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Conceptual Framework of Personal and Environment Orientation on Competencies in the Context of Industrial Revolution 4.0 among B40 Group

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Abstract
Purpose: This paper aims to propose a conceptual framework regarding personal and environment orientation on the competencies in the context of IR 4.0 among B40 group.
Design/methodology/approach: In order to confirm and finalize the framework developed, quantitative method is an appropriate method to be used. In addition, this paper used the concept of personal and environment orientation which is interpreted through RIASEC model as introduced by Holland theory. Meanwhile, three competencies selected are based on the level of consistency listed as a required competencies in IR 4.0.
Findings: A conceptual framework has been formed in relation of personal and environment orientation on the competencies in the context of IR 4.0 among B40 group.
Research limitations/implications: Since this paper only creates as a conceptual paper, there is no findings produced. The finding only obtained through previous studies. Furthermore, the conceptual framework formed also need to be tested. Nonetheless, this paper proposes a framework to future researchers test the conceptual framework in the context of B40 group.
Practical implications: The framework that has been generated also able to be a guidance for future researchers especially those in the fields of vocational behavior, economic, human resource and also human psychology in terms of individual competencies or behaviors.
Originality/value: This paper utilize RIASEC model (the combination of personality interest and work environment) as an antecedents in attempt to look at the required competencies based on the individual perspective.

Keywords: Personal orientation, Environment orientation, Competencies, Industrial Revolution 4.0, Bottom 40 percent.

Introduction

Global youth unemployment is higher than global unemployment where it is around 13.2 percent (%) in 2017 and is estimated to stay around the same level in 2018 (Dass, 2018). Unemployment or jobless is a big problem which effects the economic growth of the country because the impact of unemployment is closely related to poverty (Osman et al., 2015). The issue of poverty is expected to be a challenge to Malaysia in attempt to achieve the objective of the Wawasan Kemakmuran Bersama 2030 (WKB 2030). In Malaysia, the highest rate of unemployment among youth was recorded by the Bottom 40% (B40) group (Kementerian Pendidikan Malaysia (KPM), 2019). This becomes increasingly worrying when country is forced to face with the new industrial revolution that brought extensive changes in the nature of work and competencies namely Industrial Revolution 4.0 (IR4.0). Previously, World Economic Forum, WEF (2016) has listed the competencies that are required by IR 4.0. Unfortunately, industrial revolution will be concentrated among a small elite minority and those who are unable to compete will be left behind (Paim, 2017).

Additionally, based on tracer study report 2019 by KPM, the first degree graduates recorded the highest unemployment rate of any other level (25.3%). Unfortunately, the highest rate of unemployed or working under academic qualifications was recorded by graduates from low-income families or B40 group with 32.2 % (KPM 2019; Ngah et al., 2019). Besides that, the youth unemployment rate is expected to increase after COVID-19 by more than 12% (Rashid, 2020). Furthermore, the problem of unemployment is also related to the disciplinary distance between the fields of study offered which the highest number of non-employed graduates were from Arts and Humanities field (24.6%), followed by Agriculture and Veterinary (23.9%) and Social Science, Business and Law (21.2%) (KPM 2019).

Accordingly, individual preparedness especially graduates from low income family toward workplace environment and ownership of suitable employability skills in IR4.0 should take into consideration. Therefore, this is time to use the concept of personal and environment orientation of Holland theory in attempt to identify the competencies that are considered as important to be acquired by students to fulfill the current demand of employment. The concept of personal and environment orientation of Holland theory represented by six types of personality and environment interest namely Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E) and Conventional (C) or also known as RIASEC model.

Hence, by utilizing the RIASEC model by Holland theory, this paper will propose the framework of personal and environment orientation on competencies in the context of IR 4.0 among B40 students.

