Journal of Educational Research and Evaluation
Volume 6, Issue 2, 2022, pp. 327-336
P-ISSN: 2597-422x E-ISSN: 2549-2675
Open Access: https://doi.org/10.23887/jere.v6i2.45829

Establishing the Delphi Technique for Validity Measure of Employability Skills in Industrial Work Practice Program

Ellydza Yutima[1*], Muchlas Suseno[2], Agus Dudung[3]
[1,2,3] Universitas Negeri Jakarta, Jakarta, Indonesia

ARTICLE INFO

Article history:
Received March 04, 2022
Revised March 06, 2022
Accepted April 24, 2022
Available online May 25, 2022

Kata Kunci :
Teknik Delphi, Validitas, Keterampilan Kerja, Evaluasi Program

Keywords:
Delphi Technique, Validity, Employability Skills, Program Evaluation

ABSTRAK

Instrumen penelitian dalam evaluasi program sangat penting dan perlu kehati-hatian menyeluruh dalam hal validitas, reliabilitas, dan kredibilitas. Penelitian ini bertujuan untuk memverifikasi keterampilan yang dibutuhkan untuk dipekerjakan dalam Program Praktek Kerja Industri yang berlaku untuk bengkel Astra Honda. Teknik analisis Delphi digunakan dalam penelitian ini untuk mencapai konsensus di antara para ahli tentang keterampilan yang dibutuhkan untuk insinyur sepeda motor. Peserta ahli penelitian ini berjumlah 6 panelis dengan menggunakan teknik purposive. Pengumpulan data dilakukan melalui analisis dokumen, kuesioner dan wawancara lanjutan. Instrument yang digunakan untuk mengumpulkan data yaitu lembar kuesioner. Konsensus di antara 6 ahli dalam memeringkat keterampilan kemudian dihitung dengan menggunakan perangkat lunak SPSS 24 untuk melakukan analisis W. Hasil penelitian yaitu pertama, para ahli lebih mengutamakan penguasaan soft skills dibandingkan penguasaan technical skills. Hal ini dapat dibuktikan dengan hasil pemeringkatan yang menempatkan soft skill pada peringkat 7 teratas mendahului semua item technical skill. Kedua, di antara banyaknya keterampilan teknis yang disajikan baik dari kurikulum yang diusulkan pemerintah maupun keterampilan standar Honda, para ahli hanya memilih keterampilan yang paling spesifik dan khusus yang paling banyak diterapkan di tempat kerja. Disimpulkan bahwa para ahli lebih memilih pekerja yang unggul dalam soft skill dibandingkan dengan technical skill.

ABSTRACT

Research instruments in program evaluation are essential and need thorough care regarding validity, reliability, and credibility. This study aims to verify the skills required in the Industrial Job Training Program applicable to Astra Honda repair shops. The Delphi analysis technique was used in this study to reach a consensus among experts on the skills required for motorcycle engineers. The participants of this research were six panelists using the purposive technique. Data were collected through document analysis, questionnaires, and follow-up interviews. The instrument used to collect data is a questionnaire sheet. The consensus among six experts in rating skills is then calculated using SPSS 24 software to perform W analysis. The research results are, first, experts prioritize mastery of soft skills over technical skills. It can be proven by the ranking results, which place soft skills in the top 7 rankings ahead of all technical skill items. Second, among the many technical skills presented from the government's proposed curriculum and Honda's traditional skills, experts selected only the most specific and specialized skills that were most widely applied in the workplace. It was concluded that experts prefer workers who excel in soft skills compared to technical skills.

1. INTRODUCTION

Developing relevant skills specified for the work practice will surely empower a worker to compete against other workers from different countries in securing job attainment in the existing job opportunities. It is crucial for the education body to consider what are the skills relevant to the real world work place to be taught in the school to reduce the skill imbalances and manage to equip the graduates with the accurate skills to be employed (Mardiyah et al., 2018; Pratiwi et al., 2022). However, the rapid change in globalization, technological process, population ageing, migration, climate change as well as unanticipated shocks, such as the COVID-19 pandemic has contributed to the uncertainty which makes individuals need to develop relevant skills and use them effectively (Aji, 2020; Wahyono et al., 2020). Those changes have significantly increased the demand of the ASEAN skilled workers into 41% or equal to 14 million people and a half of that number is Indonesia's requirement (Adam & Nastiti Rahayu, 2017). Indonesia can overcome these challenges by investing in developing relevant skills which included as one of the country's investments for the country's economic prosperity, social cohesion and broader well-being (Gonzalves, 2021; Kivunja, 2014).

*Corresponding author.
E-mail addresses: EllydzaYutima_9912818007@mhs.unj.ac.id (Ellydza Yutima)

One effort to develop relevant skills is made through the establishment of vocational schools. The main function of such vocational schools is to prepare the students to be employed directly after graduating (Stellmacher et al., 2020; Supriyadi et al., 2019; Triyono, 2015). Despite the effort, there was still a gap between the demand of the workers and the prediction which may be caused by the continuous shifting in agricultural, service and processing industries that occurred in the past 15 years until 2015 (Adam & Rahayu, 2017). As many as 84% of employers reported experiencing a labour shortage in 2021 due to the inadequately skilled applicants to fill the marketplace demands (SHRM, 2021). In addition to that, the mismatch between demand and supply that was caused by the education plan that was not mirrored the reality worsen the results of the unemployment rate of vocational school graduates which shows that vocational school graduate consistently holds the highest unemployment rate in comparison to other graduates (Ediyanto, 2016; Purnamasari, 2018). Therefore, the Presidential Instruction Number 9 of 2016 proposed some policies concerning the Revitalization of Vocational High Schools, one among other steps is the link and match between the workplace applied skills and the skills taught in vocational schools.

