Students' Soft Skills and Their Readiness Towards Industrial Revolution in Technical and Vocational Education and Training (TVET): A Malaysian Sight

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DOI: https://doi.org/10.30880/ojtp.2024.09.01.004

Article Info

Abstract

Industrial Revolution 4.0 (IR4.0) has created massive uncertainty, where the human workforce will be replaced by automation and robotics. Regarding this matter, every Technical and Vocational Education and Training (TVET) student was required to acquire both technical skills and soft skills to sustain their career in a future working environment. Unfortunately, students faced the issue of lacking soft skills, which would have an impact on their readiness to face IR4.0. Thus, this study was conducted to assess the level of TVET students' soft skills and their readiness level to thrive in the industrial revolution. A quantitative approach was used in this study to obtain conclusive and definitive evidence in statistical analysis as well as to determine the relationship between the two variables, which are soft skills and readiness to thrive in the industrial revolution. Based on the results, showed that the students in this TVET institution had good soft skills and a moderate level of readiness to thrive in the industrial revolution. The results are also shown that there is a moderately strong relationship between soft skills among TVET students in this TVET institution with their readiness to thrive in the industrial revolution, r (127) = .561, p = .000. The results of the study prove that the student's level of readiness to face IR4.0 are influenced by the acquisition of soft skills, as having soft skills would affect the students' enthusiasm to be ready for IR4.0 adoption.

1. Introduction

The ever-changing world is heading towards the fourth industrial revolution (IR 4.0), which presents new challenges to all sectors in Malaysia. IR4.0 is a new paradigm that embraces rapidly evolving and converging technologies such as artificial intelligence (AI), robotics, supercomputer, cloud manufacturing, augmented reality, Big Data, and the Internet of Things (IoT) to optimize human brain function (Junid, Tuan Soh, Mahmud and Iksan, 2019). IR4.0's keyword summaries the entire development derived from digitalization (Ismail and Hassan, 2019; Aisyah Omar and Hasbolah, 2018).

With the IR4.0 advancing, students are likely to have to adapt quickly to unprecedented changes in production as technologies are taking over in many areas of the economy, or else will be faced with redundancy, or unemployment (Mohd Kamaruzaman et al., 2019; Minh, 2017). This is because the technological advancement in the current industry has affected certain professions due to IR 4.0 trend, by employing AI systems that are replacing manpower or manual job performed with smart machines (Ismail, Wan Hassan, Ahmad, Affan, Harun, 2020; Abdullah, Humaidi and Shahrom, 2020). This can be proven by Junid et. al. (2019) study reveals 60% of the existing job will vanish by 2050 due to the advent of cyber-physical systems (CPSs) (Junid et. al., 2019).

These disruptions caused by IR4.0 can be managed through education and training, especially at the tertiary level, with a focus on IR4.0 skills, which develop people to have the right mix of skills which are technical, analytical, and industrial knowledge, and soft skills to turn data into value for employers (Rahmat, Mohd, Nor and Mohtar, 2019; Ismail and Hassan, 2019), apart from being ready and understand the aspects that require changes (Adnan et al., 2020). Regarding this matter, every student including from TVET institutions is required to acquire both technical skills and soft skills as such skills will certainly enable them to maintain continuous employment in a future working environment (Ahmad, Segaran, Soon, Sapry and Omar, 2019).

Unfortunately, students are faced with the issue of lacking soft skills (Amiruddin, Ngadiman, Abdul Kadir and Saidy, 2016). Soft skills are a crucial constituent for the students to excel at future work in the IR4.0 era, especially when IR4.0 emphasizes more on industrial content that focuses on working efficiently and productively to produce a high industrial output. This means that the needs of the industry today are more oriented toward the capability and versatility to manage various tasks provided (Hisyam and Hashim, 2015). Additionally, changes in the economy have contributed to the need for students to be able to work well with people as well (Hassan, 2015) and this has been associated with the acquisition of soft skills. With the acquisition of soft skills, the students could adapt to any kind of working environment or situation which render them flexible, versatile, and compelling for a dynamic industrial shift in the context of IR4.0. This statement is following the World Health Organization (2012) report indicates that soft skills are capabilities for adaption and constructive action that allows people to cope efficiently with life challenges.

In the realization of these industry needs, according to Sparks and Waits (2011), Higher Education Institutions (HEIs) should also take the lead in delivering soft skills while disseminating knowledge. In the Malaysian context, the Ministry of Higher Education (MOHE) has prompted all institutions of higher education including TVET institutions to come to the fore and be a platform for having a comprehensive education system to train IR4.0 skills, particularly enhance the level of soft skills among students to establish of the great technical workforce (Adnan et al., 2020; Salleh, Subhi, Sulaiman, and Latif, 2016). This includes postsecondary education and training establishments known as polytechnics, vocational training centers, National Youth Skills Institute (IKBN), and National Youth High Skills Institute (IKTBN). As such, this TVET institution will be a key driver of the much-needed development for IR4.0 transformation by ensuring to polish the students to have the readiness to become an industry-required workers (Adnan et al., 2020).

