



HUMAN RESOURCE COMPETENCIES 4.0 FOR GENERATION Z

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Abstract:

This study aims to make a new concept of human resource competencies that adapted to changes in the era of industrial revolution 4.0. Human resources competencies 4.0 was a new concept for human resource competencies which was formulated from various literature reviews on competencies and has a several new indicators that were adjusted to the demands of expertise and knowledge in the era of the industrial revolution 4.0. Students at a Public University and Private Major University in Medan City, North Sumatera, Indonesia were surveyed, we distributed the questionnaires containing statements about the competencies that employees must have in the industrial revolution 4.0. The questionnaire were measure student's perceptions of whether they already have the competencies needed to face the the industrial revolution 4.0 era and indicated the items related to the human resource competencies 4.0 indicator that they had that is intercultural and language skills, good communication and cooperation skills and ability to updated their knowledge. This study is useful for generation Z as their guide in entering the work world to complete the competencies needed in the industrial revolution 4.0 era.

Keywords: competencies, human resource competencies, Human Resource Competencies 4.0, Industry 4.0, Generation Z

1. Introduction

Change is an absolute thing, both for individuals, companies and the business environment. For the business environment, the changes that occur are influenced by

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some factors in the development of the industrial revolution. The development of the first industrial revolution began in the 17th century which was marked by the discovery of steam engines to support the efficiency and effectiveness of the production process (Agolla, 2018).

The Industrial Revolution 2.0 took place in the early 20th century, during this period it was seen that development of management science was possible to improve manufacturing efficiency and effectiveness. One of them is the division of labor where each worker does a part of the total work so that it can increase productivity. In addition, mass production of goods using assembly lines also began in that era (Agarwal, 2017).

The third industrial revolution began at the end of the third century which was marked by the emergence of digital technology and the internet which made it easier for humans to carry out their activities which of course also facilitated business practices (Zeng, 2016). The beginning of the 21st century was the beginning of the start of the era of industrial revolution 4.0. Manufacturing technology has entered the trend of automation and data exchange, which includes cyber-physical systems, internet of things (IoT) and robotic technology (Nagy et al., 2018). The industrial revolution 4.0 instills intelligent technology that can connect with various fields of human life.

Today, Japan has formulated a strategy concept of Society 5.0 which is a strategy to realize a new human-centered society and provide solutions in dealing with various social problems that integrate cyber and real world space to produce quality data (Fukuyama, 2018). With the changes and challenges faced by the business world, it requires businesses to adapt both from the use of technology, the formulation of new strategies, and of course the support of human resources that can support the achievement of company goals and face the hypercompetitive business world. Human resources can be a factor of competitive advantage for companies, and human resources play an important role in economic development, industrial changes which are certainly developments in the industrial revolution (Ulrich and Dulebohn, 2015). In facing the development of the industrial revolution, where currently countries in various parts of the world are focused on facing the 4.0 industrial revolution, demanding human resources to be able to adapt to the changes that occur related to the role of human resources in the company or for the business world.

In responding to the industrial revolution 4.0, at least human resources must adapt to improve skills and abilities adapted to technological developments (Anderson, 2018). 50% of employment has the potential to be automated by adapting a new technologies as a result of the industrial revolution 4.0 (Institute, 2017), activities such as collecting and processing data, physical activity and operating machinery have the highest technical potential for automation. In order to avoid automation, important factors that must be possessed by human resources in the face of job automation in the industrial revolution era 4.0 include ability, skill and knowledge summarized in the concept of competency in human resources adapted to the opportunities and challenges of the world of work in the industrial revolution era 4.0. With the competence of human

resources, employees and business people make strategic decisions, carry out coordination activities as well as be creative and innovative (Hecklau et al., 2016).

Today's business world is not only faced with the challenges and opportunities of industrial revolution 4.0. In 2020, the millennial generation or Gen Y born between 1980 and 2000 will dominate any positions within the company (Bharat Chillakuri, 2018). In addition, companies and the business world must also be prepared to accept Gen Z, a generation born after 2000, who is currently pursuing tertiary education which, of course, after completing their education will pound the labor market around the world. Generation Z grew up in the era of the internet, social media, and smartphones, of course their having different characteristics from previous generations, such as being able to be more flexible in collaborating, be more open to cultural differences, and make data-based for decision making. Generation Z as the future generation (Brijesh Sivathanu, 2018) who will face various demands and challenges in the world of work must have competencies relevant to the world of work in the future.