One of the realizations of the link and match program is to ensure students acquire the relevant skills is through the industrial practice program. It is stated that the industrial work practice program offers valuable real-world experience to expand the knowledge of students (Mardiyah et al., 2018; Pratiwi et al., 2022). In this regard, the employers expect the intern students of the industrial of work practice program may have the knowledge of *transferrable skills* which enable them to adapt, communicate and work efficiently using the proven acquired skills (Purnamasari, 2018; Wartono & Sentono, 2013). Industrial work practice program is known to be one of the factors that can affect the mastery of employability skills (Putriatama et al., 2016; Rotatori et al., 2021). Employability skill is the skill that allows someone to get a job or be able to keep working (Putriatama et al., 2016). Industry leaders stated that they want a graduate that has been equipped with particular employability skills (Sudjimat, 2017). Employability skills were classified into two categories namely technical and non-technical skills or soft skills which is equally applied in the engineering workplace, therefore, possessing both skills is necessary to maintain employment and career success (Pais-Montes et al., 2019).

Hence, it is crucial to confirm that students get the relevant required employability skills while participating in the industrial practice program (Agustina et al., 2020; Retnawati et al., 2016; Supriyadi et al., 2019). There is an abundance of works of literature and research presenting the skills for engineering but there has been limited effort to study the skills degree of importance reflecting the real-world engineering workplace. This study aims to verify the required employability skills for motorcycle engineering in an Industrial Work Practice Program by defining the key skills using the widely used Delphi technique and ranking them based on the degree of importance. The Delphi method of analysis is a structured communication that ideally, its application is aimed at reaching a consensus of opinion among the 'experts' (Sirois & Iwanick, 1977). Delphi was mentioned previously to be used significantly for various fields, one of them is education (Kattirtzi & Winskel, 2020; Kaufmann, 2016). Delphi analysis has also proved its benefits in education since the past time in creating guidelines, standards and predicting trends (Green, 2014). The results of the study will be a standard of required key employability skills for motorcycle engineers which derived from the consensus among the experts who participated in the study, the list is recommended be used as a tool to evaluate the industrial practice program in encouraging mastery of those skills.

2. METHODS

A Delphi analysis technique was used in this study to reach a consensus among the experts on required skills for motorcycle engineers. Selecting the participants or termed 'expert' in the Delphi study is one of the essential elements since the output of the Delphi itself is the expert opinion (Skulmoski, G. et al., 2007). Adopting a purposive technique in this study is based on the notion that, given the study's goals and objectives, different types of people will have distinct and important perspectives on the ideas and issues at hand. Thus, several heads of the workshop and mechanics in Astra Honda Motor also the head of the motorcycle program in SMKN 7 Kabupaten Tangerang were selected to be the expert participants in this study. The combination of experts was to ensure that both parties have power in determining the skills for the vocational graduate because the better linkage between both parties will lead to a better outcome in the job market (Renold et al., 2018). The ideal number of panelists in Delphi study is 6-12 (Tellefson et al., 2019). Therefore, 6 panelists were chosen for this study. The profiles of the panels are presented in Table 1.

Table 1. Expert Panelists Member Profile

No	The expert	Job Title	Experience
1	Expert 1	Head of workshop	10 years
2	Expert 2	Motorcycle engineering Curriculum Developer	15 years
3	Expert 3	Head of workshop	10 years
4	Expert 4	Head of mechanic	21 years
5	Expert 5	Head of motorcycle engineering program of SMKN 7 Kabupaten Tangerang	12 years
6	Expert 6	Head of mechanic	20 years

Following the recommendation Delphi stages comprises of 3 main stages: pilot study combined with seeding, paring-down the list and ranking the skills item (Skulmoski, G. et al., 2007). The first and the second stages were conducted in a week while the last stage of Delphi was conducted within 4 weeks due to the iteration nature of Delphi which has to conduct multiple rounds until the reach of consensus and the continuous consultation to the key expert. The ranking skills stage took 2 rounds in total until it reached the optimum consensus. In an attempt to increase the data's credibility, the triangulation strategy of using several data collection and processing methods were conducted in this study. The data will be collected through document analysis, questionnaire and the follow-up interview.

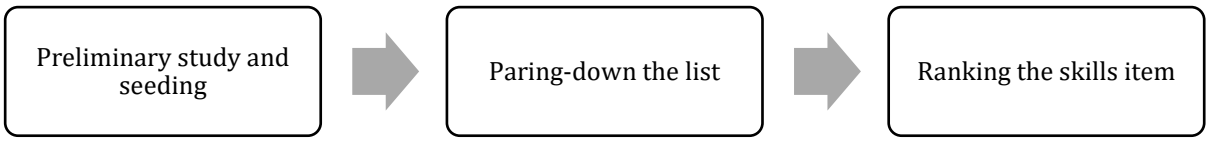

Figure 1. Delphi Stages

There are two types of employability skills sought in the seeding process; technical and non-technical. The non-technical skills or commonly called soft skills were attained from different sources of literature. The soft skills selected were focused on the soft skills required specifically for an engineer in general. The technical skills for motorcycle engineers have been formulated previously in the Indonesia national work competency standards based on the decree of the Minister of Manpower of the Republic of Indonesia no. 147 year 2019. There is an abundance of the number of skills presented in that paper. Therefore, to avoid the possibility of clouded judgement, the researcher had a pilot study to conduct a consultation with the head of the motorcycle engineering program to sort the skills and he proposed the set of skills given and formulated by Astra Honda Motor. The set of skills has been used by SMKN 7 Kabupaten Tangerang as a standard reference for the final competency test for motorcycle engineering students. There were 24 technical skills in that list and the expert added another skill item to that list so there are 25 technical skills in total. The expert then was presented by the selected 25 technical skills and 7 the soft skills; 32 skill items in total and do a content validation check to ensure if the skills were relevant. The level of agreement is suggested in Table 2.