Generally, a conceptual framework is proposed and used as a guideline to achieve the research objectives of the study. This study utilized the Conceptual Model of Soft Skills at Higher Learning Institutions in Malaysia as a guide to creating the conceptual framework of this study (Chan, 2010). The conceptual framework seeks a comprehensive study of the relationship between independent variables and dependent variables within the IR4.0 context. Figure 1 shows the conceptual framework of the study that has been designed to show the overall concept of this study to be conducted.
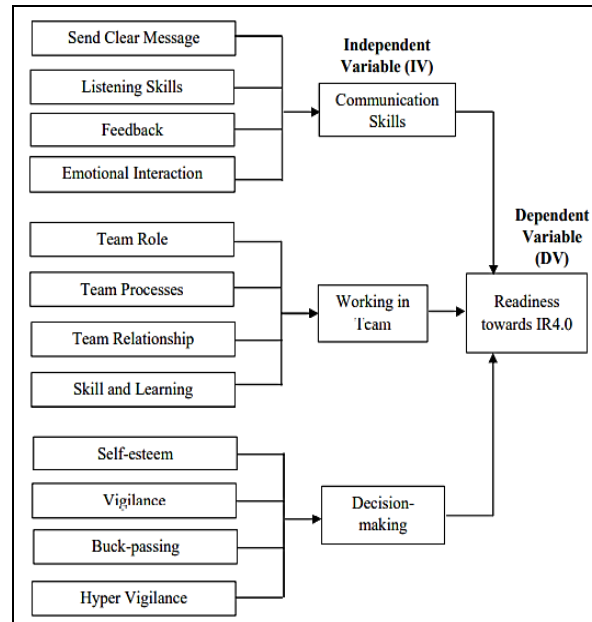
Fig. 1 *Conceptual framework of this study*

Based on figure 1, the conceptual framework reveals the relationship that exists between the independent variables and dependent variables. Communication skills, working in a team and decision-making are so crucial to maintain a high level of employability among the students as these skills that individuals use to interact with, interpret or inform social and physical environments (Torino, 2015). It is a personal style that makes any person unique, despite having the same knowledge and qualifications that include hard skills or technical skills. Such variables were evaluated by asking the students which personal qualities they possessed to thrive in their readiness in a dynamic and ever-challenging working world towards IR4.0.

As for communication skills, this ability to communicate effectively aims to provide convenience in understanding the message conveyed and received as well as, responding well to the information. There are four conceptual convenient clusters of communication skills are intended to find out whether the students can communicate well, including sending clear messages, having listening skills, giving and getting feedback as well as handling emotional interactions (Musid, Affandi, Husain, Kamal, and Abas, 2019; Rodzalan, 2016).

Next, working in a team is to be able to achieve synergism that exists between all team members to create an environment. This means the students are all willing to contribute and engage in cultivating a positive, productive, and effective team environment. Therefore, these students need to build an imperative relationship through collaboration between group mates by getting to know each other's strengths and weaknesses to develop new skills and drive their professional growth. There are four conceptual convenient clusters of working in a team including team roles, team processes, team relationships as well as skills and learning (Roosmalen, 2012).

Lastly, decision-making is used in determining attitudes and actions in various situations and circumstances. In this distinctive era of IR4.0, which is all about emerging technologies and Big Data, students must make efficient decisions to boost productivity and performance as well as increase profitability. There are four conceptual convenient clusters of decision-making consisting of self-esteem, vigilance, buck-passing, and hypervigilance (Oeser, 2016).

Typically, the term "student readiness" is characterized as students who are deemed to be prepared with the knowledge, skills, and affective factors considered to be necessary for success in the future work environment, or the types of educational programs and learning opportunities that contribute to improved labor readiness (Rahmat et al., 2019). Readiness to thrive in the industrial revolution is pivotal for students, as it enables students to take a career pathway with potential future advancement, despite being able to adapt and integrate well into a future society.

1.1 Students' Soft Skills

Soft skill is a part of personal skills, alongside hard skills. Soft skills are described in scholarly literature are nontechnical skills, abilities, and traits needed to function in a particular employment environment (Fadel et al., 2022). However, soft skills are more than simply individual traits and dispositions. According to the European Centre for Development of Vocational Training (2008), soft skills are individual skills that relevant to the

execution of tasks, jobs, or occupations other than those currently or recently had. Soft skills are a unique selling point of human beings that offer a competitive advantage and edge over others at work and in life. This means soft skills are personal qualities that encourage situational awareness and enhance the individual's ability to get a job. This statement is parallel with Dogara et al., (2020) states that soft skills are the qualities essential and needed by students other than academic education, to make them visionary and competitive enough to equip themselves in the job market. In other words, soft skills help train students to enter and reach the profound working world.

Undeniably, individuals with a solid command of soft skills can think on their own feet, solve problems, lead a group through teamwork drills, provide constructive and critical feedback, motivate and inspire fellow employees and set a precedent for the rest of the workplace (Musa and Soo, 2016; Abdullah-Al-Mamun, 2012). Soft skills are also the key capabilities that help to boost competitiveness and productivity at the individual, social and national levels (Musa and Soo, 2016). Soft skills are pivotal to a worker's ability to work smarter, not harder (Hassan, 2022). Notwithstanding, soft skills do not replace the specific skills discipline, but rather add to technical skills and professional knowledge which are very crucial to assess the academic qualifications of TVET graduates to allow them to cope with rapid changes in the industry (Wan Ismail and N. Hamzah, 2018; Esa et al., 2011).

