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Mediating Role of Organizational Change Readiness on Knowledge Management and Entrepreneurial Orientation for Innovation

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Abstract **-** The research aimed to explore factors that could help schools enhance their innovation which is challenging due to their institution nature. Three variables were investigated as the antecedents of innovations: entrepreneurial orientation, knowledge management, and organizational change readiness. In education, entrepreneurial orientation was gauged through five dimensions: innovativeness, proactiveness, risk-taking, autonomy, and competitive aggressiveness. The knowledge management process involved three dimensions: knowledge creation, knowledge sharing, and knowledge utilization. The relationship between knowledge management variables was formative, as no single dimension fully captured the entire process; each contributes uniquely. Organizational change readiness dimensions included changing commitment and change efficacy. Dependent variable innovation was assessed through technical, administrative, and managerial innovation. The empirical research was quantitative by design, and data were collected from 110 private secondary schools across Indonesia. The research model was tested using partial least squares – structural equation modeling (PLS-SEM) with the extended repeated indicator approach. The research finds that entrepreneurial orientation does not directly affect innovation, but it is fully mediated by organizational change readiness. Additionally, while knowledge management has a significant direct effect on innovation, organizational change readiness partially mediates the relationship. The research also highlights the importance of organizational change readiness, which has rarely been discussed in entrepreneurial orientation and knowledge management literature.

Keywords: organizational change readiness, knowledge management, entrepreneurial orientation

I. INTRODUCTION

The COVID-19 pandemic exposed organizations to rapid and unprecedented changes (Seetharaman, 2020). The health crisis impacted not only the economy, but also social aspects, including education (Donthu & Gustafsson, 2020; Krishnamurthy, 2020; Seetharaman, 2020). The disruption it caused was even predicted to trigger long-term changes in the world of education, including in schools (Krishnamurthy, 2020). One of the biggest challenges that schools dealt with during the pandemic was how to innovate their teaching and learning activities as they shifted from face-to-face to online learning with the help of technology (Krishnamurthy, 2020). Innovation in education is important as it is generally seen as the main source of development and improvements in productivity and effectiveness (Peñate, Robaina, & Nieves, 2023). However, it is not an easy process due to the institutional nature of schools (Hermansen & Lund, 2023). Yet given the importance of innovations for schools, notably as seen within the unique context of the pandemic, it is important to seek enablers that could foster it.

Factors that could support organizational efforts to generate innovation are knowledge management (Cheng, 2020; Rehman & Iqbal, 2020; Lam et al.,

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2021) and entrepreneurial orientation (Hughes et al., 2021; Jalilvand et al., 2019; Zhai et al., 2018; Vincent-Lancrin et al., 2019). It is stated that a key to innovation in education relates to the ability of its actors to absorb and produce knowledge. The results of these studies align with Rofiaty (2019), who studies knowledge management as one of the antecedents of innovation in schools. Aside from knowledge management, entrepreneurial orientation is important as there is a demand for schools to be able to generate more innovation and take risks (Ho, Lu, & Bryant, 2020). Recent studies have also discussed the relationship between entrepreneurial orientation and knowledge management and mentioned how it could support the organizations in acquiring, sharing, and using their knowledge (Jiang, Wang, & Jiang, 2019; Latif et al., 2021; Nasution et al., 2021).

However, several studies have also found no direct relationship between knowledge management and innovation, notably Lam et al. (2021), Inkinen, Kianto, and Vanhala (2015), and Ho, Lu, and Bryant (2021) also assert that entrepreneurial orientation is not the sole predictor of innovation in schools. Given those arguments, it is important to consider another factor that could enhance the relationship between knowledge management and entrepreneurial orientation to innovation in schools. The research explores a construct namely organizational change readiness, which to our knowledge, has not been widely examined in the study of knowledge management, entrepreneurial orientation, and innovation.

Organizational change readiness has historically been associated with reluctance to make changes (Wang, Olivier, & Chen, 2020) Despite it receiving relatively little attention, AlNuaimi and Khan (2019) reveal that the relationship between organizational change readiness and innovation can also apply directly. This opens new opportunities to study whether this organizational readiness could mediate the relationship between knowledge management and entrepreneurial orientation towards innovation.

The main research objective, therefore, is to explore the factors that could help schools to enhance their innovation. Entrepreneurial orientation and knowledge management are the main antecedents, with the research novelty lying in the introduction of organizational change readiness. This affects school innovation, and its enablers is explored further. The relationship between entrepreneurial orientation and knowledge management also is analyzed, as entrepreneurial orientation is the indicated to assist organizations in fostering knowledge management process.

