

Mental Workload Analysis Using NASA-TLX Method at Bank XYZ - Medan Balaikota Consumer Loan Unit

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ABSTRACT

All human activities, whether light, medium, or heavy, must have or contain a workload. Basically, every human being has a varied workload capacity, thus it's not inconceivable that the workload experienced by one worker differs from that of another, because there are a variety of elements that influence the difference in workload capacity. Sales and processing teams are under a lot of pressure to meet credit disbursement targets, which puts them under a lot of mental strain. A worker will experience work stress if he is given an excessive workload. When it comes to work, the influence of stress will result in a decline in performance, efficiency, and productivity of the work in question. To address this issue, a study based on the National Aeronautics and Space Administration Task Load Index (NASA-TLX) approach will be conducted to measure the mental strain of personnel in the Medan Balaikota consumer loan unit. NASA-TLX is a way for analyzing the mental workload of workers who must do a variety of tasks at work. Mental demand, physical demand, temporal demand, performance, effort, and frustration dimensions are among the six variables to be measured. Thirty workers of PT Bank XYZ Consumer Loan Unit Medan Balaikota Branch were surveyed. The NASA-TLX survey method is a quantitative descriptive methodology that was utilized to test in this study. According to the findings of the study, the NASA-TLX average score of PT Bank XYZ Consumer Loan Unit Medan Balaikota Branch employees obtained through research had a modest value. The result is a score of 77.

Keywords: Mental Workload, NASA-TLX

BACKGROUND

The workload, in theory, is divided into two parts: physical and mental. When executing a mental task (metacontroller activity), the operator's evaluation of the alertness interval (capacity when being motivated by the current workload) is defined as the operator's evaluation of the alertness interval (capacity when being motivated by the existing workload) (Raldinal, 2012). The mental load in question is the difference between the job requirements (task demand) and the capacity of workers doing mental tasks such as surgical operations, particular assembly, shooting at targets, looking at micro-sized things via a microscope, and so on. Mental workload has a strong link to errors made, alternatively it can be claimed that mental workload has a link to performance levels.

Workload can be defined as the difference between the ability of workers and the demands of the job. If the worker's ability is higher than the demands of the job, a feeling of boredom will arise. Conversely, if the ability of workers is lower than the demands of the job, excessive fatigue will appear. The Consumer Loan Unit is a banking industry whose activities include physical and mental activities. The Consumer Loan Unit is a business unit that disburses consumer loans to customers who currently only provide loans in the form of KPR (House Ownership Credit). When a

worker experiences an excessive mental load, he will quickly experience fatigue and lose focus at work. The relationship is seen with work, the impact of mental workload will lead to decreased performance, efficiency, and productivity of the work concerned.

Referring to the description above, it can be seen that the mental workload problems experienced by employees in the consumer loan unit in the Medan Balaikota area vary with their work. To overcome this problem, it is necessary to conduct a study to determine the mental workload of employees in the Medan Balaikota consumer loan unit, namely the National Aeronautics and Space Administration Task Load Index (NASA-TLX) method. NASA-TLX is a method used to analyze the mental workload faced by workers who have to perform various activities in their work. Where there are six indicators to be measured, namely mental demand, physical demand, temporal demand, performance, effort, and frustration dimension.

Workload

Renty Anugrah (2017) said that workload is an effort that must be expended by someone to fulfill the "demand" of the job. While capacity is the ability / capacity of humans. This capacity can be measured from a person's physical and mental condition. The workload in question is a measure (portion) of the limited operator capacity required to perform a particular job. A mental workload that is too high will result in work stress and a workload that is too low will result in boredom, laziness, and lack of concentration. Work stress is events around work that are hazards or threats such as fear, anxiety, guilt, anger, sadness, despair, boredom, and the emergence of work stress due to the workload received that exceeds the limits of the worker's ability which lasts for a long time relatively long in certain situations and conditions. Different jobs for each worker will cause different levels of work stress. Job stress has a direct or indirect effect on aspects of

work, especially on achievement motives which will later be related to the work process.

