Effect of Leadership and Motivation on the Employee Performance Through Work Environment as Intervening Variable  
(Case Study at PT ATS)  

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Abstract  
The aim of this study is to analyse the effect of leadership and motivation, using work environment as intervening variable, on the employee performance in the context of PT ATS. In this study, a structured questionnaire was developed by using Likert scale and applied on 131 respondents, whom their various jobs are directly relating to the operations within observation period of 2019. Leadership and motivation act as independent variables, work environment as intervening and employee performance as dependent one. The method used for the research is quantitative, applying survey and path analysis technique. For data analysis purpose, SPSS is used for descriptive statistic and PLS applied for developing structural and measurement models. The outcome of this study shows that leadership has no significant effect on employee performance, both directly or indirectly, through work environment. Meanwhile, motivation has significant direct and indirect (through work environment) effect to the performance of employees. Both leadership and motivation, have significant direct effect on the work environment. Work environment also has direct effect significantly on the employee performance significantly. Work environment also performs as full mediator within the effect of leadership to the employee performance. In the meantime, work environment contributes as partial mediator within the effect of motivation to the employee performance.  

Keywords: Leadership, Motivation, Work Environment, Employee Performance  
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I. Introduction  
1.1. Background  
Human resource plays salient role in the company’s operations. Without this reliable resource, the usage of other sources will not be effective and efficient. Sinambela (2018) opines that human in each organization, both business and public, is the main resource, beside others, such as money, material, machine, method and market. Meanwhile, Wibowo (2017) views that for organisations, including the companies, increase of competitiveness durability, are a must. However, the competitiveness of an organization will only be improved if they may adopt themselves with increase of internal performance and keep observing the external changes.  

In the implementation of sustainable palm oil, human resource contributes significantly. Human establishes identification, planning, implementation, evaluation, and also drives other resources to ensure this system is well implemented. Human resource is also part of sectors, which included into the principles and criteria of sustainability system. One of indicators in the Indonesian Sustainable Palm Oil (ISPO) is that the availability of human resources system. This includes remuneration, incentive, carrier path, performance evaluation, rights and obligations of workers, implementation of occupational safety and health, and increase of employee competence based upon the existing regulations.  

ATS is a palm oil company, established in 1991, with status of domestic investment (PMDN). Concessions of ATS located in Tapung Hulu, Kampar District, and Kepenuhan Hulu, Rokan Hulu district, both in Riau Province, Indonesia. With regard to the production, fresh fruit bunches they produced relatively decreased up to 14.6% in 2018 from 80,471 tonnes in the previous two years. The crude palm oil (CPO) productions experienced the same trend, where in 2018 the production declined 11% from 15,414,05 tonnes in earlier two years ago.
Table 1. PT ATS Production Plan and Realization

| Tahun | Fresh Fruit Bunches Plan (ton) | Fresh Fruit Bunches Realization (ton) | Crude Palm Oil Plan (ton) | Crude Palm Oil Realization (ton) |
|-------|-------------------------------|------------------------------------|----------------|--------------------------------|
| 2016  | 99,144.68                    | 80,471.00                          | 20,820.38      | 15,414.05                     |
| 2017  | 91,199.50                    | 74,539.00                          | 18,695.90      | 14,249.60                     |
| 2018  | 67,610.81                    | 68,694.00                          | 13,691.19      | 13,133.08                     |

Sources: PT ATS 2019

Therefore, based on the above phenomena gap, it is necessary to investigate the factors influencing the employees' performance, thus, we perform a case study of an Indonesian private company.

1.2. Objective and Questions Formulated in the Study

The aim of this study is to develop a model for analyzing the effect of leadership, motivation and work environment on the performance of ATS’s employees. The sentences to be questioned from this study are as below:

1) the direct effect of leadership on the employee performance
2) the direct effect of motivation on the employee performance
3) the direct effect of leadership on the work environment
4) the direct effect of motivation on the work environment
5) the direct effect of work environment on the employee performance
6) the indirect effect of leadership on the employee performance through work environment as intervening variable
7) the indirect effect of motivation on the employee performance through work environment as intervening variable.