In a prior study examining the relationship between entrepreneurial orientation and innovation, it is stated that proactiveness and risk-taking played a positive role in company innovations (Pérez-Luño, Wiklund, & Cabrera, 2011). In addition, organizations with high levels of risk-taking tend to generate more innovations as environmental dynamism increases (Pérez-Luño et al., 2011). This argument applies equally in the world of education, where entrepreneurial orientation has been cited as capable of rendering schools proactive and open to new profitable opportunities and helping them to achieve the vision through measured risk-taking (Balasubramanian, Yang, & Tello, 2020). Innovation in education is also considered to depend on the entrepreneurial behavior of its actors, and will be hampered by a tendency to avoid risk (Vincent-Lancrin et al., 2019). Empirically, a significant relationship between entrepreneurial orientation and innovation in educational institutions is evident in research conducted by Rofiaty (2019). The context of the COVID-19 pandemic presented a dynamic, unpredictable, and demanding environment for change. To contend with this, it is very likely that organizations need to be open to new ideas, actively seek opportunities to exploit, and take measured risks. Therefore, Hypothesis 1 of the research is:

H_1: Entrepreneurial orientation has a positive and significant impact on innovation produced by schools.

Vincent-Lancrin et al. (2019) state that one of the keys to innovation in education relates to the ability of actors to absorb and produce knowledge and practice. In addition, teachers can improve their teaching methods through discussion, observation, or reflection on the practices of their colleagues. A research employing content analysis techniques found that knowledge management has a very close relationship with innovation (Breznik, 2018). This is in line with Abbas and Sağsan (2019), who prove a significant relationship between knowledge management and innovation since knowledge management functions as the basis of research and analysis activities. Knowledge management practices are also considered capable of supporting innovation since they are a key factor in sustainable value creation (Ferraris et al., 2021). Knowledge management can support organizations to create innovations related to learning activities and curricula (Cheng, 2020; Supermane & Tahir, 2018). A knowledge management practice commonly associated with innovation is knowledge sharing, as innovation is highly dependent on the knowledge and experience of organizational members (Elrehail et al., 2018), both explicit and tacit (Sudibjo, Aulia, & Harsanti, 2022). In the context of the pandemic, knowledge management is a highly relevant concept for research since schools require new knowledge that they can use when navigating uncertain conditions. It can be seen in the many online seminars held on school-related topics. The research proposes Hypothesis 2:

H_2: Knowledge management has a positive and significant effect on innovation produced by schools.

Recent studies have endeavored to learn about the enablers of the knowledge management process,

one of which is the entrepreneurial orientation (Latif et al., 2021). Latif et al. (2021) mention that organizational willingness to take risks and experiment will support learning, knowledge capture, and knowledge dissemination. Nasution et al. (2021), meanwhile find that proactiveness and risk-taking, as dimensions of entrepreneurial orientation significantly impact knowledge management. Firms with a strong entrepreneurial orientation tend to direct their attention and efforts towards knowledge management (Nasution et al., 2021). Interestingly, other research has noted that the effect of entrepreneurial orientation on the knowledge-creation process is strongest when market dynamism is high and there are strong business ties with other organizations (Jiang et al., 2019). Based on these arguments, the research presents the Hypothesis 3:

H_3: Entrepreneurial orientation positively relates to knowledge management.

Entrepreneurial orientation can encourage the ability and desire to implement changes (Uusitalo & Lavikka, 2020). Another research contends that entrepreneurial orientation relates to employees' commitment to showing it (Hosseini, Dadfar, & Brege, 2018), which as a concept is similar to organizational change readiness. Weiner et al. (2020) state that an organization that is open to innovation, risk taking, and flexibility, will support the formation of organizational change readiness. In contrast, several studies have also mentioned that organizational change readiness can support entrepreneurial orientation, including in the school context. A principal alone cannot achieve a school's vision but instead must have the support and commitment of all members of the organization (Balasubramanian et al., 2020). This is supported by Uusitalo and Lavikka (2020), who also assert that the ability to make risky decisions requires a commitment to resources. It is important to explore entrepreneurial orientation as a factor that supports change readiness in schools, given its importance in the recent pandemic context. Therefore, the research proposes Hypothesis 4:

H_4: Entrepreneurial orientation has a positive and significant effect on organizational readiness to make changes.

Knowledge management practice is a predictor of organizational change readiness (Sullanmaa et al., 2021). Sullanmaaa et al. (2021) demonstrate that knowledge management can help communicate the goals and expected results of a process, so all parts of the organization understand the need for change, support the change process, and provide feedback that can improve efforts to conduct and activity. This aligns with Cheng (2020), who illustrates that knowledge acquisition and sharing processes, as examples of knowledge management activities, can accelerate the implementation of a new program. Organizational change readiness can derive from knowledge related to where the change is, who is in charge of the change process and the content of the change (Wang, Olivier, & Chen, 2020). Meanwhile, Doringin et al. (2020) state that, after they have listened to their colleagues' experiences, the knowledge management process can increase teachers' confidence in undertaking their work. The influence of knowledge management on organizational change readiness is an interesting topic to study in the context of the COVID-19 pandemic. On the one hand, schools require change readiness to ensure they can initiate and sustain the change process. On the other hand, it also enables schools to acquire new knowledge that is relevant for them to use and share within their organization. Therefore, Hypothesis 5 is proposed:

H_5: Knowledge management has a positive and significant effect on organizational readiness to make change.

