Lavish Opulent Education

International Journal of Social, Economic, and Business

Vol.1, No.3, 2025, pp. 25-32

Journal homepage: https://ejournal.lavishopulent.com/ojs/index.php/ijseb/index E-ISSN: 3063-9832

The Effect of Work-Life Balance, Burnout, and Work Discipline on Employee Productivity at JTV Rek Surabaya

Marselia Bilqis Rafifah ¹, Acep Samsudin ^{2*}

Universitas Pembangunan Nasional "Veteran" Jawa Timur, Indonesia, <u>marseliabilqis12345@gmail.com</u> ^{1*} Universitas Pembangunan Nasional "Veteran" Jawa Timur, Indonesia, <u>acep.samsudin.adbis@upnjatim.ac.id</u> ²

Corresponding Author Email: marseliabilqis12345@gmail.com

ABSTRACT

Received : 11 Desember 2024 Accepted : 20 Februari 2025 Published : 30 Maret 2025

Keywords:

work-life balance, burnout, work discipline, productivity, JTV Rek Surabaya

This research aims to analyze the effect of work-life balance, burnout, and work discipline on employee productivity at JTV Rek Surabaya. The research employs a quantitative approach using multiple linear regression analysis. The sample consists of employees at JTV Rek Surabaya selected through purposive sampling. The results show that work-life balance has a significant positive effect on employee productivity. Burnout has a significant negative impact on employee productivity, while work discipline contributes positively to improving productivity. Simultaneously, these three variables significantly influence employee productivity. This research is expected to provide practical benefits for the company's management in maintaining work-life balance, reducing the risk of burnout, and enhancing employee discipline to achieve optimal productivity and to develop more effective human resource management strategies.

INTRODUCTION

Television has been an important part of Indonesian life since it first appeared in 1962 as a source of entertainment, information, and education. However, advances in digital technology have changed the media landscape, presenting major challenges to the conventional television industry, especially from streaming platforms and social media (Lukmiati & Samsudin, 2020). Although television is still the main media for many people, especially in areas with limited internet access (Kominfo, 2019), intense competition requires media companies to continue to innovate in delivering quality content. In the dynamic television media industry, employee productivity is a crucial factor in determining the success of the programs produced (Catur & St, 2017).

Work-life balance, burnout, and work discipline are the main factors that affect employee productivity. A good work-life balance can increase employee satisfaction and performance (Lukmiati et al., 2020), while burnout can reduce motivation and productivity (Padang et al., 2022). Burnout, which is characterized by emotional exhaustion, depersonalization, and decreased personal achievement, has become a serious

concern in various industries, including media (Salvagioni et al., 2017). On the other hand, high work discipline is positively correlated with increased work efficiency and quality (Nuriyatul et al., 2024; Agung & Firdaus, 2020).

In preliminary observations at JTV Rek Surabaya showing employee attendance data for the period January to August 2024, it was found that there were problems related to employee absences without information which were quite significant. The results of interviews with HRD JTV Rek showed that many employees were recorded as absent without information more than 10 times in each month.

If this problem is not addressed immediately, the company risks experiencing stagnation in employee work quality, which has the potential to reduce competitiveness in the increasingly competitive television industry. Based on this phenomenon, this study aims to analyze the influence of work-life balance, burnout, and work discipline on employee productivity at JTV Rek Surabaya.

LITERATURE REVIEW

Human Resource Management

According to Veithzal Rivai (2003, p 1) in the book (H. Fachrurazi et al., 2021), human resource management (HRM) is part of general management which includes aspects of planning, organizing, implementing, and controlling. This process is found in the fields of production, marketing, finance, and staffing. Human resources are considered increasingly important in achieving company goals.

From the definition of HR management above, it can be concluded that HR management is a process carried out by superiors to acquire, retain and develop employees.

Work life balance

(Lonska et al., 2021) Said most people active in the labor market face the problem of distinguishing their work from their personal lives. In many cases, this can lead to burnout, which is a condition of physical and mental exhaustion when a person's ability to work is depleted. It was found that the negative effects of work on work-life balance are usually concentrated in the early stages of childcare, when employees in households have children of preschool age.

