

Influence of Goals-Orientation and Leadership Styles towards Performance based on Vision and Policies in Science, Technology and Innovation Sector, Malaysia: A Framework Paper

Siti Nur Syahirah Mohd Adnan and Raju Valliappan

Abstract- One of the important agenda in realizing Malaysia to become a developed country with strong science, technology and innovation sector is to become a scientific and progressive society. In line with the country's agenda, this study discusses the concept of scientific and progressive society as stated in 2020 Vision to identify the gaps and challenges that are faced in implementing the next vision; TN50, and proposes a framework model to study the identified sector in Malaysia. The study examines and discusses how goals-orientation is corporately appropriated in the context of performance success or failure and provides conceptual framework to analyze different leadership styles through the lenses of qualitative textual analysis and theoretically linked to goals-orientation theories, leadership theories and performance theories. The study and its proposed framework are based on the literature reviews that may enhance knowledge in the academia and may help in identifying gaps on the policies by analyzing the opinions, experiences and information that will be collected from the qualitative interviews of the chosen head of organizations / leaders from the science, technology and innovation sectors in Malaysia.

Index Terms— Goals-orientation; Leadership; Performance; Science, Technology and Innovation Sector

1 INTRODUCTION

THIS study aims to study influence of leadership between goals-orientation and performance among the head of organizations in the science, technology and innovation sector. Leaders or head of organizations demonstrate their own learning behavior, goals, motivation, and leadership styles. Therefore, the leaders drive the organizations for their own and organizational performances and employees betterment incorporating all these factors. The leaders need to develop their competence in terms of their abilities to continuously deepen their skills, knowledge and positive attitude to efficiently build and maintain the organizations [21]. This study will also discuss on science, technology and innovation sector, the leadership styles, relevant theories, and goals-orientations as well as performance definition of the head of the organizations or the leaders.

1.1 Definition of Keywords

Goals-orientation is self-evidently believed of as the portion of the cognitive life of the nation [12]. The goals-orientation is a perspective idea that can be described as positioning ones purpose towards developing capacity and capability as motivations. The goals that will be examined in the study are reward, development and learning oriented goals. The fundamental learners in any organization are the leaders. A leader's learning and absorptive ability differs from team members that are working in the same organization [3]. This is because of the fact that the leaders influences their team members. The leader can be portrayed as a person who influences a big group or an individual in an organization, guides and assists them to establish and achieve their goals, and allows them to be effective [20].

In the leadership journals and studies carried out by researchers, it is crucial to focus on potentials of new line of studies, outline tangible research agendas, redirect existing research streams, and put away the areas that are no longer relevant to the leadership area [4]. Moving on to business sector, performance is viewed as an accomplishment or a fulfillment of work task in which it can be measured via standard of accuracy, cost, completeness, time-line and so on. Performance is a positive triumphs one has accumulated as a result of experiences over the span of their career [21]. Performance can also mean a validation of abilities, especially in comparison with peers [6].

The study will focus on the industry of science, technology and innovation sectors in Malaysia. It involves scientists, engineers, technologists, innovators, designers, policy makers, industry players and business players. In particular, the importance will be given to the organizations that are under the purview of Ministry of Science, Technology and Innovation (MOSTI) in Malaysia. MOSTI is overseeing and responsible for the area of science, technology, innovation, chemistry, meteorological, space science, biotechnology, nuclear, technology park, nanotechnology, astronautics, cyber security, standards, metrology, remote sensing, atomic energy, design, venture debt and venture capital.

2 LITERATURE REVIEW

2.1 Vision 2020 and Science Policies in Malaysia

Wawasan 2020 Malaysia or Malaysian 2020 Vision, launched on 20 February 1991 was aimed for Malaysia to be a developed nation in its own way without following the way of

other developed countries. The 2020 Vision has gained substantial coverage and publicity as Malaysian aimed not to imitate any developed nation such as United Kingdom, Japan, Sweden, or Finland. The 2020 Vision aims to establish development in the area of economic, political, social, psychological, technological and cultural background based on the Nine (9) Challenges proposed (Figure 1). The 2020 Vision is an approach and a guideline to economic, social and political growth of the country to be greatly developed, united, prosperous, democratic, progressive and dynamic.