Organizational change readiness has traditionally been more associated with aversion to change (Wang, Olivier, & Chen, 2020) than directly with organizational innovation. Nevertheless, it has been cited as an antecedent that will facilitate organizations to initiate and maintain a change process and demonstrate an attitude that supports it; for example, in developing a new policy, procedure, or practice (Weiner et al., 2020). This is supported by the findings stating that organizational change readiness is an important factor for initiating innovation and that organizations require commitment and self-efficacy to accept new things that arise in conjunction with the process (Amels et al., 2020). Vincent-Lancrin et al. (2019) also state that confidence in the ability (efficacy) to implement new pedagogical methods enhances teachers' confidence to adopt further changes. Based on this explanation, Hypothesis 6 is proposed as:

H_6: Organizational change readiness has a positive and significant direct influence on innovation produced by schools.

The research proves that organizational change readiness mediated knowledge management to innovation. This means that if organizations require to innovate their technical, administration and managerial innovation based on knowledge management, the organization should develop through organization change readiness (Rofiaty, 2019). However, organizational change readiness does not provide a perfect mediation effect from entrepreneurship orientation to innovation, due to the direct influence of entrepreneurship orientation to innovation. The result shows that organizations can innovate only by paying attention to entrepreneurship orientation (Uusitalo & Lavikka, 2020 and Ho et al, 2020). Based on these arguments, Hypothesis 7 and Hypothesis 8

are proposed as:

H_7: Organizational change readiness has a mediate effect knowledge management to innovation.

H_8: Organizational change readiness has a mediate effect entrepreneurial orientation to innovation.

II. METHODS

Entrepreneurial orientation variable is a second-order reflective-reflective model based on Hosseini et al. (2018) and is defined as a method and decision-making style that supports entrepreneurial activities and demonstrates and organization's desire to compete. The model comprises five dimensions: 1) innovativeness (tendency to support new ideas), 2) proactiveness (anticipation of opportunity and threat that might arise), 3) risk-taking (tendency to take calculated risks), 4) competitive aggressiveness (tendency to compete with their competitors), and 5) autonomy (independent action to bring forth ideas through to completion).

Knowledge management variable is a second-order reflective-formative model adapted from Rofiaty (2019), whose research is conducted in a school context. Three dimensions of knowledge management are: 1) knowledge creation (focus on activities that generate knowledge), 2) knowledge utilization (application of knowledge), and 3) knowledge sharing (activities to share and exchange knowledge among members). The reflective-formative model is used to remove from the analysis the bias that often emerges from the reflective-reflective model, especially given that the individual processes within knowledge management could not be separated from each other.

Organizational change readiness is based on research by Weiner et al. (2020) and is defined as members' level of preparedness to implement changes, both psychologically and as shown in their behavior. The construct comprises two dimensions: 1) change commitment (shared resolve by members to implement changes) and 2) change efficacy (shared belief in their capability to implement changes).

Innovation variable is based on research by Rofiaty (2019) in a school context and is defined as a new product, service, structure, or equipment adopted by an organization. This construct consists of three dimensions: 1) technical innovation (innovation that related to how the organization conducts its internal process), 2) administrative innovation (innovation related to of new policy implementation), and 3) managerial innovation (innovation related to managerial structure).

The research is quantitative in nature and uses primary data obtained from online surveys distributed to private secondary school principals. Non-probability purposive sampling is employed as the sampling method. After the data have been collected, the research conducts a screening using data from schools with A and B accreditations, as well as with principals who had at least one year's service. Limitations in terms of accreditation are expected to maintain sample homogeneity. Meanwhile, the principal's term of office is used to ensure that the incumbent principal understands the issues facing their organization.

Measurement and structural models are evaluated using partial least squares structural equation modeling (PLS-SEM). PLS-SEM is chosen over covariance based (CB)-SEM due to the presence of constructs that are measured using formative indicators. Most researchers consider PLS-SEM to be better suited to measuring formative indicators owing to the identification problems frequently encountered with measurements when using the CB-SEM method (Sarstedt et al., 2019). PLS-SEM can also accommodate data processing that is not normally distributed and can be used with fewer samples than CB-SEM. SmartPLS 3 is used for testing (Sarstedt et al., 2019). The extended repeated indicator approach is chosen in this test to eliminate any bias that may have arisen due to relationship between the reflective-reflective construct of entrepreneurial orientation, and the reflective-formative construct of knowledge management, as suggested by Becker et al. (2023). The measurement and structural models are evaluated based on the guidelines provided by Sarstedt et al. (2019). The research also conducts a two-step approach as suggested by Anderson and Gerbing (1988), using mathematical models:

$$IN = \beta_1 EO + \beta_2 KM + \beta_3 OCR + \varepsilon_1 \ldots\ldots\ldots\ldots (1)$$

$$KM = \alpha_1 EO + \varepsilon_2 \ldots\ldots\ldots\ldots (2)$$

$$OCR = \delta_1 EO + \delta_2 KM + \varepsilon_3 \ldots\ldots\ldots\ldots (3)$$

$$IN = \gamma_1 KM + \gamma_2 EO + \gamma_3 KM \times OCR + \gamma_4 EO \times OCR + \varepsilon_4 \ldots\ldots\ldots\ldots (4)$$

The model consists of four abbreviations: 1) Innovation (IN), 2) Entrepreneurial Orientation (EO), 3) Knowledge Management (KM), and 4) Organizational Change Readiness (OCR). Meanwhile β_1 used to test H_1, β_2 used to test H_2, β_3 used to test H_6, α_1 used to test H_3, δ_1 used to test H_4, δ_2 used to test H_5, γ_3 used to test H_7, γ_4 used to test H_8, and ε_1, ε_2, ε_3, ε_4 are used as error term.

