ANALYSIS OF THE NIGHT SHIFT WORK IN SOFTWARE APPLICATION SUPPORT SECTOR

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Degree of Master of Business Administration in Information Technology

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ABSTRACT

This study explores and analyses the association between the strategies on night shift related work and job performance in the Sri Lanka Software application support sector in the IT industry. The main objectives are to identify the factors that affect the night shift work in the Software Application Support sector, examine the relationship between factors of night shift work and job performance, and recommend a set of guidelines to improve job performance during the night shifts.

The analysis of the literature review discusses the current research on night shift work and factors that help to improve employees' performance during shifts such as compensation, recognitions, and rewards, promotions, workplace arrangement, shift time allocation, etc. This study has identified five main factors using a pilot test, to be addressed throughout the research. The research methodology is based on a quantitative approach, hence a survey is conducted with 150 employees who work in the Application Support Sector of the IT industry. The survey questionnaire contains 30 questions such that five questions per each variable. Descriptive analysis was performed to analyze the demographic characteristics given by respondents depending on central tendencies measurement and frequency analysis of constructs. The reliability analysis was performed using the scale measurement. Then the inferential analyses are performed using the Pearson correlation coefficient analysis. Finally, the ANOVA test is applied to identify the impact of the five independent variables with the dependent variable, job performance in the night shift.

According to the analysis results, it can be concluded that leadership management and workplace arrangement have a high impact on job performance during the night shifts. Also, Rewards and recognition having a considerable relationship with job performance even though it has a medium level impact. The Time allocation and Nature of work do not have an impact on performance. Further, a set of recommendations are proposed to improve night shift job performance of employees in Application Support sector, IT industry in Sri Lanka. These recommendations will enable organizations to identify employees' needs and wants. These strategies can be implemented based on a priority level, which includes the most prominent ranking with the intention of improving employee satisfaction on night shifts. Thus, by meeting the needs of employees, job performance can be increased on night shifts.

ACKNOWLEDGEMENT

It goes without saying the guide indeed was instrumental in guiding me towards the completion of this study. Importantly I wish to thank Dr. Indika Perera for his encouraging attitude, his expertise, guidance and support from the initial stage to the final stage that enables me to complete and making this project a reality, also the University of Moratuwa for the opportunity given and the constant encouragement insistence on completing the work in stages.

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CHAPTER ONE

1. INTRODUCTION

1.1 Overview of the Research

Customer satisfaction is one of the major points that need to be considered in every business and it is common for the IT application support sector. If the application support company unable to provide proper client support during the clients' time zones then it will make a bad impression about the company and it can be a reason for the churn of precious customers. Sincemost of the companies adopting the shift rotations for this, then they need to concentrate more onproper ways to handle the shift rotations, especially the night shifts. Throughout this research, it is going to identify the ways which can improve the employees' performance during the nightshifts while keeping their willingness to work. For example, this research will focus on factors like employee rewards and recognition, workplace arrangement, time allocations for a shift, leadership & management, nature of work.

The term "job performance" is highlighted along with the above factors, and this study identifies the factors that influence job performance during night shifts. Employee performance is one ofthe major factors that organizations are looking into for many years. If an employee is doing well, it will improve the profitability of the company.

Clarke & Brooks, (2010) found that jobs that help meet employee relationships with their families help improve employee job performance. When an employee is happy with his work, he will get a chance to have a proper family life without problems. Kyndt et al.,(2009) confirmed that job performance has a highly positive impact on job performance. He identified that some changes need to be done in organizational environments to achieve proper work-lifebalance and it will affect job performance.
Mita et al., (2014) confirmed that organizations can use talented resources to compete in

a competitive world if companies can offer opportunities to improve their careers. And if company is driving employee innovation and more opportunities, it's more likely to improvethe work quality and loyal to the company.

Regular rewards are very basic in the present world. Employees are constantly striving to improve their skills and talents to match the current marketplace. Therefore, Employees, alwaysexpect the company to reward them for their valuable skills and commitment. If the employeesare not satisfied with the rewards, and they may be fed up with the company and will look for other opportunities to change their company.

Leadership is another important factor for an organization. A leader always guides the team members toward a goal. So the success or failure depends on the leader. Flexible shift patternsare another factor that can affect your ability to perform a job. If your company gives you the opportunity to choose the shift allocations, it will be less stressful.

1.2 Motivation

IT Support companies need to find a proper way to provide services to their clients to satisfy their requirements. The most feasible and easiest way is to have a shift rotation within the organization which includes a nigh rotation.

Management needs to find a way to have these night shifts in a way to improve the employee'sperformance and also the willingness to work. It's identified that some factors help employeesto motivate and work in night shifts.

If employers use these factors to improve the job performance in night shifts, then they will ableto get the best out of their employees. Also, Employees will happy about their job role and theywill try to work with their will. So this will help to save the employees with the organization inthe long term and they will become good assets to the organization. Then this will help the organization to improve the services in the long term aspect and it will cause to increase revenue to the organization.

1.3 Research Scope

There are several factors that causing the performance of the employees during the night shifts. These include workplace arrangements, compensation, shift time allocation, working conditions, management and leadership. All the factors identified through a pilot test. The Survey Method section will clearly explain the method used. In this study, the factors influencing night shift job performance are considered independent factors, and night shift job performance is a dependent factor. Quantitative research should be conducted to gather information by identifying the factors. After collecting the data, you need to perform a statistical analysis to confirm the acceptance of the hypothesis. By analyzing the results, researchers can identify hypotheses that they can accept or reject. Then, by analyzing the results using a measurable strategy, we identify the factors that most influence and slightly influence the ability of night shifts to perform their duties. The job performance during night shifts can be enhanced with the recommendation based on the guidelines.

1.4 Research Question

IT industry is one of the emerging sectors in Sri Lanka and there are many reputed companies and a lot of startups in the IT Sector. When the IT Software Companies or IT Service Companies growing then they will try to enter the global market and they will have clients all over the world. These companies have to face a lot of challenges during this growth and providing support to global clients in the entire time zones is one of them.

Most well-reputed companies try to start branches in different regions to help the global customers in different time zones, but this approach is not feasible for most of the companies in Sri Lanka due to the high cost involved.

If we analyze the current IT companies, most of them are moving towards the night shift rotations to provide support to their clients. These companies try to use their existing employees or entire new employees batch to continue the service.

The Software Application support having different levels like level 1 to 3 and this involves

basic service desk support to in-depth technical expert support. So the employees need special skills and knowledge to cope with these tasks and they need to use their brainpower to the highest. Because of this, there is a high chance employees get tired and fed up during the night shift rotations. Also, this can cause a decrease in their performance and even they may worry and leave their jobs.

IT Companies need to consider the night shift rotations as well because of the work performed during this time directly affecting the clients working in other time zones. If companies do not consider the importance of maintaining a better night shift process then they will have to face consequences like a bad reputation, customer dissatisfaction, and even the churn of the clients. Also, there is a possibility to lose experienced knowledgeable employees to the organization.

1.5 Research Objective

Below listed are the main objectives which will be discussed on study.

1. Understand the key factors that influence performance in night shifts in Sri Lankan software companies.
2. Understand the connection between the independent factors and the performance in the night shift.
3. Provide a set of recommendations to improve the night shift performance in the application support industry in Sri Lanka.

1.6 Significance of the Study

In any organization, human resources are by far the most valuable resource it possesses. Due to this organizations need to do their best to keep their employees in-house and get themost out of them, but most managers are unaware of the methods and tools they can use toimprove work performance during night shifts. Employee rewards and Recognition, Timeallocation, Nature of Work Workplace Arrangement, Leadership and Management, need to be clearly identified and applied in a correct way in shift work.

1.7 Research limitations

The below limitations were identified during this research.

- The information was collected in a short time period.
- There were not much literature were found related to the night shift rotations in software industry.
- The most of the previous researches were done in the health care sectors.
- The studywas limited to a specific scope due to the limitation of time and resources.

