ANALYSING THE FACTORS INFLUENCING MENTAL HEALTH AND THE INTERCONNECTIONS AMONG FACTORS IN INFORMATION TECHNOLOGY

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Abstract This study focused on the mental health of IT sector employees in Colombo, using quantitative research methods and data from 300 participants (162 males and 138 females) using the DASS 21 questionnaire and self-administered surveys through convenience sampling. Correlation analysis, chi-square tests, and regression analysis were utilized to examine the data. It found significant correlations between mental health outcomes (stress, anxiety, and depression) and factors like work-life balance, workload, working conditions, and physical fitness. Work-life balance, working environment, and workload were identified as the most significant predictors of mental health outcomes. Physical fitness was associated with stress, depression, and anxiety but had a limited overall impact on mental health. Differences in depression, stress, and anxiety levels were observed based on marital status, age group, work experience, salary, and gender. These findings emphasize the importance of addressing work-life balance and working conditions to enhance the mental health of IT sector employees in Colombo. They provide valuable insights for organizations and policymakers to develop strategies and interventions that promote employee well-being and productivity, underscoring the need to prioritize mental health and create a supportive work environment.
Keywords: Anxiety, Depression, Physical Fitness, Mental Health, Stress, Workload

Introduction

Good mental health level is important for the employees, and it can positively affect the job in many ways[1]. Many kinds of research stated that it was important to handle and otherwise it could affect personal life as well. Limited research has been conducted to identify the influencing factors on Mental health of ICT sector employees. The Mental Health Level with Stress, Depression and Anxiety of the ICT executives separately not mentioned clearly in previous studies[2]. Therefore, this study is to be conducted to find out the influencing factors on Mental Health Level and their relationships of the ICT sector employees in Colombo district with their Stress Level, Anxiety Level and Depression Level separately. This investigation will give the ideas to the employees to find out the Mental Health Level with their Stress Level, Anxiety Level and Depression Level. Then if need, they can take part in employer-sponsored programs and activities, Take care of their physical and Mental health and Nurture relationships[3].

Problem Statement

Limited research has been conducted to identify the influencing factors on Mental health level and their relationships of ICT sector employees. The Mental Health Level with Stress, Depression and Anxiety of the ICT sector employees separately was not mentioned clearly in previous studies. Also, some factors are not analyzed with stress, anxiety, and depression separately. Given the nation's present political atmosphere and the possible harm, it could do to both their personal and professional life, it is critical for ICT industry professionals to investigate their own levels of stress, anxiety, depression as well as mental health and their relationships.

Research Objectives

The main aim of the study is to identify the factors influencing on Mental Health of IT Sector employees in Colombo.
The Specific objectives are,

- To identify factors influencing Stress on IT sector employees.
- To identify factors influencing Anxiety on IT sector employees.
- To identify factors influencing Depression on IT sector employees.
- To isolate the relationship between Stress, Anxiety, Depression Levels.

- To isolate the relationship between Age group, Marital status, Gender, Salary, Working experience with Stress, Anxiety and Depression.

Methodology

A. Conceptual Framework

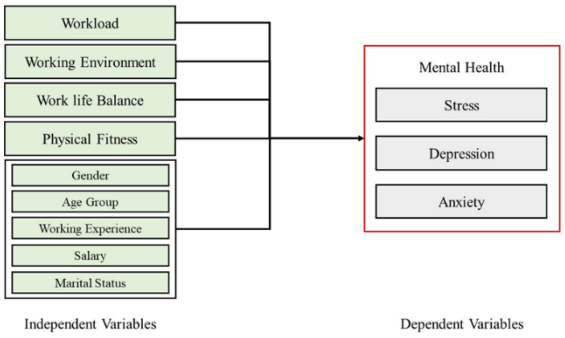

Fig. 1. Conceptual Framework.

Research Design

This research is aimed to do survey type quantitative method to get numerical, less biased, and accurate results. Since the population is large, many scholars offered to do quantitative research to ensure the accuracy of the findings.

Population

The study targeted a population of around 20000 employees of the ICT sector in the Colombo district in Sri Lanka (Sri Lanka Labor force survey 2020). The researcher has aimed to do this research among ICT sector employees working at ICT firms in Colombo district.

Sample Selection Procedure and Sample Size

The researcher has selected a convenience sampling method used to get feedback. The sample size is calculated as referring to Morgan table and found 300 nos a sample size. There are certain reasons where we cannot expect 100% responses. Incomplete feedback will be removed from the final count. Sometimes people refuse to give feedback. Hence, the sample size is calculated with a 95% confidence level which is sufficient to represent the total population.