II. Theoretical Framework and Hypothesis

2.1. Leadership

According to Amirulllah (2015), leadership is the capability, related to behaviour and expertise, to influence others to achieve organisation’s objectives. Leadership, in theory, is segmented into 3, i.e. character, charisma, and attitude. The character relates to any properties, which attach or should attach, to a leader, such as intelligence (capability to adopt and decide, knowledge and talk), personality (individualism, creativity, readiness, integrity, emotional balance), physical character and cooperation (sociability, tactic and diplomatic). Charisma stresses on the capability of a leader to influence his followers based on his supernatural or particular power. And attitude theory focuses on how the leader behaves to determine effectiveness.

Fahmi, Irham (2016) defined that a leader has a great effect on supporting increase of performance of the employees. In this globalisation era, the leadership needed should have high value of competence, and this value can only be achieved if that leader has adequate experience and knowledge. Having this kind of competence, the leader may improve quality of his subordinates’ performance. Zulkarnaen, AA and Tajuddin Pogo (2019) in his research found that leadership has positive and significant effect on the employee performance. This is in line with the other research where Irmayana, N et.al (2018) found that leadership has an effect on the employee performance. Riyanto A, et.al (2018) concluded in their research that leadership can enhance employee performance. The opposite occurs in Habba, D et.al (2017) research, they stated that leadership has no effect on performance. Danthi Ni Made Ari (2017) in her research found that leadership has a significant effect on work performance.

2.2. Motivation

Mangkunegara (2017) defined motivation as a condition, which may drive an employee to support achieving organisation’s goals. The employee will have maximum performance if they are highly motivated. Wibowo (2017) also opined that motivation is the psychological process of arising and driving behaviour to achieve the goal, or so called goal directed behaviour.

Associated with theory of motivation, Marsono (2016) explained that Abraham Maslow developed Hierarchy of Needs Theory where human has five stages of hierarchy of needs, i.e. physiological needs (the foundation level of need for human to survive); safety needs; social needs; esteem needs; and self-actualization needs (to utilise capability, skill, potency, expressing ideas and critic).

In their study, Ali, Amjad, et al (2016) concluded that partially, motivation has positive and significant effect on the performance of employees. This is in line with the other research conducted by Restuwati, DE and Masydzulhak (2019). Jeffrey, I. and Andtes, R.V. (2017) regarding the Effect of Leadership, Work Motivation and Work Environment toward Employee Performance. They stated that motivation partially has positive and significant effect on the employee performance.
2.3. Work Environment

Al-Omari, Khaled. and Haneen Okasheh (2017) viewed that work environment may be anything surrounding the workers, which affect them while doing their work.

Sedarmayanti (2011) opined that in general, work environment is categorised into 2, i.e. physical and non-physical environment. The physical environment is all physical conditions around work place, which may affect employees, directly and indirectly as well. Non-physical work environment is all conditions with regard to the work relation, vertically between superior and sub-ordinate or horizontally among subordinates. This non-physical work environment is as salient as the physical one. Working spirit of the employees is affected with non physical work environment, such as relation among employees or with the superior. If the relation is conducive then this will make employees comfortable, so that working spirit will be higher, and in turn, the performance, will be improved as well.

In their study, Puspitasari, DTD and Ahmad Badawy Saluy (2019) conclude that partially, work environment affects positively and significantly on the employee performance. Jeffrey, Ignatius and Andtes, Reisza Vallewey (2017) also provide similar conclusion, where the effect of work environment on the performance of employees partially is positive and significant. Work environment has positive and significant direct effect on the employee performance. This result is in line with the other study commenced by Samson, GN and Waiganjo M. (2015) i.e. Effect of Workplace Environment on the Performance of Commercial Banks’ Employees in Nakuru Town. This study also shows that physical and non physical work environment has effect significantly on the employee performance.