After the expert finalized and approved the set of skills, the skills then were processed and delivered to the other experts to select the most important skills for the motorcycle engineer. This is the Delphi stage 2 that is to pare down the list of skills into a more manageable number. In this stage, the 6 experts were instructed to choose at least 16 out of 32 skill items to be the most important skills for the motorcycle engineer. The skills which have more than 50% vote will be processed into the next stage of Delphi; ranking skill items. The sorted skills resulting from the previous stage will then be ranked by the panelists based on the degree of importance. The consensus among the panelists upon the skills rank result was measured using the non-parametric statistical technique that is Kendall's coefficient of concordance (*W*). *W* was used in this study to find the realistic determination of the consensus attainment among the experts (Schmidt, 1997). The value of *w* ranges from 0-1, with 0 signifying no consensus, 1 is the perfect consensus, value 0.5 suggests moderate consensus while value 0.7 and above is an ideal value for Delphi consensus (Yeoh, 2019). The level of agreement is suggested below:

Table 2. Interpretation of Kendall's *W* Value

W	Interpretation	Confidence in Ranks
0.1	Very weak agreement	None
0.3	Weak agreement	Low

W	Interpretation	Confidence in Ranks
0.5	Moderate agreement	Fair
0.7	Strong agreement	High
0.9	Unusually strong agreement	Very High

The consensus among the 6 experts in ranking the skills was then calculated by using SPSS 24 software to perform the *W* analysis. The ranking was considered based on the *W* result and the experts' comments. Lastly, to confirm the validity in each stage of the list-ranking-Delphi round, at the end of each round, the panelists were instructed to give comments and descriptions intended to understand the experts' reasons in choosing those skills to be the most crucial (Yeoh, 2019). The complete and more thorough Delphi stages are summed up in Figure 2.

