# Organizational Support and Work Engagement Factor for the Implementation of Mh02 Technology with the Delone Mclean Model

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**Abstract:** In the implementation of a system, if the organization provides support to employees for their tasks, the employees will enjoy their work and improve performance through the use of the new system. In addition, when employees feel the same connection with their job or workplace. In mining activities, operators have the potential for high levels of fatigue because production activities are carried out 24 hours and are divided into 2 shifts. In anticipation of accidents caused by fatigue, PT Pamapersada Nusantara is currently developing technology in the unit cabin that can detect indications of operator fatigue when operating the unit. The technology in question is DMS/MH02 (Driving Monitoring System / Mata Hati 2). This research proposes to examine the role of organizational support, work engagement between and MH02 technology in coal mining use Delone & Mclean model. The quantitative research technique is referred to as the research method. The target of this research is PT. Pamapersada Nusantara, and the research sample, which consists of 279 respondents, refers to the structural equational modelling model*. From the results of the research that has been carried out, it turns out that DMS/MH02 for user satisfaction, net benefit, use from user perceptions expressed agreement regarding usability, satisfaction and usefulness for the average value of usability (DMS/MH02 use) at 3.6 while for usefulness ( net benefit) with an average of 4 and for user satisfaction it has the lowest average value, namely 3.27.For the role of organizational support in the implementation of DMS/MH02, it is proven to have a positive influence on DMS/MH02 use. The study found that there was a statistically significant effect of technical and organizational variables in management information system applications. This study led to the need to involve employees and users in the planning process for developing the information/technology system.

**Keywords:** organizational support, work engagement, driving monitoring system, Delone & Mclean

## INTRODUCTION

In the implementation of a system, if the organization provides support to employees for their tasks, the employees will enjoy their work and improve performance through the use of the new system. In addition, when employees feel the same connection with their job or workplace. In mining activities, operators have the potential for high levels of fatigue because production activities are carried out 24 hours and are divided into 2 shifts. In anticipation of accidents caused by fatigue, PT Pamapersada Nusantara is currently developing technology in the unit cabin that can detect indications of operator fatigue when operating the unit. The technology in question is DMS/MH02 (Driving Monitoring System / Mata Hati 2). Basically, engaged employees do better because they feel more connected to the company as a whole. This journal proposes an integrated model to measure and validate the success factors of user involvement in information system development DMS/MH02.

The development of technology and information systems has become widespread and is considered important in all fields. Information systems have developed rapidly and have diverse applications. Meanwhile Al Moghrabi (2002) calls this system one of the most successful means of facing the challenges of the times because it is all integrated activities aimed at obtaining information and knowledge through technological means for managers to make different location decisions. However, despite the technological advances of a system, it is still necessary to evaluate perceived use, user satisfaction and net benefit. Therefore, attention is paid to the users of information systems, and organizations must proceed in parallel lines when developing and implementing appropriate information. And attention to information technology users (Msallam, A. A. et al., 2019).

The company will continue to improve its image with its customers and increase satisfaction with services and prices by improving the quality of its services and increasing the efficiency of employee performance, one of which is by improving integrated information/technology systems. This system is the pillar of procedure development. Employee performance and increase in functional abilities, and influence the behavior of individuals and work groups to create performance results that are consistent with the company's corporate goals, and provide workers with the ability to achieve the tasks and obligations assigned to them and develop their ability to assume additional responsibilities to achieve a high level job satisfaction, adapting to the work environment, and thus being able to explore the elements of human performance in terms of efficiency and productivity, which are reflected in having an impact on overall organizational effectiveness (Msallam, A. A. Et al., 2019).

In implementing a system, if the organization provides sufficient support to employees for their tasks, employees will enjoy their work more and improve their performance through the use of the new system (Lee, D.H. Et al, 2010). According to Abusamhadhana G.A.O., et al. (2019) user work engagement combines user participation and user involvement factors. It shows the behaviour and psychological activities of the users involved during the development of an information system. Several previous studies claim that these two factors contribute positively to the success of information systems. However, in general there is still no understanding in the literature regarding the measurement and validation of the influence of these two factors.