2.4. Performance

Fahmi, Irham (2016) defined performance as the output of an organisation, profit oriented or non profit oriented resulted within a period of time. Mangkunegara (2017) categorised indicators of employee performance into 3 types, i.e. work quality (accuracy, carefulness, skill, and cleanliness); work quantity (output); and reliability (instruction, initiative, diligence, attitude to employees and teamwork).

Factors affecting performance, according to Inaray, et. al (2016) are leadership and motivation. Meanwhile, Elisiana, et. al (2016) concluded that significantly, employee performance is affected by leadership, motivation and work environment.

2.5. Research Model and Hypothesis

The Research model of this study is shown on Figure 1.1.

Hypothesis

Based on the literature review, the results of the previous research and the model above, the hypothesis are as follows:

H1: Leadership affects directly on employee performance
H2: Motivation affects directly on employee performance
H3: Leadership affects directly on work environment
H4: Motivation affects directly on work environment
H5: Work environment affects directly on employee performance
H6: Leadership affects indirectly on employee performance through work environment
H7: Motivation affects directly on employee performance through work environment.
III. Research Method
The method used for the research is quantitative, applying survey and path analysis technique. Path analysis, according to Marsono (2016) is a mean or technique, which may assist researcher to elaborate the correlational causal quantitative data. There are 3 types of variables in this study, i.e. independent, dependent and intervening variables. In this study researchers distributed questionnaires to 131 employees whom their work relate to the production process of ATS estate. This estate is located in Tapung Hulu, Kampar District, Riau Province (Petapahan estate)

IV. Research Result and Discussion
4.1. Outer/Measurement Model
According to Ghozali, Imam (2015), rule of thumb for Convergent Validity test is the value of Loading Factor > 0.6 (for explanatory research), and AVE > 0.50. The test shows that all dimensions, i.e. leadership (6 dimensions), motivation (5), work environment (2) and employee performance (5) have loading factor (original sample) > 0.6. Meanwhile, AVE values for leadership, motivation, work environment, and employee performance are > 0.5. Therefore, we may conclude that the structural model is valid.

Table 4.1. Loading Factor Value

| Indicator       | Original Sample (O) | Sample Mean (M) | Standard Deviation (STDEV) | T Statistics (O/STDEV) | P Values |
|-----------------|---------------------|-----------------|---------------------------|------------------------|----------|
| K1 < Leadership (K) | 0.715               | 0.706           | 0.066                     | 10.861                 | 0.000    |
| K2 < Leadership (K) | 0.798               | 0.797           | 0.038                     | 21.158                 | 0.000    |
| K3 < Leadership (K) | 0.736               | 0.731           | 0.072                     | 10.197                 | 0.000    |
| K4 < Leadership (K) | 0.831               | 0.830           | 0.033                     | 24.975                 | 0.000    |
| K5 < Leadership (K) | 0.777               | 0.776           | 0.042                     | 18.624                 | 0.000    |
| K6 < Leadership (K) | 0.788               | 0.784           | 0.049                     | 15.954                 | 0.000    |
| KK1 < Employee Performance (KK) | 0.828           | 0.828           | 0.042                     | 19.760                 | 0.000    |
| KK2 < Employee Performance (KK) | 0.834           | 0.832           | 0.034                     | 24.297                 | 0.000    |
| KK3 < Employee Performance (KK) | 0.730           | 0.708           | 0.110                     | 6.666                  | 0.000    |
| L1 < Work Environment (L) | 0.887           | 0.884           | 0.029                     | 30.848                 | 0.000    |
| L2 < Work Environment (L) | 0.913           | 0.912           | 0.018                     | 50.388                 | 0.000    |
| M1 < Motivation (M) | 0.726               | 0.724           | 0.046                     | 15.623                 | 0.000    |
| M2 < Motivation (M) | 0.812               | 0.803           | 0.042                     | 19.311                 | 0.000    |
| M3 < Motivation (M) | 0.743               | 0.737           | 0.060                     | 12.412                 | 0.000    |
| M4 < Motivation (M) | 0.827               | 0.826           | 0.036                     | 22.693                 | 0.000    |
| M5 < Motivation (M) | 0.741               | 0.735           | 0.062                     | 11.975                 | 0.000    |