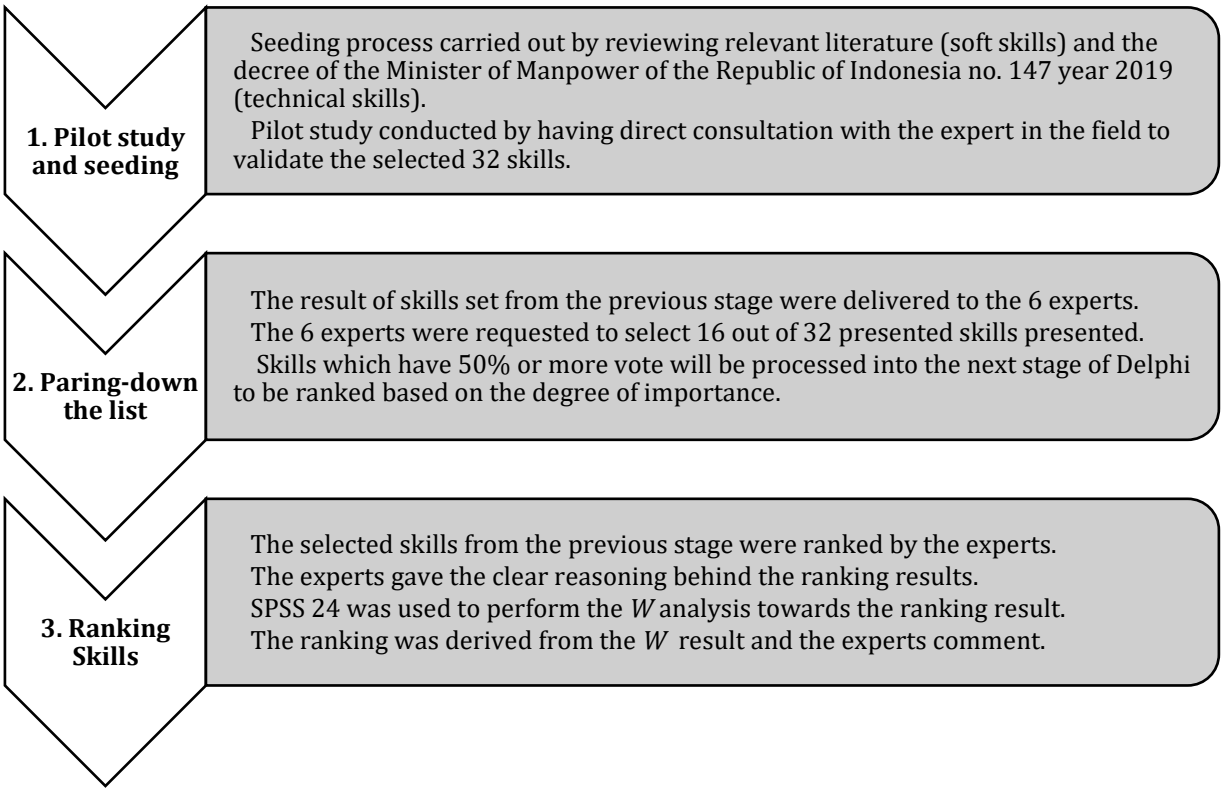

Figure 2. The Delphi process and details of each stage

3. RESULT AND DISCUSSION

Results

The results of the study will be presented separately based on the 3 Delphi stages: 1) Stage 1: pilot study and seeding, 2) Stage 2: paring-down list and 3) Stage: ranking skills. There are several additions to the process of the Delphi stage such as the validation process and the 2 rounds of Delphi ranking skills in Delphi stage 3. The seeding is one of the procedures which can be used to build Delphi key skills item to be processed in the next Delphi stages, the key skills can be derived from the literature review (Skulmoski, G. et al., 2007). A comparative study in an attempt to improve the engineers' employability, has done research on soft skills required in the engineering workplace by exploring the 163 job application advertisements and classified it into 4 distinct categories based on the demands; category A: highly demanded, category B: moderately demanded, category C: lowly demanded, category D: rarely demanded (Chaibate et al., 2020). The vital Engineer soft skills classification based on the job advertisements is presented in Figure 3.

Because this study's main focus was to attain the high priority skills in the engineering field, hence, only the soft skills from categories A and B are included in this study. Those skills were then undergoing a crosscheck to ensure the application in the engineering field and found responsibility, adaptation, decision making, teamwork and problem-solving are the most applied skills (Pais-Montes et

al., 2019). From both studies, it can be concluded that the soft skills for engineers, in general, are communication, organization, technology literacy, responsibility, decision making, project management, teamwork, innovation, problem-solving, efficiency, rigour and adaptation. The technical skills are then chosen from the final competency list used by both Astra Honda Motor and SMKN 7 Kabupaten Tangerang comprising 24 skills in total. The skills set for both soft skills and technical skills were validated in the pilot study.

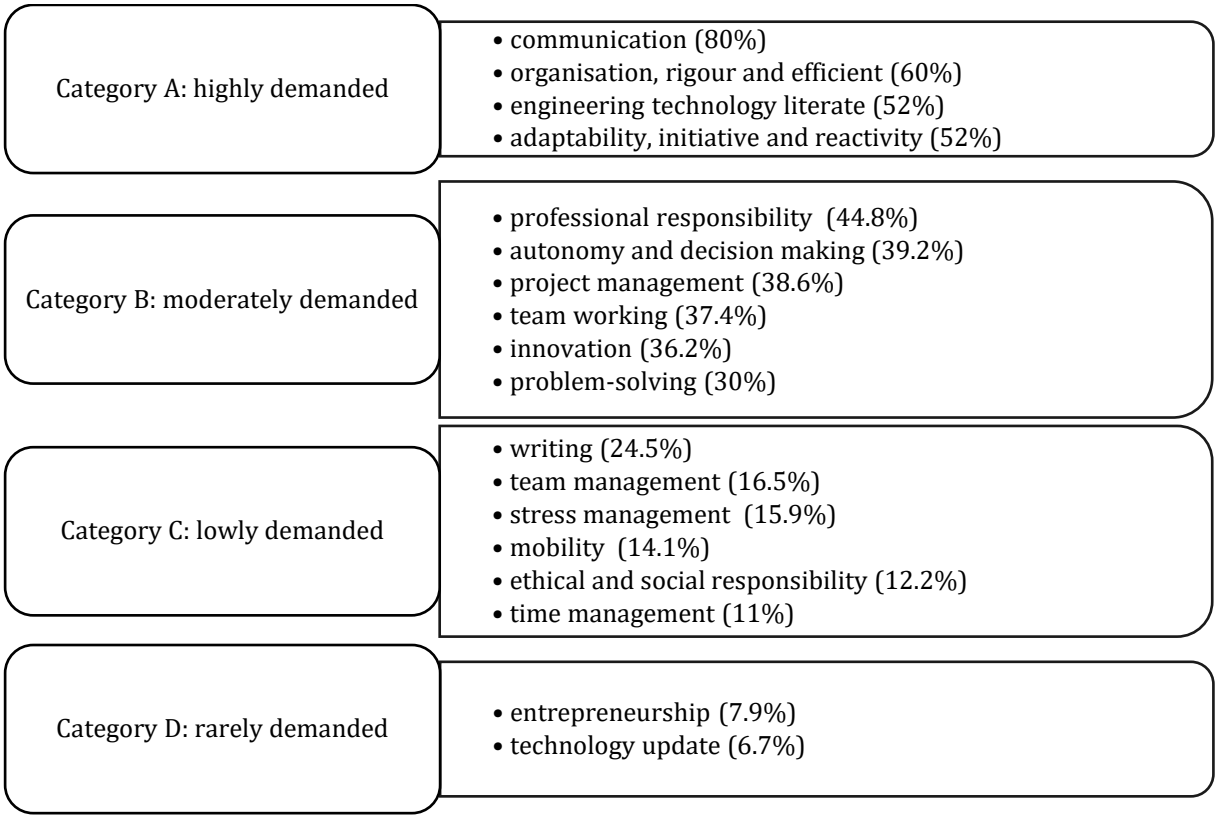

Figure 3. The vital Engineer Soft Skills Classification Based on the Job Advertisements