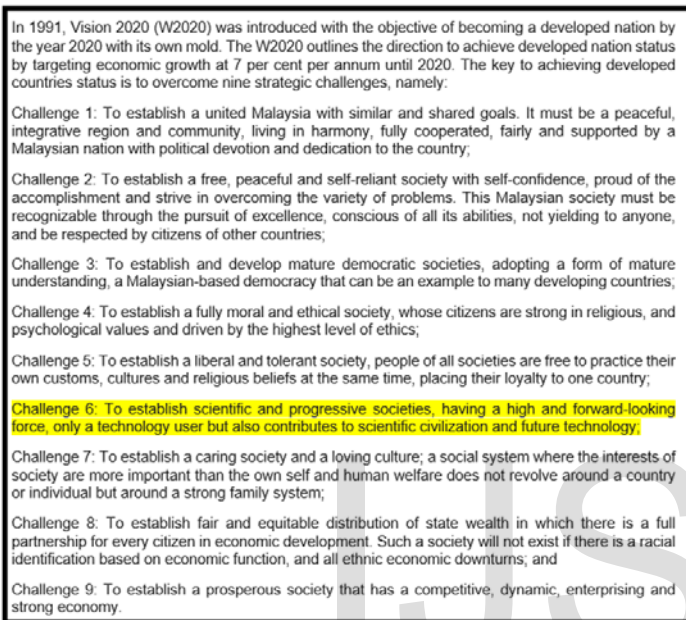


Figure 1: Vision 2020 [8]

In 2020, Malaysia visions to become a developed nation and the objective can only be achieved if Malaysians can overcome the 9 challenges that the government had mentioned before. Most importantly, the science, technology and innovation sector plays a huge role in determining the development phase of the nation and country. In order to structure a solid STI society with interest in science, technology and innovation knowledge, individuals, nation and government have to strive together to accomplish the Vision 2020. The focus on global science, technology and innovation sector for the progressive achievements and status is very important given the opportunity and efforts of Malaysian that are working together to achieve this agenda. In the 10th Malaysia Plan (2011-2015), Malaysia aimed to be powered by an innovation-led economy, to promote private sector as the main driver of the growth through increasing the private-sector investment and dedication to science, technology and innovation [14]. The government has taken several measures to promote industrial innovation through fiscal and financial incentives and public-private partnerships and has allocated research and development funds such as Biotechnology Commercialization Fund, InnoFund, TechnoFund, ScienceFund, and others through MOSTI and its agencies.

Malaysia has adopted a quadruple helix method to improve partnership among government, industry, academia and society in order to achieve the nation's science, technology and innovation policies, priorities and programs more efficiently [15]. The science, technology and innovation policies and strategies; First National Science and Technology Policy (1986-1989); Technology Industry Development: A National Action Plan (1990-2001); Second National State Science and Technology Policy and Action Plan (2002-2010); and Science, Technology and Innovation Policy (2011) are affiliated with the 2020 Vision. These policies and strategies have described the efforts of Malaysia to create progressive scientific and innovative nation and transformation agenda of the country (Challenge 6th of the 2020 Vision). One of the aims of science to action strategy is to strengthen governance and public services to guarantee a system that will facilitate the development and uptake of science and technology agenda [14].

The Science, Technology and Innovation Policy (2011) derives with the theme of "Utilizing STI for Socio-Economic Transformation and Inclusive Growth". Various programs and initiatives have been implemented under all of these science, technology and innovation policies and have accelerated the progress including increased capacity and capacity of research, collaboration between public-funded industrial research organizations, development and commercialization of the country, development of knowledge-based new industry and increased commercialization through the Model National Innovation [7]. However, the country's evaluation capabilities are still not robust and this has resulted in lacking of assessment of the science, technology and innovation programs and policies on a regular basis [14]. In order to manage this issue, National Science Council has been established to strengthen and coordinate the science, technology and innovation strategies of different agencies and align them towards proposing the new Science, Technology and Innovation Master Plan (2020-2030).