III. RESULTS AND DISCUSSIONS

Data are collected from 110 private secondary school principals in Indonesia. Most teachers and employees are female (54%) while in contrast, majority of the schools are led by male principals (67%). The percentage of male teachers and employees has been found to have a negative relationship with innovation related to pedagogy and process (Haelermans, 2010). Therefore, based on the data in the research, most schools should be more open to innovation. A total of 81% of the participating schools are managed by a foundation responsible for managing more than one

organization. According to Haelermans and Blank (2012), schools that are in a network can benefit from their participation in the circle, especially related to shared services. Viewed from the perspective of knowledge management, which is a variable in this research, schools in a network may derive knowledge from these other organizations.

The measurement model is evaluated for both constructs and dimensions. Internal consistency is evaluated using composite reliability (CR) as Sarstedt et al. (2019) mention that it is more appropriate for use as a measurement in PLS-SEM than Cronbach's alpha. All reflective dimensions have a CR value greater than 0.8. It is, therefore, assumed that the construct is reliable. Convergent validity is measured by looking at indicator reliability or factor loadings and average variance extracted (AVE). All indicators have loadings greater than 0.7, while all dimensions have an AVE of at least 0.5. Considering the indicators' validity and AVE, it can be assumed that the lower-order constructs are valid. The Fornell-Larcker test is conducted to test discriminant validity, and shows that the model satisfies the criteria. For knowledge management, which adopts a reflective-formative model, collinearity issues are tested by looking the outer variance inflation factor (VIF). The VIF should be lower than 5 (Sarstedt et al. 2019), which is achieved in the study. All indicators also have significant outer weights to their respective dimensions. Based on all evaluations, the measurement model satisfies all of the criteria for the research.

The relationship between each constructs and its dimensions, in terms of outer weights and outer loadings, can be seen in Figure 1. For entrepreneurial orientation, the risk-taking dimension makes the lowest contribution, which infers that school personnel may be anxious in terms of taking risks in their jobs. For knowledge management, the relationship with its dimension is shown with outer weights, with the highest value for knowledge sharing. This indicates that knowledge sharing is the most important factor in enhancing knowledge management value in schools, followed by utilization. Knowledge creation, meanwhile, makes a relatively low contribution to the construct. The dimensions of organizational change readiness have similar outer loadings, which indicates they near equal importance in enhancing organizational change readiness, while administrative innovation has the highest loadings for innovation in school, followed closely by technical and managerial innovation.

The next stage of the research involved testing the structural model, with the main objective of proving the hypotheses and answering the research questions. As for the measurement model, a path is chosen as weighting scheme in the PLS algorithm. Meanwhile, 5,000 subsamples are used for the bootstrapping with the confidence interval set as a BCa bootstrap, two-tailed test type, with a significance level of 5%. All criteria mentioned followed the guidance provided by Sarstedt et al. (2019). The first step in testing the structural model is to consider the collinearity issue as reflected in the inner VIF values, which in this research are all below 5. The next step involved testing the path coefficient between the latent variables and the hypothesis described in the previous section. Figure 1 shows the path coefficients and T-values between the constructs and dimensions. The numbers in italics represent the T-values, while the others represent the path coefficients.

Figure 1 shows that all hypotheses are proven, except for H_1. Previous research has stated that entrepreneurial orientation is closely related to innovation created by organizations, especially when they are willing to take risks and are open to and actively seek new opportunities that can be exploited (Balasubramanian et al., 2020). However, the finding is not supported in the research since entrepreneurial orientation has no direct significant effect on innovation produced by schools. This may be caused by the relatively low value of the outer loadings for the risk-taking dimension. As a result, schools may be open and have new ideas (innovativeness) or try to find opportunities to use (proactiveness) but lack of courage to make them happen because of the risks that must be borne if the innovation does not work or negatively impacts the school's performance. The research results may also support Ho et al. (2021) who study entrepreneurship in the school context. Their research concludes that schools have limited freedom and the entrepreneurial activities that can be carried out have limitations in the form of legitimacy by the system. In the context of the research, this is evident in the outer loadings of the autonomy dimension, which is the second lowest for entrepreneurial orientation.