Data Collection Methodology and Technique

Initially, secondary data such as journal articles, books, websites, etc., were used to identify the main factors that impact Mental Health, research gaps, the similarity of the topics, and research findings. Accordingly, the conceptual framework was developed, and a questionnaire will be prepared. There are three sections to the questionnaire. For independent and dependent variables, Sections A, B, and C each have a Four-Likert scale questionnaire. The respondents' demographic data is provided in Section A. Depression, Anxiety, and Stress Scale - 21 Items (DASS-21) was used to assess mental health. In a study, Ahmet AKIN and Bayram ETN looked at the validity and reliability of the Depression Anxiety Stress Scale (DASS). High concurrent validity coefficients (0.87 and 0.84, respectively) were found. Cronbach's internal consistency was 0.89 across the entire scale. Items and totals had correlations ranging from 0.51 to 0.75. Test-retest reliability and split-half dependability both obtained scores of 99 and 96, respectively. These results demonstrate that the DASS is a valid and trustworthy tool[4]. Each variable will have seven questions. The questionnaire will be pilot tested to see the accuracy of the questions included. The google form will be developed along with the approved questionnaire, and it will be sent to respondents through emails, messengers, and WhatsApp. The feedback received will be verified for completeness. Finally, the total feedback will be tested from SPSS to get the results. Descriptive Statistics, Shapiro Wilk Test, Cronbach Test, Chi

square analysis, Regression analysis, and Spearman correlation methods will be used for data analysis[5].

Results and Discussion

A. Reliability Analysis

Table 1: Reliability Statistics

Cronbach's Alpha	N of Items
.939	7

Cronbach's alpha of .939 indicates a high level of internal consistency among the items in the scale or questionnaire. This means that the items are measuring the same construct or idea in a reliable and consistent way. With 7 items, this alpha value suggests that the items are working well together and that they are likely measuring a unidimensional construct. However, it's important to consider other factors such as the content of the items and the context in which they are being used when evaluating the quality of a questionnaire or scale. (It should be noted that most social science research scenarios regard a reliability coefficient of.70 or above to be "acceptable".)

B. Normality Test

To ascertain whether the study's data were normally distributed, the Shapiro-Wilk test was run. The Shapiro-Wilk test can be used to determine whether a random sample originates from a normal distribution. When the P value is low, the test can reject the null hypothesis that the population is normally distributed and show that the sample is not normally distributed[6].

- Null hypothesis: The distribution of the data is normal.
- Alternative Hypothesis: The data is not normally distributed.

Table 2: Results of the Shapiro Wilk Test

	Shapiro-Wilk		
	Statistic	df	Sig.
Stress	.769	300	.0001
Anxiety	.880	300	.0001
Depression	.850	300	.0001
Working Environment	.829	300	.0001
Workload	.817	300	.0001
Physical Fitness	.876	300	.0001
Work life	.851	300	.0001

In the above table II, the normality of Stress, Anxiety, Depression, Working Environment, Workload, Physical Fitness, Work life was analyzed and according to the results of the test, P value is less than alpha value (0.05>P). Therefore, it cannot reject the alternative hypothesis of the test. It means the data was not Normally Distributed.

C. KMO (Kaiser-Meyer-Olkin) Test

The statistical metrics KMO (Kaiser-Meyer-Olkin) and Bartlett's Test are used in the field of factor analysis to assess whether the data are sufficient and appropriate for conducting factor analysis. Utilizes the KMO sample adequacy test to assess whether the variables in the dataset are suitable for factor analysis. It evaluates the proportion of data variance that might be caused by underlying causes. Values closer to 1 suggest a better fit for factor analysis. The KMO measure has a range of 0 to 1[7].

Table 3: Results of the KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.907
Bartlett's Test of Sphericity	Approx. Chi-Square	2558.402
	df	28
	Sig.	.0001

Your example's KMO rating of 0.907 indicates that the dataset is ideally suited for factor analysis. On the other hand, Bartlett's Test of Sphericity examines if there is a significant difference between the identity matrix and the correlation matrix among the variables in the dataset. Variable correlation is assumed in factor analysis, and Bartlett's test can reveal whether this is the case or not. The chi-square distribution of Bartlett's test statistic is present. The test statistics for your situation is roughly 2558.402 with degrees of freedom (df) set at 28. The correlation matrix is not an identity matrix, according to the null hypothesis, as indicated by the significance value (Sig.) of 0.0001. This shows that there is enough data to move further with the factor analysis. The KMO measure and Bartlett's Test both show that the dataset is suitable for doing factor analysis based on the values you gave. The Bartlett's Test reveals that there is a considerable correlation between the variables, while the KMO measure indicates a high level of sampling adequacy.