From the above theory, it can be seen that many individuals active in the labor market have difficulty separating work from their personal lives, which often leads to physical and mental exhaustion. This problem is particularly experienced by employees who are in the early stages of preschool childcare, where the demands of work and family intersect. In addition, the broader concept of work-life balance teaches that reconciliation includes not only work and family, but also other activities such as religious activities, education, community involvement, and personal activities. Therefore, it is important to create a more holistic balance between work and non-work aspects of life.

Burnout

Maslach, 2001 in (Lina, 2023) Burnout is defined as a state of fatigue caused by excessive workload that lasts continuously and is monotonous. Burnout is a psychological syndrome consisting of three aspects, namely emotional exhaustion, depersonalization, and low self-esteem in carrying out daily tasks. This condition can also lead to a decrease in work motivation in individuals who experience it.

From the explanation above, it can be concluded that burnout is a condition of physical, mental, and emotional exhaustion caused by excessive and monotonous work continuously. Burnout can have an impact on three main aspects: emotional exhaustion, depersonalization, and low self-esteem. This leads to decreased work motivation, and encourages psychologically withdrawn behavior, such as cynicism, truancy, or a desire to change workplaces.

Work Discipline

(Qomariah, 2021) said that discipline is an attitude shown by someone to accept and comply with the rules and standards that apply in their environment. Good discipline will help companies achieve goals quickly, while poor discipline will hinder and slow down their achievement.

From the explanation above, discipline is the attitude or awareness of individuals to comply with applicable rules, standards, or procedures, both in the context of the company and the social environment. Discipline plays an important role in achieving organizational goals effectively and efficiently.

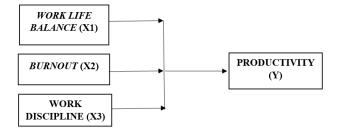
Productivity

According to Handoko (2003: 39) in (Busro, 2018), productivity is a mental attitude and human effort to achieve better results by using resources as effectively as possible. In the end, productivity is measured by the inputs used to achieve optimal results.

The conclusion that can be drawn is that productivity is a comprehensive concept that combines the efficient use of resources, process effectiveness, mental attitude of workers, and continuous efforts to improve performance. It serves as an important indicator for organizations to measure, evaluate, and improve their overall performance.

Framework

Figure 1. Research framework



Description:

X = Independent Variables, namely Work life balance, Burnout, and Work Discipline Y = Dependent Variable, namely Employee Productivity

= Partial influence

= Simultaneous Effect

METHOD

Research Design

This research uses quantitative methods with multiple linear regression approaches to analyze the effect of independent variables on the dependent variable. This research design is causal, which aims to examine the cause-and-effect relationship between Work-Life Balance, Burnout, and Work Discipline on Employee Productivity.

Population and Sample

The population in this study were all employees of JTV Rek Surabaya. The sampling technique used purposive sampling method, namely selecting respondents based on certain criteria in accordance with the research objectives. The sample size was 62 employees calculated based on the Slovin formula or other relevant methods to ensure data representativeness.

Data Collection Method

The data used in this study were obtained through a questionnaire distributed to JTV Rek Surabaya employees. This questionnaire consists of several indicators that have been tested for validity and reliability to measure each research variable. In addition, this study also used observations and interviews to obtain additional information about conditions in the company.

Data Analysis Method

The collected data were analyzed using multiple linear regression analysis with the help of statistical software, namely SPSS version 30. Validity and reliability tests were carried out to ensure the accuracy of the research instruments. In addition, classical assumption tests, such as normality, multicollinearity. heteroscedasticity. autocorrelation tests were conducted to ensure that the regression model met the statistical requirements. Hypothesis testing was conducted using the t test (partial) and F test (simultaneous) with a significance level of $\alpha = 0.05$.

RESULT

Validity Test

The validity test is carried out to ascertain whether the questionnaire has the ability to accurately measure the variables under study. To assess validity, researchers used the SPSS (Statistical Product and Service Solutions) 30 program for Windows. The results of testing the validity of indicators for each independent variable and the dependent variable are as follows.

