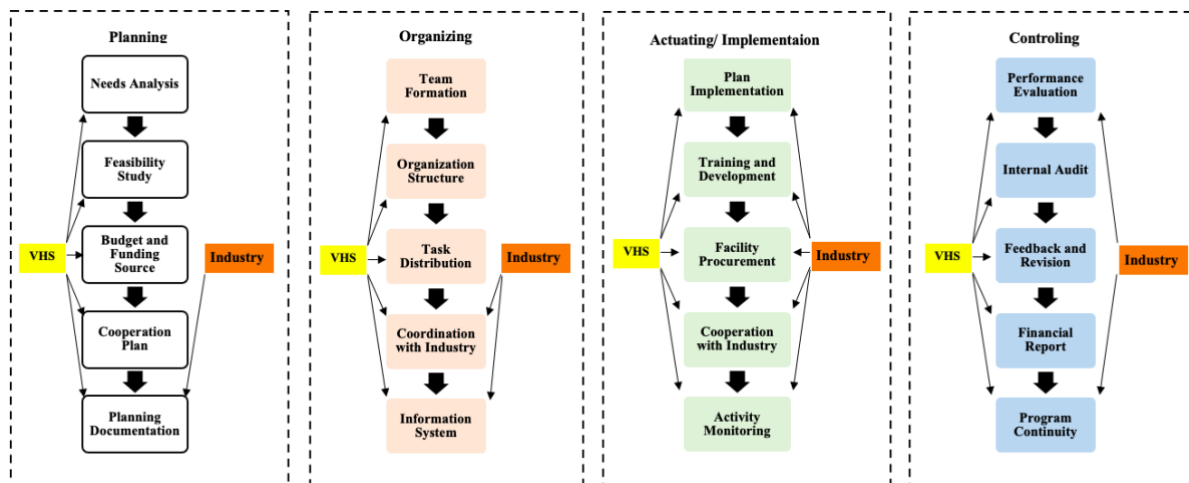


Figure 3. Stages of the hypothetical MPTI Model

Table 3. Stages of the hypothetical MPTI Model

Stages	Activity	Performers
Planning	Needs Analysis	VHS
	Feasibility Study	
	Budget and Funding Source	
	Cooperation Plan	
	Planning Documentation	
Organizing	Team Formation	VHS dan Industry
	Organization Structure	
	Task Distribution	
	Coordination with Industry	
	Information System	
Implementation	Plan Implementation	VHS dan Industry
	Training and Development	
	Facility Procurement	
	Cooperation with Industry	
	Activity Monitoring	
Supervision	Performance Evaluation	VHS
	Internal Audit	
	Feedback and Revision	
	Financial Report	
	Program Continuity	
		VHS dan Industry

## Discussion

Januszewski et al. (2024), Qiu et al. (2024), Yadav et al. (2024), who examined the success of collaboration between vocational high schools and industry in apprenticeship programs. The results of this study show that good collaboration between schools and industries can improve students' skills and better prepare them to enter the workforce. The study found that internship programs run through solid partnerships between schools and companies provide valuable practical experience for students, as well as creating a bridge between education and the world of work. In addition, Pacher et al. emphasized that this kind of collaboration can adapt the education curriculum to the evolving needs of the industry, making graduates better prepared and relevant to the demands of the job market (Januszewski et al., 2024; Qiu et al., 2024; Yadav et al., 2024).

Sutiman et al. (2022) on the sustainability of industry-based education financing programs in Australia stressed the importance of continuous support from industry and government to ensure the programs can run in the long term (Sutiman et al., 2022). The study shows that program sustainability depends not only on initial cooperation but also on long-term commitment from various stakeholders, including policymakers, educational institutions and the industry sector (Yadav et al., 2024). Yadav et al. (2024) also note that the integration of supportive public policies and financial incentives from the

government can play an important role in maintaining the sustainability of industry-based education financing programs (Yadav et al., 2024).

Findings from several studies highlight the positive impact of industry-based education financing on the overall quality of education in vocational schools. The provision of modern equipment and facilities by industry partners is a crucial element in bridging the gap between educational institutions and the evolving demands of the labor market (Kong et al., 2024; W. Wang, 2024; Yan, 2024). This access to advanced resources not only enhances students' technical skills but also exposes them to real-world industry standards, which are essential for their future employment (Abina et al., 2024; Purnomo et al., 2018; Learning et al., 2024). The strengthening of the relationship between schools and local industries is another significant outcome of this financing model, fostering a collaborative environment where both parties can mutually benefit. Schools gain access to resources and expertise, while industries can help shape the curriculum to better meet their workforce needs, creating a more seamless transition for students from education to employment (Yang & Liu, 2024).

By involving industry partners in the educational process, schools will be more likely to adopt cutting-edge technologies and pedagogical approaches aligned with industry trends. The integration of practical and industry-relevant content into the curriculum ensures that graduates are not only equipped with the necessary technical skills, but also with the innovative mindset required to thrive in a competitive job market. As a result, students from schools that implement such financing models tend to have a competitive advantage in the labor market, as they possess a well-rounded skill set that includes technical proficiency and the ability to adapt to the ever-changing demands of the industry (Dräger et al., 2024; Medina et al., 2024; Wesselbaum, 2024).

## CONCLUSIONS

The industry-based education financing model (MPTI) has high feasibility with an average score of 3.71 out of a scale of 4. This model is considered to be highly appropriate to the needs, effective, able to collaborate with industry, sustainable, provides significant benefits, and is easy to use. Nevertheless, there are some aspects that can still be improved, especially in terms of collaboration with industry and the benefits and impact of the MPTI model.

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