The focus of the pilot study is to ascertain the relevance between the existing research question to the industry (Skulmoski, G. et al., 2007). The consultation with the expert of motorcycle engineering was conducted after the soft skills and technical skills set were obtained to validate those skills to the motorcycle industry practice. The expert was requested to fill out the questionnaire comprises of 24 technical and 12 soft skill items presented to him to give the validation check upon the presented skills. The questionnaire contains the validity check for the expert to sort the irrelevance skills to the motorcycle engineering industry. Likert scale was integrated into the questionnaire range from 1-5 to describe the relevancy of the skills. 1: zero relevancy, 2: low relevancy, 3: moderate relevancy, 4: high relevancy and 5: very high relevancy. All of the technical skills got high to very high relevancy. On the other hand, only several soft skills got the high to very high relevancy rate, therefore the skills who got the relevance scale below it will be eliminated. The skills which scaled zero to moderate will be eliminated from the list of skill items, there are organization (2) technology literacy (2), responsibility (3), project management (1), innovation (2). The 4 soft skills were eliminated leaving the 7 soft skills to be processed on the next Delphi stage 2.

The interview session was conducted to elaborate the reasoning behind the relevancy scale given to each eliminated skill. In the follow-up interview, the expert stated that those skills are rarely applied in the engineering workplace. In other words, they are actually applied once but not with high intensity. He stated that particularly the motorcycle engineering students are not necessarily to be technology literate and innovated because the motorcycle industries have the standardized tools and solid working structure that mainly focused on motorcycle maintenance and service for the mechanic work level. The expert added another skill required for the motorcycle engineer which is neither in the government list nor the competency test, that is service tool maintenance. He argues besides having the great ability technical skills to repair motorcycles in the workshops, a motorcycle engineer must know how to maintain the

service tools for convenient daily use. In total there are 25 technical skills and 7 soft skills to be processed into the next Delphi stage 2: paring-down the list. In this stage, a questionnaire consisting of the pre-selected skills was delivered to the 6 experts. The experts were instructed to select 16 out of the presented 32 skills comprising both technical and soft skills. It is detailed that experts should select at least 10% or more if the list is less than 100 items. Hence, more than 10% particularly a half was voted by the experts (Schmidt, 1997). The skills that gain a vote below 50 % vote will be eliminated from the list. There are 14 skills selected that gain 50 % or more votes. Those 14 skills were processed into the next stage of Delphi which is the ranking skills. Skills are presented in Table 3.

Table 3. 14 selected skills from Delphi stage 2

No.	Selected kills	Percentage (%)
1	Valve clearance adjustment	87.5
2	Checking and measuring battery voltage	50
3	PGM FI fuel check and pressure	75
4	ECM check and PGM-FI failure code reset	75
5	Settling altitude and TP PGM-FI	50
6	Disassembly of CVT	75
7	Service tool maintenance	62.5
8	Problem-solving	87.5
9	Decision-making	50
10	Rigor	87.5
11	Communication	75
12	Team work	87.5
13	Adaptation	50
14	Efficiency	50

Those pre-selected 14 skills were meaningfully ranked by the experts based on the degree of importance. There is additionally two process in this stage due to the unsuccessful agreement on the initial try. Since the aim of the Delphi is to reach the desired level of agreement among the experts, another Delphi round was conducted to meet the optimum level of agreement. SPSS 24 software was used in this stage to conduct the *W* analysis. The rank was set based on the mean ranks, the lower the mean rank means the higher degree of importance. In some results of the Delphi ranking item, some items will more likely to have the same mean rank, therefore standard deviation was used to break the tie (Schmidt, 1997). A questionnaire of 32 skills that was submitted to 6 experts to rank skills based on their importance is presented in Table 4.

Table 4. Result of Delphi Initial and Final Round

Initial Round				Final Round			
Rank	**Skills**	**Mean Ranks**	**σ**	**Rank**	**Skills**	**Mean Ranks**	**σ**
1	Communication	3.33	4.76	1	Communication	1.33	0.51
2	Adaptation	4.42	5.32	2	Adaptation	2.17	0.98
3	Efficiency	4.83	2.23	3	Rigor	3.00	1.09
4	Rigor	4.83	2.68	4	Team work	4.17	0.75
5	Team work	4.83	4.62	5	Efficiency	4.33	1.03
6	Problem-solving	6.75	2.32	6	Problem-solving	6.00	0.00
7	Decision making	7.5	2.26	7	Decision making	7.00	0.00
8	Valve clearance adjustment	9.17	3.31	8	Settling altitude and TP PGM-FI	8.83	0.75
9	Settling altitude and TP PGM-FI	9.17	1.94	9	Valve clearance adjustment	9.00	1.55
10	ECM check and PGM-FI failure code reset	9.5	4.28	10	ECM check and PGM-FI failure code reset	10.17	0.41
11	PGM FI fuel check and pressure	10.83	4.62	11	PGM FI fuel check and pressure	10.67	0.82
12	Disassembly of CVT	11.17	3.13	12	Disassembly of CVT	11.33	1.63
13	Service tool maintenance	11.67	4.93	13	Service tool maintenance	13.33	0.52

Initial Round				Final Round			
14	Checking and measuring battery voltage	12.5	2.59	14	Checking and measuring battery voltage	13.67	0.52
	W		0.5		***W***	0.9	

