HR Competency Analysis on Increasing MSMEs Performance In Supporting Industrial Era 4.0

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ABSTRACT

Purpose: This study describes the analysis of human resource competencies in the era of the industrial revolution 4.0 in improving the performance of MSMEs. Technological and industrial developments require competent human resources in every organization.

Design/Methodology/Approach: The research was conducted in several businesses in Parepare City, where the sample was determined by purposive random sampling. This research uses qualitative research methods that emphasize the process of understanding based on facts in investigating a social phenomenon and human problems and is presented analytically and descriptively, which has been collected and then interpreted systematically.

Findings: The results of the research based on the qualitative approach conducted show that to achieve competent human resources in the era of the industrial revolution 4.0, human resources in companies are required to be adaptive, following company goals to adjust to employee profiles quickly, respond to the needs and developments of the times. Various challenges arise, especially related to the speed of adapting to change and the ability to collaborate virtually. The recommendations recommended in this study are to improve the performance of MSMEs as business actors to encourage the competence of the quality of human resources, especially in anticipating industry 4.0 to pay attention to and maximize aspects; Adaptive thinking and virtual collaboration.

Keywords: HR Competency; Industry 4.0; Adaptive Thinking; Virtual Collaboration; MSMEs Performance

INTRODUCTION

MSMEs (Micro, Small, and Medium Enterprises) comprise most business entities in Indonesia. According to (the Ministry of KUKM, 2022), the Ministry of Cooperatives and Small and Medium Enterprises reported data on developing Micro, Small, and Medium Enterprises (MSMEs) and large, thriving in some regions. It can be
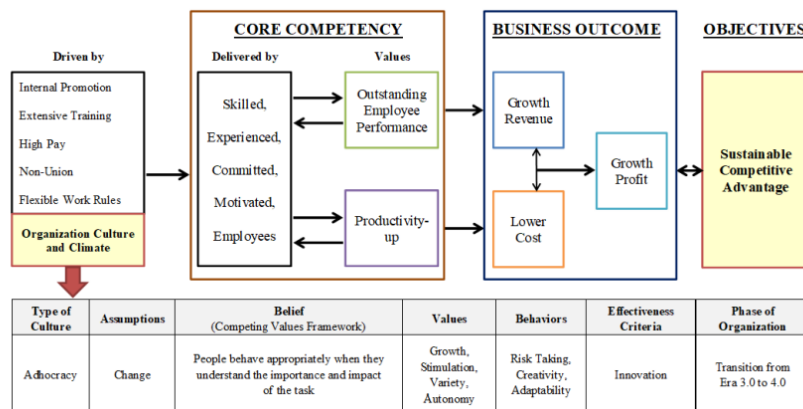
seen from the data reported by the Ministry of Cooperatives and Small and Medium Enterprises (Kementrian Koperasi dan UMKM, 2019) the total number of MSMEs in Indonesia reached 8.71 million business units in 2022 (Santika, 2022). The Ministry of Cooperatives and SMEs (KemenKopUKM) targets 24 million Micro, small, and medium enterprises (MSMEs) to be digitally transformed by 2023.

The target of 24 million MSMEs entering the digital ecosystem will be followed by an increase in numbers in 2024. "In 2023, the Ministry of Cooperatives and SMEs targets nationally 24 million MSMEs for digital onboarding, which we hope will reach 30 million in 2024. According to data from the Ministry of Cooperatives and SMEs, until now, there have been 20.76 million MSMEs for digital onboarding. MSMEs need quality human resources to carry out work in achieving the goals set by the company (Masud et al., 2022). Human resources must be managed as well as possible to perform responsibilities. It is to achieve the success of an organization or company will be determined by human factors or employees in achieving predetermined performance (Afdal et al., 2021). For this purpose, agencies need a leader who can manage human resources within the company to improve employee performance efficiently and effectively within an agency.

The success of a business entity in achieving its goals can be influenced by many factors, one of which is human resources. Human resources (HR) is the most important asset owned by any company or organization. Company success is highly regulated by the quality and performance of qualified human resources (da Silva et al., 2022). Human resources are thinkers, planners, and movers in an agency or organization to achieve the goals or objectives planned by government agencies. This goal will not be achieved without the active role of employees, even though the tools used in these agencies are so sophisticated. No matter how sophisticated the technology, the development of information, the availability of capital, and sufficient materials, it is difficult for companies to achieve these goals without human resources.