As soft skills are presented, not precisely defined skills, but rather a cluster of personality traits that have a synergistic effect, making a decisive contribution to personal and professional efficacy. Soft skills are also required by employers to recruit graduates of fresh engineering in the era of IR4.0, based on previous research (Azmi et al., 2018). Students today should have soft skills as demanded by employers, especially when facing an increasingly challenging job market. Soft skills indeed have strategic roles to play in assessing someone's job performance (Kenayathulla, 2021). This cluster becomes "fundamental" in choosing human resources from the IR4.0 perspective. Students, therefore, need to possess soft skills to secure and retain their jobs in the future.

1.2 Students' Readiness for Industrial Revolution

Readiness is a status that can be defined as an extension of which people are seen to have the mentalities and characteristics that make them trained or prepared in the workplace to respond to another learning and ability upheaval of IR4.0 (Ahmad et al., 2019). The term "student readiness" is characterized as students who are deemed to be prepared with the knowledge, skills, and affective factors considered to be necessary for success in the future work environment, or the types of educational programs and learning opportunities that contribute to improved labor readiness (Rahmat et al., 2019). Abdullah et al. (2020) explained that students' work readiness requires skills, knowledge, attitudes, and commercial awareness, which allow students to make a meaningful contribution once hired.

Knowledge, skills, and provisions are interdependent and mutually reinforcing, including academic and technical skills and soft skills. Based on these definitions, it can be concluded that the students' work readiness relies on the students' capabilities to comprehend the skills learned in the class. Nonetheless, the readiness of Mechanical Engineering from Malaysian polytechnics, in terms of competency is still at a moderate level based on Adnan, Paimin, and Hasan's (2019) study. This assertion is in line with Jamhari, Razak, Mohamad and Ishar's (2020) study, which claimed that Malaysians, including the students, are still not ready to meet the challenges of IR 4.0. This statement is supported by Ling, Abdul Hamid, and Chuan's (2020) study posits that level of readiness of manufacturers for IR 4.0 individual dimensions and the ability to take the IR4.0 advantages is lower than expected.

There are numerous reasons students are not ready to face the industrial revolution, but the students are usually unaware of the new phenomenon of IR4.0 (Ahmad et al., 2019). Yet, one of the most critical reasons students are lacking readiness towards IR4.0 is that they have poor soft skills (Abdullah et al., 2020; Mohamed and Abidah, 2015; Abdullah-Al-Mamun, 2012; Esa, Md Yunos, and Mohamad Ali, 2011). Soft skills are considered to be an essential element in the working world, particularly with the drastic technological changes of IR4.0. A study conducted by Alias, Hamzah, and Yahya (2013) also reveal that the current employers were not merely concentrating on technical skills and academic knowledge but also the need for soft skills. This could be proven that the students are too focused on getting excellent grades that they are forgetting to have appropriate employability competence, particularly soft skills (Ahmad et al., 2019). Consequently, it could be seen through feedback from the industries points out that employers are skeptical about recruiting graduates because of their lack of soft skills (Mohamed and Abidah, 2015).

Due to the technological advancement of IR4, Zulnaidi and Majid (2020) propose that educational approaches should undergo evolution to be at par with the technology and automation's evolution to ensure that students have the readiness for the industrial revolution. Consequently, the education system should act immediately to keep up with the rapid growth, where the TVET curriculum should be equipped with the latest teaching and learning (TandL) system to meet the current demands of IR4.0. However, Wagiran (2012) points out that there is still a gap in competency between what vocational high schools has given and the real needs of

the industrial sector. This reveals that the current skills needed by the industries are not parallel with the curriculum provided in skills training centers.

To prepare the students to be highly qualified for future employment trends of the industrial revolution, the educational sector, which acts as a provider of skills and knowledge to the workforce should change how students are trained (Abdullah, Humaidi, and Shahrom, 2020). Fundamentally, an integrated and comprehensive curriculum should be reformed to accommodate all the employers' current needs of students, in particular those with both hard skills and soft skills (Ishak and Sukardi, 2019; Ahmad, Segaran, Soon, Sapry, and Omar, 2019). In light of this, the educators from HEIs are not well grasping the concept of IR4.0 that give a negative impact on the student's readiness for the industrial revolution (Kadir and Thangavelu, 2020). They should therefore be ready to face the challenges of incorporating the nuances of educating millennials and the digital generation, with current skills and technology into their TandL methods of IR4.0. This statement is consistent with Junid et al. (2019) study, which shows that there is average readiness among science-stream teachers in Kuantan to deal with the transformation of education in the IR4.0. Hence, this issue needs to be tackled to ensure that the students are well-prepared for IR4.0, as education is undoubtedly the key to producing a well-rounded human resource that can thrive in the worldwide industrial markets.