The validity check was conducted in each round of Delphi ranking by doing a member check to the 6 experts to improve the rigor of this Delphi study (Brady, 2015). The anonymity of each experts' answers was maintained throughout the process. The result shows that the soft skills were on the top 7 rank and the technical skills follow after. In the initial round, the optimum level of agreement was failed to reach. It could only reach the *W* value of 0.5; the moderate level of agreement. It was observed and found that one particular expert had a quite distinct opinion compare to others. In the crosscheck detail, he stated that 'technical skill is the most essential to attain and the other skills follow'. He stated that soft skills will develop over time. Regarding that, another Delphi round was conducted. The final round of Delphi exceeded the desired level of agreement reaching the *W* value of 0.9 (very high agreement). In the second round of Delphi ranking, most of the experts agreed with the previous ranking result. However, there are some changes applied on it, both in the soft skills and technical skills item. In the soft skill part, efficiency which was originally in the third rank moved to a lower rank of fifth while rigor and teamwork had a higher rank in the second round; rigor, moved from fourth to third and teamwork moved from fifth to fourth. In the technical skill part, there are two skills item that were swapped in the second round, valve clearance adjustment; was moved into lower rank of ninth and the settling altitude and TP PGM-FI; was moved into higher rank of eighth.

Discussion

Based on the results of the conducted study there are several findings that can be obtained. Firstly, the experts prefer the mastery of soft skills compare to the technical skills mastery. It can be proved by the ranking results which put the soft skills on the top 7 rank preluded all of the technical skills items. In the follow-up interview with the experts, the experts stated that workers with the low soft skills ability especially communication and adaptation were quite troublesome in the workplace, they tend to quit from the workshop due to unreasonable motive in the short period of time, furthermore lack of communication slow down the working process. It leads to the idea that companies prefer the candidate who offers good mastery of soft skills since soft skills teaching is more challenging than hard skills teaching (Almeida & Morais, 2021; Tseng et al., 2019; Viscione et al., 2019). Soft skills mastery will likely to help an engineer to have the higher rate in the employment and de.velop in his own career because employers do not merely seek a good hard-skill engineer but more importantly an engineer with the good soft skills mastery (Hariti et al., 2020; Munir, 2021). With the rapid shifting of the economic growth and globalisation, engineering is no longer considered a set of technical skills, engineers must successfully integrate various knowledge and discipline to cope with the unprecedented change ahead in the future and the current labor demand. As stated, that 'a student proficient in the soft skills — but who struggles academically — is better prepared for the next step than his or her straight-A peers who lack skills like self-management or grit' (Despeisse & Minshall, 2017; Merz, 2014).

Secondly, among the abundance technical skills presented both from the government proposed curriculum and Honda standardized skills, the expert selected only the specific and particular most applied skills in the work place. The experts added that eventually, the skills applied depend on the most occurred motorcycle case problems in the workshop, they depend on several different factors such as geographic condition and trend effects in each region. It is similar to a study, exploring the most applied skills in the computer, industrial and naval engineering fields shows that among the plenty skills acquired from the class, only some of the specific skills that are most applied in the work place (Pais-Montes et al., 2019; Sudana et al., 2019). It is one of the challenging duties for institutions or schools to determine the specific technical skills most applicable in the work field to cope with the fast-changing environment. Delphi is one of structural communication methods that can extract ideas from the employers' perspectives to deal with this issue by helping schools and institutions maintaining relevancy in the curriculum (Brady, 2015; Kattirtzi & Winskel, 2020).

There was a consistency between the result of this study regarding the soft skills obtained and those reported by (Merz, 2014; SHRM, 2021; Wagiran et al., 2019). They mentioned those skills are relevant to the employers' demand and future job requirements. There is no doubt about the relevance of the technical skills resulting in this study since it was derived from the Manpower minister list, approved and used by Honda and the school to evaluate the students' competency. Those skills were re-analysed, re-approved and were ranked by the experts which are no other than the main stakeholders in the particular industries. Apart from the use of both skills in the engineering workplace. It can be concluded that both of

the skills contribute to one's success in the workplace. Technical skills help the engineers deal with the product while soft skills ease the process. Soft skills help the engineers deliver and perform the technical skills as well. A study focus on the application of the skills in the engineering workplace shows that both technical and non-technical skills are equally applied (Pais-Montes et al., 2019). What matter is which are more important skills than others so schools can prepare the accurate and detailed curriculum plan with the different time allocation based on the degree of importance of the skills for the students orienting the job market demand considering the implications the world has given. By aiming into one standard of skills HR industries may provide the relevant requirements for the applicants so the industries will likely hire the desired applicants. Hence, the individual productivity will increase then there will be an economic growth in one's country.

4. CONCLUSION

In summary, the experts prefer a worker that excel at soft skills compare to the technical skills. In this sense, it is crucial to address the soft skills into the curriculum and develop it during the learning. Verifying and evaluating how these skills applied in the vocational school Industrial Work Practice program is necessary to maintain the relevancy of the program purpose to the labor current demand. Learning and acquiring the righteous employability skills will help the vocational school graduates to get hired by the employers. While trying maintaining relevancy between the school program and the current trend, it is even more essential for the motorcycle industries to provide the vigorous set of specific and accurate skills that are most applied in the work field to guide the job applicant to apply for the suitable job position. This could also help the employer get the looked-for worker and increase the employer productivity.

5. REFERENCES

Adam, S., & Nastiti Rahayu, A. (2017). *Strategi implementasi Revitalisasi SMK: 10 langkah Revitalisasi SMK*. Direktorat Jenderal Pendidikan Dasar dan Menengah Kementerian Pendidikan dan Kebudayaan.

Adam, S., & Rahayu, N. (2017). *Strategi Implementasi Revitalisai SMK*.