The process of scientific nation building is an attempt to develop and become technology creator and to inspire innovation and advance creation for the future. Based on the Malaysian Education Blueprint (2013-2025) that was launched in 2013, the blueprint sets a target of producing 60 000 Malaysian PhD holders by 2025 in order to enhance the supply of high-end science, technology and innovation personnel, [14]. The nation has also set to improve the quality of academic staff by increasing the number of academics with PhDs in public universities, with a target of 75% in research universities and 60% in other public universities and targeted to achieve 100 researchers, scientists and engineers (RSE) per 100,000 workforce by the year 2020 [19]. This has been decided to improve overall human resources, skills and capacity building of Malaysia to be developed country by 2020-2025.

For Malaysia, the scientific and innovative nation is formed from the interest of learning and progressing in the science, technology and innovation industry, the rise of the Fourth Industrial Revolution (Industry 4.0 or 4IR) economy and other science, technology and innovation interaction which at the end been united with the phrase of the scientific

and innovative nation itself. The Industry 4.0 is a period characterized by increasing digitization and interconnection of products, distribution, value chains and business models [9]. It has ushered terms such as “Smart Robots”, “Smart Factories” and “Big Data” to become buzzwords that are used in daily life and understandably, the revolution has necessitated transformation of higher education, as universities rise to shape future technology by developing the very test-beds for innovation, besides educating the future generations. Indeed, emerging disruptive technological innovations are currently changing the landscape of many industries and Malaysian has to meet and overcome these challenges of the new era and expected to be the new technology drivers and emerging innovators.

In 2018, Malaysians celebrated 61 years as an independent nation and from the humble and uncertain beginnings, the nation has grown and evolved significantly into a modern economy and society. Malaysia began with the era of the New Economic Policy (1971-1990), stepped into the 2020 Vision era (1991-2020) and currently the nation has to be ready to face reality of the next 30 years [13]. ‘Transformasi Nasional 2050’ or TN50 is another initiative designed for the future of Malaysia in the period 2020 to 2050. From the vision of becoming a developed nation, the nation aims to excel to be amongst the top countries in the world in economic development, citizen welfare and innovation [13].

2.2 Underpinning Theories

The theories are discussed in terms of the definition and explanation and will be used to further study based on the conceptual framework of this paper:

2.2.1 Theory 1: Goal-Orientation Theories

The goal orientation theories examine the important perspective of achievement motivation emerging from needs, situation-based, self-based, values, and so on. According to path-goal theory, effective leaders engage to assist goal achievement and maximize its value, thus influence and improve the team members’ performance, expectancies and satisfaction [17]. In addition, theoretical propositions have developed to reflect the constructivist worldview influence and emphasis on holism and individuals as central to not only the construction of their career but as well their lives [16]. The types of goals-orientation that are proposed in the study are reward orientation, development orientation and learning orientation.

The development orientation is a continuous lifelong process of developing experiences that focuses on obtaining, pursuing and processing information about life styles and role options, occupational and educational choices, specifically in the career-pathway [10]. The learning-orientation originates from mastery goal orientation theory and it states to one’s purpose of learning, understanding and developing competence and skills can be referred to the purpose of personal learning development and growth [12]. Every organizations should provide opportunities for the leaders to create a learning culture to enhance and inspire their knowledge to achieve its objectives [21].

2.2.2 Theory 2: Leadership Theories

Many theoretical concepts are written and discussed to describe leadership and a total of 66 different leadership theory domains was classified with diversity and novel perspectives that has enriched the leadership knowledge [5]. The prominent concept of the theories are based on the contingency approach, transactional and transformational traits and the proposed framework is enlighten to include a newly discussed theory of leadership in management to provide comparison of novel insights.