Literature Review

Competencies in the context of IR 4.0

Previously, WEF was list out top ten competencies that required in IR 4.0 for year 2015. Based on that, WEF then forecast the competencies that required for the following five years which is in year 2020 (Mohd Kamaruzaman et al., 2019). Next, WEF once again list out the top ten competencies for year 2018, then make an anticipating on the future competencies that required in the labor market for year 2022 (Mohd Kamaruzaman et al., 2019). Among the competencies listed in the four years (2015, 2018, 2020 and 2022), there are three competencies have shown the consistency. This consistency is seen based on its frequency listed as a required competencies in IR 4.0, as interpreted in Table 1.

Table 1: The consistency of competencies required in IR 4.0 in four years

No.	Competencies	2015	2020	2018	2022
1	**Complex Problem Solving**	**x**	**x**	**x**	**x**
2	Coordinating with Others	x	x		
3	People Management	x	x		
4	**Critical Thinking**	**x**	**x**	**x**	**x**
5	Negotiation	x	x		
6	Quality Control	x	x		
7	Service Orientation	x	x		
8	Judgement and Decision Making	x	x		
9	Active Listening	x	x		
10	**Creativity**	**x**	**x**	**x**	**x**
11	Emotional Intelligence		x	x	x
12	Cognitive Flexibility		x		
13	Analytical thinking and innovation			x	x
14	Active learning and learning strategies			x	x
15	Attention to detail, trustworthiness			x	
16	Reasoning, problem solving and ideation			x	x
17	Leadership and social influence			x	x
18	Technology design and programming				x
19	Coordination and time management			x	
20	System analysis and evaluation				x

Based on Table 1, clearly shows that complex problem solving (CPS), critical thinking and creativity was the most consistent competencies compare to others. In addition, these competencies also categorized as the skills that are difficult to be obtained in this age (Jabatan Tenaga Kerja Semenanjung Malaysia, JTKSM, 2018). Therefore, based on this discoveries, CPS critical thinking and creativity considered as relevant competencies that to be focused in this study.

Complex Problem Solving (CPS)

Referring to Fischer et al., (2012), CPS applied based on the constitutive concepts "complexity", "problem", and "problem solving". These concept defined CPS as a problem solving that being structured by the external problem and/or the problem solving process that have to be formalized by a set of many highly interrelated elements, for example, a complex system. Thus, CPS involves several process that begin with identifying complex problems,

followed by reviewing related information to develop, then evaluate options and lastly implement solutions (Schwab, 2018).

Critical Thinking

A comprehensive and concise operating definition of critical thinking is an active process of intellectual discipline and full skills with the concept of analysing, synthesizing, applying and evaluating information gathered from experience, reflection, observation or communication that is used as a guidance for belief and action (Piaw, 2010; Flor et al., 2013). Critical thinking also known as the ability to analyse information in objective way and make a reasoned judgment which involves the evaluation of sources, for instance, facts, data, phenomena, observable as well as research findings (University of Louisville, 2019).

Creativity

In general, creativity is defined as the propensity to generate or produce thoughts, ideas or alternatives that might be helpful in communicating and entertaining others as well as solving a problems (Cropley, 2011). Creativity is not confined to art, literature, performing arts or similar artistic domains, but also occurs in other fields like business, education, technology, manufacturing, medicine, administration or defense (Cropley, 2011). Creativity can be formed in various ways includes personality characteristics, cognitive processes, and environment variables or combination all (Sternberg, 2006; Kaufman et al., 2008; McKay & Kaufman, 2019).

The Concept of Personal and Environment Orientation

Personal and environments orientation are demonstrated through six measurements or scales that using the same RIASEC model namely Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C). This concept is issued through Holland theory which is one of the most prominent theories in vocational psychology that highlights the individual tendency to find and create work environments to show the work characters (Holland, 1997; Nye et al., 2017). This theory has a capability to explore individual creative career (Vuyk & Kerr, 2019), the selection of study program (Schelfhout et al., 2019), assessed people's affective responses (Phan & Rounds, 2018), identify individual job satisfaction, job retention, and job performance (Holland, 1997; Sheldon et al., 2020).

