Original Research Article

Exploring the Moderating Role of Artificial Intelligence on Organizational Citizenship Behavior and Employee Performance in SMEs

ABSTRACT

The intention of this study is to explore the moderating impact of artificial intelligence in the relationship between organizational citizenship behavior and the performance of the employee. Organizational citizenship behavior, which covers voluntary employee actions that contribute to organizational effectiveness, is increasingly pertinent from a modern workplace perspective. As organizations assimilate AI technologies, understanding how the said technologies have impacts on employee performance becomes crucial. This study also examines the way AI enhances or weakens the effects of OCB on employee performance of small and medium-sized enterprises. The research sample in this study is 243 culinary small and medium-sized enterprises from Makassar, Indonesia. The findings of the study eventually suggest that AI not only supports employees in their roles but also shapes their willingness to engage in OCB, ultimately impacting overall performance outcomes. This study also discusses the implications for management practices and future research guidelines, emphasizing the importance of leveraging AI to foster a productive work environment.

Keywords: organizational citizenship behavior, employee performance, artificial intelligence, SMEs, human resource management.

1. INTRODUCTION

Within the swiftly developing business landscape recently, small and medium-sized enterprises, or SMEs, continually develop their organizational learning and technology in order to develop their competitive edge [1, 2]. Among such learning and technologies, organizational citizenship behavior, or OCB, and artificial intelligence, or AI, become transformative potencies to reshape how organizations work, interact with individuals and groups, as well as involve customers [3]. As SMEs tend to deal with several issues [resource limitations, market competition, etc.], AI assimilation creates not only opportunities but also challenges that warrant deeper investigation [4, 5]. Organizational citizenship behavior, or OCB, tends to be associated with the employees' voluntary efforts that contribute to the overall effectiveness of an organization but are not formally recognized or rewarded, which eventually enhance employee performance (EP) [3]. Furthermore, literature implies that despite the increase in interest among scholars in exploring the AI and OCB impact on organizations, nonetheless there is a shortage of empirical investigation emphasizing certain impacts of AI, OCB, and EP within SMEs. To be more specific, this study finds that there is a gap in the body of literature in understanding how AI moderates the relationships between OCB and EP from the SMEs perspective. As such, this study expects to investigate the

moderation effect of AI on the relationship amongst OCB and employee performance in small business units.

2. MATERIAL AND METHODS

2.1 Organizational Citizenship Behavior

According to the literature, OCB is seen as certain voluntary actions of any individual that later bring a contribution to the effectiveness of the organization. The dimensions of OCB, based on the study of Rego, Ribeiro [6], are: (a) civic virtue, or CV, which is described as the senses of individual in terms of responsibility within the organization [participate and contribute to the committee or attend the meetings]; (b) conscientiousness, or C, which is seen as an individual's commitment in order to perform one's job duties caringly and diligently. For instance, meet the deadline, arrive on time, or arrive on time at the office. In addition, scholars, such as Popescu, Fistung [7], also indicate that there are several factors that affect OCB, namely organizational climate, which covers positive organizational culture, and individual characteristics, which explain the individual personality characteristics, e.g., openness as well as agreeableness. Subsequently, OCB encompasses voluntary behaviors that go beyond formal job requirements and contribute positively to the organization. For its measurement, the dimensions of OCB are also: (a) The established scales to assess various dimensions, such as altruism, conscientiousness, civic virtue, and sportsmanship; (b) Self-Report Surveys, such as collecting data through employee surveys to gauge perceived OCB levels; and (c) Peer Evaluations, such as Incorporate feedback from colleagues to provide a more comprehensive view of OCB. Additionally, the contextual factor of OCB is mainly to examine how the SME culture, leadership style, and team dynamics influence OCB, recognizing that smaller teams may foster closer relationships.