In conclusion, the preparation to deal with the industrial revolution can be initiated by stressing work readiness among today's students. As the landscape of the IR4.0 work environment tends to be complex, the best strategy is, firstly to shape the students' thinking and secondly to provide a foundation or exposure to the pillar of IR4.0 skillsets to be competent to respond to this transformation, notably soft skills so that they can manage the latest system applications (Adnan et al., 2020). This issue of students' readiness should not be underestimated and should be paid attention to, as it acts as a predictor of students' potential for their future job performance and career sustainability once they reach the workplace (Abdullah et al., 2020).

2. Methodology

According to Sekaran and Bougie (2016), a research design is an action plan for collecting, measuring, and analyzing data based on research questions. In addition, the research design also includes several rational decision choices and should be presented so that it is easy to understand. A study plan implies some decisive structure toward progress that helps bridge research questions and implement or execute research. In achieving the objectives stated, the researcher needs to obtain results and information on the relationship of students' soft skills with their readiness towards an industrial revolution in one of the TVET institutions at Johor.

A quantitative approach was used in this study to obtain conclusive and definitive evidence in statistical analysis (Mohammad and Othman, 2018). This research was carried out using a survey design as an effect of the data collection method to accomplish the study objectives (Sileyew, 2019). In this research, the researcher chose random sampling because this sampling technique uses randomization that allows each individual in the population to have an equal chance to be part of the selected sample (Seikh Salleh, 2013). The number of samples required for a population-based study, this research focuses on 127 students from the General Machinery program in one of the TVET institutions in Johor, namely College A were selected randomly. The questionnaire is the main instrument for data collection in this study because it is the most appropriate tool to answer research questions and meet research objectives, as it is generally easy to oversee in the light of the fact that they are institutionalized (Ahmad et al., 2019) and also can be interpreted by all respondents in the same way (Setibi and Mapfaira, 2014).

2.1 Research Procedure

The first phase involves the initiation of the study with the selection of a topic followed by a problem statement. The problem statement includes identifying the research problem and providing the research objectives and the research questions. Next, a systematic review of the literature conducts to obtain literature sources relevant to the study conducted as reference sources. The second phase involves identifying the problem areas and then preparing and refining the questionnaire queries before conducting the instrument's validity and the pilot study. The instrument's validity requires consideration from three experts in the field of the study before been proceed as a pilot study. A pilot study conducts to determine the reliability and improvement so that it is suitable to carry out the actual study. Finally, the third phase involves the data collection process by applying the prescribed study design. Assessment will be made through graphical representations, tables, and test results to determine whether the hypotheses proposed in the study have been accepted or rejected.

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2.2 Research Instrument

A specifically designed instrument was used in this study, consisting of five parts, namely Part (A), Part (B), and Part (C), with a total of 35 items. Part (A) of this instrument is to assess respondents' demography or personal background, while Part (B) is to assess the students' soft skills. Part (B)(I) is intended to evaluate the level of communication skills among the students, using the instrument from Zainuddin & Selamat (2012) by adapting the Transactional Communication Model. Part (B)(II) is to determine working at the team level among students, using the instrument from Zakaria, Ahmad and Noor (2014) and Team Effectiveness Diagnostic (2005) by following the Interprofessional Teamwork Model. Part (B)(III) is to examine the level of decision-making among the students, using the instrument from Oeser (2016) by utilizing Trevino's Ethical Decision-Making Model. Part (C) is to identify the student's readiness to thrive in the industrial revolution, using the instrument from Ismail, Wan Hassan, Ahmad, and Affan. Harun (2020) and Ahmad et al., (2019).

Table 1 *Contents of the questionnaire instrument*

Section		Item	Number of Items
Part (1)	Soft Skills	(a) Communication Skills	8
		(b) Working in Team	8
		(c) Decision Making	8
Part (2)	Students' Readiness Towards IR		35

Respondents were asked to state their level of agreement on the five-point Likert scale as shown in Table 2. According to Noordin (2016), the Likert scale is used to measure the attitudes, opinions, and perceptions of a person or group about social phenomena. Items were designed after Thurstone's which allows respondents to choose one of the listed options (Amiruddin et al., 2016).

Table 2 *Likert scale agreement*

Score	Indicator
1	Strongly disagree
2	Disagree
3	Slightly agree
4	Agree
5	Strongly agree

Based on Table 2, the respondents will evaluate the statements of each item with a 5-point scale from the lowest point, which strongly disagreed (1), to the highest point, which strongly agreed (5). Descriptive statistics were used to analyze the data collected from Part (1) until Part (2) by finding the mean, standard deviation, frequency, and percentage by forming tables and graphs (Hailu, 2012). The data from both Part (1) and (2) on students' soft skills and readiness towards the industrial revolution among TVET students from a TVET institution were analyzed using frequencies and percentages. The data of the initial five-point Likert scale from both Part (1) and (2) were analyzed to determine whether the students' soft skills and readiness towards the industrial revolution are at low, medium, or high. The mean of the data set was used as it was the most accurate value to represent the data set (Ibrahim et al, 2015). The mean score interpretations as shown in Table 3 (Amiruddin et al., 2016).