1.8 Chapter Framework

This study has five chapters. The first chapter is “Introduction” and this chapter gives an opening for the next four chapters. Chapter two is the literature review. In the literature review, the study seeks to discover factors related to night shifts and factors that can affect employee performance. Also, expect to summarize the previous findings and understandings of earlier the examiners, writers, and researchers. The literature review consists primarily of research paper reviews, with articles on how night shift work affects employees' ability to perform their duties and independent variables: Employee rewards and Recognition, Time allocation, Nature of Work Workplace Arrangement, Leadership, and Management.

Therefore, the analysis of independent variables begins with an analysis of employee performance. All such variables are of interest

In this chapter, the research seeks to identify the fundamental relationship between the dependent and independent variables. Then, through the presentation and analysis of data, we try to achieve the purpose of the research.

The final chapter of the study concludes with recommendations for researchers who want

to conduct studies related to night shift work and employee performance.

CHAPTER TWO

2. LITERATURE REVIEW

2.1 Introduction

This chapter focuses on factors connected to the night shift work and how these affect the employees' performance and wellbeing. These factors are identified by the researchers and the Journals, Magazines, Textbooks, and internet web sites were used to collect this information. This discussion includes theories, methods, and related tasks related to night shifts and their impact on job performance and well-being. Also, this describes the methods that can be used to analyze the data collected for this research.

2.2 Factors affects to employees performance in night shifts

2.2.1 Shift Work

According to Harrington, (2001) Day time work is considered as the "Normal" hours of work, and rest is a night time activity for day time workers. Shift workers are the people work on schedules or rotations that organizations provided to them which can be involved extended hours, which obviously affects the normal human behavior. According to the Hossain (Hossain et al., 2004) shows that the world's developing countries are more favorable in shift work and at least 15%-20% of the workforce will engage in shift work.

2.2.2 Shift Schedule

Harrington's study Harrington, (2001) further shows that the shift system includes work from 6 to 12 hours at a time, and it takes turns of 2, 3, or 4 turns within 24 hours.

Historical data shows that the shifts can be started at different times and the shifts can have many variations. Some employees work continuously two days, others have only the night shift, and others will rotate on each shift.

2.2.3 Shift work and employee's wellbeing

Shift durations and rotations are defined by the organizations on their requirements, and this causes to create various shift patterns. Those patterns may affect employees in many aspects. Estryn-Béhar & Van der Heijden, (2012) was conducted a study in Europe to identify how shift work causing employee's work-life balance, their health, and how their work impacts from it. This was done by targeting the nurses in the health care industry. Furthermore, this study shows a shift with 8 to 10 hours and night shifts only occur 6 times per month seems to have less impact on the work-life balance. Shifts with 10 to 12 hours have cause for the burnout and fatigues and it has cause for the law performance. Half of the respondents worry about the mistakes during the work in night shifts.

Also this has found out that there is a high possibility of getting leaves when someone attends more than 6 nights in a month.

Also, Niu et al., (2011) identified that working on night shifts cause the irregular sleeping patterns and can cause the occupational health risks. Also this will clearly cause work performance degrade during the shifts. Further, this research confirmed that night shift work disturbs the circadian rhythm and it causes various physical and mental disorders, and also it negatively affects work safety, performance, and productivity.

There is a high chance to increase cholesterol levels of shift workers and Karlsson et al., (2003) performed a study regarding this identified that there is a connection between night shift work and level 2 diabetes and heart diseases. Also this confirms that there is a significant association between lipid disturbance and night shift.

Furthermore, Wirth et al., (2017) has identified that night shift work cause for sleep abnormalities with disruptions for circadian rhythms. Also has identified that the night workers WBC count is higher than the normal day working employees. So it seems that the nigh work has affected the immune system and it may increase the possibility of getting ill.

2.2.3 Shift Work and job perform

Shiftwork makes workers tired and creates some serious problems in works. Especially due to tiredness, there is a high chance to do mistakes. Also, employees tend to get naps during shifts and that led to a decrease in the performances.

The search Dall'Ora et al., (2016) included 35 studies. Twenty-five were conducted in the health sector and other on non-health professions. The characteristics of the various shift operations are related to the performance and welfare of the employees. The results of the large multicenter collaborative research highlight that a shift of more than 12 hours is associated with critical consequences. This study has shown 40 hours of work per week can cause adverse events, but no definitive evidence has been identified on the work of the Compression Working Week. Overtime was related to work performance decline. A fixed night shift seemed to allow resynchronization while the working rotation shift was related to deteriorated job performance. However, job satisfaction of fixed night workers declined. Providing breaks during the shifts had a positive effect on employees' agility and tiredness, and rapid return between shifts has caused employees more tired and fatigue.

Åkerstedt researched the relationship between napping and shift work Åkerstedt & Torsvall (1985) and for this, The 280 shift workers on the rotate schedule filled out a questionnaire on napping behaviors. 51% were addicts, but few people worked during the afternoon shift or vacation. Four patterns of non-nap (49%), morning nap (18%), night nap (18%), nap of both nighttime and daytime (15%) were seen. For example, the low rate napping on the morning/night scale, and the nightly napping are high. In a study that was repeated after 1.5 years, it turned out that a non-nap was a very stable behavior, but in many cases when the employee return to the day work, then napping has disappeared. The results show that shift workers nap due to the loss of the main sleeping cycle.

2.2.4 Compensation

Feldman (2000) has mentioned that the compensation can be an additional payment which can be a payable cash or non-cash payment. These compensations are given in addition to

the employees salaried and this is the appreciation for the additional work or commitment of the employees. The compensation and benefits are dependent on the organization and different types of compensations can be classified as overtime payments, tips, shift allowances, bonus payments, insurance coverage, vehicle allowances, etc.

Dockel et al., (2006) states that most IT companies have recently considered variable compensation. Employees are always like to perform better than expected if they are willing to get benefits. He also stated that employees should be fairly rewarded based on their talent and commitment to the organization.

2.2.5 Employee recognition and rewards

Brun & Dugas (2008) has identified employees are not completely satisfied with their salaries alone. Normally their expectations are more than that. this research identified the four ways to raise employee awareness, including "ethical perspectives," "humanitarian and existential perspectives," "school psychodynamics," and the "behavioral perspectives." Under an "ethical point of view," he confirmed the importance of senior management involvement in the definition of organizational standards for compensation. Apart from that, you can close the employment gap by treating your employees fairly and being able to identify past mistakes. The "Human and Existential View" explains that management must be involved in the project phase as needed. In addition, Managers need to be able to encourage teams to move forward as a single unit. This improves their ability to work individually.

“The work psychodynamics school”, clarifies that peer criticism is vital and directors got to distinguish the abilities of each group part and compensate them as required. In the event that administrators can spur workers by sending appreciation letters from clients approximately their execution, they can persuade representatives.

According to Saunderson, (2004) managers must be able to identify and recognize employee ideas and appreciate them, even though they cannot actually apply them. The boss must always express gratitude and appreciation for the work that the employees have

done. This will encourage them. Also, the managers can conduct performance evaluation meetings and provide feedbacks and guide them to improve themselves.

2.2.6 Promotion and opportunity for growth

Kosteas, (2010) recognized that showing employees the opportunity to climb their career ladder could motivate them. When there is potential for career advancement within an organization, theydo not consider leaving the company to look for new opportunities. They find that when it comes to looking for new opportunities, men are more advanced than the ladies.

In terms of work satisfaction alam (2012), promotion was identified as one of the most important factors. All staff seek opportunities to climb the professional stage. This can be achieved in a promotional manner. The organization must therefore provide staff with promotional opportunities and always attempt to offer promotions within the time frame announced. Promotions are one of the difficulties facing companies. You will also have to raise your salary if you have a promotion.

Promotions play a major role in employee retention, so companies need to find out possible issues that can occur during the promotion procedure.

2.2.7 Management and leadership

Noranee et al., (2013) thought that organizations should create a smooth and peaceful environment for their employees to work. The skills and characteristics required of a good leader have been found depends on the circumstances. Leaders should work with their colleagues and listen to their thoughts. Dignam (2012), has identified leaders increase employees' sense of duty. Leaders need to trust their subordinates, and they must be trustworthy. Also, they need to support their employees whenever they need help.

