Leadership 4.0 In Technical And Vocational Education And Training Institution

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ABSTRACT
Technical and Vocational Education and Training (TVET) Institution play an important role in preparing youth to enter the workforce and in improving their employability throughout their careers. Position as a leader in TVETinstitution in new challenging stream world needs to understand the strategic role that can contribute to the growth of knowledge and skills.The systematic review method was used to synthesis of leadership concepts. Thirteen journals from various sources had been selected in this study to analyze the leadership in TVET. This study shows that innovative behavior in organizations towards different interest groups depends on the ability of organizational leadership. Through this analysis, four components have been identified that must be possessed by qualified leaders, namely style, characteristics, competencies, and ability. The results of this study showed that the dimension of leadership depends on the rapidly changing scenario due to revolution. TVET leaders should exploit the potential opportunities brought by the new era with much responsibility and wisdom, by providing flexible leadership for their institutions.

INTRODUCTION

Technical and Vocational Education and Training (TVET) systems have to be ready in the world of new disruptive technologies emerged. Whatever the real situation will be concerning labor market demand, TVET systems will have to respond to changes. Schröder (2019) stated that in the past and until today – partly as a result of the organization of work and education – people have been educated as similar devices in hierarchic organizations, without creative or decision-making faculties. Common acceptance of the TVET system is largely dependent on the fact that society has an idea of which competencies match occupational profiles.

TVET systems will have to modernize and adapt to technological progress. Digital transformation will have a wide impact on TVET and also labor markets on a global scale. According to Oketch (2006), TVET can be a cure to youth unemployment. By providing the youth with pre-employment vocational education and training, governments will equip them with skills that would be necessary later in the labour market. The main objective of TVET was to bring technical and vocational education and training in line with labour market requirements and to increase the quality of education through innovative improvements (Shah et al., 2011).

By 2030, education systems will need to enroll hundreds of millions of additional children and adolescents to achieve basic education (that is, pre-primary, primary, and lower secondary education) for all(UNICEF. 2015).It is critical to provide education to ensure long-term development, learning, and health to society. It is also vital for education systems to ensure that all children, youth, and adults are learning and gain relevant skills. There is an urgent need for children, youth, and adults to develop throughout life the flexible skills and competencies they need to live and work in a more secure, sustainable, interdependent, knowledge-based, and technology-driven world. In the World Education Forum 2015, they agreed that education systems must be relevant and suitable to rapidly changing labour markets, technological advances, urbanization, migration, political instability, environmental degradation, natural hazards and disasters, competition for natural resources, demographic challenges, increasing

global unemployment, persistent poverty, widening inequality and expanding threats to peace and safety.

Figure 1: Relevant Workforce Toward IR4.0

Based on Rosnah binti Muhamad Tahir, Director of Miri Industrial Training Institute in TVET Symposium 2019 stated that education syllabus and pedagogy for STEM related subjects not attractive and matched with industry needs. She adds that based on McKinsey's job report 2030, more education skill and TVET training required as one of the relevant approaches towards IR4.0 (Figure 1).

She also revealed that working in a team and leadership is a must to suit with Industrial Revolution 4.0 (IR4.0). As technology gets placed into the country, the leader of organizations from the various fields have to adapt the own approaches. As the pace of change becomes faster, leaders of educational institutions must be creative, flexible, and ready to operate swiftly.
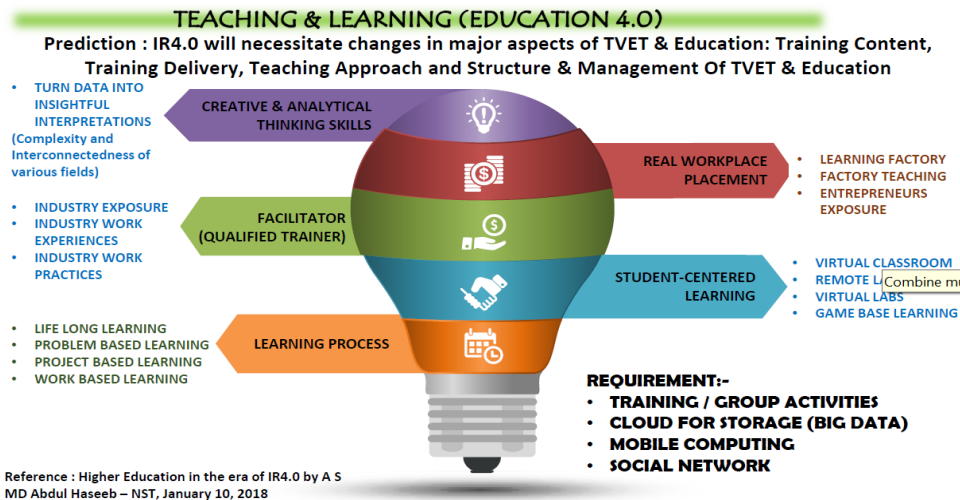