2.2.2.1 Theory of Leadership In Management Law (LIM Law 2017)

This theory emphasizes the consequence of consistent pressure of task by the leader with ultimate purpose of achieving perfection in every tasks until the team members reach optimum point of fear and excellence. The theory focuses on the result-oriented leadership style that ensures result driven strategies and commitment of the team members. Continuous instruction passed to them by the leader with impertinent enforcement until they perform beyond expectation to the extent of exhaustion, and later the leader steps in to cultivate this as habitual application to the team members with measures to retain them and progress the organization [20].

2.2.2.2 Theory of Transformational Leadership (1980s)

This theory discusses on values of the leaders transforming the team members by their inspirational nature and charismatic characteristics and entails aspirations, goals, and values of the team members, so that they can perform their work consistent with their values. However applied psychology literature suggests that transformational leadership may lead to detrimental consequences for the team members because of their increased dependency on the leader [6].

2.2.2.3 Theory of Transactional Leadership (1970s)

This theory emphasizes on values of being positive and mutually beneficial between the leader and the team members and in a simple illustration, the transactional leadership behavior consists of a transaction made between the leader and team members, such that the leader provides rewards in return for the team members’ effort [6].

2.2.2.4 Contingency Theory (1960s)

The Contingency Leadership theory discusses that there should not be only a specific or particular way of leading because leaders should have leadership styles based on certain situations and it was developed to apply the approach-concepts to real life situations. The theory describes that there was no single design that worked best for all situations. Solutions to challenges are dependable on the particular situation or environment [11].

2.2.3 Theory 3: Performance Theory

Based on strategic leadership framework study by Elkins and Keller [17], the perceived leaders’ support was related to the performance for example in innovativeness, business advocacy, expected contribution, amount of investment,

and it could also influence any project termination. The performance-based theories are comprised of developmental and outcome aspects. Three major perspectives were proposed within this theory; an individual differences perspective; a situational perspective; and a performance regulation perspective; and each of these perspectives is associated with their own specific performance enhancement interventions and major trends: the relevance of proactivity; increase in teamwork; the importance of continuous learning; globalization and technology [18].

3 PURPOSE OF THE STUDY

Malaysia can be considered one of the most dynamic emerging economies in Southeast Asia as it sustains rapid average growth of over 6.4% per year since 1970 [14]. Malaysian aims to be a developed nation with the launching of Malaysian 2020 Vision on 20 February 1991. Despite having the vision and policies, achieving the goal of becoming a high-income and developed country in 2020 would still be challenging for Malaysia. This is due to the productivity and innovatively growth has slow down and this is supported by two reports published in 2016; the Economic Assessment Report and the Review of Innovation Policy of Malaysia Report. The reports have highlighted the importance of promoting innovation and recommendations that were made for Malaysia to enhance the quality of education and training, to increase the availability of a high-skilled workforce and to improve Malaysia's attractiveness for investment in high value-added activities [15].

The study aims to provide a conceptual framework of future research to find the gaps on the 2020 Vision that leads to factors not achieving high productivity and innovatively growth and lack of the scientific and innovative nation building, by focusing on leaders and team members in the science, technology and innovation organizations in Malaysia. The focus of the study is also to discover the relationship of different goals-oriented leaders and their leadership styles' influence on their performance. This is due to the government needs to include creating a productive workforce and improving the necessary skills of the workforce and the organizations to face the challenges of industrial development through a culture of excellence in advancing on the human capital building of scientific and innovative nation, without compromising the goals of community restructuring.

By making science, technology and innovation an im-

ported to develop capabilities and capabilities in strategic and knowledge-based workforce as well as advancing the culture of science, technology and innovation in the process of developing high-performance organizations. An organization that can maintain and progress as a learning organization will have a strong competitive advantage and competences to become outstanding in the business community [21]. However, without sufficient guidance and goals from the leaders, team members may lack direction and loose focus. Scholars argue that the influence of leadership styles on the relationship between goals-orientation and performance is not well-documented [6].

Therefore, the future study will contribute to the literature by analyzing influence of leadership styles on the relationship between goals-orientation and performance. Findings from the study will help to understand a different perspective on the high productivity and innovatively growth and which type of leaders are performing well in the science, technology and innovation sector.