Table 3 *Mean score interpretation*

Interpretation Range	Mean Score
Low	1.00-2.33
Moderate	2.34-3.67
High	3.68 -5.00

The inferential statistic is used to study the comparison, relationship, and effect of the variables. The Pearson correlation has been used to evaluate the inferential statistical analysis to address the third research question in determining whether there is any relationship between soft skills within TVET students with their readiness to thrive in the industrial revolution. Pearson correlation is the statistical test used to measure the degree of the relationship between linear-related variables when the data is normally distributed (Shi and Conrad, 2009). First, the skewness and kurtosis analysis test has been used to examine the normality of the data (Zulnaidi and Majid, 2020). According to Counts (2015), the data set is normally distributed when the skewness and kurtosis are between -1.96 and +1.96 or near zero. This means that a perfectly normal distribution would

have zero skewness (Counts, 2015). The data normality can also be determined using histogram graphs. If the graph is bell-curved shapes and distributes the Sig. value (2-tailed) more than 0.05 (p>0.05), and thus it is normal data (Mukhtar and Ali, 2018).

Then, to test the relationship between the variables of the parametric test, the hypothesis was tested for a correlation coefficient value, r that lies between -1 and 1. If the values of r are close to 0, it implies that there is no (linear) correlation or relationship. If the values are near ± 1, it means that the correlation is very strong in which the r ≥ 0.5 is acceptable. Table 4 shows the interpretation of the correlation coefficient value, r:

Table 4 *The interpretation of correlation coefficient value*

Correlation coefficient value, r	Strength of linear relationship
≥ 0.8	Very strong
0.5 < r <0.8	Moderately strong
0.3 < r <0.5	Fair
< 0.3	Poor

3. Results

The researcher has explained and clarified the first research question which is to identify the level of soft skills among TVET students in College A through the results of the descriptive analysis of the study of each element of TVET students' soft skills.

As far communication skills section is concerned, the results of the analysis of the study showed that the element of Send Clear Messages has the highest mean score (M=3.88, SD=.599) compared to other elements of communication skills. This is because this skill can be developed when the students perform or engage in activities such as presentations and open discussion, or the completion of written reports and assignments, as can be corrected by teachers if they make any mistakes or errors. The second highest element of the sequence is the Listening Skills element (M=3.77, SD=.0.763) and followed by the Feedback element (M=3.74, SD=.698). While the element of Emotional Interaction showed the lowest mean score (M=3.70, SD=.652), compared to other elements, but still at high interpretation. The results of the descriptive analysis for the items in the communication skills section will be shown in Table 5.

Table 5 *The descriptive analysis for each item in each element of communication skills*

No.	Elements	Items	Mean	Standard Deviation	Interpretation
1.	Send Clear Message	I have no trouble talking to others.	4.13	.777	High
2.		I can get my point across clearly without hesitation.	3.64	.709	Moderate
Total Average			3.88	.599	High
3.	Listening Skills	I listen to what others have to say without interrupting.	3.80	.839	High
4.		I can stay concentrated on what others are saying for a long period.	3.74	.953	High
Total Average			3.77	.763	High
5.	Feedback	I can accept criticism from other people easily.	3.58	.868	Moderate
6.		I can restrain myself from saying something that could offend others.	3.89	.857	High
Total Average			3.74	.698	High
7.	Emotional Interaction	I remain calm when talking to others even when I feel angry about what they say.	3.69	.821	High
8.		I keep everyone calm when a problem arises in group discussions.	3.70	.738	High
Total Average			3.70	.652	High

This is because the student has built a strong bonding relationship with others. After all, they need to avoid conflict to get help and support easily, especially since their activities are mainly heavy work like running a machine which takes a lot of energy. These results showed that most TVET students in College A have a high level of communication skills with a mean score of (M=3.77, SD=.457). As regards working in the team section, the results of the analysis of the study showed that the element of Team Role has the highest mean score of (M=4.09, SD=.679) compared to other elements of working in a team. This is because whenever the students want to achieve their goal, in particular, to get a good grade, they need to have a clear understanding and appreciation of other team members' roles in carrying out group activities, assignments, and projects (Yusof, 2014).

Then, the second highest element in the sequence is the Team Processes element with a mean score of (M=3.94, SD=.693), while the element of Team Relationship (M=3.92, SD=.706) simultaneously. Lastly, the element of Skills and Learning (M=3.90, SD=.646) has the least mean score but is still at high interpretation. This is because the students tend to share recommendations on social networks with others and to exchange commitments when performing a task while providing feedback, assistance, and tutorials to support each other. These results showed that most TVET students in College A have a high level of working in a team with a mean score of (M=3.96, SD=.556). The results of the descriptive analysis for the items in the Team Processes element will be shown in Table 6.