The research also proves that organizational change readiness fully mediates the relationship between entrepreneurial orientation and innovation, and partially mediates the relationship between knowledge management and innovation. The two dimensions have almost equal loadings, thus indicating that both change commitment and change efficacy are important to fostering innovation in schools. While the direct relationship between organizational change readiness and innovation has not previously been widely studied, AlNuaimi and Khan (2019) cite commitment as an important antecedent for initiating innovation while belief in the ability to implement new things can increase organizations' confidence to repeat it in the future (Vincent-Lancrin et al., 2019).

Cheng (2020), Doringin et al. (2020), and Sullanmaaa et al. (2021) all examine the relationship between change readiness and knowledge management. They highlight that the knowledge sharing process is an important factor related to change readiness. Knowledge sharing is expected to help organizations convey the need for change to organizational members so that it receives a positive response (Sullanmaa et al., 2021) and helps increase the members' confidence in their ability to undertake the work, which relates to efficacy (Doringin et al., 2020). The explanations from previous studies are also supported by the results of the

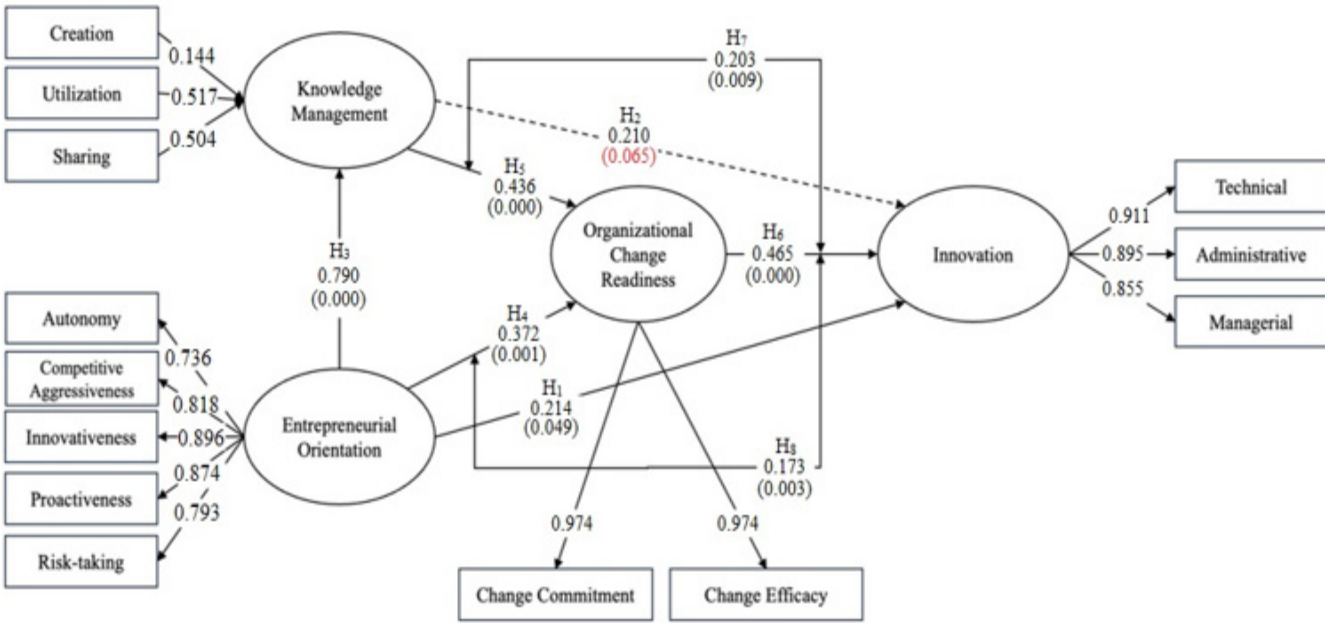

Figure 1 Research Model

research. The data show that the knowledge-sharing dimension has a higher outer weight value than other factors, indicating that it makes a major contribution to the knowledge management process.

Regarding H_4, the relationship between the two constructs is implied in Hosseini et al. (2018), who state that entrepreneurial orientation is related to commitment. Elsewhere, Uusitalo and Lavikka (2020) emphasize the role of innovativeness with a commitment to mastering new things. Those arguments are supported by the results of the research, where the highest loadings in the entrepreneurial orientation dimension are for innovativeness, which is defined as the tendency to engage and support new ideas. In addition to being related to innovativeness, organizational change readiness is influenced by the tendency to take risks and flexibility within the organization (Weiner et al. 2020; Balasubramanian et al., 2020). Interestingly, the research shows that autonomy and risk-taking dimensions had the lowest loading scores compared to the other dimensions. This indicates the potential for the innovativeness dimension to have a more significant influence on organizational change readiness, compared to autonomy and the tendency to take risks.

Concerning entrepreneurial orientation and knowledge management, the research strongly suggests that entrepreneurial orientation significantly affects knowledge management. This aligns with the studies cited in previous chapter. Which interestingly have mentioned that risk-taking as a major factor in the effect of entrepreneurial orientation on knowledge management, while the research suggests that the level of risk-taking in schools is relatively low. Meanwhile, proactiveness almost has the highest loading from all dimensions and is also mentioned as an important enablers of knowledge management. Therefore, compared to prior assumptions, the research suggests that proactiveness may play a bigger role than innovation.