2. Research Question

The industrial revolution with its various challenges must be faced as one of the efforts to achieve success. Competence is an important study for the science of human resource management as a provision for human resources in carrying out the demands of work and position. With changes brought about both in terms of technology and innovation, the industrial revolution also influences aspects of human resource management. The development of the industrial revolution will certainly be felt by future generations which in this case is generation Z, so that generation z must be able to adjust the competencies they have with the competencies needed for the world of work in the era of industrial revolution 4.0.

The following research questions will be answered including:

- What are the common challenges that companies will face in facing Industry 4.0?;
- Has the Generation Z had 4.0 human resource competencies to work in the present or in the future?

3. Literature Review

3.1 The Human Resource Competencies Concept

There is still very little literature and concepts that discuss the competence of human resources. Though competency is an important factor in achieving individual work results in supporting the achievement of company performance and goals. Competence is an attribute within employees which is the capital for these employees to obtain maximum performance (Kock, 2008). The increasing importance of human resource competencies is felt as a result of hypercompetition in the world of business, so companies must be able to adapt to the challenges and opportunities that arise from the development of today's business world. Professional competencies are knowledge,

skills and abilities developed during one's education life to solve problems in a profession or position (García, 2015). Many researchers identify four main categories for classifying competencies (Hecklau et al., 2016). The first category is technical competence, which relates work with knowledge and expertise, the second category is methodological competency which includes all skills and abilities for general problem solving and decision-making skills. Furthermore, the third competency category is social competence; social competence is the skill and ability to behave cooperatively in work and good communication skills that are applied in the world of work. The fourth category of competence is personal competence. Personal competence consists of the ability of individuals to socialize, positive motivation possessed and good behavior that is inverted in the world of work (Becker et al., Solga et al., Grabman et al.). Other research states that self-concept can be measured using the concept of competence consisting of Scholastic Competence, Social Acceptance, Athletic Competence, Physical Appearance, and Job Competence (Hughes et al., 2011). The concept of competency is the knowledge, expertise and professional ability to do one's work (Alamsyah Lotunani, 2014). Competence is a combination of characteristics of experts who have contributed to improving performance in achieving predetermined organizational goals (Yamali, 2017).

3.2 Human Resource Competencies for Industrial Revolution 4.0

The trend of industrial revolution 4.0 is the internet of things, machine to machine, man to machine, the concept of smart factory, smart robot, big data and digitalization in various fields (Yigit Kazancoglu, 2018). With the development of technology, the internet of things and digitalization resulted in a decrease in demand and utilization of human labor, because a portion of human work can be done by machines. The development of the industrial revolution will affect the need for a set of skills needed for work, redefine how and where people will work so that it requires new management understanding and new management regulations, besides Industry 4.0 will change people's lifestyles and change business processes. Human resources must be prepared to face changes from all aspects of life (Ataç, 2018). If seen as an opportunity, technological development can improve the quality of work of employees as a whole can improve organizational performance (Maksumic, 2017). The industrial revolution 4.0 will create challenges in terms of the economy, demographic changes from the social side, challenges in terms of technological development, in terms of the environment, industrial revolution 4.0 also has an effect that is from the existence of climate change, due to the use of technology that sometimes does not pay attention to nature and the environment, finally the challenges in the political and legal fields are motivated by the government's obligation to concern in funding research programs, and with the development of technology, the government must also tighten legislation related to the utilization of big data and data protection which of course must be more tightened.

Furthermore, based on the challenges faced by the 4.0 industrial revolution, the competencies needed by human resources are formulated in the face of the 4.0

industrial revolution which is an aggregation of the competency concepts proposed by Hecklau (2016) and the competency framework proposed by UNESCO (2015) which became the beginning of the presence of the term Human Resource Competencies 4.0. Table 1 describes the competencies needed in the face of the industrial revolution 4.0:

Table 1: Aggregation of the Concept of Human Resource Competencies 4.0
Put forward by Hecklau (2016) and Unesco (2015)