D. Descriptives Statistics

Table 4: Descriptives Statistics of the variables

Item Statistics			
	Mean	Std. Deviation	N
Stress	5.92	5.304	300
Anxiety	5.90	4.443	300
Depression	5.54	4.625	300
Working Environment	6.76	5.728	300
Workload	5.89	5.534	300
Physical Fitness	5.94	4.372	300
Work life	6.16	5.368	300

For seven separate variables stress, anxiety, depression, work environment, workload, physical fitness, and work-life balance, these statistics include information on the mean, standard deviation, and number of observations. The standard deviation quantifies the variability or spreads of the data around the mean, whereas the mean represents the average value of each variable. The sample size, or the number of people that were counted for each variable, is shown by the number of observations. For instance, a sample size of 300 people yielded a mean stress score of 5.92 and a standard deviation of 5.304. This suggests that the average level of stress in this sample is moderately high, but there is also considerable variability in the data. Similarly, the mean scores for anxiety, depression, workload, physical fitness, and work-life are all in the moderate range, with standard deviations indicating some variability. The highest mean score is for the working environment, which suggests that individuals in this sample generally perceive their working environment as positive. Overall, these statistics provide a snapshot of the levels of stress, anxiety, depression, workload, physical fitness, work-life, and working environment in a particular sample of individuals.

E. Correlation Analysis

Analysis revealed a significant strong positive correlation between work-life balance with stress ($r = 0.611$, $p < 0.05$), Anxiety ($r = 0.761$, $p < 0.05$) and Depression ($r = 0.618$, $p < 0.05$). This suggests that employees who experience higher levels of stress, anxiety and depression tend to have a poorer work-life balance. Significant strong positive correlation between workload with stress ($r = 0.623$, $p < 0.05$), Anxiety ($r = 0.713$, $p < 0.05$) and Depression ($r = 0.625$, $p < 0.05$). This suggests that employees who experience higher levels of stress, anxiety and depression tend to have higher workload. Significant strong positive correlation between working environment with stress ($r = 0.687$, $p < 0.05$), Anxiety ($r = 0.700$, $p < 0.05$) and Depression ($r = 0.703$, $p < 0.05$). This suggests that employees who experience higher levels of stress, anxiety and depression tend to have worst working environment. Significant weak positive correlation between physical fitness with stress ($r = 0.247$, $p < 0.05$), Anxiety ($r = 0.404$, $p < 0.05$) and Depression ($r = 0.306$, $p < 0.05$). This suggests that employees who experience higher levels of stress, anxiety and depression tend to have poorer physical fitness. Stress, anxiety, and depression are closely related, and they have a significant positive relationship with each other, and therefore employees who experience one condition are often at risk

of developing the others. Effective treatment for these conditions typically involves a combination of medication, therapy, and lifestyle changes aimed at reducing stress and improving overall well-being.

F. Chi Square Test

The Chi square test[8] results show that there is no significant difference in the distribution of depression and stress levels between males and females, which means that there is no evidence to support a difference in the levels of depression and stress that males and females experience based on the statistical analysis of the data. However, there is evidence to show that men and women experience anxiety at different levels.

There is evidence to suggest that depression, anxiety, and stress levels vary across different age groups, with some groups being more susceptible to depression than others.

Young employees and adolescents may have higher rates of depression, stress, Anxiety than older employees. This could be due to several factors, such as hormonal changes, social pressures, or life transitions that are common during these age periods. There could be significant differences in the distribution of depression, stress, and anxiety levels between marital status groups. It was shown that marital status can be an important factor in mental health outcomes, including depression, stress, and anxiety. The distribution of depression, stress, and anxiety levels varies significantly among people with various levels of work experience. The distribution of depression and anxiety levels among people with various income levels differ significantly. Additionally, there is no discernible variation in the distribution of stress levels between people with various levels of income.