Kroon & Freese, (2013) has identified similar kind of leadership skills. He pointed that a good leader will be a factor to reduce employee turnover. According to Andrews & Wan, (2009), if a employee immediate supervisor was helping to improve

the career objective, the employee felt safe and wanted to stop. If they receive ongoing feedback and rewards from their boss, there is high chance to employee are being stayed in the company. According to Ellett & Dews, (2008), employees will think twice if they on leaving the organization if the interaction with the management is very good. Also, employees will try to help the management to make decisions.

2.2.8 Workplace Arrangement

According to Buhter, (1997), the working environment is included with both physical and psychosocial factors and the right selection of the factors will increase the night shift performance. Khan et al., (2011) has analyzed the work environment effect on employee performance by using a sample of 150 respondents. This research was performed in the sector which is related to education of Pakistan. This research has found that infrastructure had not a significant influence on employees' performance but workplace incentives have had a high possibility of increase employee's motivation.

The research conducted Miles, (2000) suggested that management should invest in ergonomic chairs and tables to increase productivity. In addition, the same studies have found environmental factors like furniture, amount of available office materials, partition height and thickness impacting the individual and team performance.
Also, the Kahya, (2007) has concluded working conditions directly impacting the job performance in manufacturing settings.

2.2.9 Time Allocation

Estryn-Béhar & Van der Heijden, (2012) was conducted a study in Europe to identify how shift work shifts causing employee's work-life balance, their health, and how their work impacts it. This was done by targeting the nurses in the health care industry. Furthermore, this study shows a shift with 8 to 10 hours and night shifts only occur 6 times per month seems to have less impact on the work-life balance. Shifts with 10 to 12 hours have cause for the burnout and fatigues and it has cause for the law performance. Half of the sample worries about the mistakes during the work in night shifts. Also this has found out that there is a high possibility of getting leaves when someone attends more than 6 nights in a month.

Also, Niu et al., (2011) have identified that working on continuous nightshifts effects on employees sleep quality, fatigue, cortisol profile, and attention level. This can cause occupational health risk.

2.2.10 Application Support

Brahmachary, A. (2019) has identified 5 levels in the application support sector and this involves basic service desk support to in-depth technical expert support. Level one is query-type support and basically, the application team can provide information to the customers. In level two support is troubleshooting an issue and provide a solution or in-depth analysis for it. The third level of application support is to try to identify the root cause of the issues by trying to reproduce similar behavior in a local environment or develop a new feature or function to resolve the issue.

2.3 Methodology

2.3.1 Descriptive analysis

Analysis description Descriptive techniques Axinn & Pearce (2006) uses to summarize data collections or components. Medium, modal and standard deviation are the most common measurements. This study reports on a number of questions, such as gender, income, gender and education. Descriptive analyses are carried out at the study level.

2.3.2 Cron batch alpha value

Cronbach's Alpha method shows how each thing in a set connects in another set with other things. The higher the alpha appreciation, the greater the affiliation. If the coefficient appreciation is more prominent than 0.7, you can conclude that the result is trustworthy. The result is considered unreliable if the estimation coefficient is less than 0.6. Table 1 shows the Cronbach alpha show, which is the corresponding internal consistency of each run

Table 1: **Classification of the Reliability Analysis**

Cronbach's alpha	Internal Consistency
< 0.6	Poor
0.6 - < 0.7	Moderate
0.7 - < 0.8	Good
0.8 - < 0.9	Very Good
> 0.9	Excellent

2.3.3 Statistical inference

Inference test Lehamnetal. , (2013) is a quantifiable methodology utilized to form predictions of almost the populace utilizing the data collected by the test. You'll review the information taken from the test sometime recently deciding the populace. They are essentially used to test a theory and show if the speculation has been recognized or rejected.

2.3.4 The Pearson correlation & coefficient analysis

The Pearson coefficient can be used to make sure that the dependent and independent variables are closely linked. If the factor is higher than 0.9, the variables can be considered to be more interconnected.

Just as if the correlation values are lower than 0.20, we can also take into account that variables are not clearly correlated.

For each value range, Table 2 shows the strength level.

Table 2: Standards of Pearson Correlation Coefficient

Correlation value (values are valid for both positive and negative)	Interpretation
0.9 - 1.0	Very high correlation
0.7 - 0.9	High correlation
0.5 - 0.7	Moderate correlation
0.3 - 0.5	Low correlation
0 - 0.3	Negligible correlation

2.3.5 Analysis the hypotheses

Hypotheses are suspicions that ought to be demonstrated or refuted agreeing to the investigation. These are statements of expectations approximately a few characteristics of the population. This can be a testable explanation, utilized to foresee connections between chosen factors.

Null-hypotheses

If there are no differences or links between variables, these are known as **null hypotheses**. If a research study finds a null hypothesis, it almost always follows the hypothesis of research. (Hypothesis of direction or non-direction)

Non Directional-hypothesis

It shows that a relationship exists between variables but it does not specify a direction. For example, if an event is not sure. This can be used.

Directional-hypothesis

The directional hypothesis indicates the way in which the variables relate. It says essentially, if "A" occurs, "B" will occur.

2.3.6 Test methods for hypotheses

The t-test could be used to check whether or not the population mean is different from the mean of samples, or to see if two sample methods yield different results. It is useful if you know little about the population and if the measurement of the sample is small.

2.3.7Introduction to ANOVA test

One popular method used to check whether there is a significant difference between groups is ANOVA (Variance Analysis). By calculating the null assumption, you can judge whether you must reject it. The two main types of ANOVA tests are in one direction and in two directions. The first way to test the difference contains one variable.

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1 The Research approach

Research can be carried out in three ways: "exploratory;" "descriptive" and "causal," according to the Association for Educational Communications and Technology (2001). Descriptive research was selected for this research and the research question was previously identified. The investigation questions how night work in the software application support sector affects employee performance.

The reason to select the descriptive research method is that the cost factor and time factor are low when comparing to the other two research methods. Also, there is more space to conduct more precedent research regarding this topic and get information.

According to Creswell, (2014), research can divide into qualitative or quantitative. The quantitative method is all about collecting data using a proper mechanism and analyzing them using statistical approaches. The quantitative method was used to gather data from employees in the software application support sector of Sri Lanka, and a questionnaire-based survey was performed.

A numeric rating scale is used within the questionnaire to collect the participants' state of each question. IBM SPSS software is used for the statistical analysis of the collected data and provides recommendations based on the results to improve the performance of the employees during the night shifts.