Human resource management is seen as having a fairly important role in the industrial world, entering the era of the industrial revolution 4.0 or the fourth world industrial revolution, where information technology has become the foundation of life because the internet and massive developments influence it. Digital technology is the backbone of human movement, connectivity, and machines (Jędrzejczyk, 2019). The following is a detailed explanation; the implementation of the conceptual framework shows the relationship between Core Competencies and Business Results, which become an integral part of improving the company's performance strategy so that it can implement a sustainable long-term strategy. Goal a In the Industrial Age 4.0, companies are no longer just looking for profit but business reach and company sustainability amidst very tight competition.

Currently, the 4.0 commercial revolution has become a new paradigm that is currently being discussed in the world, including in Indonesia. Kamble et al. (2020) Argued that the industrial revolution 4.0 became an advancement in which business production electricity was optimized with ultra-modern internet technology, which became the center of the 4.0 commercial increase. Therefore, it is only natural that company story 4.0 is increasingly in demand, especially for MSMEs in Indonesia. The company's success in surviving and even winning in business competition is the main focus that must be supported and achieved by every element of the organization (Plawgo & Ertman, 2021).

Type of Culture	Assumptions	Belief (Competing Values Framework)	Values	Behaviors	Effectiveness Criteria	Phase of Organization
Adhocracy	Change	People behave appropriately when they understand the importance and impact of the task	Growth, Stimulation, Variety, Autonomy	Risk Taking, Creativity, Adaptability	Innovation	Transition from Era 3.0 to 4.0

Figure 1. The conceptual framework model of the company in the Industrial Revolution Era 4.0

According to Pandya & Kumar (2022), the key to the existence of human resource competence itself is HR innovation. Innovation is the most crucial factor in determining competitiveness. Innovation achievement is a commitment to the extent to which a business organization can optimize the body of knowledge, technology transfer, business incubation, science, and technoparks. Important elements that can be applied to encourage the competitiveness of MSMEs in Industry 4.0, including 1) the implementation of innovative business systems; 2) Human resources that are more adaptive and responsive; 3) improving the quality of human resources or employees; 4) research innovations that support industry 4.0; and 5) innovation and system strengthening to improve industrial output and encourage the birth of technology-based start-ups (Sanders et al., 2016). Industry 4.0" has been widely used by business people, including MSMEs in Indonesia; Industry 4.0 wants to have a major influence on the national and international business industry (Tortorella & Fettermann, 2018). Nurwardani (2018b) argues that there are at least 10 HR competencies needed during the industrial revolution 4.0, namely: 1) sense-making, 2) social intelligence, 3) novel and adaptive thinking, 4) cross-cultural competence, 5) computing thinking, 6) new media literacy, 7) transdisciplinary, 8) mindset design, 9) cognitive load management and 10) virtual collaboration.

METHODS

This research uses a qualitative approach with a data analysis model from Miles and Huberman, suggesting that activities in qualitative data analysis are carried out interactively and occur continuously until completion, verification, and conclusion drawing (Dull & Reinhardt, 2014). The following are the steps of the Miles and Huberman model of data analysis method: The main activity in any research is data collection. First, the author chooses a topic to collect articles, conducts data reduction, collects data by direct interviews with the objects in the study, and searches for reputable international articles from Google Scholar using variable names as predetermined keywords.

To summarize, selecting the important things, focusing on the most significant aspects, because the amount of data, namely business actors in Parepare City, collected in the field is very large, it must be carefully recorded by selecting articles that meet the requirements and a collection of well-organized and compact facts that allow conclusions to be drawn. Actions to be taken (Huberman, 1994), After the data is reduced, the author presents the data in the form of narratives and article review tables. Presenting the data will make it easier for the author to find research gaps and explain research solutions. This stage is carried out by presenting an organized collection of information with the ability to conclude because the results of interviews collected during the qualitative research process are generally in the form of stories, requiring simplicity without reducing the content (Dull & Reinhardt, 2014). Summarize research gaps and find a new conceptual model framework that is expected to be used for further research.