Table 6 *The descriptive analysis for each item in each element of the team process*

No.	Elements	Items	Mean	Standard Deviation	Interpretation
1.	Team Roles	I value each member's contribution to the team.	4.17	.774	High
2.		I ensure that I'm clear about my duties.	4.01	.751	High
Total Average			4.09	.679	High
3.	Team Processes	I appreciate each member's unique capability.	3.97	.755	High
4.		I work through differences of opinion between the team members without damaging the relationship.	3.91	.868	High
Total Average			3.94	.693	High
5.	Team Relationship	I help to resolve problems together with the team members.	4.04	.912	High
6.		I make effective decisions together with the team members.	3.80	.780	High
Total Average			3.92	.706	High
7.	Skills and Learning	I often ask questions of the team members to embrace continuous improvement.	3.75	.786	High
8.		I collaborate with the team to incorporate the best method.	4.07	.778	High
Total Average			3.91	.647	High

As for the decision-making section, the results of the analysis of the study showed that the element of Vigilance has the highest mean score (M=3.80, SD=.740) compared to other elements of decision-making skills. This is because the students do not want to make a wrong decision that could affect their future by considering the risk and alternatives, as well as having a clear goal (Oeser, 2016). The second highest element of the sequence is the Self-esteem element (M=3.72, SD=.641) and followed by the Hyper Vigilance element (M=3.70, SD=.661). While the element of Buck-passing showed the lowest mean value (M=3.48, SD=.654). This is due to feelings of shame, lack of motivation, limited time and opportunity, and the presence of social pressures that are causing a change of attitude among the students (Wilson et al., 2017). These results showed that most TVET students in College A have a high level of decision-making with a mean score of (M=3.69, SD=.483). The results of the descriptive analysis for the items in the decision-making section will be shown in Table 7.

Table 7 *The descriptive analysis for each item in each element of decision-making*

No.	Elements	Items	Mean	Standard Deviation	Interpretation
1.	Self-esteem	I feel confident about my ability to make decisions.	3.83	.743	High
2.		I successfully carried out the decision I made.	3.61	.736	Moderate
Total Average			3.72	.641	High
3.	Vigilance	I will find out the advantages and disadvantages of all the alternatives.	3.93	.828	High
4.		I am clear about my objectives before choosing.	3.68	.933	High
Total Average			3.80	.740	High
5.	Buck-passing	I take responsibility for the decisions I make.	3.40	.953	Moderate
6.		I decide for myself even though there are better-informed people.	3.55	.721	Moderate
Total Average			3.48	.654	Moderate
7.	Hyper Vigilance	I do feel any pressure when making decisions.	4.00	.787	High
8.		I do change abruptly my preferences when things go wrong.	3.40	.953	Moderate
Total Average			3.70	.661	High

The results of the analysis of the study showed that working in a team has the highest mean value (M=3.96, SD=.556) compared with another element of soft skills. The second highest mean of the sequence in the element of soft skills is communication skills (M=3.77, SD=.458). While decision-making showed the lowest mean value (M=3.69, SD=.483), but still at a high interpretation of mean value. As a result, most TVET students in IKTBNP have good soft skills, with a mean score of (M=3.81, SD=.433) as most of the elements have a quite high mean score, exceeding 3.68. The results of the study findings for the first research objective in this study will be demonstrated in Table 8.

Table 8 *The descriptive analysis of the level of each soft skills elements*

No.	Soft Skills Level	Mean	SD	Interpretation
1.	Communication Skills	3.77	.458	High
2.	Working in Team	3.96	.556	High
3.	Decision-Making	3.69	.483	High
Total Average		3.81	.433	High

Next, the researcher discusses the results of the study analysis for the second research question in this study which is to assess the level of TVET students' readiness towards the industrial revolution through the results of the descriptive analysis of the study. The results for Question 1, "I know about the Industrial Revolution 4.0 (IR4.0)." has the highest mean score of (M=3.11, SD=.870) compared to other items. Next, the results for Question 2, "I am ready to adapt to changes during IR4.0." has a mean score of (M=3.60, SD=.755), followed by Question 3, "I am ready to learn new knowledge provide by the institution regarding IR4.0." has the mean score of (M=3.73, SD=.725). Next, the results for Question 4, "I am ready to do my tasks in an innovative way to face IR4.0." has a mean score of (M=3.70, SD=.689).

Then, the results for Question 5, "I am ready to change my working style for IR4.0." has a mean score of (M=3.63, SD=.771), while Question 6, "I am ready to attend training provided by the institute to thrive in IR4.0." has the mean score of (M=3.65, SD=.689). In the meantime, the results for Question 7, "I am ready to apply technical skills in the tasks required for IR4.0." has a mean score of (M=3.63, SD=.760). Last, Question 8, "I am ready to apply soft skills in the tasks required for IR4.0." has a mean score of (M=3.60, SD=.733).

Based on the results of the analysis of the study, indicated that Question 3 has the highest mean score compared to other items. This is because individuals who are so-called students or still learning in class have a high level of enthusiasm, attitude, and willingness to learn new things. While Question 1 has the lowest mean

score. This is because the students are not yet familiar with IR4.0 as the use of IR4.0 elements and IR4.0 technologies are not being incorporated into the students during the teaching and learning sessions (TandL) (Ismail et. al, 2020). The results indicated that most TVET students in College A have a moderate level of readiness, with a mean score of (M=3.58, SD=.397). The results of the study findings for the second research objective in this study will be demonstrated in Table 9.