3.1 Research questions

In line with the above mentioned purposes, the conceptual framework has been designed to find out relationships of the following research questions:

- i. What is the quality and capability of dynamic scientific nation building of Malaysia based on the 2020 Vision incorporated with the science, technology and innovation policies?
- ii. Which type of goals-oriented leaders performed competently in the science, technology and innovation industry?
- iii. How does leadership styles influence their work performances?

3.2 The Proposed Framework Model

The proposed framework for this study is based on previous study by Bhattacharyya & Jha [2] who worked on developing the model on profit orientation with organizational variables such as empowerment and performance and Domingues [6] who analyzed the interactive effects of goal orientation and leadership style on sales performance. Based on their frameworks, the study will propose a new integration of variables that will examine the heads or the leaders of the organizations in the science, technology and innovation sector; their goals-orientation focus and commitment, leadership styles and performance. The proposed framework in Figure 2 illustrates the proposed relationship of variables of the study. This new theoretical framework departs from current theories concerning from the direct influence of leaders leadership styles and goals-orientation towards performances in the organizations.

-
- *Siti Nur Syahirah Mohd Adnan is currently pursuing doctorate degree in Management in Limkokwing University of Creative Technology, Malaysia, E-mail: syah_13@yahoo.com*
 - *Assoc Prof Dr Raju Valliappan is currently a senior lecturer in Limkokwing University of Creative Technology, Malaysia, E-mail: Valliappan.raju@limkokwing.edu.my*

portant parts of the organizations' socioeconomic planning and development, the leaders of these organizations are ex-

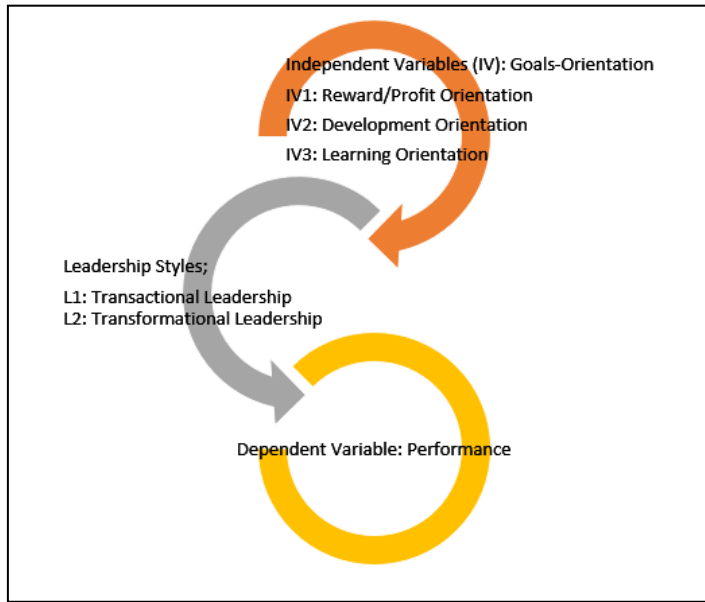


Figure 2: Framework Model

3.4 Definition of the Variables

The list below is the definition and explanation of terms that are suggested throughout this model:

3.4.1 Dependent Variable (DV): Performance

The performance achievers are people that are highly motivated to accomplish organization objectives, aiming to obtain rewards and recognition from the leaders and organizations and they frequently compare themselves to their peers [6]. In practice, it might be difficult to describe performance because only actions relevant for organizational goals constitute performance measurement and one needs benchmarks for evaluating the degree to which the performance meets the organizational goals [18]. Performance will be measured by the accomplishment of the organizations based on the science, technology and innovation policies key factors such as human capital and so on via completeness, time-line, standard of accuracy, profit and satisfaction.

3.4.2 Independent Variable (IVs): Goals-Oriented

IV1: Reward Orientation: The reward-based-goal is a monetary target such as gratuity, increment, and bonus given to the employees of organizations. However, it is not only money and bonuses that can inspire the leader and the team members, recognition, appreciation, respect, acknowledgement, and honor also play the role as the reward given that incites them to increase their performance [11]. Thus, the reward orientation variable will comprise of both recognition and monetary aspects.