Figure 2: Teaching and Learning (Education 4.0)

Due to the advancement of technology, the learning environment (Figure 2) that enables students to contribute in this 4.0 era has controlled to a shift in the conventional learning paradigm towards technology-based learning (Lase, 2019). This technology progression would impact almost all academic institutions in terms of program development, developing teacher knowledge and qualifications, and in the learning process. Based on findings by Raza (2016), there are several leadership challenges in IR 4.0 affect people around the world.

The significance of creativeness and innovation of leadership will boost the output gap within their opponents. As technology grows rapidly, a leader needs to transform leadership practices to succeed in an innovative, digital environment within the scenario.

Previous studies were preoccupied with the concept that leaders were born, not made, and later looked for the specific characteristics of the great leader. According to Bass (2008), leaders were regarded as special people, endowed with superior powers and

talents, which could include physical attributes such as height, as well as psychological strengths such as confidence and charisma. Educational leadership today faces multiple difficult issues every day and as a leader, they are forced to become more creative and innovative so that they can keep in with the current economic realities (Marron, 2014).

Sveningsson and Alvesson (2012) stated their notion of leadership, describing the key activity as "influencing expectations, meanings, and values about what is desirable and necessary related to everyday work". Sirat et. al., (2012) declared that effective leadership in higher education will know the opportunity and take wise decisions based on the opportunities given to lead institutions. Brennan (2014) also suggested leadership and leaders are the pursuers of TVET success. Education leadership is one of the key components in the educational system to produce individuals with enthusiasm and confidence. It is not easy to produce the courageous human capital that can take risks, confident, good at leading, and always have a positive mind. The main challenge in the development of IR 4.0 is that technology will change the work structure in regular life and caused diminishing many other jobs (Indrawan and E.Lay, 2019). Besides shifting the work system, the technology applied needs creative and innovative workers (Ningsih, T, 2019). Therefore, a new set of leadership competencies develop that differs significantly from the current set of skills. This paper will identify and list the characteristics and styles required by TVET leaders to improve their organizations' performance in line with the development of the IR 4.0 technology that resulting education 4.0.

3. METHODOLOGY

This study was used a systematic literature review approach and fourteen journal papers had been chosen as materials to be analyzed. A systematic review was performed to provide an impartial synthesis and interpretation of the findings (Gough, Oliver, & Thomas, 2012). A systematic review is a process of selecting, identifying, and synthesizing primary research studies to provide a thorough and reliable representation of the subject being reviewed (Oakley, 2012). We searched a range of library databases using established keywords. All research designs were initially considered to establish the

body of evidence. Experimental and comparative papers were then critically appraised for methodological quality and information was extracted on effective processes.

3.1 Study Selection

The search was limited to the years 2015-2020, as IR4.0 embraces the industry's policy and indirectly affects the educational system. The search for this study was performed using the electronic database. This systematic review does not seek to create new knowledge but rather to synthesize and summarize present knowledge, and therefore significant research must already exist on the topic. The initial search resulted in 32 articles through databases such as Emerald, ProQuest, Elsevier, and Google Scholar were searched to congregate papers related to "fundamental of leadership", "education 4.0", "industry 4.0" and "TVET". The findings from this aggregation of an unbiased selection of studies then needed to be discussed to put them into context. During study selection, the authors looked to match the studies found in the search to the review's inclusion criteria, and identified those studies that were conducted in the correct population, used interventions of interest, and recorded the predetermined and relevant outcomes.