Analyzing the research model using the PLS-SEM method can also identify the construct with the strongest overall effect on innovation. Entrepreneurial orientation has the highest effect ($p = 0.71$), which is interesting since it does not have a significant direct relationship. However, entrepreneurial orientation does have a significant effect on knowledge management and organizational change readiness; hence, it is proven as a significant antecedent, albeit indirect, to innovation. The second strongest effect is for knowledge management to innovation ($p = 0.55$) while the weakest is organizational change readiness to innovation ($p = 0.42$). The result indicates that while organizational change readiness has a significant effect on innovation independently, it is more important for organizations to foster their orientation and knowledge management first.

IV. CONCLUSIONS

The research aims to explore the factors that may help schools enhance their innovation. Entrepreneurial orientation does not have a direct significant effect on innovation, while knowledge management does. Both constructs are mediated by organizational change readiness, partially for knowledge management and fully for entrepreneurial orientation. This result supports previous studies pointing out that the relationship between knowledge management and entrepreneurial orientation towards innovation is not always directly significant. They may need mediators, in this case organizational change readiness, to support their relationship with innovation. The research defines organizational change readiness as change commitment and change efficacy. Therefore,

it is suggested important for schools to have both qualities to leverage their entrepreneurial orientation and knowledge management process to produce innovation.

In addition, the research proves the significant and direct effect of entrepreneurial orientation towards knowledge management. Entrepreneurial orientation has the strongest effect on innovation produced by schools, through its effect on knowledge management and organizational change readiness. Meanwhile, organizational change readiness has the weakest overall effect, which indicates that while it is important for schools to have the commitment and ability to change, it is more important to have the correct orientation and strong knowledge management processes.

To the extent of the authors` knowledge, the research is among the first empirical studies to consider the role of organizational change readiness in mediating the effect of entrepreneurial orientation and knowledge management on innovation. While previous studies have indicated that both antecedents are directly related to innovation, the research proves the existence of mediators that could be explored further, meaning those relationships could be enhanced. The research also suggests that entrepreneurial orientation is the most important element for organizations to produce innovation, although the effect may not be direct. The correct orientation drives processes in the organization and strengthen commitment and beliefs that the organization can implement changes. Schools must, therefore, foster this aspect if they are to produce more innovation.

To strengthen proactiveness, schools must consciously and actively seek for new opportunities or ideas that they can act on. They should not merely wait and see what competing schools may be doing and then copy them but should instead attempt to be change. For example, schools can look at global trends in education during the COVID-19 pandemic and seek to incorporate changes in their practices. They can also engage with professionals from the world of business, to obtain a fresh perspective on how other organizations have dealt with the pandemic. Schools should also foster competitiveness by trying to beat their competitors. This mindset could spark motivation and help schools to identify tangible actions and targets that they can achieve. This is especially challenging during a pandemic as parents may become more selective in their choice of school. Schools that are not attempting to be better than their competitors may not be chosen, which will inevitably impact their financial and operating positions. Schools must remember that an aspect of entrepreneurial orientation is the level of autonomy within the organization. To strengthen this, they must grant teachers and employees a degree of freedom to do their jobs. This could help them produce ideas and identify improvements that could help the school, as opposed to being restrained because they must follow rigid rules that may not yield benefits for the organization. Finally, to enhance entrepreneurial orientation, schools could push their management teams, teachers, and employees to take calculated risks in the development of new ideas. This is an important exercise so that each member of the organization understands and is open to developing something new for the organization. To innovate more in the future, schools must promote the exploration of and experimentation with new ideas.

The research has several limitations that could be improved by future studies. Subsequent research may be conducted longitudinally so that the causal relationship between constructs can be explained profoundly. The research would also have been more interesting if it had considered the investments and innovations that schools made during the pandemic, and how these will affect school performance in the medium and long term. The research model is developed for use in the context of private schools, but could also apply in other institutional organizations, such as government offices.

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REFERENCES

Abbas, J., & Sağsan, M. (2019). Impact of knowledge management practices on green innovation and corporate sustainable development: A structural analysis. *Journal of Cleaner Production, 229*, 611-620. https://doi.org/10.1016/j.jclepro.2019.05.024.

AlNuaimi, B. K., & Khan, M. (2019). Public-sector green procurement in the United Arab Emirates: Innovation capability and commitment to change. *Journal of Cleaner Production, 233*, 482-489. https://doi.org/10.1016/j.jclepro.2019.06.090.

Amels, J., Krüger, M. L., Suhre, C. J. M., & van Veen, K. (2020). The relationship between primary school leaders' utilization of distributed leadership and teachers' capacity to change. *Educational Management Administration and Leadership, 49*(5), 732-749. https://doi.org/10.1177/1741143220915921.

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 103*(3), 411-423. http://dx.doi.org/10.1037/0033-2909.103.3.411.