Work engagement occurs when employees feel a shared connection with their work or workplace. Basically, engaged employees perform better because they feel more connected to the company as a whole. Companies have begun investing in various types of benefits in an effort to engage their employees. However, employee involvement is often forgotten when there is a system development project within the company, such as when implementing the DMS/MH02 system.

Organizational Support and Work Engagement are vital factors in the implementation of DMS/MH02, because basically we need to develop strategies to ensure that employees are informed about the implementation of the system, how the changes affect their jobs specifically, and the expectations of the organization.

In this journal, we propose an integrated model to measure and validate success factors for user involvement in information system development DMS/MH02.


**METHODOLOGY**

In this research, it is typical to relate validity to the quantitative descriptive type because with the existing subjective method measurement questionnaire, we will test its validity compared to the objective method. There is research from Chandra and Madiono (2017), Handoyo and Setiawan (2017) supporting the theory from Anitha J (2014), namely "Determinants of employee engagement and their impact on employee performance" saying that Employee Engagement has a good impact and provides something meaningful to quality of work of workers. Robinson et al. (2008) said that the quality of employee performance is dominant which causes good employee engagement and employees who

have a good attachment to the corporation and boost performance so that it has an effect on the continuity of the corporation (Ramadhan & Sembiring, Indonesian Management Journal, Vol. 14 - no. 1 April 2014 ). There are several studies that have been studied which show that there is a close correlation between employee loyalty towards work and their place of work, which leads to performance and profits for the company (Choo et al, 2013). With this explanation, it is closely related to the quality of work provided by workers to their company. So research experts agree that work engagement has a big impact on the quality of workers' work. Therefore, workers have attachment and loyalty to their company, this really helps the company to carry out its company goals.

Robbin & Judge (2008) and Waileruny (2014) researched that each worker thinks that their company will fully support when rewards are given fairly, workers should have the right to have an opinion when in discussions to make a decision, and superiors will be considered very supportive.

To test the research hypothesis empirically, researchers collected data through questionnaires. The research population was employees in the production department and coal mine hauling site department of BRCB-Pama Persada Nusantara. The target population to be selected is the position of operator and head of section 2 of the department.

Determining the number of samples taken can be determined using the Slovin formula, the Slovin formula is a formula or formula for calculating the number of samples that are not known with certainty. Slovin is used in survey research where the sample size is usually very large, so a formula is needed to get a small sample but can represent the entire population. Solvin's formula, Umar (1997). To determine the number of respondents filling out the questionnaire and to determine the amount in measuring waste generation and composition, so the error rate is 5 %. So that researchers can determine the minimum sample limit that meets the 5% sample error requirement to be included. By using the formula above, researchers can find out the amount minimum sample for measurement, with a total population (N) = 660, the sample size (n) = 249 is obtained. Actually, we took a sample of 279.

The data collection method used in this research is by using a questionnaire instrument, which is a set of questions to obtain information from respondents. On this research questionnaire sheet there are two types of statements, questions: (1) statements related to variable measurement; (2) questions related to respondent data. Questionnaires are made from structured statements/questions and provide answers in the form of a scale with answers adapted to the statements/questions to be made. It is easier for respondents to answer and avoid bias. The scale measurement used is Likert where each statement has an answer of 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree) to 5 (strongly agree).

