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Industrial Revolution 4.0 Career Agility and Competencies Among Secondary School Counsellors in Preparing Students Future Skills in Malaysia

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Abstract

Intro Industry 4.0 is transforming how businesses operate by integrating enabling technologies, such as the internet of things (IoT), artificial intelligent (AI), cloud computing, autonomous robots, simulation, analytics, additive manufacturing and machine learning, into their manufacturing facilities, overall operations, or on how they provide their services. Smart factories combine cutting-edge sensors, embedded software, and robots to gather and analyse

data, enabling improved decision-making via more predictive analyses. This current technological transformation of industrial revolution 4.0 changes our education system in an indirect way to meet industrial needs. Future careers are changing accordingly. Counselors in schools play an important part in ensuring that students are adequately prepared to adapt to changing work environments and maintain their relevance in the labour market. It is very likely that guidance counsellors in schools are not prepared for or aware of the future careers that will be available in the job market as a result of Industrial Revolution 4.0. **Objective** This study is to measure the level of the school counselor's competencies and career agility in preparing secondary school students for IR4.0 future skills. **Method** An online survey questionnaire with 44 items was used to collect data. 80 secondary school counsellors completed the online survey. **Finding** show that the counsellor's competencies and career agility of counselors in the aspect of preparing secondary school students towards future skills is at a moderate level. Conclusion, the accountable party needs to do what needs to be done to raise school counsellors' familiarity with IR4.0. As a result, school counsellors will be better able to incorporate IR4.0 principles into their guidance and counselling as well as their coaching practises, resulting in graduates who are well-equipped to meet the needs of the industries of the future.

Keywords: future skills, labour market, labour market, counselor, career awareness

1. Introduction

1.1 Introduce the Problem

The Fourth Industrial Revolution's progress has had a profound effect on a number of fields, including education, which is essential for the workforce and this will continue evolve as human understanding of future economic implication (Bughin et al., 2017). According to the McKinsey Global Institute (2017), there could be a demand for millions of jobs by 2030 as a result of a number of factors that could act as drivers of the future labour market. The reason for this is that the Industrial Revolution 4.0 (IR 4.0) necessitates the development of new talents. As a result, as we supply companies with qualified personnel who can support the growth of today's sector, the training and education system will expand. The Malaysian education system, according to Datuk Seri Idris Jusoh, former minister of higher education, requires significant changes. In particular, higher education institutions must significantly alter their teaching and learning (T&L) methods to meet the demands of the IR 4.0 (Junid et al., 2019).

Due to the changes brought on by the IR 4.0 phenomena, there is now a much greater need for human resources with high levels of expertise (Ismail et al., 2020). The current human resources are the ones who will lead the nation in the future. Thus, the development of human resources has become crucial in reducing the effects of environmental changes. This idea will be more suited to the needs of IR 4.0 with increased automation and computer technology use. Strong educational and human resource development are necessary for a country to increase its level of national competitiveness, according to (Julaihi & Hamdan, 2020).

1.2 Explore Importance of the Problem

The development of human resource policy, particularly those in the education and training sectors, is increasingly important as Malaysia's economy steadily transitions from one that is labor-intensive to one that is capital- and technology-intensive. The introduction of creative and encouraging counsellors who assist students in learning new information and motivate them to accept change is linked to the achievement of these goals (Johnson, 2017). In order to convert their students in accordance with the demands of the Fourth Industrial Revolution

and create a workforce that capable of employability skills meeting the difficulties of Industrial Revolution 4.0, counsellors' competencies, knowledge awareness and career agility must be assessed (Adnan et al., 2020).

The changes brought about by the Industrial Revolution 4.0 phenomenon have significantly raised the high demand for highly skilled and knowledgeable human resources (Yang & Gu, 2021). According to Lasi, we have reached a point where there are clear industrial demands and technological pushes acting as a driving force for this new revolution. On the one hand, there is a significant need for change in general social, education, economic, and political fields (Lasi et al., 2014).

As a result, students must be exposed to IR 4.0 from the beginning to overcome these difficulties. Secondary school counsellors require appropriate and relevant training to ensure that the students they serve receive excellent academic paths that will impact their quality of life long after they leave the school (Paolini, 2019). Professional school counsellors play a critical role in helping students build future abilities, as well as preparing them for career requirements (Ku Johari & Amat, 2019).

