

# The Secret to Enhancing Innovativeness in the Digital Industry

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The effects of leadership styles on organisational innovativeness are still arguable due to inconsistencies. Many researchers have analysed the direct and indirect relationships with antecedent variables of organisational innovativeness. The influence of transformational leadership styles has been widely approved to have an effect to organisational innovativeness. However, organisations sometimes fail to achieve their organisational innovativeness due to their limited understanding of the relationships between leadership, and knowledge-based empowering interaction that will enhance organisational innovativeness. This study is constructed to fill a research gap between Digital Transformational Leadership Styles and Organisational Innovativeness with Knowledge-Based Empowering Interaction as mediator. It deploys 32 digital firms' owners and executives in Indonesia as samples. Data was gathered through online questionnaire of Likert's Scales, and analysed with Smart Partial Least Squares. The result shows that organisations should consider the Knowledge-Based Empowering Interaction to increase Organisational Innovativeness.

**Key words:** *Digital Transformational Leadership, Knowledge-Based Empowering Interaction, Organisational Innovativeness*

## Introduction

Industry 4.0 has changed the business world today by being characterised by several technology components: Cyber-Physics Systems, Internet Services, Smart Factory & Smart Products, M2M (Machine-to-machine) communication, Big data and Cloud computing.

Mastery of knowledge, science and technology is the key to winning competition (Hermann, Pentek, & Otto, 2015). Technology can be studied under technological elements such as technical devices (technoware), human devices (humanware), information devices (infoware), and organisational devices (orgaware) in relation to knowledge management. Technical devices increase added value or productivity; human devices promote science, skills and work ethics; information devices support applied technology; and organisational devices increase the ability of human resources, management practices and organisational connection to achieve positive results (Daryani et. al., 2012). In the era of digital and knowledge-based technology, the terms frequently heard include digitalisation and innovation, so that the success factor of industries, cities and countries is speed or acceleration. Today's changes challenge established theories and systems as well as people's paradigms from the industrial era to the information age, which make it difficult to balance and understand these changes without rapid digitalisation, knowledge and innovation transformation.

Knowledge management and innovation are processes for creating, exploiting, renewing, applying and understanding knowledge to enhance a new ways for competitive advantage (Darroch, 2005). Knowledge sharing increases new knowledge and organisational capabilities to create innovation. Knowledge sharing has been studied as the mediator between leadership styles and innovation which will enhance organisational innovativeness (Birasnav et. al., 2013; Khan et. al., 2018; Noruzy et. al., 2013; Yaseen et. al., 2018). Organisational leadership is the most important factor for successful execution of knowledge management (Davenport et al., 1998). However, it is not really enough to produce organisational innovativeness.

## **Literature Review**

Leadership inspires employees to acquire, transfer and apply knowledge for innovative performance (Lopez & Esteves, 2013). Studies directly examining the relationship between transformational leadership and innovative behaviour have found inconsistencies. Some studies found transformational leadership to have a negative impact on organisational innovation and suggest future research regarding the concept of knowledge sharing as an important antecedent to organisational innovation (Basu & Green, 1997; Calisir et. al., 2016; Ng & Kee, 2016; Pieterse et. al., 2009; Sethibe, 2018). Some research has found no effect from transformational leadership styles concerning exploratory innovation (Jansen et. al., 2009), while Other studies have found a positive effect (Boerner, Eisenbeiss, & Griesse, 2007; Calisir et. al., 2016; Noruzy et. al., 2013; Para-González et. al., 2018; Yaseen et. al., 2018). There is a positive relationship between the construction of transformational leadership and knowledge management activities (Analoui et. al., 2013; Birasnav, 2014), knowledge sharing (Masa'deh, et. al., 2016; Mohammadi & Boroumand, 2016), and

organisational innovation (Garcia-Morales et. al., 2008). Leadership styles have different results in their implementation as shown in the above research gap .

### ***Digital Transformational Leadership***

Companies experience exponential evolution in available technology systems and digitisation is creating more and more fields of value creation and increasing linkages through the Internet. Everything leads to a real quantum leap in solutions and concepts. Digital transformational leadership in companies such as Facebook, Twitter, Instagram, Airbnb, Alibaba and Amazon is needed to stay alive.

Leadership describes the relationship of interaction between leaders and subordinates that influences subordinates to behave toward completing tasks; maximising productivity, clearing vision and improving organisational outcomes as well as organisational innovativeness to search for new ideas, abilities and creativity. Leaders should improve togetherness in the organisation, joint commitment, and unite members in achieving their organisational goals and objectives. Transformational leadership is examined as an antecedent for organisational learning and knowledge sharing to improve organisational innovation and performance (Arif & Akram, 2018; Garcia-Morales et al., 2008; Garcia-Morales et. al., 2012; Matzler et. al., 2012; Mohammadi & Boroumand, 2016; Sethibe & Steyn, 2015).

Transformational leadership consists of four styles: idealised influence, inspirational motivation, intellectual stimulation and individualised consideration. Ideal influence or charisma of leaders provides vision, mission and inspires subordinates. Inspirational motivation, which occurs when leaders act as role models for their subordinates, brings intellectual stimulation, so that leaders stimulate their assistants' efforts to be innovative and creative. Finally, individual consideration provides support, guidance and training to followers (Avolio & Bass, 1999; Bass & Riggio, 2006).

