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Research Article

Training Program Analysis for Leadership 4.0 in Fourth Industrial Revolution

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Abstract: The purpose of this study was to analyze existing training programs in leadership 4.0 on the websites and utilize this information to develop the generic training program in leadership for any organization, regardless of size and industry. Four organizations were found to provide relevant training programs for leadership 4.0. These training programs were analyzed based on five key elements of training program encompassing program highlights, target groups, venue and duration, format, and strengths and weaknesses. Findings of this analysis led to develop example of training program in leadership 4.0, which contained name of the program, program highlights (4 modules designed), targets, duration, delivery format, and training methods. Limitations and research applications were also discussed.

Keywords: Training, Training needs analysis, Leadership 4.0, Fourth Revolution.

INTRODUCTION

Fourth industrial revolution refers to rapid transformation in the design, creation, operation, manufacturing systems, and machineries (Oberer & Erkollar, 2018). Only the most agile organization will thrive in industry 4.0 (Lewin, 2017). As today's businesses have encountered the VUCA (Volatile, Uncertain, Complex, and Ambiguous) environment, leaders necessarily need to adjust the way of thinking and behaving in order to succeed in this changing environment. The journey to digital transformation in Industry 4.0 requires alteration of the long-term strategy created by a distinctive practice of leadership, which refers to leadership 4.0. Digital transformation is not about technology, but leaders who understand key elements that affect the organization, and focused on changing the mindset of employees as well as system, process, and culture prior to implementing digital related strategies (Tabrizi, Lam, Girad, & Irvin, 2019).

Leadership 4.0 represents the term of leadership in a digital age, which needs more skills, abilities, and competencies than the past generation. According to a survey of 436 business leaders by Harvard Business Review Analytic Services (2014), despite digital intelligence is mandatory for today's business leaders, many of these executives admitted that they lacked the knowledge and skills required to succeed in the digital age. The recent PWC's digital IQ survey confirmed that only 52 percent of leaders from large firms feel that their digital IQ is resilient, which was reduced by 15 percent from a year ago (Nigro, 2019). The results of this survey demonstrated the need of maximizing skills and capabilities to be an effective leader 4.0. In the light of this, organizations need to provide appropriate training programs and activities that support and enhance the development of leadership 4.0 as leadership training can improve technical skills, strategic knowledge, and enhance attitudes and performance of employees (Cascio, 2019). The traditional skill training approach of growing leadership may not be suitable for an organization to produce new leaders who need different skills and knowledge to transform their organization in the age of digital (Ross, 2019).

The advent of digital transformation requires the new skillsets for leadership 4.0. Numerous programs both graduate degree program and training program attempt to design courses to support the development of leadership 4.0. However, the investigation of strengths and weaknesses for these programs has not yet been identified in the previous research. Promsri (2019b) recommended expanding the

analysis to certificate and training programs in digital leadership to examine the key components of these programs and differences. Therefore, the purpose of this study is to investigate and analyze existing training program for leadership 4.0 on the internet and propose generic training program for leadership 4.0 based on this analysis.

Literature Reviews
Training

The purpose of training in an organization is to improve employees' performance at the different levels. Employees who are provided the training must be measured their improved performance to identify whether or not they have changed in knowledge, skills, attitudes, and behaviors. Training can be roughly addressed from two viewpoints – macro and micro levels. Macro level refers to issues such as collective disbursements by various training providers, target groups for training, benefits of training, and economic impact of training. While micro level alludes to topics such as types of training, training needs analysis, training delivery methods, and training results assessment (Cascio, 2019). To increase the benefits of training, organizations must be aware of training process, which consist of three stages: needs assessment, development and conduct of training, and evaluation (Gómez-Mejía, Balkin, & Cardy, 2016). In the first phase of training process, organizations must place an emphasis on what employees should be trained in relation to job characteristics and changes in business environment. Numerous training trends occurred in the past decade indicated the needs of training and development that help strengthen employees' knowledge, skills, capabilities, and behaviors on their job. One of various trends has a massive impact on training needs is the effects of digital technology on work. This trend rapidly emerges in the past few years when organizations are pretty much relied on digital technology and involved with digital transformation process. As a leader is a key person who helps the organization get through digital transformation, leadership training needs in relation to enhance knowledge and skills of digital leadership are important. Nielson (2017) described that the foremost pieces of leadership needs assessment in the organization is to ascertain existing leadership competencies and attempt to adjust them to fit the changing environment and organizational culture. Thus, to develop training needs assessment for leadership 4.0, organizations need to define current leadership competencies in the organization prior to providing additional training courses and activities to maximize leadership competencies level to meet the requirements of leadership 4.0.