Personal Orientation

Holland (1997) briefly justifies the use of six personality types by represent six common clusters of personality or behavioural repertoires that occur in society which is RIASEC model (Allen, 2005). Table 2 below shows the description of RIASEC personality type of Holland theory.

Table 2: The description of RIASEC personality type of Holland theory

RIASEC personality type	Description
Realistic types, R	Lacking in social skills and have difficulty coping with interpersonally demanding situations, preferring to work with other realistic individuals or all alone (Holland, 1997; Rocconi et al., 2020; Mason et al., 2020).
Investigative types, I	Possessed the abilities of presenting refined mathematical and scientific skills, but usually lacks leadership skills and the appreciation of science and research situations (Holland, 1997; Armstrong & Vogel, 2009).
Artistic types, A	Creative, preferring to express ideas and materials but lacks skills or bureaucratic organization and tends to avoid occupations or conventional situations (Holland, 1997; Allen, 2005; Ferreira et al., 2016).
Social types, S	Demonstrates excellent helping and teaching skills, and tends to be free of mechanical and scientific skills but refuse working with machines (Holland, 1997; Barrick et al., 2003; Ferreira et al., 2016; Rocconi et al., 2020).
Enterprising types, E	Possessed entrepreneurial leadership skills and persuasive capacity, enjoy working with others but lacks a scientific skills (Holland, 1997; Barrick et al., 2003; Ferreira et al., 2016; Rocconi et al., 2020).
Conventional type, C	Prefer activities that entail explicit, ordered, systematic manipulation of data other than comfortable in settings and not subjected to creative or entrepreneurial demands, preferring to address problems in conventional, tried and tested ways (Holland, 1997; Ferreira et al., 2016).

Environment Orientation

Holland (1959, 1997) describes that over time people develop habitual or preferred methods of dealing with environmental tasks (Sheldon et al., 2020). Six different model working environments (RIASEC) have been proposed which correspond to the personality types in that they are situations created by individuals who dominate those environments (Allen, 2005). Holland (1997) summarizes the RIASEC environment interest as follows:

Table 3: The description of RIASEC environment type of Holland theory

RIASEC environment type	Description
Realistic types, R	Typically involved the environment that requires the usage of machines and tools, fosters technical competency, and reinforces traditional values and an appreciation of goods, money, power and possessions. Example for Realistic careers include cook, farmer, fire fighter, aircraft engineer and electrician (Holland, 1997; Sheldon et al., 2020)
Investigative types, I	Work environment that encourage scientific competencies and achievements as well as involve the observation and investigation of physical, biological or cultural phenomena. For examples mathematician, psychiatrist and biomedical engineer (Holland, 1997; Sheldon et al., 2020).
Artistic types, A	Require competency in the creation of art forms, products, designs, patterns and encourage people to view themselves as expressive, original, intuitive, nonconforming and independent. For instance designer, actors, musicians, architects (Holland, 1997; Allen, 2005; Athanasou, 2017).
Social types, S	Encourage and reward social competence and the ability to be understanding, cooperative, flexible and socially responsible. Social careers include nurse, psychologist, dental hygienist, and physical therapist (Holland, 1997; Athanasou, 2017; Rocconi et al., 2020; Sheldon et al., 2020).
Enterprising types, E	Frequently involve starting up and carrying out projects which these occupations can involve leading people and making many decisions but sometimes they require risk taking and often deal with business. The occupations involved such as business executives, managerial positions, industrial relations (Holland, 1997; Athanasou, 2017; Sheldon et al., 2020).
Conventional type, C	Frequently involve a set of procedures and routines that include working with data and details more than with ideas Conventional careers include librarian, statistician, logistics analyst, and accountant (Athanasou, 2017; Sheldon et al., 2020).

Therefore, inspired by RIASEC model by Holland theory, this study has a motivated to fully utilize such theory to determine the individual competencies in the context of IR 4.0. This motivation is driven by shown the effectiveness of this theory in helping individuals choose education field and career (Holland, 1997; Vuyk & Kerr, 2019; Schelfhout et al., 2019). Other than that, its effectiveness in helping individuals achieve high job satisfaction and job performance has also been proven (Phan & Rounds, 2018; Holland, 1997; Sheldon et al., 2020).