Table 9 *The descriptive analysis for each item of readiness to thrive in the industrial revolution*

No.	Items	M	SD	Interpretation
1.	I know about the Industrial Revolution 4.0 (IR4.0).	3.11	.870	Moderate
2.	I am ready to adapt to changes during IR4.0.	3.60	.755	Moderate
3.	I am ready to learn new knowledge provide by the institution regarding IR4.0.	3.73	.725	High
4.	I am ready to do my tasks in an innovative way to face IR4.0.	3.70	.689	High
5.	I am ready to change my working style for IR4.0.	3.63	.771	Moderate
6.	I am ready to attend training provided by the institute to thrive in IR4.0.	3.65	.689	Moderate
7.	I am ready to apply technical skills to the tasks required for IR4.0.	3.63	.760	Moderate
8.	I am ready to apply soft skills in the tasks required for IR4.0.	3.60	.733	Moderate
	Total Average	3.58	.397	Moderate

Lastly, the researcher explained the results of the study analysis for the third research question in this study which is to identify the relationship strength between the soft skills among TVET students in College A with their readiness to thrive in the industrial revolution through the results of the inferential analysis. It showed that there was a moderately strong strength of the linear relationship between soft skills among TVET students in College A with their readiness to thrive in the industrial revolution as the correlation coefficient value, r is (r=.561, sig=.000), as the correlation coefficient value, r is between 0.6 and 0.8 (0.6 < r <0.8). The soft skills with the readiness to thrive in the industrial revolution have also a statistically significant linear relationship as satisfied the assumption of ($p<0.05$). It is, therefore, there is a statistically significant relationship between soft skills with the readiness to thrive in the industrial revolution among the TVET students in College A. The results of the study findings for the third research objective in this study will be demonstrated in Table 10.

Table 10 *The inferential analysis for the relationship of the soft skills among TVET students with their readiness to thrive in the industrial revolution*

	Readiness to Thrive in Industrial Revolution			Interpretation
	N	r	Sig. (2-tailed)	
Communication Skills	127	.479**	.000	Fair
Working in Team	127	.598**	.000	Moderately Strong
Decision-Making	127	.481**	.000	Fair
Soft Skills	127	.561**	.000	Moderately Strong

4. Discussion

The first research objective is to identify the perceived level of soft skills, consisting of communication skills, working in a team, and decision-making among TVET students from the General Machinery program in College A. There are three (3) elements of soft skills that have been measured to assess the level of soft skills among TVET students, which communication skills, working in a team, and decision-making. Overall, most College A students have good soft skills, with a mean score of 3.80. Supposedly, the soft skills possessed by the TVET students in College A do not have a detrimental impact on their readiness to thrive in the industrial

revolution. The result of this study by Amiruddin, Ngadiran, Zainudin, and Ngadiman (2017) study which states that TVET students at the MARA Skill Institute (IKM) students in Johor have a high tendency in soft skills. Simultaneously, this statement is in line with Murgor's (2017) study, which notes that the soft skills measured within the students at TVET institutions in Uasin Gishu, Kenya, are perceived as good. This shows that soft skills have been incorporated into the curricula of TVET institutions either through extra curriculum programs that are predominantly voluntary or through interaction in-class activities where there is a deadline to catch up where one will unconsciously learn. how to communicate, work in a team and make decisions.

Based on the results of the analysis of the study for each soft skills element, it showed that the element of working in a team has the highest mean value compared with others. These results indicate that most TVET students in College A have a high level of working in a team with a mean score of 3.95. This finding is in line with that of Amiruddin et. al (2016) study which states that working in a team is the highest among the soft skills elements among TVET students at the Advanced Technology Training Centre (ADTEC) in Batu Pahat, Johor. This shows that the students can collaborate with group members in sharing ideas, information, and improvement. This skill may be acquired and promoted as the students carry out workshop projects and tasks, where the process is often technical and procedural that requires them to work in a group. Moreover, a learning-based approach may be used, where not only conventional methods are implemented in the teaching and learning (TandL) process, to integrate working in teams between TVET students (Murgor, 2017).

Next, communication skills are the second highest mean of the sequence in the element of soft skills. This indicates that most TVET students in College A have a high level of communication skills with a mean score of 3.76. This result is from a study carried out by Zakaria, Ma'arof, and Ibrahim, (2017), which states that communication skills are adequately imparted to TVET students in Vocational college, Kluang, Johor. This implies that this skill is strongly developed in TVET institutions, even seemed put emphasis on technical skills that may fade their ability to communicate with people, to pass the examinations. This can be seen by performing activities like presentations and open discussions in a class or group could nurture verbal communication skills while written communication skills can be built by the completion of written reports and assignments. While decision-making showed the lowest mean, but still a high interpretation of mean value. This indicates that most TVET students in College A have a high level of decision-making with a mean score of 3.68. This result is coincided with Astuti et. al. (2019) study notes that the decision-making of its sample is well perceived. The reason is that the students are not just learning by demonstration, which means that they have the chance to make their own decision to venturing the unknown and risks. This shows that the students' good decision-making will allow provision for students to face the disruptive era.