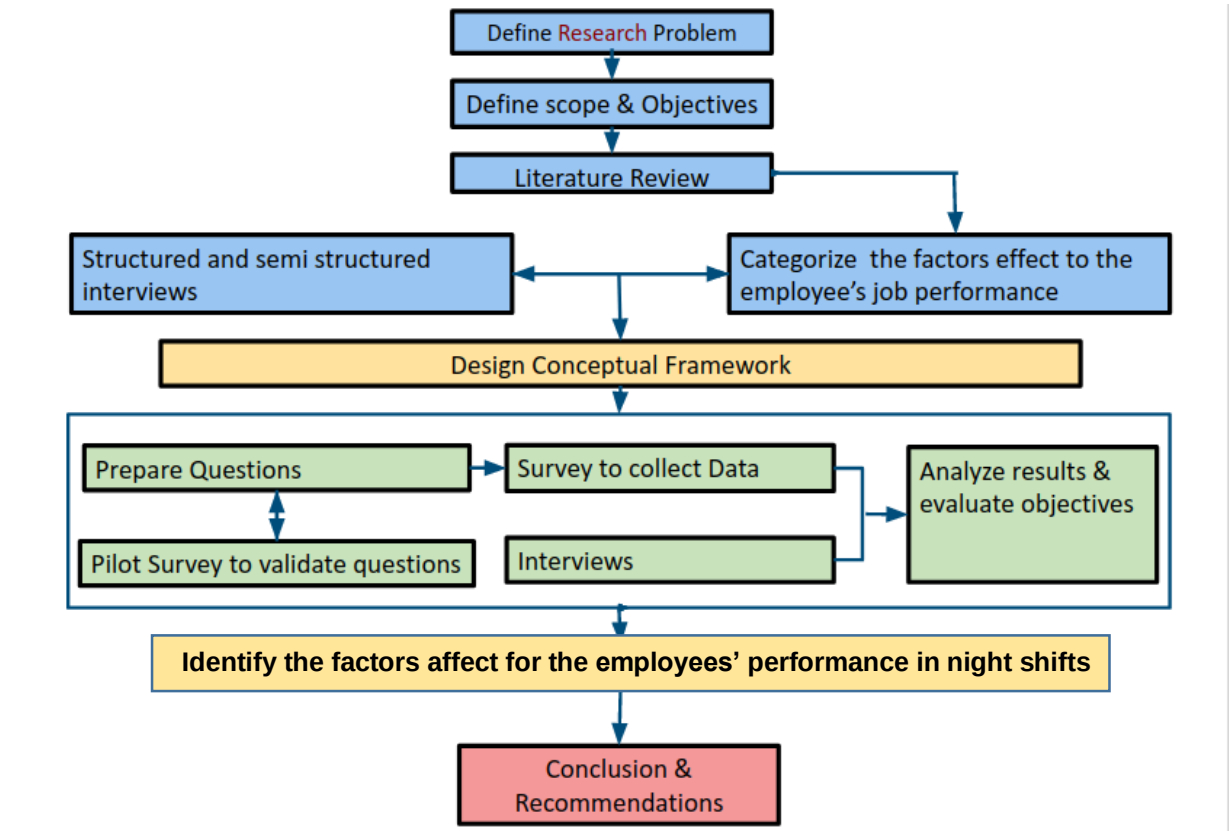


Figure 1 : Research Approach

The research approach is clearly mentioned in Figure 1 and the first step was to define the research problem which is going to be addressed using this research. The scope and objective of this research were identified and the scope was confirmed by doing a literature review on previous researches that have been conducted in this area.

The set of hypotheses have been formulated to cover the selected variable on the research scope and then the questionnaire has been designed to cover the dependent and independent variables. Then a pilot test run was conducted on the questionnaire nearly with 20 responses and calculated the Cronbach alpha value to check the reliability on each factor. Finally, the questionnaire shared among the employees working in the application support sector in the IT industry of Srilanka. This has been shared among nearly 300 employees usingdifferent media such as email, social media, and soft copies. These media help a lot to collect the required data quickly. Then it is concluded that it is accepted and rejected by the analysis of the data gathered. In order to improve the work performance of employees at night shifts, a

series of guidelines and recommendations can be recommends.

3.2 Data collection methods used

One of the main sections of quantitative research is the data collection section. For statistical analysis, these data will be used.

The probability sampling method was used to collect data. Simple random sampling, systemic sampling, stratified random sampling, and cluster sampling are four main methods for sampling. We've randomly selected the Random method from the list of methods above. Primary data consists of original material created from the field, and secondary data is derived from it.

3.2.1 The Primary data

Sekaran (2010) states that the primary data for the research is gathered from the original source for a specific reason. Primary data collection techniques such as questionnaires and interviews are frequently used. The questionnaire addresses the problem that the research deals with.

3.2.2 The Secondary data

These data have been gathered as primary research data, if explains further, the secondary data is the information gathered in previous studies, which served as the primary data. Then these data are publicly available in journals, internet resources, and accessible to everyone. The importance of the secondary data is that they have been already validated by the previous researchers and it is useful when the data collection is hard or impossible due to some conditions. The downside of the secondary data is with time the credibility will be reduced and can be outdated. So always need to make sure that the time period of the data collected and whether they match for the requirement correctly.

3.3 Sample design

3.3.1 Target population

According to Zikmund et al., (2013), the population of research depends on the target resident whose the researcher is going to focus on. A Srilanka labor force survey report has revealed that there are nearly 62000 employees work in the IT industry. The target population for this research is Software application support employees among these IT workers.

3.3.2 Sample size

The sample is a set of respondents who are most suited to represent the population. According to Cumming & Calin-Jageman, (2016), there should be a 95% confidence level and 5% of margin error, the sample size is 150. The questionnaire has been shared among the employees who work in the software application support sector in IT Sri Lanka.

3.3.3 The Sampling elements

The research sample size is 150 employees from the Software Application Support sector. The questionnaire was created with 30 questions, 5 for each variable, and distributed to the employees.

3.4 The Research equipment

Research equipment can be defined as a method for collecting data. Surveys can be used to collect information. This is the most common method employed by the majority of researchers. There are two types of surveys: closed and open. This survey used a private version of the survey. In addition to surveys, you can collect information through interviews. We can get their ideas verbally and have face-to-face discussions when conducting interviews. In this study (Sekaran, 2010), the Likert scale was employed as a rating scale.

3.4.1 Methods of distribution

According to Sekaran and Bougie (2010), surveys are a type of data collection that can be used to evaluate variables. This survey utilized an online survey that was distributed to employees via email and social media, and data was collected from respondents. It could take a few minutes to complete the survey, but it could take several hours because employees are busy at work. Hard copies of surveys were distributed internally in addition to online surveys, making data collection more efficient.

3.4.2 Questionnaire design

To collect information from the sample, a structured questionnaire was developed. The Questionnaires were then distributed among the samples, and any clarifications or instructions were provided as needed. The questionnaire was divided into two sections. The first section included seven questions designed to elicit demographic information from participants, and the second section included thirty questions designed to assess independent and dependent variables.

3.4.3 Pilot test

In this research, the questionnaire was distributed among 20 employees in the software application support sector. According to the responses, the research can be carried out with the identified factors.

3.4.4 Summary of questionnaire

The questionnaire includes seven demographic questions and twenty-five questions for independent five variables. Also, there are sixquestions for the dependent variable.
Please refer to Table 3 which summarizes the questionnaire.

Table 3: Diagram of the questionnaire

Variables investigated in research	Question count
Age	1
Gender	1
Educational Experienc	1
Work Experience	1
No of dependents	1
Marital Status	1
Shift Experience	1
Job Performance at night shifts	5
Employee rewards and Recognition	5
Time allocation and shift rotation	5
Nature of Work	5
Workplace Arrangement	5
Leadership and Management	5

3.4.5 Background information on the questionnaire structure

Table 4 explains the questionnaire's detailed structure.

Table 4: questionnaire

No	Question statement	Dependent attribute
1.	feel that rewards and extra payments motivate me to do more night shifts.	Job performance in the night shift
2	I feel that more break time helps me to perform my work well in the shifts.	Job performance in the night shift
3	I easily get tired and get sleepy during the night shift work.	Job performance in the night shift
4	I'm very satisfied with the workplace environment arrangement.	Job performance in the night shift

5	I feel that my company is really caring for me and it help me to work in shifts.	Job performance in the night shift
6	My company gives a reasonable compensated or extra payment for the shifts	Employee rewards and Recognition
7	My company does not encourage the extended hours after the agreed shifts time.	Employee rewards and Recognition
8	Night shift works are recognized over the day workers during the performance appraisals.	Employee rewards and Recognition
9	Employees satisfied with recognition/ reward got in night shift work.	Employee rewards and Recognition
10	More learning opportunities and career progression can be achieved during the night shifts.	Employee rewards and Recognition
11	My company creates the night shift rota including regular break times for the night shifts.	Time allocation and shift rotation
12	Night shift rota is well designed with unbiased allocations towards the persons.	Time allocation and shift rotation
13	When it comes to the night shift rotations it is easy to work continuously in the entire week on night shifts.	Time allocation and shift rotation
14	It would be better to have a day off after each night shift to balance the social life and health life.	Time allocation and shift rotation
15	I normally like to attend fewer night shifts during a month.	Time allocation and shift rotation
16	Most of the time I need to perform repetitive tasks in the night shift which can be performed with practice and less effort.	Nature of Work
17	My Night shift tasks involve more paperwork or documentation which require more concentration.	Nature of Work