RESULTS

Based on the article search conducted by the author using the indicators used in the research keywords, the number of articles obtained is as follows research keywords:

Table 1. Data Collection of Articles

Keyword	Number of Research Articles		
	Google Scholar	ScienceDirect	Emerald
Industry 4.0 and HR Competency	320	35	42
HR Competency and MSMEs Performance	220	27	55
Adaptive Thinking and MSMEs Performance	150	30	18
Virtual Collaboration and MSMEs Performance	178	22	31

The author screens the articles determined for use in the following ways:

1. The article has indicators that relate to the variables used by the author.
2. The data used are research articles
3. The data consists of articles from 2013-2022
4. The national and international articles used are reputable
5. Articles that have been found, then the author conducts a review by looking at the influence of related variables

By filtering the data above, the number of articles obtained is as follows:

Table 2. Data Reduction of Articles

| Keyword	Number of Research Articles
Industry 4.0 and HR Competency	12
HR Competency and MSMEs Performance	10
Adaptive Thinking and MSMEs Performance	5
Virtual Collaboration and MSMEs Performance	8

The gap research table is a data collection of research article reviews collected by the author.

Table 3. References of Research Article

No	Relationship Between Variables	Article References
1	Industry 4.0 and HR Competency	(Yashonidhi Srivastava *et al.,* 2022); (Fabian Hecklau and Mila Galeitzke, 2016); (Hecklau, Fabian, et al 2017); (Dhanpat, Nelesh, et al, 2020); (Kowal and Barbara, 2022); (Da Silva, L. B. P., et al, 2022); (Imran, Faisal, and Jussi Kantola, 2019); (Hidayat, et al, 2020); (Maryono, Doni, et al, 2022); (Jędrzejczyk, Waldemar, 2019); (Plawgo, Bogusław, and Agnieszka Ertman, 2021); (Piwowar-Sulej, Katarzyna, 2020)
2	HR Competency and MSMEs Performance	(Pandya, et al, 2022); (Kamble, Sachin S., et al., 2020); (Sariyer, Gorkem, et al., 2021); (Jamwal, Anbesh, et al., 2021); (Machado, Eduardo, et al., 2021); (Subramanian and Geetha, 2021); (Afdal, Zul, Menik Kurnia Siwi, and Tri Kurniawati, 2021);

		(Tortora, Alessia MR, et al., 2021); (Soni, Gunjan, et al, 2022); (Lakshmi, TR Kalai, et al, 2021)
3	Adaptive Thinking and MSMEs Performance	(Suminah, et al, 2022); (Gube, Maren, and Susanne Lajoie, 2020); (Hutton, Rob, et al, 2017); (Pan, Wen, and Li-Yun Sun, 2019); (Morteza Eslahchi, 2022)
4	Virtual Collaboration and MSMEs Performance	(Okon, Emmanuel O, 2018); (Virmani, et al, 2021); (Carneiro, Luis Maia, et al, 2013); (Sulistiyani, Endang, and Dody Setyadi, 2021); (Virani Sameer, 2013); (GALIB, Mukhtar, et al, 2022); (Alanah Mitchell, 2021); (Xusen Cheng, et al, 2017); (Fang, S., et al, 2014); (Kusmiyati, Leni, and Anjar Priyono, 2021)

After collecting articles, reducing data, and collecting data by direct observation of objects in the study (Huberman 1994), the following design suggested by the author uses a qualitative observational design with a cross-sectional study approach. The next step is to create a conceptual framework proposed by the author:
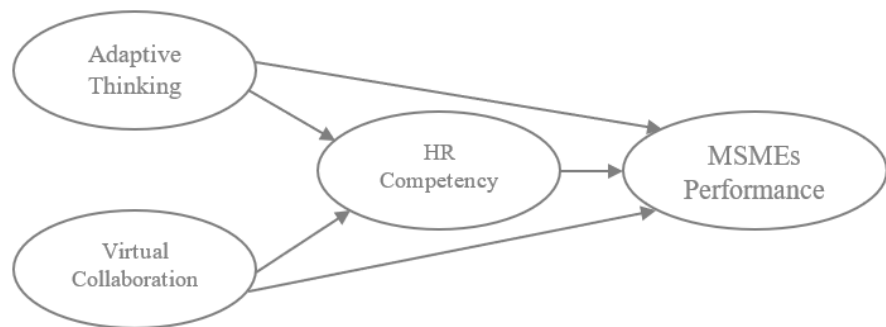
Figure 1: A Conceptual Framework of HR Competency, Adaptive Thinking, Virtual Collaboration, and MSME Performance

Based on the conceptual framework, the hypothesis below were proposed:

H1: The relationship between Adaptive Thinking and HR Competency variables has a positive and beneficial effect.

H2: The relationship between Virtual Collaboration and HR Competency variables has a positive and beneficial effect.

H3: The relationship between Adaptive Thinking and MSMe Performance variables has a positive effect.

H4: The relationship between Virtual Collaboration and MSMe Performance has a positive effect.

H5: There is a good correlation between HR Competency and MSMe performance.

