# THE EFFECT OF SHIFT WORK SYSTEM AND FATIGUE TOWARDS EMPLOYEE STRESS AT ASTON MANADO HOTEL

## *PENGARUH SISTEM KERJA SHIFT DAN KELEHAHAN TERHADAP STRES KARYAWAN DI ASTON MANADO HOTEL*

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**Abstract:** Human Resources is one of the most important parts of a company, also it has a role to regulate all obligations, regulations and discipline of the workers. Aston Manado Hotel is the object of this study. The purpose of this study is to determine the level of influence of stress on employees from the applied shift work system and fatigue to employees who worked shifts on the object. The method used in the study is multiple linear regression using saturation sampling technique taking 57 respondents who worked in shifts. The result of the study using a questionnaire showed that shift work system provides a positive and significant effect on employee stress as well as fatigue gives a significant effect on employee stress, and also shift work system and fatigue had a relationship so that it shift work system and fatigue significantly affected stress on employees. As a recommendation, this research can be a description, input and reference for other researcher, companies and work institutions that apply shift work systems to their employees

**keywords***: shift work system, fatigue, employee stress*

**Abstrak:** *Sumber Daya Manusia adalah salah satu bagian terpenting dari sebuah perusahaan, juga memiliki peran untuk mengatur semua kewajiban, peraturan dan disiplin pekerja. Aston Manado Hotel adalah objek dari penelitian ini. Tujuan dari penelitian ini adalah untuk mengetahui tingkat pengaruh stres pada karyawan dari sistem kerja shift yang diterapkan dan kelelahan pada karyawan yang bekerja shift pada objek. Metode yang digunakan dalam penelitian ini adalah regresi linier berganda dengan menggunakan teknik sampling jenuh yang mengambil 57 responden yang bekerja secara bergiliran. Hasil penelitian dengan menggunakan kuesioner menunjukkan bahwa sistem kerja shift memberikan pengaruh yang positif dan signifikan terhadap stress karyawan begitupun dengan kelelahan memberikan pengaruh yang signifkan terhadap stress karyawan, dan juga sistem kerja shift dan kelelahan memiliki hubungan sehingga secara signifikan sistem kerja shift dan kelelahan mempengaruhi stres pada karyawan. Sebagai rekomendasi, penelitian ini dapat berupa deskripsi, input, dan referensi bagi peneliti lain, perusahaan, dan institusi kerja yang menerapkan sistem kerja shift kepada karyawan mereka.*

**kata kunci:** *sistem kerja shift, kelelahan, stres karyawan*

# INTRODUCTION

## Research Background

Manado is one of the cities in Indonesia, where tourism, and technology are developing. There are progresses and growth which continues to happen which opens the opportunity of employment for the people who are in the vicinity, which in turn reduces the unemployment rate. A lot of new companies and institutions have been established, where it requires the workforce to operate all the obligations and needs that will be applied.

Every company, organization or institution must have a purpose, vision, and mission to be achieved and implemented. And all the goals and vision and mission can be realized by utilizing all the resources that exist within the company. Although there are very many important resources in the company, but a very important and even inseparable factor of an organization, both institutions and companies. Resources are also one key that determines the development of the company. According to the webster encyclopedia (Fatah, 1962) resources is the ability to meet or handle things, sources of supplies, support or assistance, and the means produced by human faculties or minds.

The success of a company, it all depends on the resources (employees) in carrying out the duties and responsibilities already given. As an employee, it is certainly not easy to adapt to the environment, because employees must obey the rules and working hours. That is, every employee has a job that must be constantly done with the division of working time into shift. The purpose of continuous employment is work which, by its type and nature, must be carried out or carried on continuously or in other circumstances based on agreement between workers and employers.

Companies have their own reasons to use the shift work schedule system, partly because of technological advancements that are increasingly increasing day by day, economic reasons because if using only one shift only the cost of existing equipment will be expensive, and also the market demand such as an increase in demand product or service so that the shift work system must be applied in order to fulfill the request. There are so many services that require shift work basicaly every action or occupation has its own impact and risks on employees who work and also on the company itself, as well as the shift work system as listed on the title variable already written. Work with the shift system has an impact on employees that may affect, among others; As a tourism city, Manado has many residential hotels with various unique characteristics, one of which is Aston Hotel Manado.