NASA-TLX

The NASA-TLX method is a method used to analyze the mental workload faced by workers who have to perform various activities in their work. This method was developed by Sandra G. Hart of NASA-Ames Research Center and Lowell E. Staveland of San Jose State University in 1981 based on the emergence of subjective measurement needs consisting of a nine-factor scale (task difficulty, time pressure, type of activity, effort), physical effort, mental effort, performance, frustration, stress and fatigue). Of these nine factors, it is further simplified into 6, namely Mental demand (MD), Physical demand (PD), Temporal demand (TD), Performance (P), Effort (E), Frustration level (FR). NASA-TLX (Nasa Task Load Index) is a method of subjectively measuring mental workload. The measurement of the NASA-TLX method is divided into two stages, namely the comparison of each scale (Paired Comparison) and assigning a value to the work (Event Scoring).

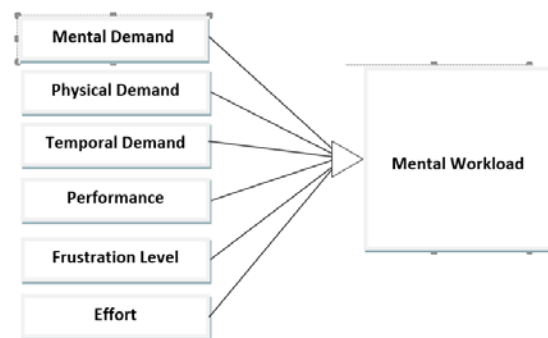


Figure 1. Conceptual Framework

RESEARCH METHODS

This research is a quantitative research because the formulation of the hypothesis and the variables used are taken from the existing theory, namely Gary B. Reid's theory for mental workload. This research was started in June-August 2019 at PT.Bank XYZ Consumer Loan Unit Medan Balaikota. Sources of data used in this study

are primary data and secondary data. The primary data in this study is the result of distributing questionnaires distributed to employees of PT. Bank XYZ Consumer Loan Unit Medan Balaikota. The population and sample in this study is 30 people consisting of several employees who have different positions/classes.

RESULT AND DISCUSSION

Classification of Mental Workload of All Employees Based on Nasa Score – TLX

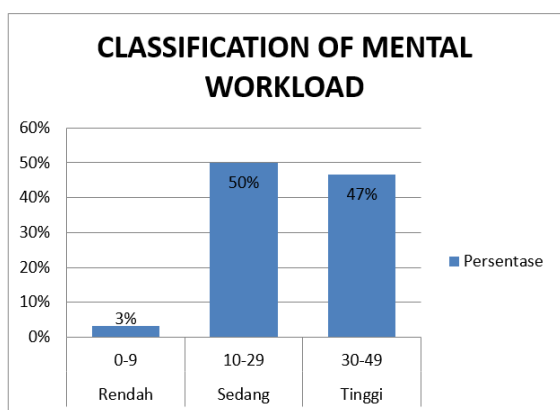


Diagram 1. Mental Workload Classification

From the results of the classification of mental workload on employees of PT.Bank XYZ Consumer Loan Unit Medan Balaikota which states that the mental workload is low 1 person, medium 15 people and high 14 people

Classification of Mental Workload of All Employees Based on Nasa Indicators – TLX

Table 1. Classification of Average Values Nasa TLX indicator

INDICATOR	TOTAL	AVERAGE
KM	6.570	219
KF	4.150	138
KW	5.380	179
P	7.380	246
TF	4.730	158
U	6.330	211
Average WWL		1.151
Score Average		77

The average value of the Nasa TLX indicator can be seen that the highest indicator is performance with an average

value of 246, the second is mental needs with an average value of 219 and the third is business with an average value of 211. The average NASA-TLX score shows that the overall average workload of employees is 77. However, there is also a score above 77. From the measurement results, it is known that there are categories of performance and mental needs are the dominant factors that affect workload during working time. Performance is the first most dominant category that affects employees during work. In carrying out their duties, employees are judged by performance, that is, they must focus their minds on each target to be achieved and during work they must be able to receive good information from superiors. Mental needs are the second factor that affects the workload of employees during work. The mental needs of employees who are issued are focused on achieving targets and must pay attention to the time to reach the target each month, employees must also pay attention to debtors who will apply for mortgages or have submitted to maintain smooth payment of installments.