The second research objective is to examine the perceived level of readiness to thrive in the industrial revolution among TVET students from the General Machinery program in College A. Based on the results of the analysis of the study, it has been shown that most TVET students in College A are moderately ready to thrive in the industrial revolution with a mean score of 3.58, which need a lot of improvement and change. This finding is by Ismail and Hassan's (2019) study which states that the Malaysian Premier Polytechnic students' readiness to face IR4.0 is still on average. Nonetheless, this result contradicts a study conducted by Ismail, Wan Hassan, Ahmad, Affan, and Harun (2020) which notes that the level of readiness, especially in terms of IR4.0 knowledge of students at one Malaysian Technical University, is poor. This indicates that the students are not yet familiar with IR4.0T as the use of IR4.0 elements, in particular IR4.0 skills including soft skills, and IR4.0 technologies such as Internet of Things (IoT), big data analysis, and cloud technology are not being incorporated in the students during the teaching and learning sessions (TandL) neither in class nor in daily life (Ismail et. al, 2020). However, the students still display a high level of enthusiasm, attitude, and willingness to take up the IR4.0 challenges based on the findings. This suggests that the IR4.0 technology should be extended in the learning and TVET curricula, as it will be easier to nurture the students who have a deep interest, ready to learn and use the IR4.0 technology compared to those who are not interested.

The third research objective is to determine the relationship between soft skills, consisting of communication skills, working in a team, and decision-making among TVET students with their readiness to thrive in the industrial revolution. Based on the results, the TVET students of the General Machinery program at College A are approaching the readiness in each element of the soft skills such as communication skills, working in a team, and decision-making towards the industrial revolution. This means that soft skills influence or affect the readiness to thrive in the industrial revolution. This result is consistent with a study carried out by Ahmad, Segaran, Soon, Sapry, and Omar (2019) which states that there is a relationship between non-technical skills or commonly known as soft skills with the readiness of the 200 Technology Management and Business students in Faculty of Technology Management and Business at UTHM towards industrial revolution as the soft skills affect the student's readiness to thrive in the industrial revolution.

Also, a study conducted by Teng, Ma, Pahlevansharif, and Turner, (2019), also found that there is a relationship between soft skills and student readiness for future IR4.0 employment among 361 undergraduate business students. This assertion is reinforced by the Pramudia, Ardiwinata, Sudiapermana, and Hilmi, (2019) study, which states that there 89 is a relationship between soft skills and the readiness to enter the working

world of industrial revolution among the 916 alumni of the Indonesian Education University. This indicates that the student's level of readiness to face IR4.0 are influenced by the acquisition of soft skills, as having soft skills would affect the students' enthusiasm to be ready for IR4.0 adoption (Ling et al., 2020). This is because students can be aware and prepared to face IR4.0 with a thorough understanding and familiarity with the IR4.0 concept by adapting to working conditions and versatility (multi-skilled) in line with the existing labor market requirements through the acquisition of soft skills, according to Adnan et al., (2020) and Mokhtar and Noordin (2019).

5. Conclusion

This study is carried out to identify the level of soft skills, which are communication skills, working in a team, and decision-making among TVET students from the General Machinery program in College A, and their level of readiness to thrive in the industrial revolution. As a result, most College A students have strong soft skills in communication skills, working teams, and decision-making based on the results of this study. Yet, they are moderately ready to thrive in the industrial revolution based on the result of the study. Despite that, this study is performed to determine the relationship strength between the soft skills among TVET students in College A with their readiness to thrive in the industrial revolution as well. Consequently, there is a moderately strong strength of the linear relationship between the soft skills elements of communication skills, working in a team, and decision-making within the TVET students in College A with their readiness to thrive in the industrial revolution. This indicates that soft skills influence or affect the readiness to thrive in the industrial revolution as the TVET students of the General Machinery program at College A are approaching the readiness in each element of the soft skills, which are communication skills, working in a team, and decision-making towards industrial revolution. Subsequently, the results of the study are performed have addressed all the research questions identified by the researcher.

Accordingly, competent, knowledgeable, and skilled students are the main agenda of the national education system to contribute to a skilled workforce. The current challenge is to ensure that new employees in the era of IR 4.0 need to have skills in automation, digital and information technology without forgetting soft skills to be able to manage and leverage the needs of smart systems. The development as well as widespread access to the internet and multimedia can help students to be better prepared for the wave in which this revolution marks the emergence of cyber-physical systems involving entirely new capabilities for humans, machines, and new methods of technology, especially in TVET institutions.

Henceforth, the researcher hopes that this study that has been carried out will contribute to the stakeholders or parties involved, despite helping TVET students to be ready in terms of soft skills to thrive in the industrial revolution. Whether we realize it or not, and regardless of what we think about the topic, great changes are taking place due to IR4.0, seemingly in a blink of an eye. The solution is to be prepared to face the IR 4.0 challenges as the journey will not be easy. Technical skills alone handicap students. It must be done by acquiring soft skills as well to remain relevant and to be able to act creatively in the dynamic labour market.

Acknowledgement

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