Method

The conceptual framework is based on the critical review from previous research. In order to confirm and finalize the conceptual framework, quantitative method is an appropriate method to be used. In addition, this paper used the concept of personal and environment orientation which is interpreted through RIASEC model as introduced by Holland theory. Meanwhile, three competencies selected are based on the level of consistency listed as a required competencies in IR 4.0.

Findings

Derives from the needs to have a look in depth into the issues especially those related to IR 4.0 and B40, this paper proposed the conceptual framework that can be used to look into these matter. Therefore, personal and environment orientation will be tested using the RIASEC model by Holland theory namely Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E) and Conventional (C) as the most appropriate factors to identify the required competencies in the context of IR 4.0. From this comprehensive framework, personal and environment orientation by using RIASEC model is the most important factor that require to be used to provide enlightenment on the gap in the existing literature. Moreover, this concept is one of the most prominent theories in vocational psychology which is centers on the tendency of individuals to seek and create work environments that allow to reveal the work characters. Meanwhile, three competencies (CPS, critical thinking and creativity) that shows a high level of consistency over a four-year period and that are difficult to obtain by individuals are categorized as a critical competencies that require to be study. Thus, Figure 1 below shows the conceptual framework that can be used to test the effects of personal and environment orientation on competencies in the context of IR 4.0 among B40 group.

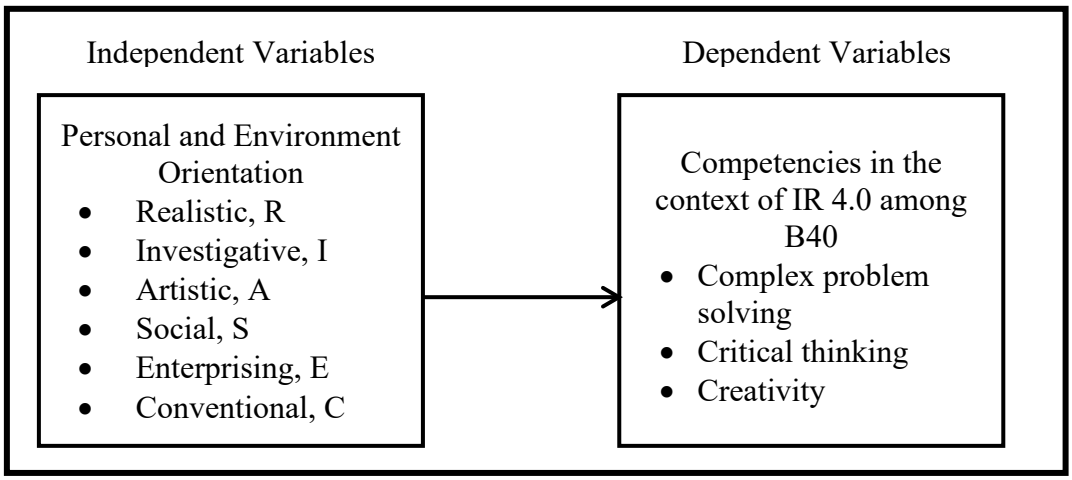

Figure 1: Conceptual Framework

Discussion and Conclusion

As IR 4.0 has been identified as a key growth driver, there is a requirements to ensure sustainable growth that can be enjoyed by all segments of society including B40 group. Thus, it is important to ensure that each person has a job and competencies to earn income. Individuals with proper competence able to be quickly adapted to the new reality and control the technologies under IR 4.0. This can indirectly reduce the risk of unemployment. Reflecting on that, this paper attempt to gives some enlightenment on this issues by proposing a conceptual framework. This conceptual framework is believed to provide a guideline to tackle the existing

issues. Finally, the framework that has been generated also able to be a guidance for future researchers especially those in the fields of vocational behavior, economic, human resource and also human psychology in terms of individual competencies or behaviors.

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