Discriminant validity is tested using cross loading parameter. If the value of cross loading of each indicator on their construct is higher than the other construct, then this measurement model is considered valid (Ghozali, Imam. (2015). The result of the test showed that the value of cross loading of each indicator is higher that other construct, therefore we may conclude that this measurement model is valid.
The reliability test of the construct to the reflective indicator, according to Ghozali, Imam. (2015), can be performed by two ways, i.e. Cronbach’s Alpha and Composite Reliability. The test resulted that the values of both Cronbach’s Alpha and Composite Reliability of each construct is higher than 0.7, therefore this measurement model is reliable.

| Dimension | Leadership_(K) | Employee Performance_(KK) | Work Environment_(L) | Motivation_(M) |
|-----------|----------------|---------------------------|----------------------|----------------|
| K1        | 0.715          | 0.266                     | 0.339                | 0.477          |
| K2        | 0.758          | 0.345                     | 0.475                | 0.483          |
| K3        | 0.736          | 0.435                     | 0.359                | 0.445          |
| K4        | 0.831          | 0.400                     | 0.427                | 0.537          |
| K5        | 0.777          | 0.328                     | 0.420                | 0.545          |
| K6        | 0.788          | 0.292                     | 0.414                | 0.523          |
| KK1       | 0.357          | 0.628                     | 0.546                | 0.473          |
| KK2       | 0.357          | 0.854                     | 0.581                | 0.594          |
| KK3       | 0.351          | 0.730                     | 0.373                | 0.344          |
| L1        | 0.435          | 0.533                     | 0.887                | 0.537          |
| L2        | 0.508          | 0.617                     | 0.913                | 0.580          |
| M1        | 0.422          | 0.382                     | 0.500                | 0.726          |
| M2        | 0.477          | 0.349                     | 0.517                | 0.812          |
| M3        | 0.537          | 0.573                     | 0.376                | 0.743          |
| M4        | 0.508          | 0.524                     | 0.515                | 0.827          |
| M5        | 0.538          | 0.462                     | 0.489                | 0.741          |

4.2. Structural / Inner Model
Related to the test for determinant coefficient (R²), according to Chin in Ghozali, Imam (2015), if the value of R² is 0.67; 0.33; and 0.19 show, in sequence, the model is strong, moderate and weak. Table 4.2. shows that R² for work environment is 0.413 or moderate. Therefore, we conclude that the contribution of leadership and motivation to influence work environment is 41.3%. And the other remaining portion is contributed by variables, which are not part of this study. R² for employee performance is 0.477 or moderate. Therefore, we conclude that the contribution of leadership, motivation and work environment to influence employee performance is 47.7%. And
the other remaining portion is contributed by variables, which are not part of this study.

Table 4.2. Determinant Coefficient

| Variable                      | R Square | R Square Adjusted |
|-------------------------------|----------|-------------------|
| Employee Performance (KK)     | 0.477    | 0.465             |
| Work Environment (L)          | 0.413    | 0.404             |

The scores of R² may also be shown in the structural model as below:

Figure 4.4. Loading Factor and Determinant Coefficient

The score for Q² is 0.693 therefore the model has a strong predictive relevance (Q² > 0). Related to f², the score for motivation to work environment is 0.232 (moderate), work environment to employee performance is 0.212 (moderate), leadership to work environment is 0.045 (weak), leadership to employee performance is 0.000 (weak), and motivation to employee performance is 0.093 (weak).