Aston Hotel Manado is a leading 4 star hotel in Manado. Managed by Archipelago International since May 2009. Superbly located in the Central Business district of Manado the capital city of North Sulawesi, the hotel is close to exclusive Manado shopping and its finest attractions. Therefore this hotel is the choice of domestic and foreign tourists, business people, and families as a place to stay because of its luxurious facilities and good service. Speaking of services at Aston Hotel Manado.

For the sake of and to meet all of the visitors' needs, this hotel applies shift work to its employees, the shift work in this hotel is divided into 3 work systems. With the shift work system that has been set up and implemented, it is most likely that the employees in the hotel have experienced a flaw that led to stress while doing work. Employee fatigue and stress caused by the shift work system experienced by employees working at the Aston Manado Hotel. The pressure and obligation to work using the shift work system makes the employees must comply with these regulations. With the existence of the system, the employees are required to be able to work more disciplined, diligent and deft. Therefore employees can experience fatigue continuously even this fatigue can affect their work performance, as a result employees will also feel stressed when working because they only do the same work continuously.

## Research Objectives

The research objectives are to know the effect of:
1. Shift Work System and Fatigue on Employee Stress at Aston Manado Hotel simultaneously
2. Shift Work System on Employee Stress at Aston Manado Hotel partially
3. Fatigue on Employee Stress at Aston Manado Hotel partially

# THEORETICAL FRAMEWORK

## Human Resources Management

Human Resources Management is the process of acquiring, training, appraising and compensating employees, and attending to their labor relations, health and safety, and fairness concerns." (Dessler, 2005:109).

Human Resources Management itself is a way that is created to manage the resources (workforce) that exist within the company. The system is created to maximize every individual effectively, so that common goals can be achieved. According to Simamora (2018:681-683) that Human Resource Management is systematic procedure for collecting, storing, maintaining, retrieving and validating data required by an validating organization about Human Resources, Human Resources activities and characteristic.

Employee Human Resources Management duty to meet all the needs of employees and has a very important role in the welfare of life of employees. In addition, it can be concluded in the outline that the Human Resources is an arrangement or series of steps to manage or use human resources to achieve goals that have been formed by companies or agencies an organizations.

**Shift Work**

Shift work system itself has many notions or definitions but in general the definition of Shift Work is a turn of the clock and work schedule and working hours on employees in a company. The existence of this shift work is to satisfy any particular request or useful to support a predetermined obligation. Work shift is defined as a 24 hours period of time for which one or groups of people are scheduled or arranged to work in the workplace (Tayari and Smith, 1997). According to Bhattacharya and McGlothlin (1996:486) the basic definition of work shift is the time of day a worker must be in the workplace. By this definition, all workers who are scheduled to be at work on a regular basis, including daytime workers are shift workers.

Each year the proportion of workers is increasing, caused by several objectives of the company to improve the service and quality of a company. This encourages companies or agencies to implement shift work system. This can cause various problems in the carwayan itself, such as being less adaptable to frequent alternating or unusual working hours. In general the company or institution has its own work system although usually have 3 working shift system every day with 8 working hours every shift.

Workers engaged in the rotational shift system will vary their working time, morning, evening, and night, according to the specified rotational shift system. Work shift system may vary between agencies or companies, although usually use three shifts every day with eight hours of work each shift. Knauth (1988) The Design of Shift System suggests that there are five main factors that must be considered in shift work, among others (Nurmianto, 2004: 68)

**Fatigue**

The term fatigue leads to a condition of weakening the energy to perform an activity, work fatigue will reduce performance and increase the level of work errors. Increased work errors will provide opportunities for workplace accidents in the industry. Static muscle loading (static muscular loading) if maintained for long periods will result in RSI (Repetition Strain Injuries), ie muscle, bone, tendon, and other pain caused by repetitive types of work.24% of adults who come to the polyclinic suffer from fatigue. The conclusion of fatigue is a mechanism of body protection so that the body avoid further damage so that recovery occurs after the break. The term fatigue usually indicates the different conditions of each individual, but it all leads to loss of efficiency and decreased work capacity and endurance.