Leadership transforms organisational capability, digitalisation and innovation. Leaders need to support the development of a business environment that shifts from an economy of product value to a business model based on experience and knowledge. Changes occur in all basic aspects and leadership should have organisational resilience and ability to adapt to changes that are exponential in order to improve organisational innovation and performance in this competitive environment (Arif and Akram, 2018, Subramony et. al., 2018, Yaseen et. al., 2018).

In the era of digital technology, transformation leadership should not only understand changes in the digital world, but also be an active designer of change. Digital

transformational leadership that sees the threat of digital transformation should be ready to rescind old business and emerge to new businesses by comprehensive adaptation and accelerating with faster changes to deliver innovations that secure long-term success (Swift et. al.,2018). Digital transformational leadership understands the pace of technological development and is able to increase the capacity to change to meet new challenges and consumer demands. Leaders can maintain the speed of change or risk losing to competition.

Digital transformational leadership leads the change in management and is responsible for deciding where, when and how to embrace digital disruption. The leader has the final say to decide which innovation best suits organisational goals and has the foresight to predict where the next hurdle will come from. Leaders create success in the digital age through three habits (Swift & Lange, 2018):

1. Following the trends of emerging technologies
2. Determining the direction of digital development and investment strategy
3. Leading the team to change quickly and precisely

Being a leader that thrives in the digital age and focuses on development of digital tools will accelerate the pace of change across organisations at an unprecedented speed. Digital leaders must be prepared to pivot their business strategies instantly. They need the infrastructure in place to guide change and minimise employee resistance. However, even more importantly, they need digital talents who can cope with digital transformation to envision a new future and empower the workforce to embrace it.

### ***Knowledge-Based View (KBV)***

In resources-based value theory (RBV), Barney determines competitive advantage as the ability to control company resources that are valuable, rare, cannot be imitated or replaced including company management expertise, organisational processes and routines as well as information and knowledge (Barney, 1991; 2001). Knowledge is the most strategic resource (Grant, 1996), thus a superior organisation is a learning organisation that produces knowledge that improves the past and creates breakthroughs. Knowledge is the result of interaction between individuals, groups, and organisational units that are influenced by internal and external motivational factors or empowerment that will encourage the creation of new knowledge and innovations which can enable increased performance and productivity.

There are two types of knowledge, explicit and tacit knowledge also known as intangible knowledge. Explicit knowledge is conveyed in words and numbers, scientific formulas, specifications, standard operating procedures, graphics, manuals, etc., and passed on from one person to another in a systematic way. Tacit knowledge exists in the human mind, very

personal and difficult to form, making it difficult to communicate or convey to others, such as feelings, intuition, body language, physical experience and practical instruction, but also rare or unique which cannot be imitated or substituted (John & Andrew, 2017).

Both tacit and explicit knowledge exist in the epistemological dimension of organisational learning, the process of creating knowledge and learning organisations that work through various stages of socialisation (tacit to tacit), externalisation (tacit to explicit), combination (explicit to explicit) and internalisation (explicit to tacit). After internalisation is achieved, the process begins again, starting from a higher level of knowledge, resulting in cognitive evolution with increasing accumulation of knowledge with a spiral shape (Bass, 1999). Synergising both tacit and explicit knowledge creates new knowledge.

Knowledge sharing consists of two dimensions: knowledge donation (KD) and knowledge collection (KC). Knowledge donation consists of sharing personal intellectual capital through conversation and knowledge collection is earned by intellectual capital through consulting with partners. Knowledge emerging from KD and KC improves organisational routines, processes and practices for innovation (Razak et. al., 2018; Wang & Kwek, 2018). Knowledge shared and exchanged within organisations will produce new information and experiences that grow linearly, but if new knowledge receives feedback or support, it will grow exponentially (Liao et al., 2007).

KBV theory proposes the ability to create value added creation, transference and knowledge, incorporating knowledge that is essential to the process of using and discussing various organisational knowledge resources that can be transformed into tangible resources in product or process innovation (Cepeda-Carrion, et. al. 2017). Organisations that are more flexible and dependable to change and exploit organisational knowledge resources into innovation will achieve and maintain competitive advantage and contribute to improving business performance and market value (García-Zamora, González-Benito, & Muñoz-Gallego, 2014).

### ***Empowered Interaction Capability***

Company's interactions with customers determine company success . There are six interaction capabilities: individuated interaction , relational interaction , ethical interaction , empowered interaction , developmental interaction and concerted interaction (Karpen et. al., 2012, Karpen et. al., 2015). Each of these strategic interaction capabilities is meaningful and mutually integrated, which is beneficial as a relevant theme from Service-dominant Logic, a concept of service interaction between companies and customers (Vargo and Lusch, 2004; Vargo and Lusch, 2017; Vargo et. al., 2008).

Empowered interaction capability becomes a special talent needed by leaders to deal with more complex concepts requiring cognition (the process of gaining knowledge) and related to intellectuals (Karpen et. al., 2012; Karpen et. al., 2015). Empowered interaction capability encourages individual participants to form profitable resources and experiences that facilitate, enhance, and actualise shared value creation in the organisational level of interaction capabilities. This interaction can be developed in sharing knowledge to encourage the emergence of innovations that organisations need to maintain competitive advantage that results in organisational performance (Wang and Wang, 2012; Wuryaningrat, 2013). This study refers to Karpen's idea regarding the concept of Empowered Interaction Capability adopted in the process of dynamic interaction between organisational members in order to improve team performance (Karpen et. al., 2017).