Table 1. Validity Test Result

Variable	Indicator	r calculated	r table	Description
Work-Life Balance	X1.1	0.900	0.254	Valid
	X1.2	0.911	0.254	Valid
	X1.3	0.913	0.254	Valid
	X1.4	0.923	0.254	Valid
	X1.5	0.654	0.254	Valid
Burnout	X2.1	0.893	0.254	Valid
	X2.2	0.847	0.254	Valid
	X2.3	0.855	0.254	Valid
	X2.4	0.942	0.254	Valid
	X2.5	0.876	0.254	Valid
Work Discipline	X3.1	0.751	0.254	Valid
	X3.2	0.696	0.254	Valid
	X3.3	0.841	0.254	Valid
	X3.4	0.764	0.254	Valid
	X3.5	0.694	0.254	Valid
Productivity	Y1.1	0.850	0.254	Valid
	Y1.2	0.815	0.254	Valid
	Y1.3	0.844	0.254	Valid
	Y1.4	0.865	0.254	Valid
	Y1.5	0.827	0.254	Valid
	Y1.6	0.756	0.254	Valid

Based on the results of the Validity Test data processing above, the value of r count is greater than r table. Therefore, each of the research variables is considered valid.

Reliability Test Results

The reliability test aims to ensure that the measuring instrument used in the study is accurate. Reliability tests are also used to evaluate reliable statements or questions. To assess reliability, researchers used the SPSS (Statistical Product and

Service Solutions) 30 program for Windows. The test results are as follows:

Table 2. Reliability Test Result

Variable	Alpha Value (r calculated)	Cronach's Alpha min.	Description
Work life balance (X1)	0.910	0.6	Reliabel
Burnout (X2)	0.928	0.6	Reliable
Work Discipline (X3)	0.800	0.6	Reliable
Productivity (Y)	0.906	0.6	Reliable

Based on the results of the data processing above, the alpha value of the Work life balance variable (X1) is 0.910, the Burnout variable (X2) is 0.928, the Work Discipline variable (X3) is 0.800, and the Productivity variable is 0.906. Therefore, each variable of this study is considered reliable because it exceeds the minimum number of 0.6.

Normality Test Result

The normality test aims to determine whether the residual value is normally distributed or not. In this study, the Kolmogorov-Smirnov statistical test was used to prove that the data could be normally distributed or not. Data is said to be normally distributed if the significance value is more than 0.05

Table 3. Normality Test Result One-Sample Kolmogorov-Smirnov Test

			Standardized Residual
N			62
Normal Parameters a,b	Mean		.0000000
	Std. Deviation		.97509983
Most Extreme Differences	Absolute		.079
	Positive	.062	
	Negative	079	
Test Statistic			.079
Asymp. Sig. (2-tailed)°			.200 ^d
Monte Carlo Sig. (2-tailed) ^e	Sig.		.431
	99% Confidence Interval	Lower Bound	.418
		Upper Bound	.443

It can be seen that the significance value is 0.200, it can be concluded that the normality test results are normally distributed because the value is greater than 0.05.

Multicolonierity Test Result

The multicollinearity test is used to determine whether there is a correlation between the independent variables in the regression. To identify the presence of multicollinearity symptoms, look at the VIF (Variance Inflation Factor) results. The VIF value should not be

more than 10, if more than that, multicollinearity will occur. The test results are as follows:

Table 4. Multicolonierity Test Result

Variable	Tolerance	VIF	Description
Work life balance (X1)	0.571	1.753	No multicollinearity
Burnout (X2)	0.968	1.033	No multicollinearity
Work Discipline (X3)	0.560	1.787	No multicollinearity

From the results of the table above, it can be seen that the tolerance and VIF (Variance Inflation Factor) results of the Work life balance variable (X1) are 0.571 and 1.753, the Burnout variable (X2) is 0.968 and 1.033, the Work Discipline variable (X3) is 0.560 and 1.787. Based on the above results, the multicollinearity test shows that each independent variable in this study does not show symptoms of multicollinearity, which means that the standard error may be greater, because all variables have a tolerance value of less than 0.10 and do not exceed 10 in accordance with predetermined criteria.

Heteroscedasticity Test

The purpose of the heteroscedasticity test is to determine whether there is inequality in the variance of the residuals in the regression model for each observation. The Glejser test, which regresses the absolute value of residuals against all independent variables, is one way to identify heteroscedasticity. The results of this test will indicate whether heteroscedasticity can be shown by a certain pattern in the distribution of the residuals.