Fatigue here is a variety of circumstances accompanied by decreased efficiency and resilience in work. Work fatigue is fatigue that occurs in humans because of work done. Fatigue is classified into two types: muscle fatigue and general fatigue. Muscle fatigue is a tremor of muscle / pain in muscles. Moderate fatigue is usually characterized by reduced willingness to work caused by monotomes; intensity and duration of physical labor; environmental conditions; mental causes; health status and nutritional state (Grandjean, 1993). Fatigue is a process that accumulates from various factors causing and tension experienced by humans. Fatigue can be interpreted as a process of decreasing the performance of work and the reduced strength or physical resistance of the human body to continue the activities that must be done (Wignjosoebroto, 2003).

**Employee Stress**

Employee Stress is a growing concern for organizations today. Stress can be defined as a lively circumstance in which people face constraints, opportunities, or loss of something they desire and for which the consequence is both unpredictable as well as crucial. Stress is the response of people to the unreasonable/excessive pressure or demands placed on them.

Stress is not always negative. It may also bring out the best in individuals at times. It may induce an individual to discover innovative and smarter way of doing things. This positive dimension of stress is called as

enstress. But usually, the term stress has a negative implication and this negative aspect of stress is termed as distress. For instance - When a subordinate is harassed or warned by his superior, unhappiness of unsuitable job, etc. We can say that "Stress causes some people to break, and other to break records." It is thus very essential to have effective stress management strategies in an organization so that the detrimental repercussions of stress on the employees as well as their performance can be reduced and controlled.

# RESEARCH METHOD

## Multiple Regression Analysis

The analytical method used is multiple linear regression analysis method. In general, linear regression consists of two, namely simple linear regression with one independent variable and one dependent variable; and multiple linear regression with several independent variables and one dependent variable. Linear regression analysis is the most commonly used statistical method in social studies, especially economic research.

Multiple linear regression analysis is actually the same as simple linear regression analysis, only the independent variables are more than one fruit. The general equation is Y is the independent variable, and X is the independent variables, a is a constant (intercept) and b is the regression coefficient on each independent variable. Interpretation of the equation is also relatively the same. Interpretation of the constant (0,235) must also be done carefully. Multiple linear regression analysis requires simultaneous testing using F arithmetic.

Significance is determined by comparing the F count with the F table or looking at the significance of the SPSS output. In some cases it can happen that simultaneously several variables have a significant effect, but partially they do not. The use of multiple linear regression analysis methods requires a classical assumption test that must be statistically met.

Classical assumptions that are often used are assumptions of normality, multicollinearity, autocorrelation, heteroscedasticity and linearity assumptions. Multiple Linear regression attempts to model the relationship between two or more explanatory variables and a response variable by fitting a linear equation to observed data.

Multiple Linear Regression Analysis is a multivariate technique that is used to estimate the relationship between one dependent metric variable and one set of metric or nonmetric independent variables. With multiple regression analysis researchers can estimate and or predict the average value (population) of a dependent variable based on two or more independent variables. Regression analysis will produce an equation / regression model.

Compound regression analysis is different from correlation analysis which only produces correlation values. In the correlation analysis, the analysis is the existence of a relationship between two variables and how strong the relationship is, while in the multiple regression analysis analyzed is how much influence a variable (hereinafter referred to as an independent variable) to other variables (hereinafter referred to as the dependent variable).

Multiple linear regression has its own basic model of analysis technique. In this research multiple regression is used that is to analyzing the effect of shift work system and fatigue on employee stress at Aston Hotel Manado.

## Conceptual Framework
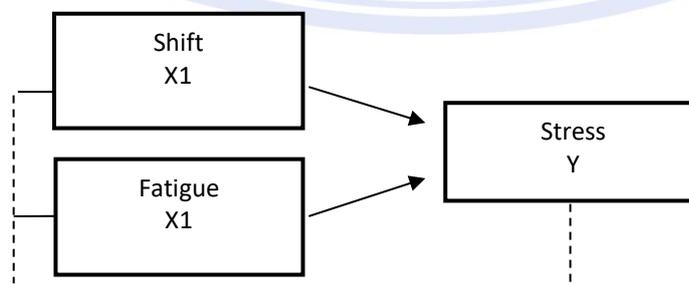


**Figure 1. Conceptual Framework**
*Data Source: Data Procesing 2019*

———▶ Partial impact independen variables to dependen variable

------ Cumulative t impact independen variables to dependen variable

# RESULT AND DISCUSSION

**Classic Asumption Test**
**Multicolerration**

**Table 1. Multicorrelation**

| Model | | Collinearity Statistics |
|-------|--------------|-------|
| | | VIF |
| | (Constant) | |
| 1 | Fatigue | 1,002 |
| 2 | Shift | 1,002 |