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**RESULTS AND DISCUSSION**

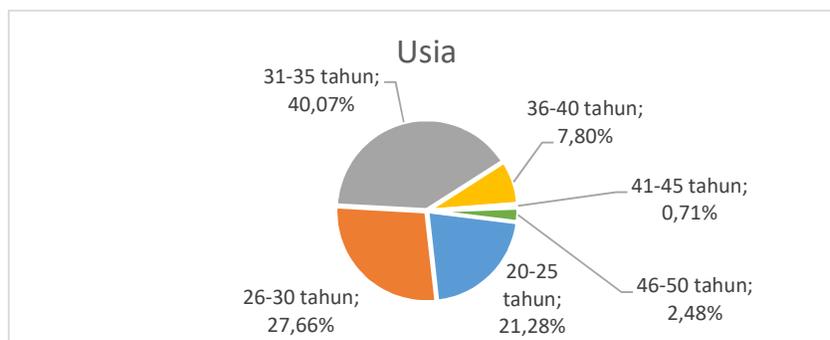The following is an analysis and description of respondent's:
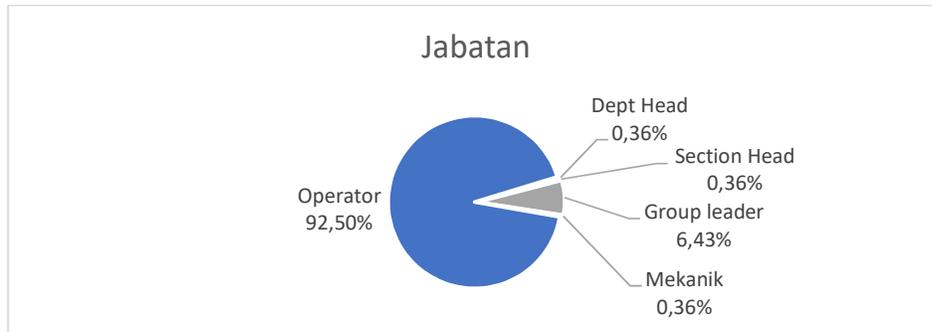


**Figure 1.** Respondent's Age

**Figure 2.** Respondent's Position

From Figure 1, it can be seen that the average age of respondents is between 30 and 40 years old, with a working period of around 5 years. And from Figure 2, we actually took a survey from direct MH02 users, namely operators who operate hauler units and supervisors or group leaders who utilize MH02 technology in their monitoring process.

Reliability and validity checks are also carried out using Smart PLS (version 3.2.9). To test reliability, you must check the Reliability indicator and Outer loading is the correlation value between the latent variable and its indicator, according to Hulland (1999) who said that a good outer loading value is 0.70 or more. According to Gaston (2013), if the outer loading value is > 0.7, more than 50% of the information from the indicator has been successfully absorbed by the latent variable. From the processed data, the outer loading table contains several values less than 0.7, namely:
1. Work engagement with P3 whose outer loading value is 0.659
2. Organizational support with v11 whose outer loading value is 0.68
3. Organizational support with v12 whose outer loading value is 0.641

This means that it shows that it has not been able to absorb the indicator values, because this research includes exploratory research which has a definition of research that aims to explore and deepen knowledge and look for new ideas to formulate problems in more detail and then decide to carry out new research, according to Hulland ( 1999) so for exploratory research the outer loading value is above 0.4 so that the 3 items with an average outer loading value of 0.6 still have data reliability.

To test reliability, internal consistency reliability is also checked and the following is the composite reliability display:

**Table 1.** Table of Construct Reliability and Validity

| | Cronbach's Alpha | rho_A | Composite Reliability | Average Variance Extracted (AVE) |
|---|---|---|---|---|
| dms/mh02 use | 0.913 | 0.913 | 0.945 | 0.851 |
| dms/mh02 user satisfaction | 0.965 | 0.965 | 0.973 | 0.876 |
| net benefit | 0.972 | 0.972 | 0.978 | 0.899 |
| organizational support | 0.941 | 0.945 | 0.949 | 0.589 |
| work engangement_ | 0.927 | 0.936 | 0.942 | 0.701 |

A good composite reliability value is 0.7 or more and if exploratory research a good value is 0.6 or more (Bagozzi and Y, 1998) and from the analysis of the Construct Reliability and Validity table then all items get a value above 0.7 with an average average at 0.9. So that after checking the reliability of the indicators and the reliability of internal consistency, it can be said that the data processed has fulfilled the elements of reliability.