Table 5. Hesteroscedasticity Test Result

Variable	Sig.	Description
Work life balance (X1)	0.696	No heteroscedasticity
Burnout (X2)	0.576	No heteroscedasticity
Work Discipline (X3)	0.085	No heteroscedasticity

From the results of the analysis above, it shows that each independent variable has a value of more than 0.05 using the Glejser test, which indicates that this study does not experience heteroscedasticity in the

regression model. That is, there is no imbalance in the residual variance for each observation in this study.

Autocorrelation Test

The autocorrelation test is used to determine whether there is a correlation between observational data in a linear regression model. A good linear regression model does not find autocorrelation. This study conducted a Run Test to ensure that there were no autocorrelation symptoms in this study. Therefore, in addition to using the Durbin Watson value, the run test can also be used to prove the correlation test. The Run Test is part of nonparametric testing, which is used to determine whether there is a high correlation between residuals. If the sig value exceeds 0.05 then the data does not experience autocorrelation. The following are the results of the Run Test:

Table 6. Autocorrelation Test Result

Runs Test

	Unstandardize d Residual
Test Value ^a	.30379
Cases < Test Value	31
Cases >= Test Value	31
Total Cases	62
Number of Runs	26
Z	-1.537
Asymp. Sig. (2-tailed)	.124
a Median	

From the table above, it shows that the Sig number is 0.124 which shows that the number is greater than 0.05. It can be concluded that if this study does not occur symptoms of autocorrelation

Analysis of Multiple Linear Regression

Multiple linear regression analysis is required in research that has two or more independent variables. Multiple linear regression analysis is used to show how much influence the increase and decrease in the value of the dependent variable has on two or more independent variables. Researchers used the SPSS 30 program, with the following results:

 Table 7. Multiple Linear Regression Test Result

			Coefficient	s ^a		
		Unstandardize	d Coefficients	Standardized Coefficients		
Model		В	Std. Error	Beta	t	Sig.
1	(Constant)	7.400	2.553		2.898	.005
	X1	.246	.109	.260	2.243	.029
	X2	115	.069	149	-1.669	.100
	Х3	.745	.159	.549	4.687	<,001

Based on the regression results, it is concluded that the constant value (α) is 7.400, which indicates that if all independent variables (Work life balance, Burnout, and Work Discipline) are 0, then Productivity will be

7.400. The regression coefficient (β 1) for Work life balance is 0.246, which means that every 1 unit increase in Work life balance will increase Productivity by 0.246 units. Meanwhile, the regression coefficient (β 2) for Burnout is -0.115, indicating that every 1 unit increase in Burnout will decrease Productivity by 0.115 units. The regression coefficient (β 3) for Work Discipline is 0.745, which means that a 1 unit increase in Work Discipline will increase Productivity by 0.745 units. Thus, Work-life balance and Work Discipline have a positive effect on Productivity, while Burnout has a negative effect.

Coefficient of Determination (R2)

The coefficient of determination serves to assess the feasibility of an analysis equation in further proof and measures the extent to which the independent variable is able to explain the dependent variable. The following is the coefficient of determination that has been determined:

Table 8. Coefficient of Determination Test Result

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.745ª	.554	.531	2.62276

a. Predictors: (Constant), X3, X2, X1

Based on the results above, it is known that the Coefficient of Determination (R2) value is 0.554. This means that the variables Work life balance (X1), Burnout (X2), and Work Discipline (X3) affect Employee Productivity (Y) by about 55.4%, while the remaining 46.3% is influenced by other variables that are not part of this research.

T-test

In the study, also known as a partial test, the independent variables Work-life balance (X1), Burnout (X2), and Work Discipline (X3) were assessed individually. The independent variables were also assessed against the dependent variable, Employee productivity (Y). The calculated t value > t table value. The t test results are as follows:

			Coemcient	>		
Model		Unstandardize B	d Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	7.400	2.553		2.898	.005
	X1	.246	.109	.260	2.243	.029
	X2	115	.069	149	-1.669	.100
	Х3	.745	.159	.549	4.687	<,001

a. Dependent Variable: Y1

Based on the table, it can be concluded that Work life balance (X1) has a positive and significant effect on Productivity (Y) with a significance value of 0.029 < 0.05 and t count 2.243 > t table 2.001, so H1 is accepted. Meanwhile, Burnout (X2) has a negative and insignificant effect on Productivity (Y) with a significance value of 0.100 > 0.05 and t count -1.669 < t table 2.001, so H2 is rejected. The Work Discipline (X3) has a positive and significant effect on Productivity (Y) with a significance value of < 0.01 < 0.05 and t count 4.687 > t table 2.001, so H3 is accepted. Thus, Work life balance and Work Discipline contribute to increasing Productivity, while Burnout tends to decrease Productivity but the effect is not significant.