*Data Source : Data Procesing 2019*

Seen from table 1 Coefficients the VIF value at the Output shows the existence of multicollinearity.
When VIF < 10,00 then there are no symptoms of Multicoleration
When VIF > 10,00 then there are symptoms of Multicoleration
With result :
VIF          : X1 Shift                                = 1,002
             : X2 Fatigue                           = 1,002

With numbers showing that only at 1.002 it can be concluded that there are no symptoms of multicollinearity, thus the available data can be used.

**Heterocedasticity Diagram Test**
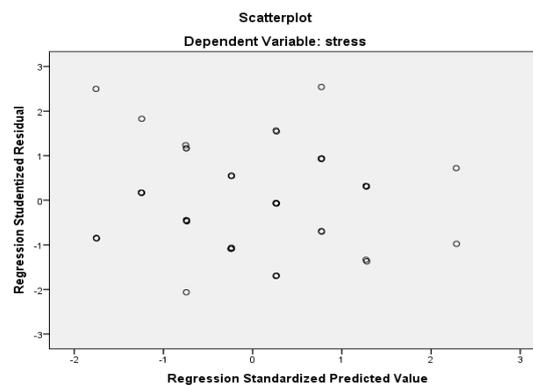


**Figure 2. Heterocedasticity Test**
*Data Source : Data Procesing 2019*

From the diagram above in figure 2 it can be seen that the spread of residuals is irregular. This can be seen in the plot that radiates and does not form a certain pattern. With these results, the usual conclusion is that no symptoms of homokedasticity or regression equations satisfy the assumption of heterokedaticity.

**Normality Test**
**Table 2. One-Sample Kolmogorov-Smirnov Test**

|  |  | Unstandardized Residual |
|---|---|---|
| N |  | 57 |
| Normal Parameters[a,b] | Mean | ,0000000 |
|  | Std. Deviation | ,27783571 |
| Most Extreme Differences | Absolute | ,073 |
|  | Positive | ,055 |
|  | Negative | -,073 |
| Kolmogorov-Smirnov Z |  | ,550 |
| Asymp. Sig. (2-tailed) |  | ,923 |

*Data Source : Data Procesing 2019*

Based on the output table 2 above it is known that the Asymp.Sig (2-tailed) significance value of 0.923 is greater than 0.05 then according to the basis of decision making in the Kolmogorov-Smirnov Z normality test above, it can be concluded that the data are normally distributed. Thus the assumptions or normality requirements in the regression model have been met.

**Autocorelation Test**
**Table 3. Durbin Watson**

| Model | Change Statistics |  |  | Durbin-Watson |
|---|---|---|---|---|
|  | df1 | df2 | Sig. F Change |  |
| 1 | 2[a] | 54 | ,000 | 1,967 |

*Source data: Data Procesing 2019*

In the regression analysis it is seen that the value of DW 1,967 indicates getting closer to the number two where this means that the Watson durbin point of this study is in accordance with the theory and can be used.

**The direct Effect Shift Work system, and Fatigue to Employee Stress**
**Table 4. R-Square**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | |
|---|---|---|---|---|---|---|
|  |  |  |  |  | R Square Change | F Change |
| 1 | ,776[a] | ,602 | ,587 | ,20952 | ,602 | 40,804 |

*Data Source: Data Procesing 2019*

In seeing the effect of shift work system and Fatigue combined in combination with Endogenous Dependent Stress Level variables can be seen in Table 4 Model Summary above, on the R square value. The amount of R square (R2) in the table above is 0.602. This figure has a significance of the influence of the exogenous shift independent variable, and fatigue of the endogenous dependent variable stress levels combined

The magnitude of the influence of the exogenous shift and fatigue Independent Variable on the Endogenous Dependent Variable employee stress combined is 60.2%.
Means 39,8 % the amount of other factors that influence outside the model examined. This means that the influence of the exogenous shift and fatigue independent variables on the endogenous dependent variable employee stress is 60.2%, while the effect of 39.8% is caused by variables outside the examined model.