**Validity Test**

As for the validity test which will be analyzed using Smart PLS using convergent validity and discriminant validity, for convergent validity itself from the construct reliability and validity table you can see the "AVE" value, according to Bagozzi and YI (1988) a good "AVE" value is 0.5 or more and from the existing data processing it can be seen that the AVE values all exceed 0.5 and are said to be valid. And an ideal discriminant validity test was also carried out using "AVE" data and correlation latent variable data. According to Fornell and Larcker (1981), recommend that the "square root" of the AVE of each latent variable should be greater than the correlation between the latent variables.

**Table 2.** Table of Discriminant Validity

|  | dms/mh02 use | dms/mh02 user satisfaction | net benefit | organizational support | work engangement_ |
|---|---|---|---|---|---|
| dms/mh02 use | 0.923 |  |  |  |  |
| dms/mh02 user satisfaction | 0.828 | 0.936 |  |  |  |
| net benefit | 0.911 | 0.873 | 0.948 |  |  |
| organizational support | 0.397 | 0.416 | 0.451 | 0.768 |  |
| work engangement_ | 0.496 | 0.503 | 0.555 | 0.718 | 0.837 |

From reading the discriminant validity table it can be concluded as follows:
1. The root value of AVE dms/mh02 use is 0.923 higher than the correlation with dms mh02 user satisfaction, net benefit, organizational support, work engagement.
2. The root value of AVE dms mh02 user satisfaction is higher than the correlation of netbenefit, organizational support, dms/mho2 use, work engagement.
3. The root value of AVE net benefit is higher than the correlation of organizational support, dms/mho2 use, dms mh02 user satisfaction, work engagement.
4. The root value of AVE organizational support is higher than the correlation of net benefit, dms/mho2 use, dms mh02 user satisfaction, work engagement.
5. The root value of AVE work engagement is higher than organizational support, net benefit, dms/mho2 use, dms mh02 user satisfaction.

From the results of this research it can be concluded that all discriminant validity at the variable level is acceptable because each variable has a larger AVE root compared to the correlation of other variables. This shows that the construct shares higher variance with the measurement items that measure it compared to items on other variables. Hypothesis testing is carried out based on the results of inner model testing (structural model) which includes r-square output, parameter coefficients and t-statistics. To see whether a hypothesis can be accepted or rejected, include paying attention to the significance values between constructs, t-statistics and p-values. This research hypothesis testing was carried out with the help of smartpls (partial least square) 3.0 software. These values can be seen from the bootstrapping results. The rules of thumb used in this research are t-statistics > 1.96 with a significance level of p-value of 0.05 (5%) and the beta coefficient is positive. the value of testing this research hypothesis and for the results of this research model can be illustrated
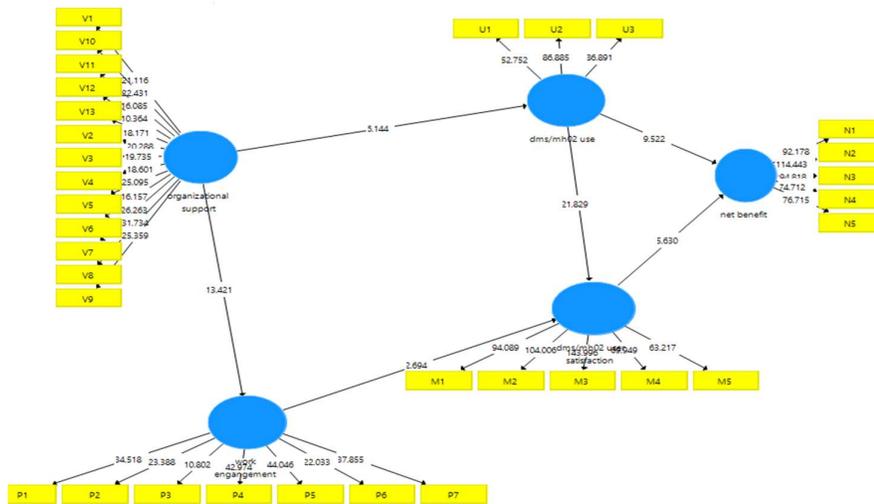
**Figure 4.** Research Model Result