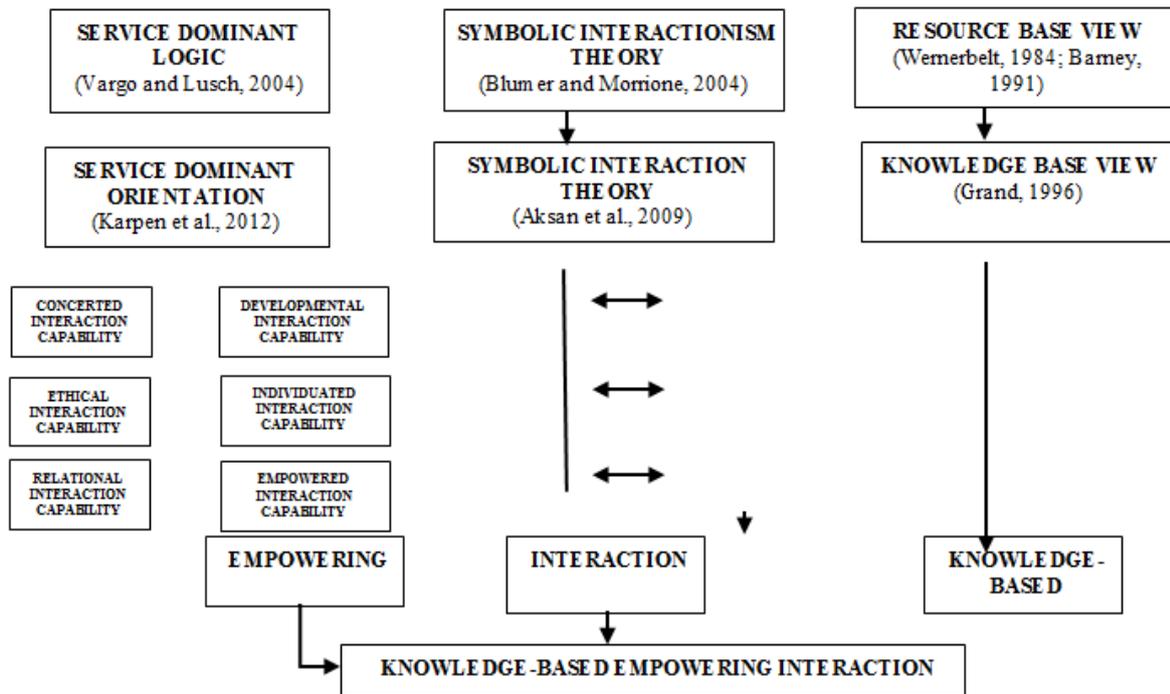
### ***Symbolic Interaction Theory***

Symbolic interaction is a process of interpretive action that examines the meaning of mutual interaction between individuals in a social environment (Blumer, 1969, Blumer and Morrione, 2004). Meaning appears when reciprocal interaction between people takes place, while being meaningless without it (Aksan et. al., 2009). Symbolic interactions are based on three basic propositions. According to Blumer and Morrione, (a) humans develop their attitudes towards objects according to the meaning of objects, (b) meaning is deduced from interaction, (c) meanings change in interpretive processes (Blumer and Morrione, 2004).

### ***Derivation of Knowledge-Based Empowering Interaction***

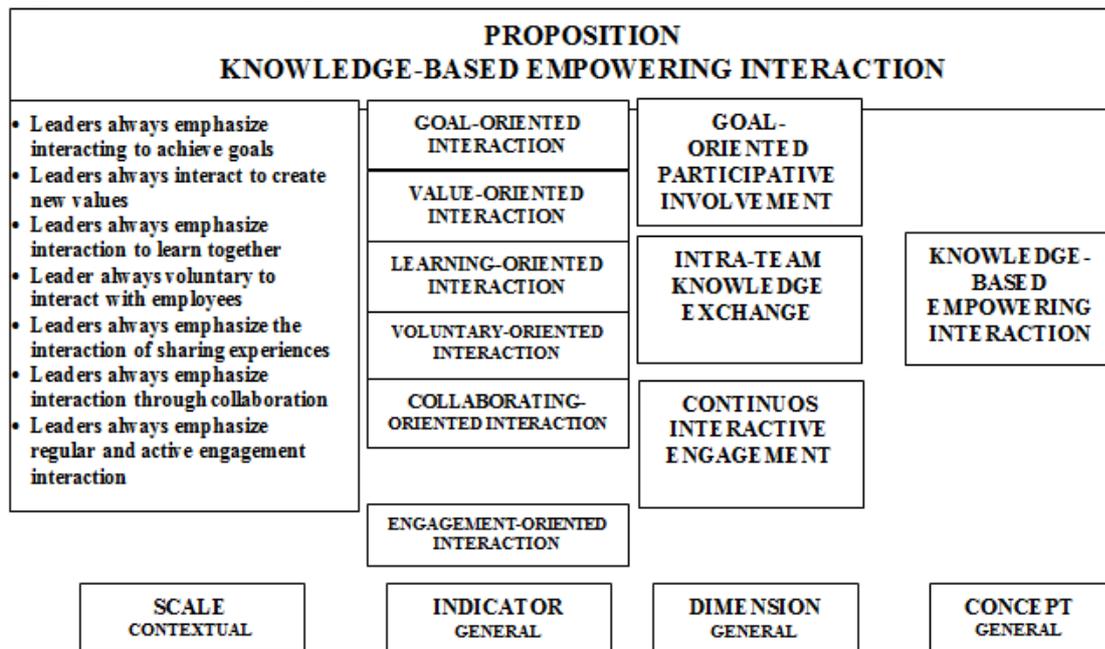
Knowledge-based empowering interaction (KEI) is a newly constructed concept originating from service-dominant orientation theory (Karpen et. al., 2012, Karpen et. al., 2015); symbolic interaction theory (Blumer and Morrione, 2004; Aksan et. al., 2009); empowered interaction capability and interaction concept, which can be combined as empowering interaction. as well as resource (Wernerfelt, 1984; Barney, 1991); and knowledge-based view (Grant, 1996) as keys to innovation (see figure 1). This research synthesises the process of various concepts and theories to obtain KEI as a strategic mediator between types of leadership and organisational innovativeness.