IV2: Development Orientation: The development based goal is a promotion-wise target given to the employees of the organizations. The target can be defined as special programs that are developed for the high-potential talents to be groomed and to

enhance leadership levels as well as promotion-trainings and promotion-programs relevant and more advance than their current job specifications so that they are promoted and retained in the organizations [2]. Thus, the development orientation variable will consist on promotion-career-development initiatives.

IV3: Learning Orientation: The learning orientation can be defined as a intense desire to improve and master skills and abilities as well as a intense belief that achievement are opportunities to further improve their self-competence [6]. Thus, the learning orientation variable is in the form of education, experiences of skills and trainings given to the employees of the organizations.

3.4.3 Other Variable: Leadership Styles

In the previous study of the leadership style [1], teams of scientists at a NASA research center were surveyed to determine whether leaders can influence the innovation of team members and the results showed effectiveness of leadership behavior was dependent on the leaders' skills and role. The transformational leadership behavior can be described by the leaders that are transforming the aspirations, values, and goals of the team members so that they perform their work better and that they will be remunerated based on their efforts. While the transformational leadership impacts the team members' motivations, attitudes, beliefs and inspires them to accept the objectives of the organizations as their own goals [6].

4 METHODOLOGY

4.1 Population and Sample of the Study

This framework of the study defines the population to be individuals that hold the position as the head of organizations in the Science, Technology and Innovation Sector in Malaysia. The heads of the organization includes Honorable Minister, Director Generals, and Chief Executive Officers. This study will conduct interviews with more than 10 leaders / key figures of science, technology and innovation sector-involvement-organizations namely in the sectors of bioeconomy/biotechnology, nuclear, remote sensing/geospatial, space, science academy, nanotechnology, and so-on. The chosen leaders will be interviewed based on the organizations-work-capacity and performance in science, technology and innovation sector under the purview of MOSTI in Malaysia.

4.2 Study Design and Sampling Technique

For this study, qualitative research based on interviews of more than 10 chosen leaders from the respective sectors of science, technology and innovation. The descriptive and correlational interview questions will be designed and structured to further relate with the research statements and theories.

4.3 Analysis Method

The collected interviews answers and data will be analyzed using thematic analysis. Hence the qualitative data analysis includes an inductive approach and strategy construction. These will indicate development of conceptual categories, descriptive relationships and empirical theories based on social reality.

5 LIMITATION AND RECOMMENDATION

The basic objective of the study is to discuss the framework model of the effects of goals-orientation and leadership styles of the leaders towards performance. The study is based on the 2020 Vision and Science, Technology and Innovation policies key factors and gaps in Malaysia. Attention is also given to the topic that discusses the theories related to different goals-orientation, performance and leadership styles. The study will further research on the topic and it is hoped that the findings and results will contribute to the better understanding of the need for adopting the goals-orientation and participating leadership qualities in the organization that enhances the organizational performance. Building, developing, managing, and sustaining organizations are a very challenging management task [21]. The study is expected to observe and analyze different styles of leadership that enhance performance. Furthermore, the study hopes that with good goal orientations and leadership styles, the performance and satisfaction of both leaders and team members will be attained in the organizations.