**Table 3.** Table of Path Coefficients

| | Original S | Sample M | Standard | T Statistics (\|O/STDEV\|) | P Values |
|---|---|---|---|---|---|
| dms/mh02 use -> dms/mh02 user satisfaction | 0.767 | 0.769 | 0.035 | 21.829 | 0.000 |
| dms/mh02 use -> net benefit | 0.599 | 0.594 | 0.063 | 9.522 | 0.000 |
| dms/mh02 user satisfaction -> net benefit | 0.377 | 0.382 | 0.067 | 5.630 | 0.000 |
| organizational support -> dms/mh02 use | 0.397 | 0.405 | 0.065 | 6.144 | 0.000 |
| organizational support -> work engangement_ | 0.718 | 0.724 | 0.053 | 13.421 | 0.000 |
| work engangement_ -> dms/mh02 user satisfaction | 0.123 | 0.125 | 0.046 | 2.694 | 0.007 |

In Table 3, it reflects the path coefficient which is the result of direct effect testing so that it can be concluded as follows:

1. The results of the analysis show that the beta coefficient value of the moderate effect of Organizational support on the Work Engagement relationship is 0.718 and the t-statistic is 13.421 p value 0.000 so that the first hypothesis is accepted, this proves that Organizational support is proven to have a positive influence on Work Engagement

2. The results of the analysis show that the beta coefficient value of the moderate effect of Organizational support on the relationship between MH02 use is 0.397 and the t-statistic is 6.144 p value 0.000 so that the second hypothesis is accepted, this proves that Organizational support is proven to have a positive influence on DMS/MH02 use

3. The results of the analysis show that the beta coefficient value of the moderate effect of work engagement on the DMS/MH02 user satisfaction relationship is 0.123 and the t-statistic is 2.694 p value 0.007 so that the third hypothesis is accepted, this proves that work engagement is proven to have a positive influence on DMS/MH02 user satisfaction

4. The results of the analysis show that the beta coefficient value of the moderate effect of DMS/MH02 Use on the DMS/MH02 user satisfaction relationship is 0.767 and the t-statistic is 21.829 p value 0.000 so that the fourth hypothesis is accepted, this proves that DMS/MH02 use is proven to have a positive influence on DMS/ MH02 user satisfaction

5. The results of the analysis show that the beta coefficient value of the moderate effect of DMS/MH02 Use on the DMS/MH02 net benefit relationship is 0.599 and the t-statistic is 9.522 p value 0.000 so that the fifth hypothesis is accepted, this proves that DMS/MH02 use is proven to have a positive influence on DMS/ MH02 net benefits

6. The results of the analysis show that the beta coefficient value of the moderate effect of

DMS/MH02 User satisfaction on the DMS/MH02 net benefit relationship is 0.377 and the t-statistic is 5.630 p value 0.000 so that the sixth hypothesis is accepted, this proves that DMS/MH02 user satisfaction is proven to have a positive influence on DMS/MH02 net benefits.

Analysis of hypothesis 1 for organizational support is proven to have a positive influence on work engagement. This is in accordance with research by Najeemdeen (2018), concluding that the organizational culture obtained and the organizational support obtained influence work engagement between workers. Companies must continue to observe and survey other factors that could have an influence on the totality of work. To know the problems and needs of employees, it is very important for management to have a close relationship with them so that they will feel supported by the organization. Perceived organizational support will increase employee motivation and their willingness to involve themselves in any work.

Analysis of hypothesis 2 for organizational support is proven to have a positive influence on DMS/MH02 use. This is in line with research from Al-Moasher and Al-Khasabah (2006) which shows the role of organizations (organizational support) in implementing Management Information Systems in the banking sector. In this study, it was found that there was a statistically significant effect of technical and organizational variables in the Management Information System application. This study led to the need to involve employees and users in the planning process for developing the information/technology system.

Analysis of hypothesis 3 for work engagement is proven to have a positive influence on DMS/MH02 user satisfaction, in accordance with studies which state that there is a close correlation between work loyalty and the company which leads to company performance and profits (Choo et al. 2013). With this explanation, it is closely related to the quality of work provided by workers to their company. So research experts agree that work engagement has a big impact on the quality of workers' work in implementing a system.