**Figure 1.** Derivation of Knowledge-based Empowering Interaction



KEI can be understood as an organisational routine that is internally embedded through the life of the organisation that includes initiating and encouraging members towards goal-oriented involvements, intra-team knowledge exchanges, and continuous interactive engagements to improve organisations.

**Figure 2.** Research Proposition Model



### ***Organisational Innovativeness***

Innovation is an important component of sustainable competitive advantage but organisations are mostly designed to promote order and routines that are not conducive to innovation, therefore leadership should provide direction and create an environment that supports creativity and innovativeness through various processes of organisational learning, new knowledge and essential competencies (Birasnav et. al., 2013; Ryan & Tipu, 2013; Yaseen et. al., 2018). Innovation can improve efficiency, productivity, competitiveness and ultimately performance (Meyer & Subramaniam, 2014). Organisations create competitive advantage through innovation of new products or services, market expansion, production processes improvement and service quality (Damanpour et. al., 2018).

Utilisation of external organisation resources such as availability of natural resources, technology, and labour market; and utilisation of internal organisation resources such as employee skills and capability, knowledge sharing, organisational structure and work systems create organisational innovativeness (Saleh et. al., 2018). It's important to manage resources and intellectual abilities inherent in the organisation and each organisational member (through both explicit and tacit knowledge) is a valuable and strategic source for generating innovation. Knowledge management and innovation are important competencies for improving organisational performance (Grant, 1996). In order to develop intellectual capital, organisations must use social capital which can be attained through interaction between members and the ability of the organisations to introduce innovation as a form of newness (Wuryaningrat, 2013).

Four types of innovations consist of product/service, process, market and organisation (OECD, 2005; Rajapathirana & Hui, 2018). Product/service innovation creates new products or services such as technical specifications and the latest software for expansion into new markets and industries (Damanpour & Gopalakrishnan, 2001). Process innovation is the implementation of a new method of production or delivery. Market innovation is new marketing method in product design, product placement, promotion, and pricing of products in order to penetrate new markets or increase company sales. Organisational innovation is the implementation of new methods in the practice of business and external company relations which will improve company performance by updating organisational systems, procedures, and routines to encourage team cohesion, co-ordination, collaboration, knowledge sharing and learning (OECD, 2005; Rajapathirana & Hui, 2018).

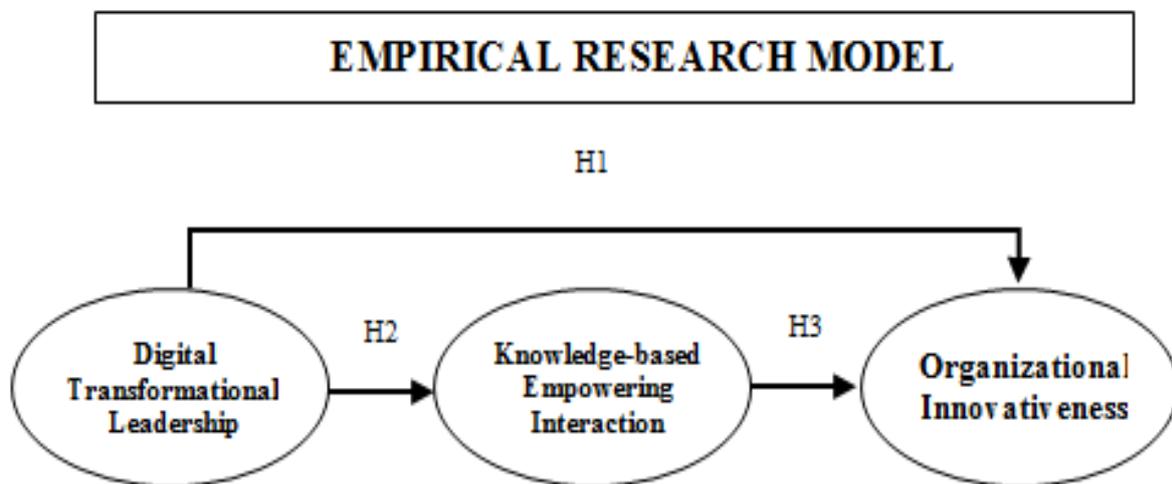
Numerous studies have reported that leadership styles such as transformational and transactional leadership contribute towards innovation through certain mediators such as knowledge sharing, organisational learning and HRM practices (Garcia-Morales et. al., 2012; Khan et. al., 2018; González et. al., 2018; Sethibe & Steyn, 2015). Transformational

leadership has a direct impact on innovation because top management strives to foster innovation, increase growth and profitability (Matzler et. al., 2012).

The main objective of this study is to systematically track the impact of knowledge-based empowering interaction (KEI) between leadership styles towards organisational innovativeness in digital organisations. It adopts a three-dimensional model of innovation related to the service sector, consisting of product, process and market innovation.