Mental Workload Classification Based on Sales Officer Employees Using Nasa Score – TLX

Table 2. Classification of Average Values of Sales Officer Employees Nasa TLX indicator

INDICATOR	TOTAL	AVERAGE
KM	2.730	227,5
KF	2.470	205,8
KW	1.000	83,3
P	3.160	263,3
TF	1.710	142,5
U	3.280	273,3
Average WWL		1.195,8
Score Average		79,7

The average value of the Nasa TLX indicator can be seen that the highest indicator is business with an average value of 273, the second is performance with an average value of 263 and the third is mental needs with an average value of 227.5. The

average NASA-TLX score shows that the overall average workload of sales officer employees is 79.7. However, there is also a score above 79.7. From the measurement results, it is known that there are business categories and performance is the dominant factor that affects the workload of sales officers during working time. Business is the first most dominant category that affects sales officers during work. In carrying out their duties, employees are judged by their efforts, namely, they must focus their minds in an effort to meet the targets to be achieved and during work they must be able to receive good information from superiors. Performance is the second factor that affects the workload of sales officers during work. the performance of the issued employees is focused on achieving targets and must pay attention to the time to reach the target each month, employees must also pay attention to debtors who will apply for mortgages or have submitted to maintain smooth payment of installments.

Classification of the Mental Workload of the Credit Process Team Using the Nasa Score – TLX

From the results of the classification of mental workload on the credit process team of PT.Bank XYZ Consumer Loan Unit Medan Balaikota which states that the mental workload is low, high is 1 person, moderate is 6 people, and high is 6 people.

Classification of Mental Workload of Credit Process Teams Based on Nasa Indicators – TLX

The average value of the Nasa TLX indicator can be seen that the highest indicator is the need for time with an average value of 275, the second is mental needs with an average value of 209 and the third is the level of frustration with an average value of 208. The average NASA-TLX score shows that the overall average workload of the credit processing team is 74. However, there is also a score above 74. From the measurement results, it is known that there are categories of time needs and

mental needs are the dominant factors that affect the burden. credit process team work during working time. Time requirement is the first most dominant category that affects the credit process team while working. In carrying out their duties, employees are often constrained by time, that is, they have to manage the time needed during the credit process which more often makes the time to go home not on time and during work they must be able to receive good information from superiors. Mental needs are the second factor that affects the workload of the credit process team during work. The mental needs of employees who are issued are focused on achieving targets and must pay attention to the time to reach the target each month, employees must also pay attention to debtors who will apply for mortgages or have submitted to maintain smooth payment of installments.

Table 3. Classification of the Average Value of the Credit Process Team Nasa TLX indicator

INDICATOR	TOTAL	AVERAGE
KM	2.720	209
KF	1.280	98
KW	3.570	275
P	2.440	188
TF	2.700	208
U	1.790	138
Average WWL		1.115
Score Average		74

CONCLUSION

The conclusions obtained based on research regarding the analysis of the mental workload of employees of PT Bank XYZ Consumer Loan Unit Medan Balaikota based on NASA-TLX (Task Load Index) are as follows:

1. The average NASA-TLX score achieved through research has a moderate value. The result is a score of 77.
2. Performance and mental requirements are the two most important factors that influence employee workload during the workday.
3. Employees report a moderate amount of mental workload, which is linked to one of PT Bank XYZ's five cultural characteristics, namely, XYZ being

strong. Where workers of PT Bank XYZ must have a learner attitude, adding information and insight from a variety of sources and experiences on a regular basis. Employees of PT Bank XYZ must also be able to perform job in a timely and efficient manner. As a result, achieving the goal of increasing corporate value is a challenge for PT Bank XYZ staff.

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