Analysis of hypothesis 4 that DMS/MH02 is proven to have a positive influence on DMS/MH02 user satisfaction. User satisfaction with a particular information system/technology can be interpreted in the positive emotions shown by individuals when interacting with it (Cenfetelli et al., 2008). When discussing the acceptance and use of IST, one can see a proven relationship between the degree of satisfaction with a particular technology and the user's intention to not only intend to use it (Park and Kim, 2014), but also intend to continue using it (Hsiao et al., 2016).

Analysis of hypothesis 5 that DMS/MH02 is proven to have a positive influence on DMS/MH02 net benefit, in accordance with the opinion of Balaban et al. (2013) the same positive relationship tends to emerge between the continued uses of IS provided by students and the benefits (Net Benefit) attached to its users.

Analysis of hypothesis 6, DMS/MH02 user satisfaction is proven to have a positive influence on DMS/MH02 net benefit, confirming the opinion of Delone and McLean (2004) and Baraka et al. (2013), the existence of a good level of user satisfaction with something provided by IST will have an impact on the emergence of benefits related to the use of the technology in question, hence the interpretation that when the user is satisfied with the information system or technology, the level of individual success is triggered.

## CONCLUSION

From the results of the research that has been carried out, it turns out that DMS/MH02 for user satisfaction, net benefit, use from user perceptions expressed agreement regarding usability, satisfaction and usefulness for the average value of usability (DMS/MH02 use) at 3.6 while for usefulness (net benefit) with an average of 4 and for user satisfaction it has the lowest average value,

namely 3.27. For the role of organizational support in the implementation of DMS/MH02, it is proven to have a positive influence on DMS/MH02 use, this is in accordance with the study (Al-Moasher and Al-Khasabah, 2006) showing that the effect of the role of the organization (organizational support) in the implementation of system management information in banking sector. The study found that there was a statistically significant effect of technical and organizational variables in management information system applications. This study led to the need to involve employees and users in the planning process for developing the information/technology system. Then, if you look at the actual results in the field, it shows that if there is no support from PAMA management, of course the many benefits of DMS/MH02 will not be felt, because the results displayed from DMS/MH02 require fast follow-up to prevent fatigue incidents. For the research we are currently conducting at the PAMA-BRCB site, support from PAMA management at the site itself is very large because here the role of PT customers. Berau Coal also monitors daily and weekly progress which will be evaluated at safety improvement meetings and LK3 between customers and all contractors working at PT. Berau Coal regarding the speed of follow-up response and evaluation of DMS/MH02 findings.

Meanwhile, the role of work engagement on DMS/MH02 user satisfaction proves that work engagement is proven to have a positive influence on DMS/MH02 user satisfaction, but it has the lowest level of significance compared to the other tested items, if you look at the close correlation between work loyalty and the company so that leading to company performance and profits (Choo et al, 2013). With this explanation, it is closely related to the quality of work provided by workers to their company. So research experts agree that work engagement has a big impact on the quality of workers' work in implementing a system. Meanwhile, the actual results in the field that occurred from the results of interviews conducted by many operators were not satisfied with the implementation of DMS/MH02 because there were many findings that did not match the facts in the field, for example the operator's findings that yawning and closed eyes were not able to be captured properly maximum by DMS/MH02. By looking at the research results which show that the satisfaction value for DMS/MH02 (DMS/MH02 user satisfaction) is only 3.27 on average compared to net benefit and DMS/MH02 use, it turns out that it is in line with the relationship between work engagement and DMS/MH02 user satisfaction. also has a low value compared to other relationships, this clearly shows that there is a problem with the quality of DMS/MH02, this was also confirmed during an interview with the IT team at BRCB, that DMS/MH02 still needs a lot of improvements in terms of infrastructure so that it can improve the quality of DMS/MH02. Therefore, it is necessary to continue with deeper studies for further research regarding DMS/MH02 quality.

## Acknowledgments

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