Leadership 4.0

The main concept of leadership 4.0 focuses on an ability of leaders to generate strategies for digital transformation (Bawany, 2019). Leadership 4.0 is also known as "a digital leader" who has possessed sufficient digital knowledge and literacy, vision, understanding of customers, agility, risk-taking, and collaboration skills (Promsri, 2019a).

Oberer and Erkollar (2018) developed 4.0 leadership matrix in which the behavioral leadership theories including Michigan studies, Ohio studies, and Leadership Grid Theory have been utilized for development. This matrix consists of two dimensions, which are innovation/technology and people concern. The combination of the different degree of each dimension leads to identify four 4.0 leadership styles encompassing 4.0 social leader, 4.0 digital leader, 4.0 technological leader, and 4.0 freshmen leader. Nonetheless, this matrix is not quite applicable as it is not based on quantitative research exploration.

The development of leadership 4.0 incorporates the process of changing leaders' mindset on how to connect people and digital technology for the organizational benefits. Numerous characteristics and skills of leadership 4.0 were proposed on the Internet as critical skills for digital leaders. Essential characteristics for leadership 4.0 are proposed by different sources on the Internet. For instance, Oxfordleadership (2017) proposed 7 characteristics of leadership 4.0 including responsibility, results, distribution of information, objectives and assessment, mistakes and conflict, change, and innovation. Apparently, these qualities are pretty much similar to leadership in a previous age of digital, but successful leaders utilize these characteristics in a different manner. In addition, Albrecht (2017) noted that executives are expected to have new competencies for leadership 4.0 encompassing lifelong learning or continuous learning especially in digital technology, management and communication skills, collaboration and conflict management skills, empathetic skills, and agility.

Organizations need to place the emphasis on these major qualities to enhance leadership 4.0 and should take these characteristics into account for developing training programs that enable leaders to elicit and improve these skills. However, examples of existing training program for leadership 4.0 are very useful for the organizations to develop their own training program for leadership 4.0. In addition, Half (2017) addressed that organizations can benefit from establishing a leadership development program based on four major steps: define leadership development needs, focus on development not training only, identify potential leaders, and measure results. This study aimed at gathering information about training program for leadership 4.0 and analyzing strengths and weaknesses of each program.

METHODOLOGY

This study used a documentary analysis approach using a secondary data to investigate training programs for leadership 4.0. The key words "training program for leadership 4.0" and "training program for digital leadership" were employed for data collection through Google search engine. Information retrieved from the Internet was to be analyzed based on five key elements of training program including program highlights, target groups, venue and duration, format, and strengths and weaknesses. Each training program was to be compared with one another on the tabular matrix format and data analysis was to be used for developing generic training program for leadership 4.0 in which organizations, regardless of size, can apply this training program to develop leaders in industry 4.0.

Findings

According to the search on the internet, this study found four organizations that delivered training program in leadership 4.0 development. Among these training programs, two were available in Europe – Germany and Switzerland while the others were held in Singapore and Malaysia. These training programs designed to develop leaders in a digital age in which various modules had been delivered. These training programs required attendants who had work experience in the management level. Only HECTOR School of

Engineering & Management specifically required a minimum of 5 years of work experience in management level. In addition, IMD Business School required specific admission for its training program in which applicants would have to submit their writing statement to the program for selection process consideration. The average duration of training program in leadership 4.0 was 2.5 days. For strengths of these training programs, HECTOR School of Engineering & Management was very remarkable as the program in leadership 4.0 was established based on cooperation with IHK Karlsruhe, the Ministry of Economics, Labor, and Housing of Baden-Wuerttemberg, the Allianz Industrie 4.0 Baden-Wuerttemberg, the Center for Creative Leadership (CCL). All of these training programs delivered their program through the classroom attendance. Center for Executive Education was considered as the best organization that provided the combination of teaching methods that helped foster both critical thinking and cooperative and active learning.

Findings revealed that training program in leadership 4.0 encompassed the overview of industrial revolution 4.0, concept of leadership and management, coaching, digital leadership, and change and innovation. This led to develop the modules for generic training program in leadership 4.0.