3.2 Review Process

This systematic review used the inclusion and exclusion criteria that are classified as mentioned in study selection. The initial search identified 32 articles. After a review of titles and abstracts, 18 studies remained for a detailed reflection. Of the 18 articles subjected to full-text review, 12 articles met at least one exclusion and inclusion criterion in the review. Finally, a manual search was conducted of the reference lists of all retrieved papers to identify any studies missed during the database searches. The search also targets unpublished studies to support minimize the risk of publication bias. Poor quality studies were excluded to include in the systematic review method but were discussed in the review report.

4.0 FINDINGS AND DISCUSSION

The domain and dimensions of the findings presented in Table 1, were extracted from the research papers that fulfilled the eligibility criteria discussed.

Table 1: Domain and Dimension of Leadership Journal

Author	Study domain	Dimension
Christine Räisänen*, Per-Erik Josephsson and Bert Luvö (2015)	Leadership education in construction	Personal competencies (being forthright, clear, flexible, self-critical, enthusiastic) and interpersonal competencies (ability to listen, to communicate, and to build teams).
Hadijah Ahmad (2015)	Challenge, roles, and characteristics of leaders in TVET	Leadership definitions, challenges, roles, and characteristics (sense/predict the situations, communicate the vision, fair, role model)
Hadijah Ahmad, Badaruddin Ibrahim (2015)	Leadership characteristics	Issues of job satisfaction and generational cohort, challenges in managing a generational cohort
Muchlas Samani (2018)	Vocational education, Era 4.0	Too specific vocational education will be easily obsolete. Vocational education that lasts too long has the risk that the learned skills will be obsolete when they graduate and enter the workforce.
Irjus Indrawan, Evanirosa, Ramsah Ali, Indra, Ramadan, Muh. Hanif, Ihsan Harun, Lathifah Hanum, Agus Purwanto, Abdul Mufid, Siti Nurkayati, Mochammad Fahlevi, Susila Sumartiningsih (2020)	Transactional, Transformational, Democratic, and Autocratic Leadership Style	Transactional leadership has a positive impact on the performance of teachers, transformational leadership has a fair and significant effect on teacher performance, democratic leadership has a positive and significant impact on teacher performance, autocratic leadership has a positive and important impact on teacher performance, leadership
Norlaila Wati Osman, Arasinah Kamis (2019)	Innovation leadership, sustainable organizational climate	Innovative organizations need leaders who have these characteristics; possessing a clear vision, determination, and a concern for the organization's future ability, to identify key sources, networks, and needs as well as; looking for alternatives to make a change; taking initiatives to modify and develop themselves, thinking and acting in new ways; ability to motivate others and show a commitment to achieve a clear goal.
M. D. Mesfin, E. J. van Niekerk (2019)	Perceived, Leadership styles, TVET college, deans effectiveness	Transformational and transactional leadership, the impact of leadership styles on job satisfaction

M. D. Mesfin, E. J. van Niekerk (2019)	Leadership styles, TVET college	Transformational leadership style sub-dimension of idealized influence, attributed, intellectual stimulation, inspirational motivation, individualized consideration Transactional leadership style sub-dimension of intrinsic reward, manage by exception (active), manage by exception (passive) Laissez-faire leadership style
Alois Nzembe (2017)	Leadership traits, motivation, TVET college	accountability and responsibility, empathetic, autocratic leadership, promote motivation, accountability
Keyredin Kedir and Abeya Geleta (2017)	Transformational leadership, TVET institution	Inspiring a shared vision, enabling others to act, modeling the way
Samsudin Wahab, Adlan Rahmat, Mohd Sukor Yusof, Badrisang Mohamed (2016)	Leadership style, education service, academic leaders, and roles	Transformational and transactional affect organizational performance (effectiveness and quality services.)
Tai Mei Kin, Omar Abdull Kareem (2019)	Leaders' competencies	The fourth industrial revolution and education 4.0, school leadership and competency, leading for learning (entrepreneurial, communication, collaboration, critical thinking, decision making, problem solving, managing change,
Birgit Oberer, Alptekin Erkollar (2018)	Digital leadership, Era 4.0	Creating the '4.0 Leadership Matrix for Digital Leaders' Essential elements determining digital leaders are organizational objectives, people, change, output, mistakes, and conflict, communication and innovation