18	We have to use more creativity and brainpower to complete night shift tasks.	Nature of Work
19	The night shift tasks are more related to problem-solving and mission-critical.	Nature of Work
20	There is a proper shift handover for pending work/tasks to the day time team which helps me to easily sign off from shift.	Nature of Work
21	Manager always allocates teams for each nightshift which helps team members to do their work collaboratively.	Workplace Arrangement
22	My company provides easy access to common facilities like foods, drinks during night shifts.	Workplace Arrangement
23	My company arranges proper, hassle-free transportation for night shift employees.	Workplace Arrangement
24	There are ample facilities to rest or take brake if any employee gets tired during shift time.	Workplace Arrangement
25	There is a proper arrangement of contact points for any emergency or escalation during the night shifts.	Workplace Arrangement
26	My management provides extra attention to the shift workers and their well-being.	Leadership and Management
27	There is a proper communication channel to report issues/problems face in night shifts to higher management.	Leadership and Management
28	Those who perform well on all the night shifts stand a fair opportunity of being promoted.	Leadership and Management
29	My supervisor/Manager continuously helps the Shift workers to maintain their work-life balance.	Leadership and Management
30	It is easy to get a leave or time off from the shift work and there is a proper process for it.	Leadership and Management

3.5 Data preparation

This study's findings were presented using figures, charts, and tables.

3.5.1 Review questionnaire

The questionnaire has been reviewed clearly to improve the quality of the questions. The pilot test was done to identify the quality of the questions, identified any errors and immediate actions were taken and the final survey was done on the amended questionnaire.

3.5.2 Data altering

Data should be edited according to the analytics tool and it was done by considering the predefined data weight. The edit was done manually.

3.5.3 Data weighting

Data weighting was used to convert the data in a way that the analytics tool can understand them. Basically, there were five selective answers for each question and each answer has been assigned with a value one to five. Table 5 explains the weight of each answer.

Table 5: Values that have been weighted (coded)

Actual value	Coded (weighted) value
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

This weighted approach was used in all the questions related to the factors discussed in this research.

3.6 Hypotheses development

Ten Hypotheses were identified according to the literature review related to this research scope.

Employee rewards and Recognition

H0- Positive relationship is available with the employee rewards & recognition with night shift job performance.

H11- Positive relationship is not available with the employee rewards & recognition with night shift job performance.

Time allocation and shift rotation

H0- Positive relationship is available with time allocation & shift rotation with night shift job performance.

H11- Positive relationship is not available with the employee rewards & recognition with night shift job performance.

Nature of Work

H0- Positive relationship is available with nature of work with night shift job performance.

H11- Positive relationship is not available with nature of work with night shift job performance.

Workplace Arrangement

H0- Positive relationship is available with workplace arrangement with night shift job performance.

H11- Positive relationship is not available with workplace arrangement with night shift job performance.

Leadership and Management

H0- Positive relationship is available with leadership and management with night shift job performance.

H11- Positive relationship is not available with leadership and management with night shift job performance.

3.7 Conceptual framework

A conceptual framework is one of the best analytical tools that can be used to clarify the concepts and related concepts. Figure 3 is showing the relationship between the dependent variable and the independents variables. The independent variables are Employee Rewards and Recognition,

Workplace Arrangements, Time allocation for shift, Leadership and Management, Nature of Work. The dependent variable is the employee's job performance in night shifts.

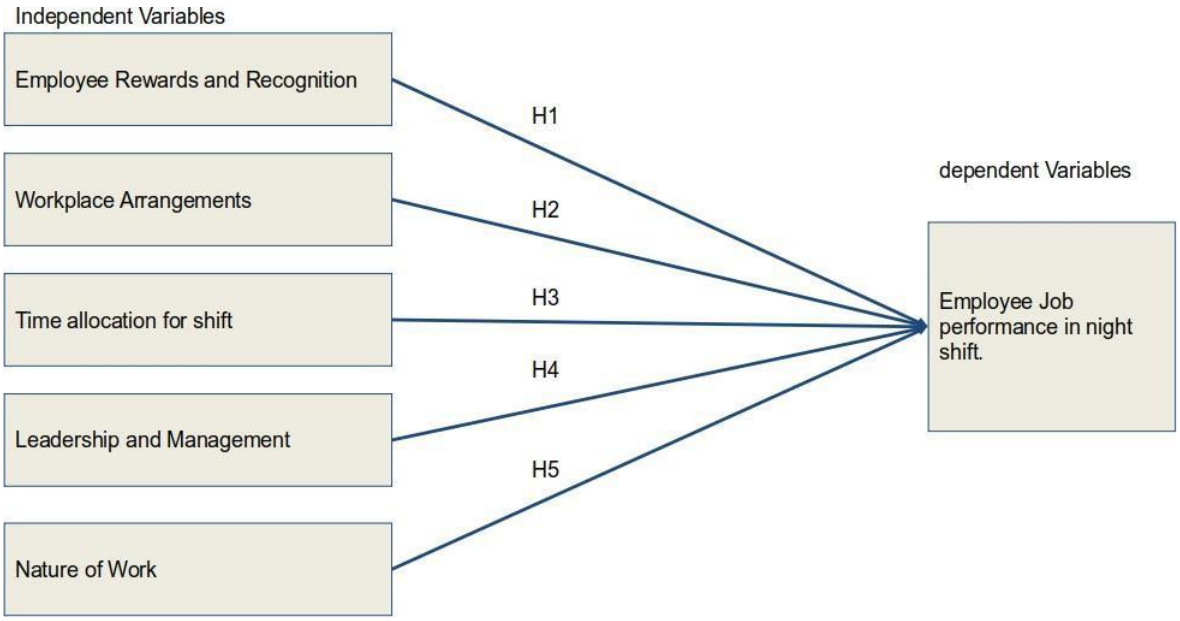


Figure 2: Conceptual framework

3.8 Conclusion

The chapter includes the case framework as well as the research methodology. And I concentrated primarily on the conceptualization diagram to gain a better understanding of the research. Finally, the hypothesis was presented. This research will determine whether or not it can be accepted or rejected based on the findings. Operationalization was used to determine the measurements for the independent and dependent variables.

Finally, the methodology of the study was discussed.

CHAPTER FOUR

4. DATA ANALYSIS AND DISCUSSION OF FINDINGS

4.1 Introduction

Research on the characteristics of variables begins with an examination of how well employees perform during their work shifts, regardless of what time of day they are working. Though all of these variables are analyzed via their indicators in order to ascertain the factors affecting employee performance. It is expected to establish a causal relationship between dependent and independent variables. It is also expected to successfully complete the objectives of the study by displaying and analyzing data.

4.1 Data Presentation and Analysis

It made use of tables, charts, and figures to present the gathered data. The study categorizes the gathered data into two groups. They are titled "Demographic Characteristics" and "Performance Evaluation of Employees Working Night Shift." The frequencies of demographic characteristics were calculated and presented in tables and pie charts. Correlation and regression analyses of independent and dependent variables were conducted and the results are presented in the following Tables and Figures. As long as no data was missing, all elements can be considered valid. The following table depicts the distribution of valid responses to Demographic Factors from a sample of 150 employees.

4.2 Calculating Demographic Data

The following tables illustrate the frequency distribution, which is derived from the Demographic Characteristics section. The first column contains an alphabetical listing of the file's measurement categories. These columns indicate the frequency with which each measurement category occurs. The 'Percent' column indicates the proportion of responses for each measurement category as follows: (f/N)*(100), where N is the total number of participants. The column labeled 'Valid Percent' indicates the percentage of valid

responses for each measurement category: (f/N)*(100), where N is the total number of participants. The column labeled 'Cumulative Percent' displays the percentage.
of responses within or below a given measurement category. And pie charts are used to illustrate the elements that have the greatest impact or that can be considered extremely important.