### *Empirical Research Model*

**Figure 3.** Empirical research model developed for this study.



### *Research Hypothesis*

The research question states: should organisations consider knowledge-based empowering interaction as increasing organisational innovativeness? This study will test and analyse relevant data in the digital industry. It is expected that conclusions can be drawn to answer the research question and analyse evidence according to the hypothesis formulated in the below table:

**Table 1:** Research Hypothesis

No	Hypothesis
Hypothesis 1	Digital Transformational Leadership has a positive effect on Organisational Innovativeness.
Hypothesis 2	Digital Transformational Leadership has a positive effect on Knowledge-Based Empowering Interaction.
Hypothesis 3	Knowledge-Based Empowering Interaction mediates the relationship between Digital Transformational Leadership and Organisational Innovativeness

### Research Method

For this research, data is drawn from a survey of knowledge practices in the context of digital firms in Indonesia. In addition, the survey instrument contains instructions for completion and research variables, which consist of t organisational innovativeness, digital transformational leadership styles and knowledge-based empowering interaction.

The study adopts a self-reporting data management approach. Questionnaires are distributed online to top management from digital industries as well as e owners who are familiar with the company activities and practices. Purposive sampling is used to collect data from the directory of digital firms. Data processing data deploys Smart PLS to answer research questions. All top management voluntarily took part in this survey without any expectation for reward. There are 32 valid responses from owners or top management of digital start-up companies.

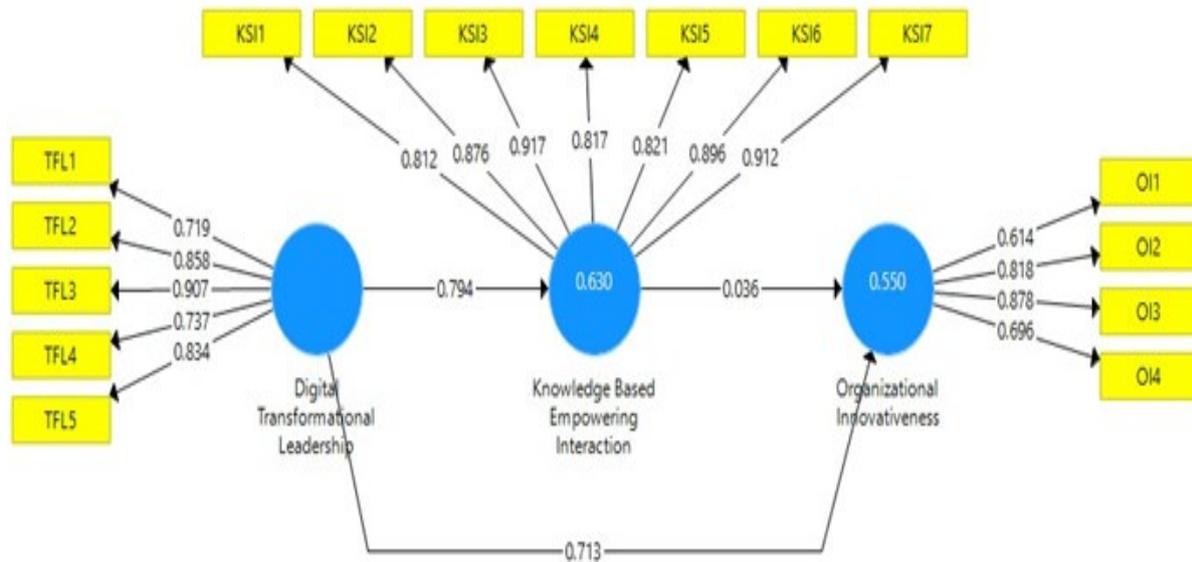
### Results

Statements that are considered valid should have an outer loading value greater than 0.5 in descriptive statistics using Smart PLS. Loadings range from 0.7 to 0.9 and all Cronbach's alpha values are greater than 0.70.

**Table 2:** Test Reliability and Validity

Variable	AVE	Composite Reliability	Cronbach's Alpha
Knowledge-Based Empowering Interaction	0.757	0.956	0.946
Organisational Innovativeness	0.752	0.83	0.736
Digital Transformational Leadership	0.766	0.908	0.871

**Figure 4.** Result of Smart PLS



Digital transformational leadership is measured by scales developed by Podsakoff et. al., (1996) with digital terms. Digital transformational leadership scale consists of five items. Organisational innovativeness is assessed by scales developed by Liao et. al., (2007) with digital terms. The scale comprises of four items. Knowledge-based empowering interaction scale consists of seven items. All items use a five-point Likert scale anchored from 1, strongly disagree, to 5, strongly agree.

The result of Smart PLS is shown in Fig.4. Digital transformational leadership has a positive direct relationship with organisational innovativeness (H1) and relates positively to knowledge-based empowering interaction (H2). Knowledge-based empowering interaction relates positively to organisational innovativeness and mediates the relationship between digital transformational leadership and organisational innovativeness (H3).

## Discussion

The results show that leadership types influence organisational innovativeness, which is consistent with previous studies (Arshad et. al., 2016; Jeyaraman et. al., 2018; Messersmith & Chang, 2017; Para-González et. al., 2018). The empirical model demonstrates that digital transformational leadership has positive effects on knowledge-based empowering interaction, differing from research conducted by Masa'deh et. al. (2016). Therefore, this study proposes knowledge-based empowering interaction (KEI) as essential to enable employee innovation.