Agustina, R., Kamdi, W., Hadi, S., Muladi, & Nurhadi, D. (2020). Influence of the principal's digital leadership on the reflective practices of vocational teachers mediated by trust, self efficacy, and work engagement. *International Journal of Learning, Teaching and Educational Research*, *19*(11), 24–40. https://doi.org/10.26803/ijlter.19.11.2.

Aji, R. H. S. (2020). Dampak Covid-19 pada Pendidikan di Indonesia: Sekolah, Keterampilan, dan Proses Pembelajaran. *Jurnal Sosial dan Budaya Syar-i*, *7*(5). https://doi.org/10.15408/sjsbs.v7i5.15314.

Almeida, F., & Morais, J. (2021). Strategies for Developing Soft Skills Among Higher Engineering Courses. *Journal of Education*. https://doi.org/10.1177/00220574211016417.

Brady, S. R. (2015). Utilizing and Adapting the Delphi Method for Use in Qualitative Research. *International Journal of Qualitative Methods*, *14*(5). https://doi.org/10.1177/1609406915621381.

Chaibate, H., Hadek, A., Ajana, S., Bakkali, S., & Faraj, K. (2020). A comparative study of the engineering soft skills required by moroccan job market. *International Journal of Higher Education*, *9*(1). https://doi.org/10.5430/ijhe.v9n1p142.

Despeisse, M., & Minshall, T. (2017). Skills and education for additive manufacturing: A review of emerging issues. *IFIP Advances in Information and Communication Technology*, *513*, 289–297. https://doi.org/10.1007/978-3-319-66923-6_34.

Ediyanto. (2016). Siklus Prapembelajaran Model Penilaian Formatif Web-Based Pada Pembelajaran Fisika Materi Suhu Dan Kalor Untuk Siswa Smk Kelas X. *Jurnal Pendidikan Fisika Indonesia*, *12*(2), 126–136. https://doi.org/10.15294/jpfi.v12i2.5906.

Gonzalves, L. (2021). Development of copying skills in L2 adult English learners with emergent print literacy. *Journal of Second Language Writing*, *51*. https://doi.org/10.1016/j.jslw.2021.100790.

Green, R. A. (2014). The Delphi technique in educational research. *SAGE*, *4*(2). https://doi.org/10.1177/2158244014529773.

Hariti, T., Sri, R., & Ernawati. (2020). Strengthening Soft Skills as the Character of Student Nurses through the Preceptorship Management Model. *Enfermería Clínica*, *30*(5). https://doi.org/10.1016/j.enfcli.2019.11.022.

Kattirtzi, M., & Winskel, M. (2020). When experts disagree: Using the Policy Delphi method to analyse divergent expert expectations and preferences on UK energy futures. *Technological Forecasting and Social Change*, *153*. https://doi.org/10.1016/j.techfore.2020.119924.

Kaufmann, P. R. (2016). Integrating factor analysis and the Delphi method in scenario development: A case study of Dalmatia, Croatia. *Applied Geography*, *71*. https://doi.org/10.1016/j.apgeog.2016.04.007.

Kivunja, C. (2014). Do You Want Your Students to Be Job-Ready with 21st Century Skills? Change Pedagogies: A Pedagogical Paradigm Shift from Vygotskyian Social Constructivism to Critical Thinking, Problem Solving and Siemens' Digital Connectivism. *International Journal of Higher Education*, *3*(3), 81–91. https://doi.org/10.5430/ijhe.v3n3p81.

Mardiyah, S. U. K., Kumoro, J., Kusuma, C. S. D., & Rusdiyanto, W. (2018). Analisis Kompetensi Mahasiswa Program Studi Sekretari dalam Praktik Kerja Lapangan. *Efisiensi - Kajian Ilmu Administrasi*, *15*(2). https://doi.org/10.21831/efisiensi.v15i2.24489.

Merz, S. (2014). Teaching the Soft Skills; Three Students Break it Down; Soft skills might be more important than academic skills, but how do you teach them. *Educational Horizons*, *93*(2). https://doi.org/10.1177/0013175X14561421.

Munir, F. (2021). More than technical experts: Engineering professionals' perspectives on the role of soft skills in their practice. *Industry and Higher Education*. https://doi.org/10.1177/09504222211034725.

Pais-Montes, C., Freire-Seoane, M. J., & López-Bermúdez, B. (2019). Employability traits for engineers: A competencies-based approach. *Industry and Higher Education*, *33*(5). https://doi.org/10.1177/0950422219854616.

Pratiwi, M., Hasanuddin, & Arafat, M. Y. (2022). Evaluasi Model Goal Oriented: Pelaksanaan Praktik Kerja Industri Jurusan Teknik Otomotif di Sekolah Menengah Kejuruan. *Jurnal Ilmiah Pendidikan Profesi Guru*, *5*(1). https://doi.org/10.23887/jippg.v5i1.47895.

Purnamasari, D. (2018). Pengaruh Lingkungan Kerja Dan Disiplin Kerja Terhadap Kepuasan Kerja Guru Sekolah Menengah Kejuruan (Smk) Swasta Sekecamatan Pondok Aren. *Jurnal Saintika Unpam : Jurnal Sains dan Matematika Unpam*, *1*(1), 108. https://doi.org/10.32493/jsmu.v1i1.1607.