2.2 Employee Performance

Literature shows that EP tends to contain employee effectiveness, which is sometimes assessed quantitatively by sales or productivity, as well as the creativity of individual and/or team. According to several studies, e.g., Adnyani, Widagda [8], the dimensions of EP are: (a) adaptive performance, or AP, which refers to the ability of the employee to adapt to the occurred-changes, such as a new role, a new technology, or a new working environment, within the workplace; (b) innovation contribution, or IC, which relates to a new insight/improved job procedure that is recommended by the employee; and (c) task performance, or TP, which relates to the employee's efficiency and effectiveness during performing job tasks and responsibilities [9-11]. Furthermore, employee performance also refers to the effectiveness and efficiency with which employees accomplish their tasks with the measurements are: (a) Performance Metrics: Define specific performance indicators (KPIs) relevant to the SME context, such as sales targets, project completion rates, or customer satisfaction scores; (b)m Performance Reviews: Implement regular evaluations that combine quantitative metrics with qualitative feedback; and (c) Goal Setting: Use SMART criteria (Specific, Measurable, Achievable, Relevant, Time-bound) for setting performance goals. The contextual factor of employee performance is to consider how the unique resources and constraints of SMEs (e.g., limited training budgets, informal structures) affect performance expectations and assessments.

2.3 Artificial Intelligence

The study of Akbar, Mustafa [1] explain that AI contains a number of technologies. For example, learning in both machine and language processes and the application of AI later help organizations to expand and influence many human resource functions. For example,

the evaluation of employee performance, the recruitment process, etc. [4]. The indicators of AI, based on the study of Pereira, Hadjielias [12], are: (a) supports from AI, or SFAI, which refers to the support level of AI that is received by employees in order to make a decision and to execute particular tasks; and (b) work process effect, or WPE, which relates to the improvements of employees' workflow efficiency and effectiveness through the application of AI technologies [13]. Furthermore, the role of AI in moderating the relationship between OCB and EP is vital, based on several reasons, which are: the acceleration on OCB, which refers to the ability of AI tools to reorganize employees' tasks, particularly the administrative ones, which later decreases the stress level of employees; and the effect on EP, which refers to the several implications, namely: the enhancements of employees' productivity and satisfaction. Moreover, AI refers to computer systems that can perform tasks typically requiring human intelligence, such as decision-making, problem-solving, and learning [21]. In addition, AI Measurement are: (a) Tools and Technologies: Identify specific AI tools used (e.g., chatbots, predictive analytics); (b) Implementation Level: Assess the extent of AI integration—fully automated systems vs. augmented decision-making; and (c) Impact on Processes: Evaluate changes in operational efficiency, innovation rates, and customer engagement post-AI implementation. For AI contextual factor is the consideration on the specific challenges and opportunities faced by SMEs, such as limited resources and the need for adaptability [12, 13, 21].

2.3 Research Framework and Hypothesis

This study proposes research framework (Figure 1) in order to guide this study organize the existing theories and concepts, facilitating understanding and interpretation of the research topic as well as to identify key variables and relationships, ensuring that the research focuses on relevant factors.

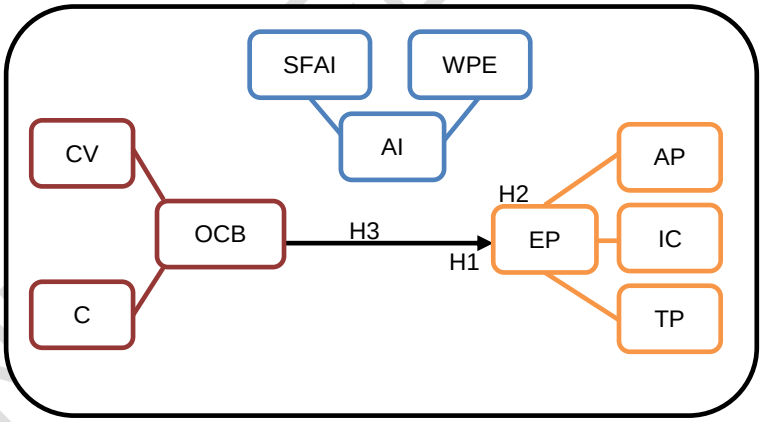

Fig. 1. Conceptual Framework (Data Generated, 2024)

Based on Figure 1 above, this study proposes three (3) research hypotheses in Table 1, which are:

Table 1. Research Hypothesis

Based on Figure 1, this study proposes several hypotheses, which are demonstrated in the Table 1.