F-test

The F test in this research aims to analyze the effect of independent variables, namely work-life balance (X1), burnout (X2), and work discipline (X3), together or simultaneously on employee productivity (Y). The results of the F test are as follows:

Table 10. F Test Result

	ANOVA*							
Model		Sum of Squares	df	Mean Square	F	Sig.		
1	Regression	496.462	3	165.487	24.057	<,001 b		
	Residual	398.973	58	6.879				
	Total	895.435	61					

a. Dependent Variable: Y1
b. Predictors: (Constant), X3, X2, X1

Based on the test results, it shows that the significance value of the F test in this study is 0.001 <0.05 significance level that has been determined in the basis for decision making. F count is 24.057. F count of 24.057> F table of 2.764. Based on these results, it can be seen that the variables Work life balance (X1), Burnout (X2), and Work Discipline together or simultaneously have a significant effect on employee productivity (Y).

The Effect of Work life balance on Employee Productivity

The t test results show that Work-Life Balance (X1) has a positive and significant effect on Employee Productivity (Y) at JTV Rek Surabaya, with a significance value of 0.029 <0.05 and t count 2.243> t table 2.001, so H1 is accepted. This finding is in line with the research of Pramesti et al. (2024), which states that the better the implementation of Work-Life Balance, the higher employee work productivity. A work environment that supports this balance helps employees manage time between work and personal life, allowing them to work more focused and efficient, and significantly increase productivity.

The Effect of Burnout on Employee Productivity

The t test results show that Burnout (X2) has a negative and insignificant effect on Employee Productivity (Y) at JTV Rek Surabaya, with a significance value of 0.100> 0.05 and t count -1.669 < t table 2.001, so H2 is rejected. This finding is in line with the research of Tadu et al. (2024), which states that Burnout has no significant effect on work productivity. JTV Rek Surabaya employees are still able to maintain productivity despite experiencing Burnout, possibly due to other factors such as work support, high discipline, or effective coping mechanisms.

Effect of Work Discipline on Employee Productivity

The t test results show that Work Discipline (X3) has a positive and significant effect on Employee Productivity (Y) at JTV Rek Surabaya, with a significance value of <0.01 <0.05 and t count 4.687> t table 2.001, so H3 is accepted. This finding is in line with Kuswibowo's research (2020), which states that the higher the work discipline, the higher the employee productivity. JTV Rek Surabaya employees have a high level of work discipline, which is a major factor in increasing their productivity. With consistently applied discipline, employees can work more effectively and efficiently, supporting the achievement of work targets and the success of the company.

The results of the F test show that Work-Life Balance (X1), Burnout (X2), and Work Discipline (X3) simultaneously have a significant effect on Employee Productivity (Y) at JTV Rek Surabaya, with a significance value of 0.001 <0.05 and F count 24.057> F table 2.764, so the hypothesis is accepted.

This research is in line with previous findings, such as research by Zulfa & Adrian (2024) which shows that the balance between personal and work life increases productivity. Burnout, as explained by Tadu et al. (2024), has a negative impact on productivity, where the lower the burnout, the higher the employee productivity. In addition, Segoro & Pratiwi (2021) also found that work discipline contributes positively to productivity.

Therefore, JTV Rek Surabaya employees will be more productive if they have good Work-Life Balance, low levels of Burnout, and high Work Discipline. These three factors together play an important role in increasing work productivity.

CONCLUSION

Based on the t test results which show that the t value is greater than the t table and is significant, it can be concluded that work-life balance has an influence on the productivity of JTV Rek Surabaya employees or it can be said that H1 is acceptable. Therefore, work life balance (X1) partially affects employee productivity (Y) JTV Rek Surabaya.

Based on the t test results which show that the t value is smaller than the t table and has an insignificant value, it can be concluded that burnout has no effect on the productivity of JTV Rek Surabaya employees or it can be said that H2 is rejected. Therefore, burnout (X2) has no partial effect on employee productivity (Y) JTV Rek Surabaya.