Putriatama, E., Patmanthara, S., & Sugandi, R. M. (2016). Kontribusi Pengalaman Prakerin, Wawasan Dunia Kerja Dan Kompetensi Kejuruan Melalui Employability Skill Serta Dampaknya Terhadap Kesiapan Kerja Lulusan Smk Kompetensi Keahlian Teknik Komputer dan Jaringan Di Probolinggo. *Jurnal Pendidikan: Teori, Penelitian, Dan Pengembangan*, *8*(1). https://doi.org/10.17977/jp.v1i8.6643.

Renold, U., Bolli, T., Caves, K., Bürgi, J., Egg, M. E., Kemper, J., & Rageth, L. (2018). Comparing International Vocational Education and Training Programs: The KOF Education-Employment. *The KOF Education*.

Retnawati, H., Hadi, S., & Nugraha, A. C. (2016). Vocational High School Teachers' Difficulties in Implementing the Assessment in Curriculum 2013 in Yogyakarta Province of Indonesia. *International Journal of Instruction*, *9*(1), 33–48. https://doi.org/10.12973/iji.2016.914a.

Rotatori, D., Lee, E. J., & Sleeva, S. (2021). The evolution of the workforce during the fourth industrial revolution. *Human Resource Development International*, *24*(1), 92–103. https://doi.org/10.1080/13678868.2020.1767453.

Schmidt, R. C. (1997). Managing Delphi surveys using nonparametric statistical techniques. *Decision Sciences*, *28*(3). https://doi.org/10.1111/j.1540-5915.1997.tb01330.x.

SHRM. (2021). *State of the Workplace Study 2021-2022*. SHRM.

Sirois, H. A., & Iwanick, E. F. (1977). Delphi-Discrepancy Evaluation: A Model for the Quality Control of Federal, State, and Locally Mandated Programs. *JSTOR*, *18*(9).

Skulmoski, G., T., Hartman, F., & Krahn, J. (2007). The Delphi Method for Graduate Research. *Journal of Information Technology Education: Research*, *6*. https://doi.org/10.28945/199.

Stellmacher, A., Ohlemann, S., Pfetsch, J., & Ittel, A. (2020). Pre-service teacher career choice motivation: A comparison of vocational education and training teachers and comprehensive school teachers in Germany. *International Journal for Research in Vocational Education and Training*, *7*(2), 214–236. https://doi.org/10.13152/IJRVET.7.2.5.

Sudana, I., Apriyani, D., & Nurmasitah, S. (2019). Revitalization of vocational high school roadmap to encounter the 4.0 industrial revolution. *Journal of Social Sciences Research*, *5*(2), 338–342. https://doi.org/10.32861/jssr.52.338.342.

Sudjimat, D. A. (2017). Employability skills of vocational high school graduate needed by industry in century XXI. (September). *AIP Conference Proceedings*. https://doi.org/10.1063/1.5003529.

Supriyadi, E., Zamtinah, Soenarto, S., & Hatmojo, Y. I. (2019). A character-based assessment model for vocational high schools. *Cakrawala Pendidikan*, *38*(2), 269–280. https://doi.org/10.21831/cp.v38i2.24099.

Tellefson, M. J., Koehler, W. S., Botsford, K. D., & Cook, L. (2019). Orientation and Mobility Career, College, and Community Readiness Standards: A Delphi Study. *Journal of Visual Impairment and Blindness*, *113*(3). https://doi.org/10.1177/0145482X19851296.

Triyono, M. B. (2015). The Indicators of Instructional Design for E- learning in Indonesian Vocational High Schools. *Procedia - Social and Behavioral Sciences*, *204*(November 2014), 54–61. https://doi.org/10.1016/j.sbspro.2015.08.109.

Tseng, H., Yi, X., & Yeh, H. T. (2019). Learning-related soft skills among online business students in higher education: Grade level and managerial role differences in self-regulation, motivation, and social skill. *Computers in Human Behavior*, *95*. https://doi.org/10.1016/j.chb.2018.11.035.

Viscione, I., Invernizzi, P. L., & Raiola, G. (2019). Physical education in secondary higher school. *Journal of Human Sport and Exercise - 2019 - Spring Conferences of Sports Science*, *14*(Proc4), S706–S712. https://doi.org/10.14198/jhse.2019.14.Proc4.31.

Wagiran, Pardjono, Suyanto, W., Sofyan, H., Soenarto, S., & Yudantoko, A. (2019). Competencies of Future Vocational Teachers: Perspective of in-Service Teachers and Educational Experts. *Cakrawala Pendidikan*, *38*(2), 388–400. https://doi.org/10.21831/cp.v38i2.25393.

Wahyono, P., Husamah, H., & Budi, A. S. (2020). Guru profesional di masa pandemi COVID-19: Review implementasi, tantangan, dan solusi pembelajaran daring. *Jurnal Pendidikan Profesi Guru*, *1*(1), 51–65. https://doi.org/10.22219/jppg.v1i1.12462.

Wartono, T., & Sentono, T. (2013). Pengaruh Prestasi Praktik Motor Otomotif dan Prestasi Praktik Kerja Industri Terhadap Minat Berwiraswasta Siswa Kelas XI Mekanik Otomotif SMK N I NgliparWonosari Tahun Pelajaran 2011/ 2012. *Jurnal Taman Vokasi*, *1*(2). https://doi.org/10.30738/jtv.v1i2.131.

Yeoh, P. L. (2019). a Critical Assessment of Skills and Knowledge for Entry-Level Marketing Jobs: a Delphi Study. *Marketing Education Review*, *29*(4). https://doi.org/10.1080/10528008.2019.1661258.