Table 1: A Tabular Matrix of Training Program in Leadership 4.0

organization	Training Program: Topic	Program Highlights	Target Groups	Venue and Duration	Format	Strengths and Weaknesses	Website
HECTOR School of Engineering & Management Karlsruher Institute for Technology	Leadership 4.0 Program for Managers and Executives	Three areas: technology, management methods and organization models, and leadership	People in management level who have at least 5 years of work experience	Karlsruhe Institute of Technology (KIT)/ 2.5 days	Personal attendance	This program was established based on cooperation with the IHK Karlsruhe, the Ministry of Economics, Labor and Housing of Baden-Wuerttemberg, the Allianz Industrie 4.0 BadenWuerttemberg, the Center for Creative Leadership (CCL) and the HECTOR School	https://www.hectorschool.kit.edu/downloads/Brochures/HECTOR-School-Leadership-40-Flyer-En.pdf
Center for Executive Education	Leadership Masterclass Series for Industry 4.0: Transforming Next Generation of Leaders	Focuses on various modules included Digital Economy, Leadership and Management, Motivation,	Leaders at all levels: executives, managers, and supervisors	Singapore	Series of in classroom activities such as seminars, case-study analyses, role-playing exercises, and debates	This program was great in terms of a combination of teaching methods that helped foster both critical thinking and cooperative and active learning	http://www.cee-global.com/leadership-masterclass/leading-in-industry-4-0/

		Coaching, Impact of 4IR, Innovation					
IMD Business School	Master digital leadership: Change how you and your team work	Focuses on digital leadership development including digital leadership assessment, engage in personalized work with coach, and complete digital leadership development plan	Executives level	IMD campus Switzerland/ 2.5 days	Classroom attendance, which participants will be individually selected to ensure that their diverse experience will have an impact for learning	This program has offered twice a year This program primarily focuses on developing digital leadership behavior	https://www.imd.org/lda/digital-transformation-leadership/
Skills Johor Sdn Bhd	Leadership 4.0: Developing Future Workforce	Focuses on 7 modules containing importance of industrial revolution, human capital development, embrace change, and assignments	C-Suite and above from all industries	Malaysia/ 1.5 days	Classroom	Apply principles and concepts into practice through assignments This program put a lot of details within a short time	https://www.sjtraining.my/upcoming-programme/2019/2/27/leadership-40-developing-future-workforce

CONCLUSIONS, DISCUSSIONS, AND RECOMMENDATIONS

The purpose of this study was to analyze existing training programs in leadership 4.0 on the websites and utilize this information to develop the generic training program in leadership for any organization, regardless of size and industry. Findings showed that most of these training programs were designed for executive level and highlighted in three main areas: fourth industrial revolution overviews, concepts of leadership emphasizing digital leadership and coaching, and importance of change and impact on organization. This led to the generic training program development in leadership 4.0 as shown in Table 2. Example of training program for leadership 4.0 was designed with the highlight on four major modules: fourth industrial revolution, leadership and management, digital leadership, and change and

innovation. This program was developed for C-suite level in any corporation with the duration of 2.5 days, which was the average duration for training in this topic, according to findings. Delivery format was run through the integration of classroom attendance and online assignment. The reason for adding online as part of delivery format was due to the gap found on the existing training programs that heavily emphasized their training through classroom method. For training methods, this study fascinated the combination of teaching methods conducted by Center for Executive Education, which provided a variety of training approaches during the program. Hence, this study employed this idea to develop training methods for training program in leadership 4.0 to ensure that attendants will be beneficial for gaining knowledge and skills through diverse training approaches.

Table 2: Example of Training Program for Leadership 4.0 based on Data Analysis

Name of the Program	Highlights	Targets	Duration	Delivery Format	Training Methods
Leadership 4.0 in 4IR	Four major modules of this program: Module 1: Overview of Fourth Industrial Revolution and Its Impact on the Organization Module 2: Concepts of Leadership and Management, Motivation for Collaboration, and Personalized Coaching Module 3: Digital Leadership: Key	Leaders, Managers, and Supervisors in all levels	2.5 days	Classroom + Online	- Class Discussion - Case Study - Role Playing - Debates - Group Brainstorming - Game-Based

	Qualities and Importance Module 4: Change and Innovation				Learning

Even though training program is important for enhancing the understanding of leadership 4.0, it is not all about training module and coursework that helps maximize leadership 4.0. The optimal formula for learning and leadership development should be based on a 70-20-10 approach (Ross, 2019). Training program for leadership 4.0 independently cannot guarantee the success of digital transformation. The other major influential factors of leadership development must be aligned with training roadmap and human resource management plans to ensure that all HR functions altogether support the enhancement of leadership 4.0 in the corporations.

Limitations of this study were the key words utilized for the search on the Internet. The next study should extend its search by using variety of key words to explore more related training program for leadership 4.0 or digital leadership. Certificate programs should also be taken into consideration for the future study. Organizations can take the benefits of this study's findings by using this proposed training program for leadership 4.0. Training institutions and organizations around the world should realize the importance and impacts of leadership 4.0 in fourth industrial revolution on corporations and put more efforts to develop and design training programs in leadership 4.0 to fill the gap in the market.

Acknowledgement

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