This study supports previous research which states that knowledge-based empowering interaction positively affects organisational innovativeness (Garcia-Morales et. al., 2012;

Khan et. al., 2018; Noruzy et. al., 2013). Other results show that leadership type has a positive impact on organisational innovation, which differs from previous research (Basu & Green, 1997; Calisir et. al., 2016; Pieterse et. al., 2009;). There is a strong relationship between digital transformational leadership and organisational innovativeness, mediated by knowledge-based empowering interaction. Organisations that successfully implement knowledge-based empowering interaction will generate innovation in terms of new products which correlates with previous research (Cheng & Krumwiede, 2011; Jimenez-Jimenez & Sanz-Valle, 2011).

## **Conclusions**

The study makes a scientific and practical contribution to discussions around knowledge-based empowering interaction, innovation and the digital transformational leadership of practitioners in Industry 4.0. It creates an understanding of knowledge-based empowering interaction which comes from the term empowering interaction capability of knowledge sharing which is needed for a reasonable scientific discussion to impact innovativeness.

The study's practical contributions are twofold: first, the definition given for knowledge-based empowering interaction helps clarify the basic understanding of the term knowledge sharing amongst practitioners. Second, six design indicators can be used for implementing knowledge-based empowering interaction scenarios in companies. They will help identify cases and guidance during implementation stages.

The study limitations include the sample and research method applied as the study only focuses on organisational innovativeness as the mediator. Other research could look at different mediators such as competitive advantage, intellectual capital and absorptive capacity. Furthermore, it is possible that a topic related to knowledge-based empowering interaction might have been overlooked, consequently creating an imperfect definition of knowledge-based empowering interaction.

For further research, both academics and practitioners are encouraged to test the accuracy and usefulness of the definition provided and challenge their utility of knowledge-based empowering interaction, which is an integral part of organisation behavioural as outlined by Razak et. al. (2018) according to whom organisational learning, competitiveness and innovation are platforms to prepare and develop human capital.



## REFERENCES

- Aksan, N., Kisac, B., Aydin, M. & Demirbuken, S. 2009. Symbolic interaction theory. *Procedia - Social and Behavioural Sciences*, 1, 902-904.
- Analoui, B. D., Doloriert, C. H., & Sambrook, S. (2013). Leadership and knowledge management in UK ICT organisations. *Journal of Management Development*, 32(1), 4-17. doi:10.1108/02621711311286892.
- Arif, S., & Akram, A. (2018). Transformational Leadership and Organisational Performance. *SEISENSE Journal of Management*, 1(3), 59-75. doi:10.5281/zenodo.1306335.
- Arshad, A. S., Rasli, A., Arshad, A. A., & Mohd Zain, Z. (2016). Transformational Leadership and Business Performance: An Insight From Technology-based SMEs in Malaysia.
- Avolio, B. J., & Bass, B. M. (1999). Re-examining the components of transformational and transactional leadership using the Multifactor Leadership Questionnaire. *Journal of Occupational and Organisational Psychology*, 72, 441-462.
- Barney, J. (2001). The resource-based view of the firm: Ten years after 1991. *Journal of Management*, 27(6), 625-641. doi:10.1177/014920630102700601.
- Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120.
- Bass, B. M. (1999). Two Decades of Research and Development in Transformational Leadership. *European Journal Of Work And Organisational Psychology*, 8(1), 9-32.
- Bass, B. M., & Riggio, R. E. (2006). *Transformational Leadership*, 2nd ed. Lawrence Erlbaum Associates, Inc. NJ.
- Basu, R., & Green, S. G. (1997). Leader-member exchange and transformational leadership: An empirical examination of innovative behaviours in leader-member dyads. *Journal of Applied Social Psychology*, 27, 477-499.
- Birasnav, M. (2014). Knowledge management and organisational performance in the service industry: The role of transformational leadership beyond the effects of transactional leadership. *Journal of Business Research*, 67(8), 1622-1629. doi:10.1016/j.jbusres.2013.09.006



- Birasnav, M., Albufalasa, M., & Bader, Y. (2013). The role of transformational leadership and knowledge management processes on predicting product and process innovation: An empirical study developed in Kingdom of Bahrain. *Tékhné*, 11(2), 64-75. doi:10.1016/j.tekhne.2013.08.001.
- Blumer, H. 1969. *Symbolic Interactionism: Perspective and Method*. University of California Press, Berkeley.
- Blumer, H. & Morrione, T. J. 2004. *George Herbert Mead and Human Conduct*. Walnut Creek, CA: AltaMira Press.
- Boerner, S., Eisenbeiss, S. A., & Griesser, D. (2007). Follower Behaviour and Organisational Performance: The Impact of Transformational Leaders. *Journal of Leadership and Organisational Studies*, 2007, Vol. 13, No. 3, 13(3), 15-26. doi:10.1177/10717919070130030201.
- Calisir, F., Gumussoy, C. A., Basak, E., & Gurel, G. (2016). Effect of Organisational Learning, Transformational Leadership, and Market Orientation on Firm Performance. *International Journal of Innovation and Technology Management*, 13(03). doi:10.1142/s0219877016400010.
- Cheng, C. C., & Krumwiede, D. (2011). The effects of market orientation on new service performance: the mediating role of innovation. *Int. J. Services Technology and Management*, 16(1), 49-73.
- Damanpour, F., & Gopalakrishnan, S. (2001). The Dynamics of The Adoption of Product and Process Innovations in Organisations. *Journal of Management Studies*, 38(1).
- Damanpour, F., Sanchez-Henriquez, F., & Chiu, H. H. (2018). Internal and External Sources and the Adoption of Innovations in Organisations. *British Journal of Management*, 29(4), 712-730. doi:10.1111/1467-8551.12296.
- Darroch, J. (2005). Knowledge management, innovation and firm performance. *Journal of Knowledge Management*, 9(3), 101-115. doi:10.1108/13673270510602809.
- Daryani, S. M., Khodaverdi, Y., Rasouli, E., & Shareghi, B. (2012). The importance of knowledge management technologies in performance improvement of organisations. *Life Science Journal*, 9(4), 4695-4699.
- Davenport, T. H., Long, D. W. D. & Beers, M. C. 1998. Building Successful Knowledge Management Projects. *Sloan Management Review*, 39, 43-57.