Based on Table 1, nine out of twelve journal papers debated about the style of leadership in the digital era, two papers discussed characteristics of TVET leaders and the rest is about competencies. Findings from Osman and Kamis (2019) revealed that innovation leadership is suggested in implementing innovation and creativity to reach the realistic goals of innovative and sustainable organizations. They also found that a suitable leadership style to create innovative and sustainable organizations are democratic leadership. These results are similar to the study from Stevenson & Kaafarani (2012) where is innovation leadership is about how the leaders play a role in inspiring people to have an open mind-set that directed the people to discover new things or ways of working in an organization. A study from Nzembe (2017) found that leadership traits that improve motivation in the South African TVET sector have revealed that in the majority of situations leaders and managers in the South African TVET sector are accommodative of educators'

challenges of the workplace. He further suggests that TVET leaders should use positive reinforcement in a manner that benefits both the students and lecturers with compliments a lecturer for doing a good job, he/she increases the likelihood of the lecturer doing that job very well again.

Ahmad, H. (2015) discovered that sense/predict of the situations, communicate the vision, fair and role model are the most common characteristics as a leader in TVET institutions by the new generation. She added that as future leaders, they have to employ high tolerance to avoid generational conflict, build effective work teams among each other. Besides, develop the ability to be more sensible on the strength and weakness of each generational difference especially in technology advancement should be one of the leaders' strategies to engage the employees to achieved job satisfaction.

The most argued from the selected journal is style/ traits leadership. The common style that has been discussed is transformational leadership. A study from Kedir and Gelete (2017) found that the five transformational leadership models were being practiced low average in the TVET institutions when three leadership practices, inspiring a shared vision, challenging the process, and encouraging the heart were rated low by the respondents, But, when the models were independently considered, the variable enabling others to act and model the way was rated relatively high. Whereas, results from Wahab et. Al, (2016) come out with transformational leadership style is more effective and preferred by leaders compared to other leadership styles.

5.0 CONCLUSION

The structure review of this reacted to the purpose of this study to find out the leadership 4.0 in TVET institutions. This study points out that leaders should be ready to have credible styles, competencies, and characteristics to become future leaders in IR4.0. The challenge of this revolution creates trained, qualified professionals who are equipped with interdisciplinary thinking, social skills, and other technical skills for a highly globalized and technological-driven shaped effective leaders will create many new possibilities for enhancing institution performance. The increasing demands for TVET institutions reforms in the era of Education 4.0 continuously challenge the roles of leaders. No institution leader will embrace any change if he/she is unable to perform the new task competently. Leadership 4.0 stands for leadership in the age of industry 4.0. which is consistent with Education 4.0. There is a need for developing a leadership 4.0 culture in TVET institutions parallel with IR4.0 needs.

Acknowledgments

REFERENCES

- Ahmad, H. (2015): Leadership in TVET for the 21st Century: Challenges, Roles and Characteristics. Procedia - Social and Behavioral Sciences 195 (2015) 1471 – 1476.

- Ahmad, H. & Ibrahim, B. (2015): Leadership and the Characteristic of Different generational Cohort towards Job Satisfaction. Procedia - Social and Behavioral Sciences 204 (2015) 14 – 18.

- Bass, B. M. (2008). The bass handbook of leadership: Theory, research, and managerial applications (4th ed.). New York: Free Press.

- Brennan, P. (2014). Raising the quality and image of TVET: Lower-level training or motor for inclusive and sustainable Growth? UNESCO IBE 2014, 183–195. doi:10.1007/s11125-014-9312-3.

- Indrawan, P. A., & E.Lay, A. (2019). Guidance and [4]Counseling Teachers' Competency Perspective in the Era of Industrial Revolution 4.0. International Journal of Innovation, Creativity and Change., 5(3), 147–161.