The self-efficacy and readiness of secondary school counsellors in the IR 4.0, as well as their capacity to tackle the problems of the IR 4.0, is alarmingly low. Counsellors are required to improve their competencies and career agility adapt to the changeover the time and exposure to future skills to support students in relation to future career knowledge (Taher, 2021). Counsellors must follow the updated spirit following the new era of IR4.0. Hence, this research is critical for Malaysia's Ministry of Education to consider future skills counselling for IR 4.0. Counsellors should promote students' future skills interests in academic objectivity growth, according to IR4.0 (Balan et al., 2021).

2. Literature Review

2.1 Describe Relevant Scholarship

The introduction section has highlighted the key constructs addressed in this empirical research paper. This current section will define and review those constructs to further elucidate the links between critical Industry 4.0 skillsets and the very significant of competencies and career agility.

2.2 Competencies of School Counselor Towards IR4.0

Competencies are defined as "any individual characteristic that can be measured or counted reliably and that can be shown to significantly differentiate between superior and average performers, or the ability to do something successfully or efficiently." Competence encompasses knowledge, skills, attitudes, and experiences. It is the focus of a person's job and their ability to perform tasks at a high level of excellence in a specific situation (Wong, 2020).

According to the literature, the 4th industrial revolution will most affect the future labour market. Internet of things, cyber-security, AI, robots, VR, cloud manufacturing, big data science are transforming this area (Siderska, 2020). According to Piaget (1970), competencies is a belief that one has the capabilities to execute the course of actions required to manage forthcoming situations. Competencies are beliefs about one's ability to development and carry out the steps necessary to achieve a set of objectives as technological advancement and a growing process for professional accountability. Piaget (1970) discovered that those who had higher levels of competencies beliefs established loftier objectives for themselves and exhibited greater levels of commitment, drive, tenacity, and resiliency in their pursuit of those loftier goals. Becaus the counselor's role is so significant and might have a

bearing on the students' lives in the future, Piaget cites a number of skills that should be possessed by the profession. For instance, research has revealed a constant association between academic accomplishment and school counselling programme efforts (Yusof, 2018; Olsen et al., 2016).

Professional counseling is beneficial to students in K–12 schools to improve their academic and career in American Schools. Using the career counseling competencies and self-efficacy a subscale of the Career Counsellor Self Efficacy Scale, this quantitative study investigated the career counseling self- efficacy and competencies of 143 practicing school counsellors. (Sanders et al., 2017) speculate that school counsellors with high levels of self- efficacy and competencies may have a more significant impact on their students than those with lower levels of competencies. Counsellors with stronger CSE beliefs (and at least adequate levels of counselling ability) are more likely to develop more useful counselling responses, persist longer and exert more effort when faced with clinical impasses, and appear more poised during sessions.

A study was to assess the critical thinking skills of Guidance and Counseling students at a public university in Bandung, Indonesia, as future 4.0 generation counsellors. The outcomes of this study, which were empirically verified and evaluated using the RASCH Model, revealed that the critical thinking skills of Guidance and Counseling counsellor students were in a low category, with a low score. The findings revealed that, with a percentage of 44%, the pupils' critical thinking abilities fell into the low category. The scalogram image demonstrated that three students provided conflicting patterns for a number of questions, demonstrating that the outcome was still reliable. The findings of this study might serve as a guide for providing group counselling to some students who displayed variable reaction patterns (Marfu'i, 2019).

Ooi et al., (2021) conducted research to study the function that school counsellors play in the process of creating and altering Malaysia's educational system. The Social Cognitive Theory is utilised in this study to investigate the connection that can be drawn between the sources of counselling competencies and the counselling self-efficacy of Malaysian school counsellors. The questionnaire Sources of Counseling Self-efficacy and the Counseling Self-Estimate Inventory were administered to 541 school counsellors nationally. According to the data, the factor that has the strongest connection to one's own sense of competencies in career advising is mastery experience.