- García-Morales, V. J., Jiménez-Barrionuevo, M. M., & Gutiérrez-Gutiérrez, L. (2012). Transformational leadership influence on organisational performance through organisational learning and innovation. *Journal of Business Research*, 65(7), 1040-1050.
- García-Morales, V. J., Llorens-Montes, F. J., & Verdu-Jover, A. J. (2008). The Effects of Transformational Leadership on Organisational Performance through Knowledge and Innovation. *British Journal of Management*, 19, 299–319. doi:10.1111/j.1467-8551.2007.00547.x.
- García-Morales, V. J., Matías-Reche, F., & Hurtado-Torres, N. (2008). Influence of transformational leadership on organisational innovation and performance depending on the level of organisational learning in the pharmaceutical sector. *Journal of Organisational Change Management*, 21(2), 188-212. doi:10.1108/09534810810856435.
- García-Zamora, E., González-Benito, Ó., & Muñoz-Gallego, P. A. (2014). Organisational and environmental factors as moderators of the relationship between multidimensional innovation and performance. *Innovation*, 15(2), 224-244. doi:10.5172/impp.2013.15.2.224.
- González, P. L., Jiménez-Jiménez, D., & Martínez-Lorente, A. R. (2018). Exploring the mediating effects between transformational leadership and organisational performance. *Employee Relations*, 40(2), 412-432. doi:10.1108/er-10-2016-0190.
- Grant, R. M. (1996). Toward a Knowledge-Based Theory of The Firm. *Strategic Management Journal*, 17(Winter special issue), 109-122.
- Hermann, M., Pentek, T., & Otto, B. (2015). Design Principles for Industrie 4.0 Scenarios: A Literature Review.
- Jansen, J. J. P., Vera, D., & Crossan, M. (2009). Strategic leadership for exploration and exploitation: The moderating role of environmental dynamism. *The Leadership Quarterly*, 20(1), 5-18. doi:10.1016/j.leaqua.2008.11.008.
- Jeyaraman, M. M., Qadar, S. M. Z., Wierzbowski, A., Farshidfar, F., Lys, J., Dickson, G., . . . Abou-Setta, A. M. (2018). Return on investment in healthcare leadership development programs. *Leadersh Health Serv (Bradf Engl)*, 31(1), 77-97. doi:10.1108/LHS-02-2017-0005.



- Jimenez-Jimenez, D., & Sanz-Valle, R. (2011). Innovation, organisational learning, and performance. *Journal of Business Research*, 64(4), 408-417. doi:10.1016/j.jbusres.2010.09.010.
- John, G., & Andrew, C. (2017). Knowledge management and professional experience: the uneasy dynamics between tacit knowledge and performativity in organisations. *Journal of Knowledge Management*, 21(4), 872-884. doi:10.1108/JKM-02-2017-0058.
- Karpen, I. O., Bove, L. L., & Lukas, B. A. (2012). Linking Service-Dominant Logic and Strategic Business Practice. *Journal of Service Research*, 15(1), 21-38. doi:10.1177/1094670511425697.
- Karpen, I. O., Bove, L. L., Lukas, B. A., & Zyphur, M. J. (2015). Service-Dominant Orientation: Measurement and Impact on Performance Outcomes. *Journal of Retailing*, 91(1), 89-108. doi:10.1016/j.jretai.2014.10.002.
- Karpen, I. O., Gemser, G., & Calabretta, G. (2017). A multilevel consideration of service design conditions: Towards a portfolio of organisational capabilities, interactive practices and individual abilities. *Journal of Service Theory and Practice*, 27(2), 384-407. doi:10.1108/JSTP-05-2015-0121.
- Khan, H. u. R., Ali, M., Olya, H. G. T., Zulqarnain, M., & Khan, Z. R. (2018). Transformational leadership, corporate social responsibility, organisational innovation, and organisational performance: Symmetrical and asymmetrical analytical approaches. *Corporate Social Responsibility and Environmental Management*, 25(6), 1270-1283. doi:10.1002/csr.1637.
- Liao, S.-h., Fei, W.-C., & Chen, C.-C. (2007). Knowledge sharing, absorptive capacity, and innovation capability: an empirical study of Taiwan's knowledge-intensive industries. *Journal of Information Science*, 33(3), 340-359. doi:10.1177/0165551506070739.
- Lopez, V. W. B., & Esteves, J. (2013). Acquiring external knowledge to avoid wheel re-invention. *Journal of Knowledge Management*, 17(1), 87-105. doi:10.1108/13673271311300787.
- Masa'deh, R. e., Obeidat, B. Y., & Tarhini, A. (2016). A Jordanian empirical study of the associations among transformational leadership, transactional leadership, knowledge sharing, job performance, and firm performance. *Journal of Management Development*, 35(5), 681-705. doi:10.1108/jmd-09-2015-0134.