Table 1. Research Hypothesis

Hypothesis

H1	OCB significantly and positively affects EP
H2	AI significantly and positively affects EP
H3	AI significantly and positively moderates the relationship between OCB and EP

Source: Data Processed (2024)

Subsequently, this study applies the quantitative research method and as such, this study conducts research questionnaire observation in order to collect primary data for this research and relevant published reports as the secondary data of this study. The research object of this study is culinary SMEs from Makassar that are active and officially registered at Makassar's Department of Cooperative and Micro, Small, and Medium Enterprise, or MSMEs (Dinas Koperasi dan Usaha Mikro, Kecil, dan Menengah Kota Makassar, or DKUMKM Makassar). Based on the report of DKUMKM of Makassar, within the year 2023, there are 211,496 MSMEs and around 19,000 registered and active SMEs [14]. The report of DKUMKM of Makassar also displays that the population of active culinary SMEs in the year 2023 is around 600, and based on such a report above and the study of Sekaran and Bougie [15], the suggested and ideal sample size of this study is 243 research samples; as such, the sample size of this study is 243 culinary SMEs. Furthermore, this study applies structural equitation modeling with a partial least squares approach to statistically calculate research data from April 2024 to October 2024.

3. RESULTS AND DISCUSSION

3.1 Validity and Reliability Test Results

Table 2. The Results of Validity and Reliability Test

	Cronbach's α	rho_A	r-table	r-count	Results
OCB (X)	0.715	0.724	0.198	0.772	Valid and Reliable
EP (Y)	0.727	1.000	0.198	0.636	Valid and Reliable
AI (Z)	1.000	1.000	0.198	1.000	Valid and Reliable

Source: Data Processed (2024)

According to the studies of Sekaran and Bougie [15], Angreyani, Akbar [16], and Bell, Bryman [17], validity tests should be conducted to confirm the validity of the calculated research constructs, especially in the context of quantitative research methodology. The r-count score should also be prioritized in order to determine the validity of the research variable, and a construct is considered valid when its r-count score is higher than its r-table score, and vice versa. Furthermore, according to some studies, such as Bell, Bryman [17], the reliability test is predominantly central for quantitative research since it aids in statistical calculation and measurement, which ensures that study methods and data collection produce reliable and consistent results. The study of Sekaran and Bougie [15] also strongly recommends that the general guideline for validity test results is that if the r-count result is more than the r-table result, the indicator is considered genuine, and vice versa. This is in reference to the validity and reliability test on the obtained data.

Based on Table 2, all variables (X to Z) have r-count scores that are larger than r-table scores, and consequently, this study finds that all research variables in this study are valid. In other words, this study indicates that civic virtue and conscientiousness, which are the dimensions of OCB, are valid. Similarly, the dimensions of both AI, which are supports from AI and work processes effect, and EP, which are adaptive performance, innovation contribution, and task performance, are also valid. Moreover, a Cronbach Alpha value > 0.60 indicates that the variable under investigation is dependable, and vice versa for reliability test

results [17-19]. The results in Table 2 indicate that the score of Cronbach's alphas of all variables from X to Z is higher than 0.06. To be more specific, this study finds that all dimensions of all variables in this study, such as civic virtue, conscientiousness, supports from AI, work processes effect, adaptive performance, innovation contribution, and task performance, are reliable. This study therefore denotes that all research variables of this study are reliable and valid and can be used for the statistical tests.

Table 2 shows that all variables, including X, Y, and Z of this study are valid. This is because the score of r-count of each variable is greater than 0.1417 (r-table). Correspondingly, the results in Table 2 describes that the Cronbach's alpha score of all variables within this study are higher than 0.06. As such, all variables in this study are valid, reliable, and appropriate to be used for further statistical measurements.