**Table 5. T Test**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | ,953 | ,333 | | 2,866 | ,006 |
| | fatigue | ,381 | ,062 | ,527 | 6,128 | ,000 |
| | shift | ,384 | ,060 | ,547 | 6,365 | ,000 |

*Data Source : Data Procesing 2019*

To see whether there is a Linear Effect of Shift Work System on Employee Stress in table 5, can be seen in the Coefficients table (a) Determine the level of Significant level of 0.05 and the Degree of Freedom DF = n - (K + 1) or DF = 57 - (3 + 1) = 54. From these provisions a t table of 1,673 is obtained (for two-way test) In the calculation of SPSS listed in the Coefficients table above where table t is to show that there is a linear effect between Shift Work System against Employee Stress is 6,365

The results of calculations with SPSS show the calculated t value of 6365> t table of 1.673. Thus the decision is that H0 is rejected and H1 accepted. This means that there is a linear effect between the Shift Work System Employee Stress. Then Shift Work Sytem affects Employee Stress.

The magnitude of the influence of Shift Work System on Employee Stress is known from the Beta Coefficient value (in the Standardized Coefficients Beta column) is 0.547 Significant because the significance / probability value of the results listed in the Sig 0,000 <0.05 column.

To see whether there is a Linear Effect Shift Work System on Employee stress. Can be seen in the Coefficients table (a) Determine the level of Significant level of 0.05 and the Degree of Freedom DF = n - (K + 1) or DF = 57 - (3 + 1) = 54. From these provisions a t table of 1,673 is obtained (for two-way test) In the calculation of SPSS listed in the Coefficients table above where table t is to show that there is a linear effect between Fatigue against Employee Stress is 6,128.

The results of calculations with SPSS show the calculated t value of 6,128> t table of 1.673. Thus the decision is that H0 is rejected and H1 accepted. This means that there is a linear effect between Fatigue on Employee Stress. Then Fatigue affects Employee Stress. The magnitude of the influence of Fatigue on Employee Stress is known from the Beta Coefficient value (in the Standardized Coefficients Beta column) is 0.547 Significant because the significance / probability value of the results listed in the Sig 0,000 <0.05 column.

**See the Feasibility of the Regression Model**

To find out the regression model that has been made correctly is to use testing in two ways, namely First using the F value in the ANOVA output table, and Second by using the Prob. value of the Sig value in table 6 of the ANOVA output.

**Table 6. Feasibility Model of Regression**

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 3,583 | 2 | 1,791 | 40,804 | ,000[b] |
| | Residual | 2,371 | 54 | ,044 | | |
| | Total | 5,953 | 56 | | | |

*Data Source: Data Procesing 2019*

Calculates the F table value with a large Provision of Significance level of 0.05 and a Degree of Freedom Value with the provisions of Numerator / Vector 1: Number of Variables - 1 or 3 - 1 = 2, and Dumerator / Vector 2: number of case-number of variables or 57- 3 = 54. With this stipulation, the F table number is 3.17. The results of calculations with SPSS obtained the calculated F value of 40.804> F table of 3.17. Thus H0 is rejected, and H1 is accepted. This means that there is a linear relationship between the Independent Variable Exogenous Shift, fatigue with the Endogenous Dependent Variable Employee Stress. With the Sig 0,000 Conclusion value, the regression model above is feasible and correct.

## DISCUSSION

**The Effect of Shift Work System and Fatigue towards Employee Stress**

Based on the results above, it can be seen there is an effect of shift work system and fatigue towards employee stress. This is because that the result shows that shift work system and fatigue have a significant effect towards employee stress. It can be seen that from the questionnaire, the respondents are strongly agree with the statement of respondent feel comfortable with the environment in which they work. This is because respondents are assigned to run certain shifts according to a predetermined shift schedule. The respondents who work with shifts cause a sense of comfort in the work being done. From the results of the questionnaire it can also be seen that the respondents did not agree with the statement often feeling anxious about the work provided, or more clearly that the respondents felt comfortable with the work currently being done. It can be said that the comfort of respondents to work makes them comfortable with their current work environments.