The design suggested by the author is a quantitative observational design with an explanatory research approach, namely research that explains the influence between several variables by testing hypotheses. The data collection method can be used in questionnaires distributed to owners or managers of MSMEs. The distributed questionnaire contains a list of structured questions addressed to respondents to obtain information related to Adaptive Thinking, Virtual Collaboration, HR Competency, and MSMe performance. Future research can use sampling techniques by purposive sampling, which is a technique for sampling by setting specific criteria. Each dimension or variable indicator that can be used is obtained from the research article with the table describing the variables below:

Table 4. Indicator and Measurement Techniques Based on References

No	Variable	Dimension or Indicator	Measurement technique	References
1	Adaptive Thinking	Concept understanding, Procedural fluency, Strategic competence, adaptive Reasoning, Productive disposition	5 points using - Likert Scale	(Kilpatrick, 2010)
2	Virtual Collaboration	work team characteristics, type of work, quality of collaboration, and use of digital technology	5 points using - Likert Scale	(Paul & McDaniel, 2004)
3	HR Competency	Possess knowledge and skills.	5 points using - Likert Scale	(Human Resources Professionals Association, 2014)

		Expert in carrying out HR activities. Have the ability to manage change. Ability to manage culture Have personal credibility.		
4	MSMe performance	HR Aspects, Financial Aspects, Production and Operational Aspects, Market and Marketing Aspects, Social and Economic Aspects	5 points using - Likert Scale	(Zheng et al., 2006)

DISCUSSION

Improving the performance of MSMEs in a business is a fundamental problem every worker faces. Especially in the era of "industrial revolution 4.0, the demands for increased competence and performance are very high. According to (Mangkunegara & Octorend, 2015), performance is the result of work that strongly relates to the organization's strategic goals about doing work and the results achieved. Performance is the level of success in carrying out tasks and the ability to achieve predetermined goals. Performance is said to be good and successful if the desired goals can be achieved properly. The results of one's work will provide feedback for the person himself.

Human resource competencies in the era of the Industrial Revolution 4.0 greatly affect one's performance because loyal employees are required to adapt to any changes in the company's external environment, such as when adopting new technology (Tortora et al., 2021). Based on a qualitative approach, we found that to achieve competent human resources in the industrial revolution era, MSMEs must be adaptive in accordance with company goals to adjust to employees quickly. Various challenges arise, especially related to adapting to change and the ability to collaborate virtually (Clauss et al., 2019).

The recommendation in this study is to improve the performance of MSMEs to encourage competition in the quality of human resources, especially in anticipation of Industry 4.0, by paying attention to and maximizing aspects such as adaptive thinking and virtual collaboration. This study has some limitations that should be addressed in future research. Because we have collected data from MSMEs in South Sulawesi Province using a qualitative approach with the data analysis model from Miles and Huberman to prepare human resource competencies in the current industrial era 4.0, it is certainly not an easy thing, especially for MSMEs in South Sulawesi, Indonesia. In doing so, there will certainly be challenges that will hinder the success or failure of the efforts made. For MSME players, several challenges must be resolved by their human resources, such as adaptability and the ability to collaborate virtually.

CONCLUSION

Human Resource Competencies in Industry 4.0 is an ability/skill that every MSME actor specifically possesses, and for this competence, business actors can be better than others. Competence focuses on utilizing adaptive knowledge and skills in collaboration to achieve optimal performance. Performance is optimal and successful if the desired goals can be achieved properly. One of the important factors because the progress of the performance of MSMEs or organizations depends on their human resources. The author shows the importance of Human Resource competencies in mediating the relationship between adaptive thinking, virtual collaboration, and MSME performance. Based on a survey of related research, the authors conducted a Miles and Huberman model data analysis by collecting data, reducing data, presenting data, and drawing conclusions/verification. After the data analysis, the authors formulated a conceptual framework with five hypotheses. In this study, the authors recommend improving the performance of MSMEs as business actors to encourage competition in the quality of human resources, especially in anticipating Industry 4.0, to pay attention to and maximize aspects; of adaptive thinking and virtual collaboration. The author hopes that future researchers can adopt the conceptual framework of the formulated model to provide empirical evidence of the model.