4.1.1 Data about the sample

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	below 30 years	64	42.7	42.7	42.7
	30-35years	66	44.0	44.0	86.7
	35-40years	16	10.7	10.7	97.3
	above 40 years	4	2.7	2.7	100.0
	Total	150	100.0	100.0	

Table 6 : Age Composition

Summary of age categories of respondents who took part in study (Table 6). According to those data, 64 (42.7 percent) of respondents are under thirty years old, which is the second-largest age category among those who took part in the study (Table 3). Additionally, only four (2.7 percent) respondents fell into the over 40 years age category, which is the age category with the fewest respondents. The following pie chart illustrates the percentage of respondents who fall into each age category. The following data can be plotted in a pie chart.

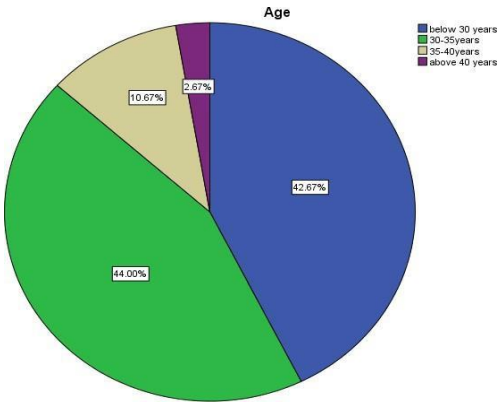


Figure 3 : Age Composition

4.1.2 Statistics for Gender

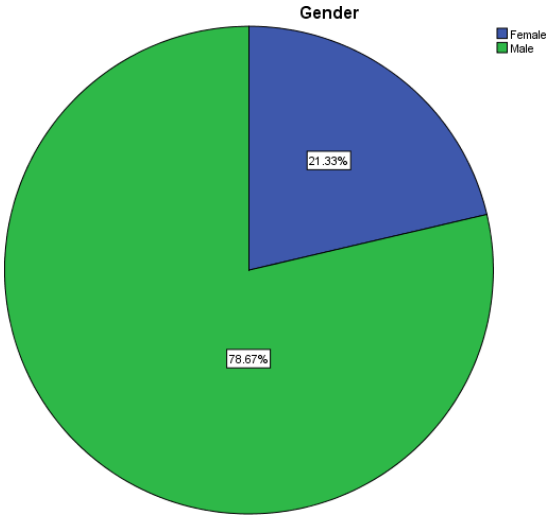
Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	32	21.3	21.3	21.3
	Male	118	78.7	78.7	100.0
	Total	150	100.0	100.0	

Table 7: Gender Composition

There were 32 female respondents (64.4 percent) and 32 male respondents (35.6 percent) in this study, as depicted in Table 7. The pie chart to the right shows the percentage of respondents who answered questions that were relevant to their gender.

Figure 4: Gender Composition



4.1.3 Statistics for Education Qualification

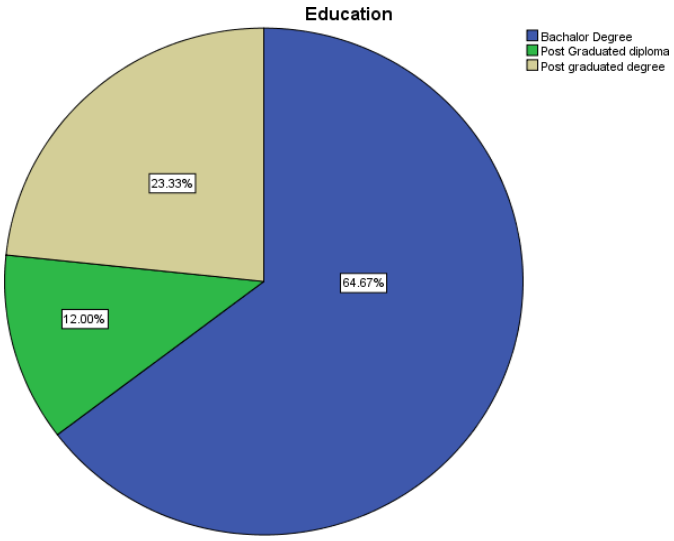
Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bachelor Degree	97	64.7	64.7	64.7
	Post Graduated Diploma	18	12.0	12.0	76.7
	Post Graduated Degree	35	23.3	23.3	100.0
	Total	150	100.0	100.0	

Table 8 : Education Qualification

As shown in Table 8, the Education Qualification of the respondents who took part in the study was summarized, with 97 (64.7 percent) respondents having a Bachelor's degree, and the Education Qualification representing the majority of those who took part in the study. The Post Graduated Degree category received only 35 responses (23.3 percent), which was the second-highest percentage of respondents. The percentage of respondents who answered questions that were relevant to the Education Qualification is depicted in the pie chart below.

Figure 5 : Education Qualification



4.1.4 Statistics for Service Period

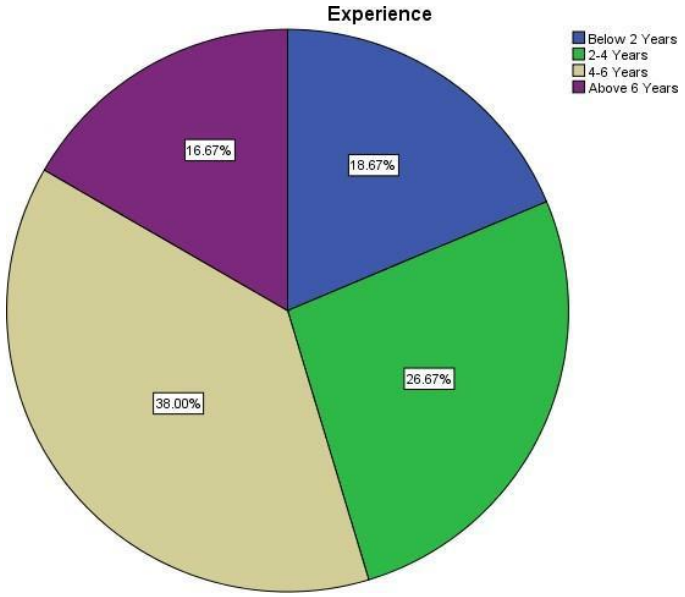
Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below 2 Years	28	18.7	18.7	18.7
	2-4 Years	40	26.7	26.7	45.3
	4-6 Years	57	38.0	38.0	83.3
	Above 6 Years	25	16.7	16.7	100.0
	Total	150	100.0	100.0	

Table 9 : Service Period Composition

According to the above Table 9, 57 numbers of respondents from the sample have been working for 4-6 Years which represents 38.0% which represents the majority and only 25respondents have been working more than 6 years which represents 16.7%. The following pie chart depicts the percentage of respondents who answered questions that were relevant to the number of years they had worked.

Figure 6 : Service Period Composition



4.1.5 Statistics for Number of Dependents

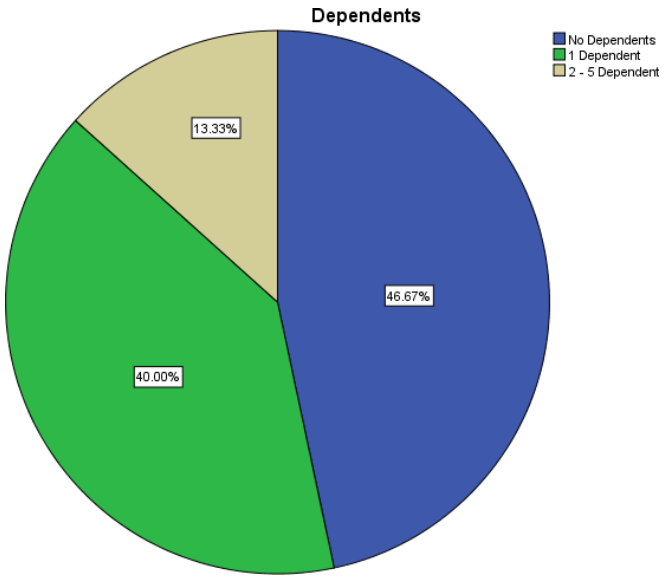
Dependents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No Dependents	70	46.7	46.7	46.7
	1 Dependent	60	40.0	40.0	86.7
	2 - 5 Dependent	20	13.3	13.3	100.0
	Total	150	100.0	100.0	

Table 10: Number of Dependents

Table 10 represents the number of dependents that the respondents have to take care ofby their salary. 70 (46.7%) employees have no dependents which represents the highest number of respondents. 20 (13.3) employees have 2 - 5 Dependent which represents the lowest number of respondents. And also there are60 (40.0%) respondents who have no dependents which represent the second highest. And also 22 (24.4%) employees take care of only 2_5 dependents. The percentage of respondents who answered questions that were relevant to the location is depicted in the pie chart below.