G. Regression Analysis

Table 5: Model 1 - Stress

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.904[a]	.818	.815	2.280	1.512

a. Predictors: (Constant), Work life, Physical Fitness, Working Environment, Workload

b. Dependent Variable: Stress

ANOVA[a]

Model		Sum of Squares	F	Sig.
1	Regression	6877.179	330.621	.0001[b]
	Residual	1534.058		
	Total	8411.237		

a. Dependent Variable: Stress

b. Predictors: (Constant), Work life, Physical Fitness, Working Environment, Workload

Coefficients[a]

Model	Unstandardized Coefficients		Sig.	95.0% Confidence Interval for B		Collinearity Statistics
	B	Std. Error		Lower Bound	Upper Bound	VIF
(Constant)	-.452	.252	.024	-.947	.043	
Working Environment	.319	.042	.0001	.235	.402	3.403
Workload	.379	.061	.0001	.259	.500	1.120
Physical Fitness	.170	.032	.0001	.107	.233	2.652
Work life	.158	.054	.003	.053	.264	1.755

a. Dependent Variable: Stress

The first model shows that workload has the largest effect on stress, followed by the working environment and work-life balance. Physical fitness has a smaller effect on stress, but it is still

statistically significant. The collinearity statistics suggest that there is no multicollinearity between the independent variables in the model.

Table 6: Model 2 - Anxiety

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.857[a]	.735	.731	2.304	1.563
a. Predictors: (Constant), Work life, Physical Fitness, Working Environment, Workload					
b. Dependent Variable: Anxiety					

ANOVA[a]				
Model		Sum of Squares	F	Sig.
1	Regression	4335.415	204.124	.0001[b]
	Residual	1566.382		
	Total	5901.797		
a. Dependent Variable: Anxiety				
b. Predictors: (Constant), Work life, Physical Fitness, Working Environment, Workload				

Coefficients[a]						
Model	Unstandardized Coefficients		Sig.	95.0% Confidence Interval for B		Collinearity Statistics
	B	Std. Error		Lower Bound	Upper Bound	VIF
(Constant)	.755	.254	.003	.254	1.255	
Working Environment	.282	.043	.0001	.197	.366	0.403
Workload	.120	.032	.0001	.056	.183	1.120
Physical Fitness	.098	.062	.115	-.024	.220	1.632
Work life	.316	.054	.0001	.209	.422	1.255
a. Dependent Variable: Anxiety						

The second model shows that work-life balance has the largest effect on anxiety, followed by working environment, physical fitness, and workload. However, the effect size for physical fitness is not statistically significant, so it may not be a strong predictor of anxiety in this model.

Table 7: Model 3 - Depression

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.893[a]	.798	.795	2.093	1.942
a. Predictors: (Constant), Work life, Physical Fitness, Working Environment, Workload					
b. Dependent Variable: Depression					

ANOVA[a]				
Model		Sum of Squares	F	Sig.
1	Regression	5103.783	291.168	.0001[b]
	Residual	1292.737		
	Total	6396.520		
a. Dependent Variable: Depression				
b. Predictors: (Constant), Work life, Physical Fitness, Working Environment, Workload				

Coefficients[a]						
Model	Unstandardized Coefficients		Sig.	95.0% Confidence Interval for B		Collinearity Statistics
	B	Std. Error		Lower Bound	Upper Bound	VIF
(Constant)	.539	.231	.020	.084	.993	

Working Environment	.244	.039	.0001	.167	.321	3.403
Workload	.262	.056	.0001	.151	.373	1.120
Physical Fitness	.009	.029	.756	-.049	.067	1.632
Work life	.284	.049	.0001	.187	.381	2.755
a. Dependent Variable: Depression						

According to the final model, the working environment has a positive effect on depression, with a coefficient of 0.244. This means that an improvement in the working environment would lead to an increase in depression. Workload also has a positive effect on depression, with a coefficient of 0.262. This means that an increase in workload would lead to an increase in depression. Physical fitness does not seem to have a significant effect on depression, with a coefficient of only 0.009 and a high p-value of 0.756. Work life has a positive effect on depression, with a coefficient of 0.284. This means that an improvement in the work-life balance would lead to a decrease in depression.

Conclusions

A study of IT sector employees in Colombo District, Sri Lanka found that several factors, including work-life balance, workload, job satisfaction, physical fitness, marital status, gender, working experience, salary, and age group, were significantly associated with mental health outcomes. Employees with poor work-life balance, high workloads, low job satisfaction, poor physical fitness, longer working experience, moderate salaries, and younger age groups were more likely to experience higher levels of stress, anxiety, and depression. The study's findings suggest that employers and policymakers can play a role in improving the mental health of IT sector employees by implementing policies and practices that promote work-life balance, reduce workloads, increase job satisfaction, improve physical fitness and provide support for employees with mental health concerns.

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