Balasubramanian, S., Yang, Y., & Tello, S. (2020). Does university entrepreneurial orientation matter? Evidence from university performance. *Strategic Entrepreneurship Journal, 14*(4), 661-682. https://doi.org/https://doi.org/10.1002/sej.1341.

Becker, J.-M., Cheah, J.-H., Gholamzade, R., Ringle, C. M., & Sarstedt, M. (2023). PLS-SEM's most wanted

guidance. *International Journal of Contemporary Hospitality Management, 35*(1), 321-346. https://doi.org/10.1108/IJCHM-04-2022-0474.

Breznik, K. (2018). Knowledge management – from its inception to the innovation linkage. *Procedia - Social and Behavioral Sciences, 238*, 141-148. http://dx.doi.org/10.1016/j.sbspro.2018.03.017.

Cheng, E. C. K. (2020). Knowledge management for improving school strategic planning. *Educational Management Administration & Leadership, 49*(5), 824-840. https://doi.org/10.1177/1741143220918255.

Donthu, N., & Gustafsson, A. (2020). Effects of COVID-19 on business and research. *Journal of Business Research, 117*, 284-289. https://doi.org/10.1016%2Fj.jbusres.2020.06.008.

Doringin, F., Silaban, S., Tarigan, N., Oktriono, K., & Doringin, P. (2020). Knowledge management develops teaching-learning activities in school. *Proceedings of the 1st International Conference on Information Technology and Education (ICITE 2020),* 122-127. https://doi.org/10.2991/assehr.k.201214.224.

Elrehail, H., Emeagwali, O. L., Alsaad, A., & Alzghoul, A. (2018). The impact of transformational and authentic leadership on innovation in higher education: The contingent role of knowledge sharing. *Telematics and Informatics, 35*, 55-67.

Ferraris, A., Giachino, C., Ciampi, F., & Couturier, J. (2021). R&D internationalization in medium-sized firms: The moderating role of knowledge management in enhancing innovation performances. *Journal of Business Research, 128*, 711-718. https://doi.org/10.1016/j.jbusres.2019.11.003.

Haelermans, C. (2010). Innovative power of Dutch secondary education. *Innovation: Management, Policy & Practice, 12*(2), 154-165. https://doi.org/10.5172/impp.12.2.154.

Haelermans, C., & Blank, J. L. T. (2012). Is a schools' performance related to technical change? - A study on the relationship between innovations and secondary school productivity. *Computers and Education, 59*(3), 884-892. https://doi.org/10.1016/j.compedu.2012.03.027.

Hermansen, H., & Lund, A. (2023). Beyond implementation: Enabling sustainable transformations of digital teaching and learning in higher education. In R. Pinheiro, C. Edelhard Tømte, L. Barman, L. Degn, & L. Geschwind (Eds.). *Digital Transformations in Nordic Higher Education* (pp. 97-118). Springer International Publishing. https://doi.org/10.1007/978-3-031-27758-0_5.

Ho, C. S. M., Lu, J., & Bryant, D. A. (2020). The impact of teacher entrepreneurial behaviour: A timely investigation of an emerging phenomenon. *Journal of Educational Administration, 58*(6), 697-712. https://doi.org/10.1108/JEA-08-2019-0140.

Ho, C. S. M., Lu, J., & Bryant, D. A. (2021). Understanding teacher entrepreneurial behavior in schools: Conceptualization and empirical investigation. *Journal of Educational Change, 22*(4), 535-564. https://doi.org/10.1007/s10833-020-09406-y.

Hosseini, M., Dadfar, H., & Brege, S. (2018). Firm-level entrepreneurship and international performance: A simultaneous examination of orientation and action. *Journal of International Entrepreneurship, 16*(3), 338-368. https://doi.org/10.1007/s10843-018-0235-6.

Hughes, M., Hughes, P., Morgan, R. E., Hodgkinson, I. R., & Lee, Y. (2020). Strategic entrepreneurship behaviour and the innovation ambidexterity of young technology-based firms in incubators. *International Small Business Journal: Researching Entrepreneurship, 39*(3), 202-227. https://doi.org/10.1177/0266242620943776.

Inkinen, H. T., Kianto, A., & Vanhala, M. (2015). Knowledge management practices and innovation performance in Finland. *Baltic Journal of Management, 10*(4), 432-455. https://doi.org/10.1108/BJM-10-2014-0178.

Jalilvand, M. R., Nasrolahi Vosta, L., Khalilakbar, R., Khazaei Pool, J., & Tabaeeian, R. A. (2019). The effects of internal marketing and entrepreneurial orientation on innovation in family businesses. *Journal of the Knowledge Economy, 10*(3), 1064-1079. https://doi.org/10.1007/s13132-017-0516-7.

Jiang, F., Wang, G., & Jiang, X. (2019). Entrepreneurial orientation and organizational knowledge creation: A configurational approach. *Asia Pacific Journal of Management, 36*(4), 1193-1219. https://doi.org/10.1007/s10490-018-9609-5.