Figure 7 : Number of Dependents



4.1.6 Statistics for Marital Status

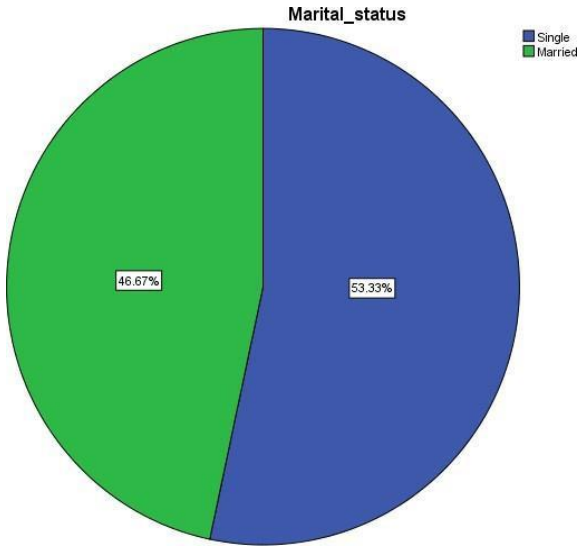
Marital status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single	80	53.3	53.3	53.3
	Married	70	46.7	46.7	100.0
	Total	150	100.0	100.0	

Table 11: Marital Status

Table 11 shows the marital status of those who answered the survey question. Eighty (53.3 percent) of the employees are single, which represents the majority of those who answered the survey questions. Furthermore, 70 (46.7 percent) of the employees are married. The percentage of respondents who answered questions about their marital status is depicted in the pie chart to the right.

Figure 8 : Marital Status



4.1.7 Statistics for Service Period in Shift Works

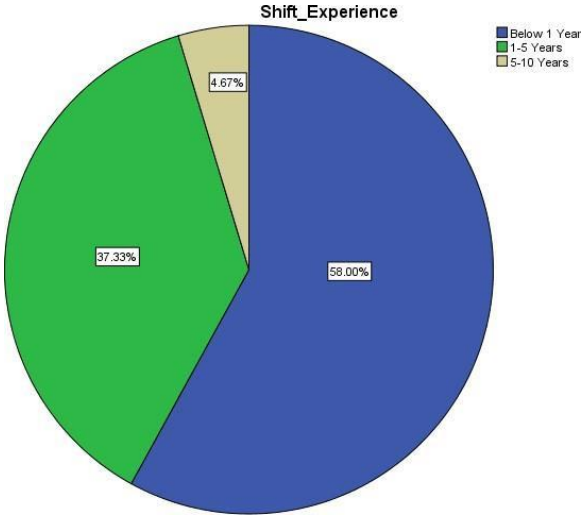
Shift Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below 1 Year	87	58.0	58.0	58.0
	1-5 Years	56	37.3	37.3	95.3
	5-10 Years	7	4.7	4.7	100.0
	Total	150	100.0	100.0	

Table 12: Shift Experience Composition

Following the results of the sample, according to Table 12, 87 respondents have worked in shift work for less than two years, representing 58.0 percent of the total, with only seven respondents having worked for five to ten years, representing 4.7 percent of the total. The following pie chart illustrates the percentage of respondents with the appropriate number of working years.

Figure 9 : Service Period Composition



4.2 Cross tabulation

Gender * Education Qualification Cross tabulation

Count

		Education			
		Bachelor Degree	Post Graduated diploma	Post graduate degree	Total
Gender	Female	17	5	10	32
	Male	80	13	25	118
Total		97	18	35	150

Table 13: Cross tabulation

Table 13 represents the Level of Education Qualification. Respondents have 32 females and 118 male. 17 female employees have Bachelor Degree which represent the highest level of Education Qualification. And also there are 10 female respondents who have Masters. And also 80 male employees have Degree which represent the highest level of Education Qualification. Likewise 5 female employees having postgraduate degree as an Education Qualification. When compare this level of education Qualification majority employees have degrees. Likewise minority employees having a Postgraduate diploma qualification.

4.3 Analyses of reliability

A reliability test was conducted prior to conducting the statistical analysis to determine the reliability of each construct used to quantify the research variables. Reliability is a matter of precision and generally accepted to be somewhere between 0.7 and 1.0. Additionally, the reliability of this data set is below 0.7, indicating that the reliability of this data set cannot be expected. Since this is important for ensuring questionnaire consistency, the researcher can make sure of this. The Cronbach's Alpha (∞) reliability can be assessed.

The following summaries of findings present the findings in greater detail.

1.1 Reliability is to check whether the likert scale questions are providing consistent result

Variable name	Chronbach's alpha	Ddecision Rule	Comment about reliability
Employee rewards and Recognition	0.831	0.831>0.7	reliable
Time allocation	0.828	0.828>0.7	reliable
Nature of Work	0.855	0.855>0.7	reliable
Workplace Arrangement	0.866	0.866>0.7	reliable
Leadership and Management	0.707	0.707>0.7	Reliable
employee performance	0.864	0. 864>0.7	Reliable

Table 14 : Reliability analysis

As a result, all variables (rewards and recognition for employees, time allocation, nature of work, workplace arrangement, leadership and management, and employee performance) scored greater than 0.7 and can be included as reliable. Employee performance on night shifts is the dependent variable in this study, and five questions were used to determine the reliability of this variable. Cronbach's Alpha value for employee job performance (on night shift) is 0.864 (86.4 percent) in this section. It is a positive indicator of the research's reliability. Cronbach's Alpha indicates that all variables are within an acceptable range and that the value earned is greater than 0.7. This has resulted in a favorable assessment of the overall reliability of the research questionnaire. Consistency among respondents has been indicated to be satisfactory, and the items used in the study provided sufficient support for

obtaining adequate results. This was done in order to ensure a favorable outcome while still accomplishing the study's objectives.

4.6 Hypothesis Validation

Testing the five hypotheses formulated by the researcher in Chapter-03 will be accomplished through the use of Pearson's correlations generated by SPSS against the data obtained through the data collection process. The testing will either result in a conclusion that the hypothesis is accepted or rejected based on the studied data that has been obtained in table format, or it will result in a conclusion that the hypothesis is failed.

Test of Correlation

This section demonstrates that there is a correlation between factors associated with the night shift and employee performance. As a result, Pearson's correlation tries to draw the optimal line through the data of two variables; the correlation coefficient indicates how far the data deviates from this optimal line, or how skewed the data is as a result of this attempt. When examining Pearson Correlation, it is critical to distinguish between weak, moderate, and strong core relationships. This can be determined using the classification system outlined below.

0.0 – 0.2 Very weak relationship

0.2 – 0.4 Weak relationship

0.4 – 0.6 Moderate relationship

0.6 – 0.8 Strong relationship

0.8 – 1 Very strong relationship

If the Sig values are less than 0.05, they can accept the Alternative Hypothesis. (H1), (H2), (H3), (H4), and (H5). If the Sig values are greater than 0.05, it is necessary to reject the Alternative Hypothesis. Furthermore, they must subscribe to the Null Hypothesis (H0). Correlations were calculated and the following results were obtained.

4.6.1 Relationship between Employee rewards and Recognition and Employee performance

H1: There is a positive relationship between Employee rewards and Recognition and Employeeperformance in night shifts

The preceding hypothesis was developed to investigate the relationship between employee rewards and recognition and performance during night shifts in the Sri Lankan software application support industry.

The results of the correlation analysis were as follows.