3.2 Total Effect Test Results

The scores of original samples, which are shown in Table 3 and/or Figure 2, indicate that all the connections between research variables are positive. For example, the score of original samples of OCB on EP is 0.655 (positive), or the connection score of AI on EP is 0.205. Likewise, the total effect test results show that the original sample score of AI on the connection between OCB and EP is also positive, or 0.195. Additionally, for the significance level, scores among all research variables are based on the results of P-value scores. For example, there is a significant effect in the relationship between OCB and EP as well as AI and EP because the P value score is lower than 0.05. Similarly, the moderation effect of AI is significant on the relationship between OCB and EP.

Table 3. The Results of Total Effect Test

	Original Samples	Sample Mean	Standard Deviation	T Statistics	P Values
OCB → EP	0.655	0.657	0.037	17.754	**0.000**
AI → EP	0.205	0.208	0.049	4.226	**0.000**
OCB → AI → EP	0.195	0.193	0.038	5.133	**0.000**

Source: Data Processed (2024)

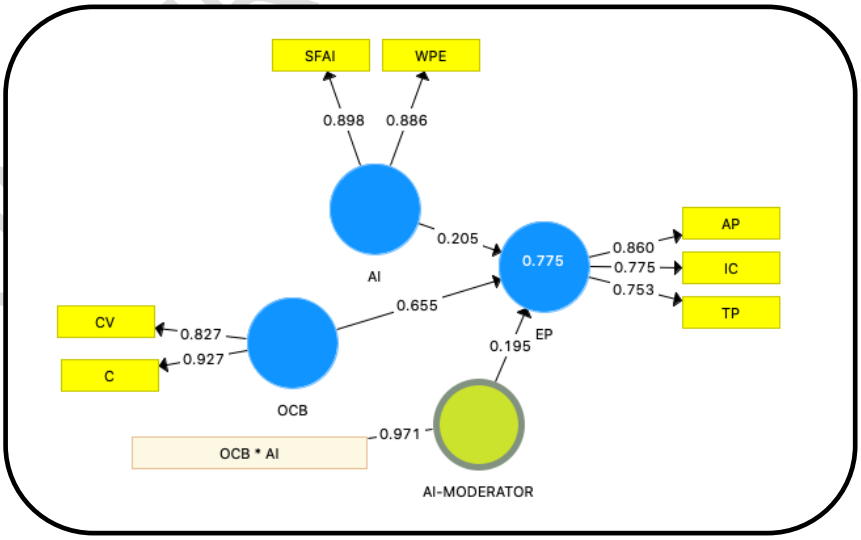

Fig. 2. Total Effect Test Results Framework (Data Processed, 2024)

Subsequently, in line with the results in Table 3 and Figure 2, this study finds that the research hypotheses of this study are accepted. To be more specific, Table 3 and Figure 2 reveal that: (a) OCB significantly and positively affects EP, i.e., H1 is accepted and H0 is rejected; (b) AI significantly and positively affects EP, in other words, H2 is accepted and H0 is rejected; and (c) AI significantly and positively moderates the relationship between OCB and EP, i.e., H3 is accepted and H0 is rejected.

4. CONCLUSION AND RECOMMENDATION

As for the theoretical contribution, this study concludes and recommends that organizational citizenship behavior and artificial intelligence significantly and positively affect employee performance. The main reason for this recommendation is that an organization's civic virtue, conscientiousness, support from AI, and work processes effect are found to have an impact on employees' adaptive performance, innovation contribution, as well as task performance. This is also similar to the recent study of Olonade, Omotoye [11] that denotes civic virtue together with conscientiousness do affect employee performance, especially employee adaptive and motivation performance during executing tasks and responsibilities. Similarly, Gupta, Lakhera [20] also explain that digital transformations as well as deep learning in human resource management bring various innovation adoptions and contributions to employee management and investment. Moreover, this study also delivers an insight that artificial intelligence does affect significantly and positively the connection between organizational citizenship behavior and employee performance. This can be seen in the role of AI supports and work processes effect on the connection between civic virtue-conscientiousness and employee's adaptive performance, innovation contribution, and task performance. Subsequently, as for managerial contribution, this study recommends and offers a guideline for SMEs manager/owner as well as for policymakers in planning, organizing, actuating, controlling, and evaluating the efficient and effective organizational strategy, especially organizational citizenship behavior strategy to improve the level of its employee performance.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declares that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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