Category	Competencies Needed	Context
Core Competencies	1. Communication and cooperation skills	The ability to build positive communication to be able to work together and achieve goals
	3. Result Orientation	Work productively and focus on achieving results at work
	4. Able to share knowledge and make continuous improvements	The ability to share knowledge and be able to improve work outcomes on an ongoing basis
	5. Digital and network mastery	Having knowledge and expertise related to the use of digital media, information technology, coding and information systems
	6. Update Knowledge	Ability and willingness to increase knowledge along with developments and changes in the world related to the field of work involved
	Managerial Competencies	1. Complex problem solving skills
2. Quality decision making		Related to the increasing task and responsibility requires quality and useful decision-making abilities
3. Intercultural and language skills		Able to understand cultural and language differences in the world of work
4. Able to manage change		Flexible and adaptative to change
5. Leadership skill		With a more flat structure, every employee must have the expertise and ability to become a leader
Core Value Competencies	1. Professionalism	Associated with the expertise and behavior of a professional employee
	2. Creative and innovative	With developments and changes that occur requires the creativity of employees to produce innovation in work
	3. Sustainable Mindset	Confidence in attitudes and expectations for making standard actions in the workplace that use resources carefully, attentively and with regard to social justice.

3.3 Overview of Generation Z

Most of the composition of employees both from the lower, middle and top level manager level is occupied by human resources from generation Y (millennial generation) (Lubis, 2019). Generation Z is a generation of modern workers who will enter the workforce. The company is ready or not ready to accept the generation z as a workforce with personal characteristics and traits that will certainly be very different from previous generations. Generation Z develops in the environment infused by

technology, communication and information and can be defined as a hyper-connected generation. Generation Z grows in a world surrounded by technology and the internet, with smartphones, games and social media (Haddouche and Salomone, 2018). Five things that companies need to know about facing the Z generation include Generation Z, the first generation that is truly a genuine digital generation; Diversity is common for generation Z; Generation Z is more pragmatic; Generation Z is more entrepreneurial and still hopes for harmonious interpersonal relationships among coworkers (Lanier, 2017). Whereas according to (Bharat Chillakuri, 2018) the characteristics of the z generation are among those who are active in using social media, very ambitious to achieve their goals, have an entrepreneurial spirit naturally, multitasking, flexible and able to work with colleagues from various countries and culture, and greatly take advantage of technological developments.

4. Methodology

4.1 Sampling Frame and Context

As many as 350 active students of economics faculty undergraduate programs who are studying at state and private universities in Medan are the samples of this study. The researcher distributed questionnaires to students at 2 state universities and 3 private universities in Medan City by asking the permission from the dean of the economic faculty at each university. The purpose of the study was explained to the respondents. Respondents were asked to fill out a questionnaire and there was no name asking for the name in the questionnaire question instrument to maintain confidentiality.

4.2 Survey Design and Survey Instrument

Based on a comprehensive literature review, the questionnaire was designed and developed based on several previous studies on human resource competencies by (Hecklau et al., 2016), (Agolla, 2018), (Ulrich and Dulebohn, 2015) and competency frameworks proposed by Unesco. In this study, one of the constructs known in the literature as human resource competencies that was synthesized as "Human Resource Competencies 4.0".

The questionnaire consists of two parts. The first part of the questionnaire consisted of 13 questions that asked the opinions of students related to indicators of human resource competencies 4.0. All statements, in this section are measured on a five-point Likert scale (1 = very insignificant, 2 = not important, 3 = neutral, 4 = important, and 5 = very important) to assess the importance of having indicators of human resource competencies 4.0.

The last part of the questionnaire contains demographic questions, such as gender, age, study period, work experience. Before the questionnaire was distributed to research samples, a trial was conducted to perfect the research instrument with a group of students outside the study respondents.

5. Research Results

5.1 The Respondent Characteristic

There were 350 total questionnaire responses. Demographic characteristics of respondents are presented as follows. The distribution of respondents based on gender is 210 women (60%) compared to 140 men (40%). For the academic level, 40 respondents (6%) were new students and 80 (17%) second year students. and third year students as many as 230 respondents (33%). Next to the grade point average (GPA), a high percentage of respondents (51%) have a GPA between 3.0 and 3.5. The second largest number is the group of respondents with GPA above 3.5 (34%). Fifteen percent are between 2.5 and 3.0 GPAs. Regarding respondents who have work experience, the largest percentage (48%) say that they have no work experience and 39% say that they have had one work experience. And as many as 13% of respondents have had two work experiences.