4.3. Hypothesis Test

The hypothesis test uses score of T-Statistics and P-Values as parameters. If T-Statistics > T Table (1.96 at significance level of 0.05) or P-Values < 0.05, then hypothesis is accepted. The result of the test is shown in the tables below:

Table 4.3. Direct Effect Test

| Direct Effect                          | Original Sample Mean (O) | Sample Mean (M) | Standard Deviation (STDEV) | T Statistics (|O/STDEV|) | P Values |
|----------------------------------------|--------------------------|-----------------|-----------------------------|-----------------|----------|
| Leadership (K) -> Employee Performance (KK) | 0.012                    | 0.010           | 0.101                       | 0.123           | 0.902    |
| Leadership (K) -> Work Environment (L)  | 0.214                    | 0.227           | 0.092                       | 2.324           | 0.021    |
| Work Environment (L) -> Employee Performance (KK) | 0.435                    | 0.409           | 0.151                       | 2.874           | 0.004    |
| Motivation (M) -> Employee Performance (KK) | 0.322                    | 0.346           | 0.156                       | 2.064           | 0.040    |
| Motivation (M) -> Work Environment (L)  | 0.484                    | 0.472           | 0.115                       | 4.204           | 0.000    |

The original sample of the effect of leadership variable on employee performance is positive (0.012). This indicates that there is a positive relation between leadership and employee performance. Then, t-statistic score is 0.123 (< 1.96) and P value achieves 0.902 (> 0.05). We may conclude, based on those values, that leadership variable has no significant effect on the employee performance.

The original sample of the effect of leadership variable on work environment is positive (0.214). This indicates that there is a positive relation between leadership and work environment. Then, t-statistic score is 2.324 (> 1.96) and P value achieves 0.021 (< 0.05). We may conclude, based on those values, that leadership variable has a significant effect on the work environment.

The original sample of motivation variable towards employee performance is positive, i.e. 0.322. This indicates that there is a positive relation between motivation and employee performance. Then, t-statistic score is 2.064 (> 1.96), and the P value achieves 0.040 (< 0.05). Therefore, we may conclude that motivation variable has significant effect on the employee. The original sample of leadership variable towards work environment is positive.
This indicates that there is a positive relation between leadership and work environment. Then, t-statistic shows 2.324 (> 1.96), and P value achieves 0.021 (< 0.05). We may conclude that leadership has a significant effect on the work environment.

The original sample of motivation variable towards work environment is positive (0.484). This indicates that there is a positive relation between motivation and work environment. Then, t-statistic shows 4.204 (> 1.96), and P value achieves 0.000 (< 0.05). We may conclude that motivation has a significant effect on the work environment.

The original sample of work environment variable towards work employee performance is positive (0.435). This indicates that there is a positive relation between work environment and employee performance is 2.874 (> 1.96), and P value achieves 0.004 (< 0.05). From the previous data, we may summarise that work environment has a significant effect on the employees' performance.

| Table 4.4. Indirect Effect Test |
|--------------------------------|
| **Indirect Effect** | Original Sample (O) | Sample Mean (M) | Standard Deviation (STDEV) | T Statistics (|O/STDEV|) | P Values |
| Leadership (K) -> Work Environment (L) -> Employee Performance (KK) | 0.093 | 0.098 | 0.063 | 1.463 | 0.144 |
| Motivation (M) -> Work Environment (L) -> Employee Performance (KK) | 0.210 | 0.183 | 0.062 | 3.365 | 0.001 |

Table 4.4. shows that the original sample of leadership variable towards employee performance via work environment has a positive score (0.093). This means that there is a positive relation between leadership variable towards employee performance via work environment. Then, t-statistic is 1.463 (< 1.96), and P value achieves 0.144 (> 0.05). Therefore, we may conclude that leadership has no significant indirect effect on the employee performance (through work environment).