- Matzler, K., Schwarz, E., Deutinger, N., & Harms, R. (2012). The Relationship between Transformational Leadership, Product Innovation and Performance in SMEs. *Journal of Small Business & Entrepreneurship*, 21(2), 139-151. doi:10.1080/08276331.2008.10593418.
- Messersmith, J. G., & Chang, Y.-Y. (2017). On the same page: Exploring the link between cross-level leadership fit and innovation. *Human Performance*, 30(1), 1-20. doi:10.1080/08959285.2016.1250766.
- Meyer, J., & Subramaniam, M. (2014). Appropriating innovation's technical value: Examining the influence of exploration. *Journal of Business Research*, 67(1), 2860-2866. doi:10.1016/j.jbusres.2012.07.001.
- Mohammadi, A., & Boroumand, Z. (2016). Transformational leadership and knowledge sharing. *International Journal of Information Science and Management*, 14(2), 83-96.
- Ng, H. S., & Kee, D. M. H. (2016). The core competence of successful owner-managed SMEs. *Management Decision*, 56(1), 252-272. doi:10.1108/md-12-2016-0877.
- Noruzy, A., Dalfard, V. M., Azhdari, B., Nazari-Shirkouhi, S., & Rezazadeh, A. (2013). Relations between transformational leadership, organisational learning, knowledge management, organisational innovation, and organisational performance: an empirical investigation of manufacturing firms. *The International Journal of Advanced Manufacturing Technology*, 64(5-8), 1073-1085. doi:10.1007/s00170-012-4038-y.
- OECD. (2005). *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data*. OECD and Eurostat.
- Para-González, L., Jiménez-Jiménez, D., & Martínez-Lorente, A. R. (2018). Exploring the mediating effects between transformational leadership and organisational performance. *Employee Relations*, 40(2), 412-432. doi:10.1108/er-10-2016-0190.
- Pieterse, A. N., van Knippenberg, D., Schippers, M., & Stam, D. (2009). Transformational and transactional leadership and innovative behaviour: The moderating role of psychological empowerment. *Journal of Organisational Behaviour*, 31(4), 609-623. doi:10.1002/job.650.
- Rajapathirana, R. P. J., & Hui, Y. (2018). Relationship between innovation capability, innovation type, and firm performance. *Journal of Innovation & Knowledge*, 3(1), 44-55. doi:10.1016/j.jik.2017.06.002.



- Razak, N. A., Aziz, R. A., Rahman, Z. A., & Ali, S. (2018). Empowering Knowledge Sharing in Business. In F. Noordin, A. K. Othman, & E. S. Kassim (Eds.), *Proceedings of the 2nd Advances in Business Research International Conference* (pp. 253-260).
- Ryan, J. C., & Tipu, S. A. A. (2013). Leadership effects on innovation propensity: A two-factor full range leadership model. *Journal of Business Research*, 66(10), 2116-2129. doi:10.1016/j.jbusres.2013.02.038.
- Saleh, A. A., Sani, M. K. J. A., & Noordin, S. A. (2018). Conceptualizing Knowledge Management, Individual Absorptive Capacity and Innovation Capability: A Proposed Framework. *International Journal of Academic Research in Business and Social Sciences*, 8(9), 385-395. doi:10.6007/IJARBSS/v8-i9/4600.
- Sethibe, T., & Steyn, R. (2015). The relationship between leadership styles, innovation and organisational performance: A systematic review. *South African Journal of Economic and Management Sciences*, 18(3), 325-337. doi:10.17159/2222-3436/2015/v18n3a3.
- Sethibe, T. G. (2018). Towards A Comprehensive Model On The Relationship Between Leadership Styles, Organisational Climate, Innovation And Organisational Performance. *International Journal of Innovation Management*, 1850021. doi:10.1142/S1363919618500214.
- Swift, M., & Lange, D. (2018). Digital leadership in Asia-Pacific. Korn Ferry.
- Swift, M., Lange, D., Pike, J. & Donald, L. 2018. Leaders For The Digital Age, The role leaders play in achieving digital sustainability. Korn Ferry Institute.
- Vargo, S. L., & Lusch, R. F. (2004). Evolving to a New Dominant Logic for Marketing. *Journal of Marketing*, 68, 1-17.
- Vargo, S. L., & Lusch, R. F. (2017). Service-dominant logic 2025. *International Journal of Research in Marketing*, 34(1), 46-67. doi:10.1016/j.ijresmar.2016.11.001.
- Vargo, S. L., Maglio, P. P., & Akaka, M. A. (2008). On value and value co-creation: A service systems and service logic perspective. *European Management Journal*, 26(3), 145-152. doi:10.1016/j.emj.2008.04.003.
- Wang, Z., & Kwek, C. L. (2018). The Mediation Role of Knowledge Sharing Between Organisational Learning and Technological Innovation Practice. *International Journal of Knowledge Management*, 14(3), 48-68. doi:10.4018/ijkm.2018070104.
- Wang, Z., & Wang, N. (2012). Knowledge sharing, innovation and firm performance. *Expert Systems with Applications*, 39(10), 8899-8908.



- Wuryaningrat, N. F. (2013). Knowledge Sharing, Absorptive Capacity and Innovation Capabilities: An Empirical Study on Small and Medium Enterprises in North Sulawesi, Indonesia. *Gadjah Mada International Journal of Business*, 15(1), 61-78.
- Yaseen, S. G., Al-Janaydab, S., & Alc, A. N. (2018). Leadership Styles, Absorptive Capacity and Firm's Innovation. *International Journal of Knowledge Management*, 14(3), 82-100.