5.2 Student Perception of Ownership Indicator of Human Resource Competencies 4.0 in Students

Questions to measure students' perceptions of Ownership of indicators of human resource competencies 4.0 in themselves are presented in Table 1. Students are asked to answer 15 statements that measure which they feel are indicators of human resource competencies 4.0 within themselves. All items were assessed using a five-point Likert Scale (1 = very insignificant and 5 = very important). To use student perceptions of the human resource competencies 4.0 indicator in itself as the dependent variable, the researcher used an average score that combines each score of 15 items provided by each respondent. The method for each statement is presented in Table 1. Responses to perceptions of indicators of human resource competencies 4.0 in students have an average (for fifteen items) of 3.83. For the questionnaire reliability test, Cronbach's alpha coefficients were calculated for each scale as a measure of reliability of internal consistency. The results of the study show that the indicators they currently have in themselves are, intercultural and language skills. Then followed by good communication and cooperation skills. Furthermore, the ability to update knowledge is the biggest indicator possessed by students. At the lower end of the spectrum are things like sustainable mindset, professionalism and quality decision making.

Table 2: Student's Perceptions of Human Resource Competencies 4.0 That They Currently Have Items Used to Assess Students' Perceptions of Human Resource Competencies 4.0 That They Currently Have

(10 items)	Mean (N=350)
I have foreign language skills besides Indonesian and I am used to having good relationships with fellow students from various countries with various cultural backgrounds	4.48
Good communication skills are important to me as a supporting factor for successful collaboration in achieving goals	4.33
I always improve my knowledge independently both in relation to lectures and knowledge outside	4.26

of lectures is driven by changes that occur	
I understand and adapt quickly to the use of things related to information systems and information technology	4.21
I understand the passion that is in me as the beginning of the development of self-creativity to innovate	4.17
I consider change is an opportunity to achieve a better goal	4.11
I have the ability to lead, coordinate and delegate authority to achieve group goals	3.90
I consider knowledge to be a matter that must be shared as capital to make continuous improvements	3.81
Work with quality results that are done efficiently and effectively is important to me	3.62
I was able to identify the source of the problem and provide an alternative solution based on the problem by considering the factors that surrounded it	3.58
I am able to perform tasks and functions well and correctly	3.49
With the duties and responsibilities that I have, then I must have the ability to make quality decisions	3.22
I have the attitude and hope of making standard actions in the workplace that use resources carefully, attentively and with regard to social justice.	2.85
Mean	3.84

Note: All items were measured on a five-point Likert scale from 1 (Very Unimportant) to 5 (Very Important).

6. Discussion and Conclusions

The results of this study indicate that intercultural and language skills are one of the largest indicators of human resource competencies owned by students who are generation z. The results of this study provide valuable advice for researchers, educational institutions, generation Z to enter the workforce and practitioners in the industry. This research highlights the importance of preparing human resource competencies in the face of the 4.0 industrial revolution. Practical Implications Include the Following:

- 1) (Kock, 2008), states that competence is an important thing that must be owned by each individual who is a determinant of the success of a job in a position. Every individual who will enter the workplace must understand the competencies they have as a basis for further enhancing their competencies that are tailored to the needs and changes in the business world.
- 2) Competence of human resources can be the core competence and distinctive competence of the company (Mooney, 2007). So the company must take into account the competencies possessed by prospective employees or employees who have worked in the company as an effort to make competent employees in accordance with the changing business world.
- 3) Educational institutions should pay attention to the concept of competencies needed for students in facing the world of work that is influenced by changes in the industrial revolution. The curriculum must be adapted to the competency requirements required for the world of work, so that the graduates can be absorbed into the workforce or independently in establishing businesses.

7. Limitations and Recommendations for Future Research

This study has several limitations that must be addressed to ensure more effective research in the future. The results are based on purposive sampling. Data from this study have not been collected from students from all universities in Medan in various faculties. Thus, research findings may not be generalized to other populations. Future research can attempt to replicate the results of this study in other contexts and populations. Future research can expand the sample to include more students, more campuses, or in other geographical locations, which makes the results of research also possible for different Future research and future research can focus on deepening the indicators of human resource competencies 4.0 based on literature review more and deeper. In this study, there were only 13 questions that were used to measure students' perceptions of the indicators of human resource competencies 4.0 they had. Future research can also examine the factors that influence the formation of human resource competencies 4.0 in humans that are useful for the success of facing changes that are influenced by the development of the industrial revolution.

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