REFERENCES

- [1] Andrews, F. M., & Farris, G. F., (1967), Supervisory Practices And Innovation In Scientific Teams, *Personnel Psychology*, 20, 497-515.
- [2] Bhattacharyya S.S., Jha S., (2014), Development Of A Model On Profit Orientation With Organizational Variables In The Context Of Emerging Economies, *Journal of Asia Business Studies*, Vol. 8 Issue: 3, pp.264-277, <https://doi.org/10.1108/JABS-05-2013-0026>
- [3] Cohen, W.M. and Levinthal, D.A. (1990), Absorptive Capacity: A New Perspective On Learning And Innovation, *Administrative Science Quarterly*. 35: 128-152. <https://doi.org/10.2307/2393553>.
- [4] Day D.V., (2018), The Leadership Quarterly Yearly Review: Pushing The Frontiers Of Leadership Scholarship, *The Leadership Quarterly*, Volume 29, Issue 1, <https://doi.org/10.1016/j.leaqua.2018.01.001>
- [5] Dinh J. E., Lord R. G., Gardner W. L., Meuser J. D., Liden R. C., and Huc J., (2014) Leadership Theory And Research In The New Millennium: Current Theoretical Trends And Changing Perspectives, *The Leadership Quarterly*, Volume 25, Issue 1, February 2014, pages 36-62, <https://doi.org/10.1016/j.leaqua.2013.11.005>
- [6] Domingues, J., Vieira, V.A. & Agnihotri, R. Mark Lett, (2017) The Interactive Effects Of Goal Orientation And Leadership Style On Sales Performance, *Springer Link*, Volume 28, Issue 4, pp 637-649 <https://doi.org/10.1007/s11002-017-9436-3>.
- [7] DSTIN (2011), *Dasar Sains, Teknologi dan Inovasi Negara, MASTIC*, Ministry of Science, Technology and Innovation (MOSTI), viewed on 7 March 2018, <https://mastic.mosti.gov.my/en/sti/kandungan-sti/row/sti-policies/national-science-technology-and-innovation-policy>
- [8] EPU (2018) Economic Planning Unit, *Dasar Negara*, viewed on 7 March 2018,

- <http://www.epu.gov.my/ms/dasar-utama/wawasan-2020>
- [9] Geissbauer R., Schrauf S., Koch V., Kuge S. (2014), *Industry 4.0-Opportunities and Challenges of the Industrial Internet*, Pricewaterhouse Coopers, December 2014
 - [10] Hansen, L.S. (1976), "Career Development Education: Humanizing Focus for Educators", *Journal of Career Development*, June, Volume 3, 42-48.
 - [11] Igbakemen GO and Odivwri JE (2015) Impact of Leadership Style on Organization Performance: A Critical Literature Review. *Arabian Journal of Business and Management Review*, Volume 5, Issue 5:142.
 - [12] Kaplan A. and Maehr M. L., (2007). The Contribution and Prospects of Goal Orientation Theory, *Education Psychology Review*, Volume 19, Number 2, page 141-184, DOI 10.1007/s10648-006-9012-5.
 - [13] MyTN50 (2018), *Malaysia's Key Development Eras*, viewed on 7 March 2018, <https://mytn50.com/>
 - [14] OECD (2016a), "Malaysia", in *OECD Science, Technology and Innovation Outlook 2016: Organisation for Economic Co-operation and Development*, OECD Publishing, Paris http://dx.doi.org/10.1787/sti_in_outlook-2016-en.
 - [15] OECD (2016b), *OECD Reviews of Innovation Policy: Malaysia 2016*, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264255340-en>.
 - [16] Patton W. and McMahon M., (2014) *Development and Systems Theory, Connecting Theory and Practice*, Career Development Series, 3rd edition, ISBN 978-94-6209-634-9
 - [17] Teri Elkins and Robert T. K. (2003) *Leadership In Research And Development Organizations: A Literature Review And Conceptual Framework*, *The Leadership Quarterly*, 14, page 587-606, doi:10.1016/S1048-9843(03)00053-5.
 - [18] Sonnentag S. and Frese M., (2001) *Performance Concepts and Performance Theory, Psychological Management of Individual Performance*, John Wiley & Sons, Ltd.
 - [19] StudyMalaysia.com (2015), *The Malaysian Higher Education System - An Overview, A Snapshot of Higher Education Institution in Malaysia, Education Guide Malaysia 13th Edition, Chapter 2*
 - [20] Valliappan, Raju. (2017). Theory of LIM Law: Leadership Style.
 - [21] Vikineswaran A. M. (2017) Theorizing Career Success Perception As A Mediator Between Managerial Learning and The Learning Organization, *Special Issue Volume 3 Issue 1*, pp. 597 - 611, doi-<https://dx.doi.org/10.20319/pijss.2017.s31.597611>.