Graduate training programme curricula, participation in an in-service or workshop, counselling experience with specific issues, and years of experience can all have an impact on a counselor's sense of competencies (Larson, 1998; Lent et al., 2003; Melchert et al., 1996). According to research done by Melchert, Hays, Wilijnen, and Kolocek (1996), it was discovered that experience plays a role in one's level of competencies. There appears to be a correlation between the breadth and depth of counselling experience, as well as the level of counselling competencies and self-efficacy. For instance, counselling professionals with a master's degree or higher and counselling psychologists reported having a higher level of counselling competencies compared to counsellor trainees with a bachelor's degree. In addition, it was discovered that practitioners who had experience in counselling had stronger perceptions of the effectiveness of counselling than those practitioners who had no or very little experience in counselling (Sanders et al., 2017).

2.3 Career Agility of School Counselor Towards IR4.0

Career agility are defined as a personal aspect of the idea of job adaptability that includes individuals' self-evaluations of their capacity to quickly adapt to and proactively respond to

changes that affect their career performance in the digital era employment context (Coetzee et al., 2020). Technology advancements like artificial intelligence (AI), augmented and virtual worlds, big data and analytics, and the Internet of Things are what define the fourth industrial revolution. These technological developments are opening up new work processes and providing organizations and businesses with new opportunity to provide value (Chesbrough, 2010). The Industrial Revolution (IR) 4.0 is now changing the nature of labour and how it is carried out. IR 4.0 career agility means the preparedness for IR4.0 in the education system and development plan, and install basic skills such as time management, personal introduction, attendance and self-upgrading to the new technology (Abdul Rahim et al., 2022). These basic skills are the first step towards career agility (Dries et al., 2012).

Several economic reports (World Economic Forum, McKinsey, 2017) say that the "fourth industrial revolution," which is the combination of advanced digitization and automation of work, will have a huge effect on people's future skills by changing the way work, employment, and business are done. A lot of progress in artificial intelligence is also expected to make one-third of the jobs we have today obsolete by 2025 (Bughin et al., 2017). Because of this, career agility is important when students get help or advice about things like finding a career, making a career change, improving their own careers, and other career-related things (Jackson & Tomlinson, 2020). In this study, students' career choices are based on how well their abilities and goals match up with the subjects they choose. A person's attitude is how they feel about people, things, events, activities, ideas, or just about anything else in their environment. This can be a positive or negative evaluation, a degree of liking or disliking, or both. It can be judged to be anything from very bad to very good (Turner & Lapan, 2013). In this study, the way students feel about future skills is thought to be affected by many different factors (Motyl et al., 2017). Students are studying on their own time and choosing their classes based on what they want to do in the future. They are not being forced or pushed. School life, also called study life, is the time a person spends in school. In this study, "school life" includes everything a student does that has to do with school for gaint knowledge and career guidance by school counsellors (Awinsong et al., 2015).

School counsellors should have the experience and expertise to execute career development plans confidently and competently in a school environment. Even though researchers have investigated school counsellors' readiness of their actual job tasks, further research into their perceptions of the career agility of their academic preparation to conduct work-related practices is needed. Since various studies have consistently identified differences in conducted and prioritized job activities by building level, analyzing school counsellors' perceived planning and practice by creating a level is necessary (Goodman-Scott, 2015).

Novakovic, (2021) examined the school counsellors' perceptions of the importance of career agility in counseling and their readiness to implement various aspects of such counselling with students and families. The results of a survey of school counsellors in a large urban district serving a diverse, low-income student population revealed that, despite believing that each area was important to their work with students and families, school counsellors did not believe they were well prepared to provide many aspects of college and career counselling.

Satria & Mustiningsih (2019) intended to ascertain the role of educational supervision in the Industrial Revolution 4.0 and Society 5.0 eras. The study employed a literature review approach to examine beliefs about teacher professionalism created in response to technology advancements, the role of counsellors in educational institutions, and IT-based counseling program in the Industrial Revolution 4.0 age. The findings indicated that counsellors' roles in supervision program could help reconstruct the professionalism of students' performance developed in response to technological advancements; counseling can help graduates

compete in today's global market.