- Kedir. K & Geleta, A. (2017): Leading educational change: The practices of transformational leadership in the Ethiopian technical vocational education and training (TVET) institutions. Vol. 9(5), pp. 49-61

- Kin, T.M. & Abdull Kareem, O. (2019): School Leaders' Competencies that make a difference in the Era of Education 4.0: A Conceptual Framework. International Journal of Academic Research in Business and Social Sciences . V 9, (4). 214-225

- Lase, D. (2019). Education and Industrial Revolution 4.0, [5]10(1), 48–62.

- Mesfin, M.D. & Van Niekerk, E.J. (2019): Perceived Effectiveness Of The Leadership Styles Of Deans In Ethiopian Governmental Technical And Vocational Education And Training (Tvet) Colleges. European Journal of Education Studies ISSN: 2501 - 1111 ISSN-L: 2501 - 1111

- V5 (10). 220-243

- Mesfin, M.D. & Van Niekerk, E.J. (2019): Leadership Styles Of The Deans In Ethiopian Governmental Technical And Vocational Education And Training (Tvet) Colleges. European Journal of Social Sciences Studies ISSN: 2501-8590 ISSN-L: 2501-8590. V 4 (1). 123-141

- Nzembe, A. (2017): Lecturers' Perceptions of Leadership Traits which Promote Motivation in a South African Technical and Vocational, Education and Training (TVET) College. Academic Journal of Interdisciplinary Studies. V 6 (2).

- Ningsih, T. (2019). Smart Teachers in Developing Students' [1]Character in 4.0 Industrial Revolution Era. Proceeding of 3rd International Conference on Empowering Moslem Society in the 4.0 Industry Era, 3, 58–68

- Oberer, B. & Erkollar, A. (2018): Leadership 4.0: Digital Leaders in the Age of Industry 4.0 . International Journal of Organizational Leadership.

- Oketch, M. O. (2006). To vocationalise or not to vocationalise? Perspectives on current trends and issues in technical and vocational education and training (TVET) in Africa. International Journal of Educational Development 27(2007), 220-234. doi: 10.1016/jj.ijeedudev.2006.07.004

- Osman, N.W. & Kamis. A (2019): Innovation Leadership for Sustainable Organizational Climate in Institution of Technical and Vocational Education and Training (TVET) in Malaysia. Asian Journal of Assessment in Teaching and Learning Vol 9, Issue 1, 2019 (57-64) ISSN2232-1926/eISSN 2600-870X

- Raza, B. (2016). Leadership 4.0: Module Management Competencies 1 (MC1), Frankfurt University of Applied Sciences: Master's Thesis.

- Räisänen, C., Josephsson, P.E. and Luvö, B. (2015): Stakeholders' views and experiences of leadership education in construction: suggestions for improvements. Procedia Economics and Finance 21. 540 – 547.

- Samani, M. (2018): Vocational Education in the Era of Industry 4.0: An Indonesian Case. Advances in Social Science, Education and Humanities Research (ASSEHR), volume 201. 45-47.

- Sirat, M., Ahmad, A. R., & Azman, N. (2012). University leadership in crisis: The need for effective leadership positioning in Malaysia. Higher Education Policy, 25(4), 511–529. doi:10.1057/hep.2012.10.

- Stevenson, J., & Kaafarani, B. (2012). Breaking away: A new model for innovation. Leader to Leader. https://doi.org/10.1002/ltl.20022

- Svenningsson, S., Alvehus, J., Alvesson, M., 2012. Managerial Leadership: Identities, Processes, and Interactions. In: Tengblad, S. (Ed.) The Work of Managers: Towards a Practice Theory of Management. Oxford University Press, Oxford. pp. 69-86.

- Schröder, T. (2019): A regional approach for the development of TVET systems in the light of the 4th industrial revolution: the regional association of vocational and technical education in Asia, International Journal of Training Research, 17:sup1, 83-95, DOI: 10.1080/14480220.2019.1629728

- Shah, I. H., Rahman, F., Ajmal, M. & Hamidullah, H. M. (2011). Situation Analysis Of Technical Education And Vocational Training: A Case Study From Pakistan. International Journal Of Academic Research, 3(1)

- Wahab, S., Rahmat, A., Yusof, M.S. & Mohamed, B. (2016): Organization Performance and Leadership Style: Issues in Education Service. Procedia - Social and Behavioral Sciences 224 (2016) 593 – 598