In addition, the work provided requires high responsibility, therefore employees may not buy time when given certain tasks by superiors. Not infrequently also employees often make mistakes or are careless when working. This is because employees often feel tired and sleepy and memory that sometimes decreases. Work shifts can cause fatigue which is very influential on employee performance, Shift work is a system that is implemented by companies to increase production maximally and continuously by working 24 hours a day and this will have a negative impact on employees, causing mental fatigue or stress. Employees who experienced great emotional stress appeared to have high levels of depression, and fatigue was a powerful factor influencing their depression.

So it can be said that fatigue is the highest factor that influences stress levels in employees so that it can also cause severe depression in employees. Higher fatigue levels are related to common infections as well. Further, it is essential that an ideal rotation of the shifts be adopted so as to reduce the sleeplessness and fatigue among the shift workers, ideally limiting the total work hours to less than 50hrs/week and night shift hours to less than 8hrs/week. Thus, the intensity of the stress reduces and the physical ability to cope up increases. While in (Lin, 2011) her study has found that the frequency with which workers engage in shift work has a significant effect on the severity of subjective fatigue experienced, as measured by the FSS. The more often workers engaged in shift work, the most severe was their rating of subjective fatigue. A correlation exists between frequency of shift work and fatigue, however whether this correlation is also causal cannot determined and the means by which shift work increases fatigue can only be hypothesized.

**Effect of Shift Work System (X₁) on Employee Stress**

From the result of the t-test above, the variable $X_1$ is partially influence variable Y and hypothesis $H_2$ is accepted. That means there is an influence of shift work system on employee stress. It can be concluded from the questionnaire that shift work systems affect employee stress. The statement can be seen in the results of the questionnaire stating that the average respondent was not satisfied with the shift of the given statement, causing a break or holiday given by the company to the respondent was insufficient. This is one statement that proves that shift work systems affect employee stress. The statement that strengthens the shift work system affecting employee stress is that the work of respondents requires high responsibility so that respondents are required to be dexterous in carrying out work that has been assigned. Need to know that Aston Manado Hotel applies a shift work system with 3 shift divisions namely morning, afternoon and night. In this study, the employees want to choose shift hours that are different from those scheduled by the company, but the hotel requires its employees to follow the schedule rules that have been arranged. However, employees continue to do their jobs according to the specified shift.

(Harada, et al, 2005) his study reveals that the shift work system of employment increases work-related stress on employee, and that job control is low among shift workers. To reduce job stress in this occupational population, a reduction in the amount of overtime and an increase in the number of holidays seem to be useful interventions.  Almost the same as research conducted by (Claudia C. Ma, 2018) the current study showed that the respondents working afternoon and night shift reported a higher number of work-related stressors compared to those working on day shift. This pattern was similar when shift work and stress derived using data from both the previous month and year. shift work was associated with increased social stress, work discontent and sleep complaints. In turn, shift workers reported decrease use of primary health care. Moreover, stress was associated with increase sleep complaints and lower scores in perceived health. The interplay between stress and shift work did not produce any significant effects.

**Effect of Fatigue (X₂) on Employee Stress**

The t-test result for hypothesis $H_3$ shows that the variable $X_2$ (Fatigue) partially influence the variable Y (Employee Stress) or can be said that $H_0$ is rejected and $H_3$ is accepted. The result indicates that there is an influence of fatigue on employee stress. It can be seen that the effect fatigue can influenced respondents stress. From the result of questionnaire, most of the respondents strongly agree with the statement they feel tired, sleepy and when they got a lot of job they can easily feel sensitive.

This raises and shows that fatigue can indeed affect stress levels because they have to be nimble at work and also they feel they are working under pressure even though they are comfortable with the work environment and with coworkers who can be invited to work together. (Qomariyatus Sholilah, Rahmi Fauzia, 2017), also revealed that, the level of fatigue of workers has a big impact on their performance in carrying out the tasks or responsibilities given, and this certainly has a great impact on employee stress levels

Sometimes the enthusiasm for work decreases when facing a problem and in certain circumstances the concentration of work decreases, can be seen if the lack of support from the closest person such as family will lead to things like this as a result employees feel lazy to work and tend to look for reasons not work, events like this can interfere with the success of the hotel.

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