Krishnamurthy, S. (2020). The future of business education: A commentary in the shadow of the COVID-19 pandemic. *Journal of Business Research, 117*, 1-5. https://doi.org/10.1016/j.jbusres.2020.05.034.

Lam, L., Nguyen, P., Le, N., & Tran, K. (2021). The relation among organizational culture, knowledge management, and innovation capability: Its implication for open innovation. *Journal of Open Innovation: Technology, Market, and Complexity, 7*(1), 66. https://doi.org/10.3390/joitmc7010066.

Latif, K. F., Afzal, O., Saqib, A., Sahibzada, U. F., & Alam, W. (2021). Direct and configurational paths of knowledge-oriented leadership, entrepreneurial orientation, and knowledge management processes to project success. *Journal of Intellectual Capital, 22*(1), 149-170. https://doi.org/10.1108/JIC-09-2019-0228.

Nasution, M. D. T. P., Rafiki, A., Lubis, A., & Rossanty, Y. (2021). Entrepreneurial orientation, knowledge management, dynamic capabilities towards e-commerce adoption of SMEs in Indonesia. *Journal of Science and Technology Policy Management, 12*(2), 256-282. https://doi.org/10.1108/JSTPM-03-2020-0060.

Peñate, A. H., Padrón-Robaina, V., & Nieves, J. (2023). The role of technological resources in the reputation of vocational education schools. *Education and Information Technologies*. https://doi.org/10.1007/

s10639-023-11919-x.

Pérez-Luño, A., Wiklund, J., & Cabrera, R. V. (2011). The dual nature of innovative activity: How entrepreneurial orientation influences innovation generation and adoption. *Journal of Business Venturing, 26*(5), 555-571.

Rehman, U. U., & Iqbal, A. (2020). Nexus of knowledge-oriented leadership, knowledge management, innovation and organizational performance in higher education. *Business Process Management Journal, 26*(6), 1731-1758. https://doi.org/10.1108/BPMJ-07-2019-0274.

Rofiaty, R. (2019). The relational model of entrepreneurship and knowledge management toward innovation, strategy implementation and improving Islamic boarding school performance. *Journal of Modelling in Management, 14*(3), 662-685. https://doi.org/10.1108/JM2-05-2018-0068.

Sarstedt, M., Hair, J. F., Cheah, J. H., Becker, J. M., & Ringle, C. M. (2019). How to specify, estimate, and validate higher-order constructs in PLS-SEM. *Australasian Marketing Journal, 27*(3), 197-211. https://doi.org/10.1016/j.ausmj.2019.05.003.

Seetharaman, P. (2020). Business models shifts: Impact of COVID-19. *International Journal of Information Management, 54*. https://doi.org/10.1016/j.ijinfomgt.2020.102173.

Sudibjo, N., Aulia, S., & Harsanti, H. G. R. (2022). Empowering personal knowledge management among teachers in Indonesia: A multi-faceted approach using SEM. *SAGE Open, 12*(1). https://doi.org/10.1177/21582440221085001.

Sullanmaa, J., Pyhältö, K., Pietarinen, J., & Soini, T. (2021). Relationships between change management, knowledge sharing, curriculum coherence and school impact in national curriculum reform: A longitudinal approach. *International Journal of Leadership in Education*, 1-25. https://doi.org/10.1080/13603124.2021.1972165.

Supermane, S., & Tahir, L. M. (2018). An overview of knowledge management practice among teachers. *Global Knowledge, Memory and Communication, 67*(8-9), 616-631. https://doi.org/10.1108/GKMC-08-2017-0065.

Uusitalo, P., & Lavikka, R. (2020). Overcoming path dependency in an industrialised house-building company through entrepreneurial orientation. *Buildings, 10*(3), 45. https://doi.org/10.3390/buildings10030045.

Vincent-Lancrin, S., Urgel, J., Kar, S., & Jacotin, G. (2019). Measuring innovation in education 2019: What has changed in the classroom? In *Educational Research and Innovation.* Paris: OECD Publishing. https://doi.org/10.1787/9789264311671-en.

Wang, T., Olivier, D. F., & Chen, P. (2020). Creating individual and organizational readiness for change: Conceptualization of system readiness for change in school education. *International Journal of Leadership in Education, 26*(6), 1037-1061. https://doi.org/10.1080/13603124.2020.1818131.

Weiner, B. J., Clary, A. S., Klaman, S. L., Turner, K., & Alishahi-Tabriz, A. (2020). Organizational readiness for change: What we know, what we think we know, and what we need to know. In B. Albers, A. Shlonsky, & R. Mildon (Eds.), *Implementation Science 3.0* (pp. 101-144). Springer International Publishing. https://doi.org/10.1007/978-3-030-03874-8_5.

Zhai, Y. M., Sun, W. Q., Tsai, S. B., Wang, Z., Zhao, Y., & Chen, Q. (2018). An empirical study on entrepreneurial orientation, absorptive capacity, and SMEs' innovation performance: A sustainable perspective. *Sustainability, 10*(2), 1-14. https://doi.org/10.3390/su10020314.