Based on the t test results which show that the t value is greater than the t table and is significant, it can be concluded that work discipline has an influence on the productivity of JTV Rek Surabaya employees or it can be said that H3 is acceptable. Therefore, work discipline (X3) has a partial effect on employee productivity (Y) JTV Rek Surabaya.

Based on the results of the F test, it can be seen that the calculated F value is greater than the F table and is significant, so that the variables Work life balance (X1), Burnout (X2), and Work Discipline together or simultaneously have a significant effect on employee productivity (Y) JTV Rek Surabaya or it can be said that H4 is accepted. Based on these results, it can be explained that the combination of work-life balance, burnout, and work discipline makes a significant contribution to the productivity of JTV Rek Surabaya employees

Based on the research findings that have been presented above, the researcher compiled several recommendations that are expected to provide practical and academic benefits. These recommendations are designed to help improve employee productivity, overcome the problems identified in the study, and provide guidance for organizational managers in making strategic decisions are as follows:

- Theoretically, this research is expected to add to the literature in the field of human resource management (HRM), especially related to factors that affect employee productivity and can also be a reference for future research that wants to examine the relationship between work-life balance, burnout, work discipline, and employee productivity in various industries.
- 2. For future researchers, it is expected to use a wider sample or compare with similar companies to see if the results of this study can be generalized.
- 3. For JTV Rek Surabaya, it is expected to continue to maintain and improve efforts to support employees' work-life balance by providing flexible facilities or policies. In addition, it is important for companies to pay attention to burnout factors by creating a healthy work environment and providing stress management programs. The company can also provide training or awards to employees who show a high level of work discipline so that they are more motivated.
- 4. For other parties, readers who are interested in the field of HR management research can use this research as a reference in understanding work dynamics and factors that affect individual and organizational performance and also this research is expected to be a reference for other organizations or institutions that want to increase the productivity of their employees. The government or educational institutions can also use the results of this study as a guide in designing training programs or policies that support work balance, burnout prevention, and

improved work discipline in various industrial sectors.

References

- Busro, M. (2018). Manajemen Sumber Daya.
- Catur, H., & St, W. (2017). Analisa Produktivitas Konsep Dasar dan Teknik Pengukuran Produktivitas (Disertai contoh implementasi dalam penelitian) (S. Sartika & M. Multazam, Eds.). Umsida Press.
- H. Fachrurazi, Kasmanto Rinaldi, Jenita, Yudiyanto Purnomo, Budi Harto, & Andina Dwijayanti. (2021). Manajemen Sumber Daya Manusia. https://www.researchgate.net/publication/367 520809
- Lina. (2023). Role Stressors, Burnout, Dan Kinerja Pekerjaan: Eksplorasi Model Dan Proposisi.
- Lonska, J., Mietule, I., Litavniece, L., Arbidane, I., Vanadzins, I., Matisane, L., & Paegle, L. (2021). Work–Life Balance of the Employed Population During the Emergency Situation of COVID-19 in Latvia. Frontiers in Psychology, 12. https://doi.org/10.3389/fpsyg.2021.682459
- Lukmiati, R., Samsudin, A., & Jhoansyah, D. (2020).

 Pengaruh Work Life Balance Terhadap
 Kinerja Karyawan Pada Karyawan Staff
 Produksi Pt. Muara Tunggal CibadakSukabumi. In Jurnal Ekobis Dewantara (Vol.
 3, Issue 3).
- Nuriyatul, D., Setyowati, T., Diansari, T., Ekonomi, F., Bisnis, D., & Jember, U. M. (2024). The Influence Of Professionalism, Burnout, Work Motivation, And Work Discipline On The Performance Of Ambulu Puskesmas Uptd Employees. Dynamic Management Journal, 8(3). https://doi.org/10.31000/dmj.v8i3
- Qomariah, N. (2021). Manajemen Sumber Daya Manusia (Teori, Aplikasi Dan Studi Empiris). https://www.researchgate.net/publication/356 291163
- Salvagioni, D. A. J., Melanda, F. N., Mesas, A. E., González, A. D., Gabani, F. L., & De Andrade, S. M. (2017). Physical, psychological and occupational consequences of job burnout: A systematic review of prospective studies. In PLoS ONE (Vol. 12, Issue 10). Public Library of Science. https://doi.org/10.1371/journal.pone.0185781