The original sample of motivation variable towards employee performance via work environment has a positive score (0.210). This means that there is a positive relation between motivation variable towards employee performance via work environment. Then, t-statistic is 3.365 (> 1.96), and P value achieves 0.001 (< 0.05). Therefore, we may conclude that motivation has a significant indirect effect on the employee performance (through work environment).

| Table 4.5. Total Effect Test |
|----------------------------|
| **Total Effect** | Original Sample (O) | Sample Mean (M) | Standard Deviation (STDEV) | T Statistics (|O/STDEV|) | P Values |
| Leadership (K) -> Employee Performance (KK) | 0.105 | 0.108 | 0.110 | 0.956 | 0.340 |
| Motivation (M) -> Employee Performance (KK) | 0.532 | 0.530 | 0.131 | 4.057 | 0.000 |

Original sample of direct effect of leadership on employee performance is lesser than original sample of indirect effect of leadership on employee performance (0.012 < 0.093). Therefore, this indicates that direct effect of leadership on employee performance is lesser than indirect effect of leadership on employee performance. Then the ratio of direct effect to indirect effect of leadership on employee performance (0.093 / 0.105) shows VAF score of 88%. This indicates that work environment performs as full mediator.

Original sample of direct effect of motivation on employee performance is bigger that original sample of indirect effect of motivation, via work environment, on employee performance (0.323 > 0.210). Therefore, this means that direct effect of motivation on employee performance is bigger than indirect effect of motivation on employee performance (via work environment). The ratio between indirect effect to direct effect of motivation on employee performance (0.210/0.532) shows 39% as VAF score. This indicates that work environment performs as partial mediator.

V. Conclusion

5.1. Practical Implementation

In improving the performance of employees, we recommend that the this palm oil company consider motivation and work environment characteristics because these two variables have a significant influence on employee performance. Therefore this palm oil company should analyze overtime these two variables such that these two variables can be adjusted. In improving work environment we also recommend that the this palm oil company consider leadership and motivation characteristics because these two variables have a significant influence on work environment.

5.2. Theoretical Contributions

Leadership has a positive and significant effect directly on work performance. This research is in line with the previous
research by Danthi Ni Made Ari (2017) in her research found that leadership has a significant effect on work performance. Motivation has positive and significant effect, directly and indirectly (through work environment) on the employee performance. This result is in line with the previous study conducted by Jeffrey, I. and Andtes, R.V. (2017) regarding the Effect of Leadership, Work Motivation and Work Environment toward Employee Performance. They stated that motivation partially has positive and significant effect on the employee performance. Besides that, Restuwati, DE and Masydzulhak (2019), in their research named The Effect of Leadership, Motivation, and Work Culture on the Employee Performance PT XYZ, also concluded that motivation variable has positive and significant effect on the employee performance.

Work environment has positive and significant direct effect on the employee performance. This result is in line with the other study commenced by Samson, GN and Waiganjo M. (2015) i.e. Effect of Workplace Environment on the Performance of Commercial Banks’ Employees in Nakuru Town. This study also shows that physical and non physical work environment has effect significantly on the employee performance. Pusptasari, DTD and Ahmad Badawy Saluy (2019) conclude that partially, work environment affects positively and significantly on the employee performance.

5.3. Research Limitation
This study exclude other variables, which may affect to the employee performance, such as remuneration, discipline, loyalty, and organization culture. Besides that, this study located only in one of palm oil companies, so that we are unable to generate the result for the whole palm oil industry. Due to measurement of this study, which only applied in certain period, the result of the study may not be set up for long-term period. A longer period of study is necessary to respond if the conclusion of this study is still applicable for long-term.

5.4. Future Research Direction
In the future, the scope of this study can be developed, not only within a single palm oil company, buy can be extended to some other similar companies. Long-term study is possibly conducted to have applicable conclusion for long-term period.

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