Mau et al., (2016) compared the existing duties and practices of American high school counsellors to the ASCA National Model. High school counsellors' expectations for student performance were also studied compared to those of teachers and school administrators. The High School Longitudinal Study: 2009–2012 examined a nationally representative sample of 852 lead counsellors from 944 high schools. The data indicated that more than half of lead high school counsellors surveyed in the current national poll prioritize preparing children for postsecondary education, while 40.2 percent prioritize academic accomplishment. The study indicated the growing importance of college and career agility for future skills in which high school counsellors are uniquely positioned to assist students with postsecondary planning during this industrial revolution 4.0.

2.4 Objective of the Study

The study's objectives are:

a) To measure the level of school counsellors' competence in preparing secondary school students for IR 4.0 future skills in Malaysia.

b) To measure the level of school counsellor's career agility in preparing secondary school students for IR 4.0 future skills in Malaysia.

3. Theoretical Framework

3.1 Krumboltz's Learning Theory of Career Counselling (LTCC)

Theories and researchers explain how career counsellors work with significant others to help students choose future careers. Theory of Careers Choice and Counselling (LTCC) is a guide for career counsellors who seek to help people with job-related issues. Krumboltz', (1996) outlined four tendencies that people must consider while making profession choices in modern society. First, people should broaden their skills and interests. Instead of steering clients based on measured interests and restricted past experiences, counsellors should help them explore new activities. Second, prepare for changing work tasks. Learning new skills for the shifting labour market can be difficult for clients, but practical interventions can help. Counsellors assist people cope with stress while learning new skills. Third, empower individuals to act. In other words, advice practise overlooks numerous career-related factors (such as a family's reaction to a job). This could trigger heterophobia (a dread of decision-making) or delay. Counsellors must be prepared to collaborate and provide effective support during exploration. Career counsellors need a larger role. Integrate career and personal counselling. Burnout, career change, peer relationships, obstacles to career development, and the work role and its effect on other life roles are potential problems a careers practitioner should address.

4. Research Methods

4.1 Research Design

The survey was descriptive, which summaries the sample data to provide the mean and standard deviation of each factor. Sarantakos, (1998) says descriptive research can characterize a phenomenon and generalize it to a larger group. Loeb et al., (2017) says precise descriptions of activities, objects, processes, and people are objective in descriptive research. This research design will help researchers identify secondary school counselors' career agility and competencies in preparing students for future skills. Descriptive survey data is commonly used in educational research since it reflects field settings (Firestone, 1987).

4.2 Sampling Procedures

The respondents in this study consisted of 186 secondary school counsellors all over Melaka. This study selected respondents by using random sampling. Instrument were sent to all the counsellors in Melaka and the online survey received 80 secondary school counsellors from public government schools in Melaka.

4.3 Participant

Women made up 52.5 percent of the responses, while men made up the remaining 47.5 percent. The purpose of the survey is to determine the career agility and competencies of secondary school counsellors in assisting students in becoming prepared for the future job market associated with the fourth industrial revolution. This is because the online survey questionnaire was initially intended as a pilot test. The significant results are essential for the counsellors because those who are fully equipped with the most relevant skillsets will be possible to guide students towards future career marked.

4.4 Instrument

The instrument named "International Competencies for Educational and Vocational Guidance Practitioners" as the counsellor's competencies was developed by Repetto, (2008) with 25 items with α=0.91. The instrument for career agility variables was developed by Coetzee et al., (2021) with 19 items with α=91. The five-point scale was used, ranging from (1 Totally Disagree, 2 Disagree, 3 Not Sure, 4 Agree, and 5 Totally Agree). Both items were checked by three experts, and the items were refined according to the experts' comments and suggestions. The pilot test that was carried out provided satisfactory results in terms of reliability Core Competencies α=0.88 and Career Agility α=0.90.

4.5 Data Analysis

In order to determine the level of secondary school counsellors' competencies and career agility attitudes toward the fourth industrial revolution, descriptive statistics (mean) were utilised in the analysis of the data. This was done in order to find out more about industrial revolution 4.0. The level was broken up into three different levels based on the mean score: low, moderate, and high. The explanation of what the mean score means may be found in Table 1.