REFERENCES

Afdal, Z., Siwi, M. K., Kurniawati, T., & Marwan. (2021). MSMEs Business Sustainability: A Literature Review. Proceedings of the Seventh Padang International Conference On Economics Education, Economics, Business and Management, Accounting and Entrepreneurship, 192(Piceeba), 317–322. https://www.atlantis-press.com/proceedings/piceeba-21/125964006

Clauss, A., Lenk, F., & Schoop, E. (2019). Enhancing international virtual collaborative learning with social learning analytics. 2019

2nd International Conference on New Trends in Computing Sciences, ICTCS 2019 - Proceedings, October, 1–6. https://doi.org/10.1109/ICTCS.2019.8923106

da Silva, L. B. P., Soltovski, R., Pontes, J., Treinta, F. T., Leitão, P., Mosconi, E., de Resende, L. M. M., & Yoshino, R. T. (2022). Human resources management 4.0: Literature review and trends. Computers and Industrial Engineering, 168(March). https://doi.org/10.1016/j.cie.2022.108111

Dull, E., & Reinhardt, S. P. (2014). An analytic approach for discovery. In CEUR Workshop Proceedings (Vol. 1304, pp. 89–92).

Human Resources Professionals Association. (2014). Human Resources Professional Competency Framework. 139. https://www.hrpa.ca/Documents/Designations/Professional-Competency-Framework.pdf

Jędrzejczyk, W. (2019). Human-organization relation in the perspective of industry 4.0. Lecture Notes in Mechanical Engineering, 1, 14–24. https://doi.org/10.1007/978-3-030-18715-6_2

Kamble, S. S., Gunasekaran, A., Ghadge, A., & Raut, R. (2020). A performance measurement system for industry 4.0 enabled smart manufacturing system in SMMEs- A review and empirical investigation. International Journal of Production Economics, 229(June). https://doi.org/10.1016/j.ijpe.2020.107853

Kementrian Koperasi dan UMKM. (2019). Data pelaku UMKM di Indonesia. Kementrian Koperasi Dan UKM Republik Indonesia, 1, 2018–2019. https://kemenkopukm.go.id/data-umkm/?O0txO7cuvfLZPSls63ODfq06kofx8LdaypR6kIgJHCp K7A4vuq%0Ahttps://kemenkopukm.go.id/read/target-pemerintah-30-juta-umkm-masuk-ekosistem-digital-pada-tahun-2024

Mangkunegara, A. P., & Octorend, T. R. (2015). Effect of Work Discipline, Work Motivation and Job Satisfaction on Employee Organizational Commitment in the Company (Case Study in PT. Dada Indonesia). Universal Journal of Management, 3(8), 318–328. https://doi.org/10.13189/ujm.2015.030803

Masud, A. A., Nurfadhilah, N., Tijjang, B., & Ali, R. (2022). The Role of E-Business Adoption Towards Improving Msme Performance in Parepare City. Hasanuddin Economics and Business Review, 5(3), 59. https://doi.org/10.26487/hebr.v5i3.3403

Pandya, D., & Kumar, G. (2022). Industry 4 . 0 Technologies for Sustainable Performance in Indian Manufacturing MSMEs. International Conference on Industrial Engineering and Operations Management Istanbul, Turkey, 3532–3542.

Plawgo, B., & Ertman, A. (2021). Competency Needs of Industry 4.0

Companies. *Central European Management Journal*, 29(4), 172–195. https://doi.org/10.7206/cemj.2658-0845.64

Sanders, A., Elangeswaran, C., & Wulfsberg, J. (2016). Industry 4.0 implies lean manufacturing: Research activities in industry 4.0 function as enablers for lean manufacturing. *Journal of Industrial Engineering and Management*, 9(3), 811–833. https://doi.org/10.3926/jiem.1940

Santika, E. F. (2022). Jumlah UMKM di Indonesia Sepanjang 2022, Provinsi Mana Terbanyak? Https://Databoks.Katadata.Co.Id/. https://databoks.katadata.co.id/datapublish/2023/02/02/jumlah-umkm-di-indonesia-sepanjang-2022-provinsi-mana-terbanyak#:~:text=Ini terlihat dari data yang,Pulau Jawa mendominasi sektor ini.

Tortora, A. M. R., Maria, A., Valentina, D. P., Iannone, R., & Pianese, C. (2021). A survey study on Industry 4.0 readiness level of Italian small and medium enterprises. *Procedia Computer Science*, 180, 744–753. https://doi.org/10.1016/j.procs.2021.01.321

Tortorella, G. L., & Fettermann, D. (2018). Implementation of industry 4.0 and lean production in brazilian manufacturing companies. *International Journal of Production Research*, 56(8), 2975–2987. https://doi.org/10.1080/00207543.2017.1391420