Table 1. Interpretation of the mean score

Mean score	level
1.00 – 2.39	Low
2.40 – 3.79	Moderate
3.80 – 5.00	High

5. Results

5.1 The Respondents

The following tables provide a summary of all of the characteristics of the responses in connection to the gender of the counsellors, which might be either male or female. In addition, the tables provide a summary of the ages of the respondents who finished the survey, as well as their qualifications and the education of colleges. This study is mostly concerned with government public secondary school counsellors. The study was successful in collecting data from Melaka state. Followed by the counsellors working experience in this

counseling field. The numbers offer a graphical depiction of the demographic features shared by each and every respondent.

Table 2. Demographic classification of respondents (N=80)

Demographic Group	Frequency	Percentage (%)
Gender		
Male	38	47.5
Female	42	52.5
Age		
21 to 30 years old	9	11.3
31 to 40 years old	45	56.3
41 to 50 years old	21	26.3
51 to 60 years old	5	6.3
Experience		
1-5 years	4	5.0
6-10 years	24	30.0
11-15 years	20	25.0
16-20 years	15	18.8
21-25 years	13	16.3
26-30 years	4	5.0
Qualification		
Bachelor	67	83.8
Master	11	13.8
PhD	2	2.5

This study managed to gather 80 responses from secondary school counsellors. The response rate of percent was represented by females at 52.5%, with males accounting for the remaining 47.5%. It is clear from this that there are more females than males in the population. The responses to this survey are primarily coming from females. The majority 56.3% are 31-40 years old secondary school counsellors with 26.3% are 41-50 years old, 11.3% are 21-30 years old and only 6.3% were above 51-60 years old. Counsellors from working experience. Counsellors 6-10years experience are 30% the highest percentage followed by 11-15 years' experience 25%, 16-20 years' experience 18.8%, 21-25 years' experience 16.3%, 1-5 years' experience 5%, 2% of 26-30years and above 30 years are 2%. This working experience is important in competencies-based survey for counsellors to help collect data. The vast majority of the counsellors have at least a bachelor's degree (83.8%), while another 13.8% have master's degrees, and 2.5% have doctoral degrees.

5.2 Level of Counsellors Competencies

In the first stage of the research project, was to determine the level of the school counsellors' competencies in guiding students towards industrial revolution 4.0 already possessed as part of their level of preparedness for the future job market. The mean and its interpretation were presented in Table 3, which detailed the counsellors' overall level of competence and percentage.

Table 3. Summary Level of Interpretation for school counsellors' competencies in preparing secondary school students for future skills based in IR4.0

Level	No. of Item	%
High	12	48%

Moderate	13	52%
Low	0	0

According to the findings that are presented in Table 3, the school counsellors' competencies level in preparing secondary school students is at a moderate level has a highest percentage of 52% (M=3.78, SD=0.72). Following the moderate level, the high level has 12 items scoring a percentage of 48%. 4% different between moderate and high level of the mean score. The findings of the research indicate that the no of 21st item, which measures the school counsellors' understanding of current labour market information related to IR4.0, has the highest mean value (M= 4.03, SD = 0.77). When compared to the other items, this one demonstrates an exceptionally high value for mean interpretation. On the other hand, the item with the lowest mean score was the no13th item, which asked respondents to "integrate research into practise in guidance and counselling" (M=3.42, SD=0.60). The overall mean values of all the items fall somewhere in the range of 3.42 to 4.03.

5.3 Level of Career Agility

Based on the second objective the attitude of career agility was measure to determine counsellor's preparedness in acceptance of the concept of IR4.0 in counselling. The data were analysed using descriptive statistics in order to determine the level of agility that secondary school counsellors have when it comes to directing students toward IR4.0 careers. Table 4 illustrated the mean for the counsellors' career agility level and percentage.

Table 4. Summary Level of Interpretation for school counsellors career agility in preparing secondary school students for future skills based in IR4.0

Level	**No. of Item**	**%**
High	6	32%
Moderate	13	68%
Low	0	0

According to the findings that are presented in Table 4, the level of counsellors' career agility in preparing secondary school students is at a moderate level has a highest percentage 68% (M=3.72, SD=0.71). Following the moderate level, the high level has 6 items scoring a percentage of 32%. The difference, expressed as a percentage, between a moderate level and a high level of the mean score is 36%. The 18th item, which measures the school counsellors' ability to adapt to changes in the Job and Career environment in order to support and guide students towards the industrial revolution 4.0, has the highest mean value (M= 3.97, SD = 0.64). When compared to the other items, this one demonstrates an exceptionally high value for mean interpretation. The item with the lowest mean score was number 13, which stated that counsellors have more energy (M=3.44, SD=0.55). The mean values of the all item are located between 3.44 and 3.97.

6. Discussion

In the era of IR 4.0, counsellors' roles take on greater importance. Counsellors must play a crucial part in achieving the goal of education in alignment with IR 4.0 by showcasing their knowledge and understanding of how to implement aspects of IR 4.0 in their approach to career guiding and school programmers in order to create a labour force that is capable of meeting the needs of the industry.

Overall, the results indicated that secondary school counsellors' career agility and counsellor

competences were at a moderate level, that may be considered satisfactory for training students to apply IR 4.0 aspects in future career planning. However, there is room for improvement. The results demonstrated that career counsellors were not yet fully prepared to integrate IR 4.0 aspects into career counselling and coaching. This result is consistent with our expectations because academicians will take some time to accept new technology innovations and educational concepts due to a lack of knowledge and expertise in the early stages (Ehlers, 2020).

According to the current research, many counsellors are eager to take part in IR 4.0-related seminars, conferences, and conversations. This result demonstrates that the counsellors in question are sufficiently motivated to adopt IR 4.0 in their coaching. Because the industry requires graduates capable of handling 4.0-related technologies, this may help to develop high-quality students, hence improving employability. In order to advance information and skills linked to IR 4.0 as a secondary school counsellor, counselors require exposure through lectures, seminars, workshops, or other events where knowledge is shared. Then, he or she can use such knowledge and skills in the guidance and counselling process. Both the students and the quality of education will gain from this. When an instructor has a positive attitude toward their job, as has been demonstrated by, they can perform their duties in a focused and continuous manner to improve their understanding and skills (Coetzee et al., 2021).

Additionally, integrating technology in the counselling process is less appealing to counsellors. The results indicate that counsellors' interest in using technology for guidance and counselling is still moderate, and that they are not yet prepared to take up IR 4.0 issues in their coaching. This might be as a result of the an inability to agile to new technologies and a lack of available technical support, which makes the counsellors believe that the ir4.0 career knowledge is ineffective by (Balan et al., 2021) and makes them unconfident in the implementation of future career competencies and agility based on the IR 4.0 concept.

7. Conclusion

All of the variables point to the conclusion that the counsellors are aware of the critical need, and they believe that they possess the skills that will be required by future careers to meet the job demands of Industry 4.0. According to the findings of this study, the counsellors have a strong belief that they have high levels of both career agility and competency. Extended research on how the competencies that the counsellors possess will contribute to their career awareness to venture in the job market of the future is required to investigate how the relationship between career awareness and STEM understanding can be investigated using the major skills that the counsellors possess (Zainudin et al., 2019).

Many of the competencies required to provide quality career services, such as good communication skills, strengths and limitations analysis, demonstrating ethical behaviour, and the ability to integrate theory into practise, are likely to be required to provide quality services in other areas that are not necessarily related to career guidance. However, some skills are common among career counsellors. There could be labour market information, knowledge of lifelong career development, or job search strategies (Ali, 2021; Sima et al., 2020).

The findings of this study will eventually lead to an expansion of the study's objectives in profiling the most significant variable that counsellors possess in order to increase the chance of employability for students in future career market. Counsellors must be agile with today’s changes in both social and economic. Furthermore, the phenomenon of qualification mismatch is becoming increasingly common when employees have qualifications that are

significantly greater than or, insufficient for a given job (Magruk & Rollnik-Sadowska, 2021).

Additionally, a more elaborate qualitative analysis will be conducted in order to contextualize the essential skills needed from the employers' perspectives in accordance with industry requirements for students (Haleem & Javaid, 2019). The results of that extensive research effort should provide broader insights and recommendations that can assist stakeholders in the process of developing succession plans for the future job market. Considering the challenges of Industry 4.0, another intriguing idea appears to be the development and flexible consultative eco-system, the primary goal of which should be to identify and promote future career information to students (Motyl et al., 2017). These types of career agility and competencies are critical for secondary school counsellors because the majority of them relate to professions that do not yet exist.

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