Correlations

		Rewards Recognition	Job Performance
Rewards Recognition	Pearson Correlation	1	.729**
	Sig. (2-tailed)		.000
	N	150	150
Job Performance	Pearson Correlation	.729**	1
	Sig. (2-tailed)	.000	
	N	150	150

**. Correlation is significant at the 0.01 level (2-tailed).

Table 15 : Correlation between Rewards Recognition and Job Performance

The conclusion reached in Table 15, shown in the graph above, is that the relationship between rewards and recognition and job performance is strong, which is as previously demonstrated in the previous table. Additionally, because the study's two-tailed significance value is less than 0.05, there is reason to believe that it is quite statistically significant. Hypothesis 1 was accepted because the statistical relationship developed in the context of the Sri Lankan software industry was classified as positive. Because the statistical relationship developed was classified as positive, Hypothesis 1 was accepted.

4.6.2 Relationship between Effective Time allocation and Job Performance

H2: There is a positive relationship between Time allocation and Job Performance in night shifts

The above hypothesis was created to test the relationship between job performance in shift time allocation and Job Performance in the night shift. In the context of the Sri Lanka software application support industry. The correlation analysis revealed the following.

Correlations

		Time Allocation	Job Performance
Time Allocation	Pearson Correlation	1	.395**
	Sig. (2-tailed)		.000
	N	150	150
Job Performance	Pearson Correlation	.395**	1
	Sig. (2-tailed)	.000	
	N	150	150

**. Correlation is significant at the 0.01 level (2-tailed).

Table 16 : the correlation between Time Allocation and employee performance

As shown in Table 16, there is a positive correlation between Time Allocation and Employee Performance. Also, the two-tailed significance value is below 0.05, indicating that the study is significant.

Given that the statistical relationship developed is classified as positive (weekly), Hypothesis 2 was accepted in relation to the study conducted on the Sri Lankan software industry.

4.6.3 Relationship between Nature of Work and Job Performance

H3: There is a positive relationship between Nature of Work and Job Performance in night shift

The hypothesis above was created to test the association between Nature of Work and Job Performance, in the context of the Sri Lanka Software Engineering industry.

The correlation analysis revealed the following,

Correlations

		Nature of Work	Job Performance
Nature of Work	Pearson Correlation	1	.735**
	Sig. (2-tailed)		.000
	N	150	150
Job Performance	Pearson Correlation	.735**	1
	Sig. (2-tailed)	.000	
	N	150	150

**. Correlation is significant at the 0.01 level (2-tailed).

Table 17: Correlation between Nature of Work and Job Performance

The correlation between Job Nature and Job Performance is definitely positive as illustrated in table 17. The study is very significant, as indicated by the two-tailed significance value of less than 0.05.

Hypothesis 3 was accepted as a result of the research conducted on Sri Lanka's Software Engineerin(SSE).

4.6.4 Relationship between Workplace Arrangement and Job Performance

H4: There is a positive relationship between Nature of Work and Job Performance in night shift

The hypothesis above was created to test the association between Workplace Arrangement and Job Performance, in the context of the Sri Lanka Software Application Support industry.

The correlation analysis revealed the following,

Correlations

		Workplace Arrangement	Job Performance
Workplace Arrangement	Pearson Correlation	1	.858**
	Sig. (2-tailed)		.000
	N	150	150
Job Performance	Pearson Correlation	.858**	1
	Sig. (2-tailed)	.000	
	N	150	150

**. Correlation is significant at the 0.01 level (2-tailed).

Table 18: Correlation between Workplace Arrangement and Job Performance

Workplace Arrangement and Job Performance both show a correlation coefficient of 1.00 (see Table 18). The study is very significant, as indicated by the two-tailed significance value of less than 0.05.

Hypothesis 4 was accepted in relation to the study conducted on the Software Engineering industry in Sri Lanka given that the statistical relationship developed is classified as positive(moderate).

4.6.5 Relationship between Leadership Management and Job Performance

H5: There is a positive relationship between Leadership Management and Job Performance in night shifts

The hypothesis above was created to test the association between Leadership Management and Job Performance in night shift, in the context of the Sri Lanka Software Application Support industry.

The correlation analysis revealed the following,

Correlations

		Leadership Management	Job Performance
Leadership Management	Pearson Correlation	1	.741**
	Sig. (2-tailed)		.000
	N	150	150
Job Performance	Pearson Correlation	.741**	1
	Sig. (2-tailed)	.000	
	N	150	150

**. Correlation is significant at the 0.01 level (2-tailed).

Table 19: Correlation between Leadership Management and Job Performance

As shown in Table 19, leadership behavior management has a significantly positive correlation with job performance. Moreover, the study's two-tailed significance value of 0.05 is below the threshold of 0.05, which indicates that the study is very significant. In view of the fact that the statistical relationship is positive, the hypothesis put forth in the Software Engineering industry in Sri Lanka (Hypothesis 5) was accepted in relation to the study

As a summary of Core relation analysis,

Factors	Person correlation	sig	comment
Rewards Recognition	0.729	0.000	There is a correlation betweenthe two. sig 0.000<0.05 The connection is significant.
Time Allocation	0.395	0.000	There is a correlation between the two. sig 0.000<0.05 The connection is significant.
Nature of Work	0.435	0.000	There is a correlation between the two. sig 0.000<0.05 The connection is significant.
Workplace Arrangement	0.858	0.000	There is a correlation betweenthe two. sig 0.000<0.05 The connection is significant.
Leadership Management	0.741	0.000	There is a correlation betweenthe two. sig 0.000<0.05 The connection is significant.

Table 20: Correlation summary

Figure and table depictions show how independent and dependent variables are linked. Overall, there is a moderately positive relationship between all of the independent variables, including employee recognition and rewards, time allocation, the nature of the job, workplace setup, leadership and management, and employee performance. The main purpose of the study was to discover how independent and dependent variables interact.

Therefore, it is possible to see it as a contributing factor in shift work, with a positive (moderate) correlation to work performance, allowing the study to achieve its primary objective.

4.7 Regression Analysis

4.7.1 Model summary

The 'Model summary' table compiles all the coefficients in the regression equation and summarizes how much of the dependent variable is explained by that equation. Multiple correlation coefficient denoted by the letter 'R' appears in Table 4.17. R squared is a measure of how much of the variation in the dependent variable can be explained by the predictor variables. The adjusted R2 indicates that as more variables are incorporated into the model equation, their influence will increase as a mere coincidence. The 'Standard Error of the Estimate' is the squared root of the Mean Square Residual, and is referred to as 'Standard Deviation' (or Error).

Model Summary

Model	R	R Squared	Adjusted R Squared	Std. Error of the Estimate
1	.889[a]	.791	.784	.27682

a. Predictors: (Constant), Leadership Management, Time Allocation, Rewards Recognition, WorkplaceArrangement, Nature of Work

Table 21: Model Summary - Simple linear regression goodness of fit

The R squared value conveys information about the goodness of the regression model. When R squared is close to 1, the majority of the variance in the dependent variable can be explained by the variance in the independent variable; when R squared is close to 0, the majority of the variance in the dependent variable cannot be explained by the variance in the independent variable.

The R squared value for this study is 0.791, indicating that a portion of the variance in job performance can be explained by the variance in the Night shift work factors examined. Thus, the independent variables account for up to 79.1 percent of the variance in the dependent variable.

4.7.2 ANOVA for the regression analysis

This table summarizes the independent variable's ANOVA results and provides the p-value ("sig" for "significance") for each predictor's effect on the criterion variable. In general, P-values (Sig values) less than 0.05 are considered "statistically significant."

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	41.799	5	8.360	109.092	.000[b]
	Residual	11.035	144	.077		
	Total	52.833	149			

a. Dependent Variable: Job Performance

b. Predictors: (Constant) rewards and Recognition, Time allocation, Nature of Work Workplace Arrangement, Leadership and Management

Table 22 : ANOVA a results of the independent variables

As demonstrated in above table, Sig value was 0.000 which indicates Sig value was lower than 0.05, so it is obvious that whole model is significant.

4.7.3 Regression Coefficients

In the column "Unstandardized coefficients" of the regression output in SPSS, the coefficients are denoted by the letter "B." They are accompanied by the standard errors associated with them. The standardized coefficients contain similar information, but in the form of z-scores. The following column contains the t-statistics and their corresponding p-values.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.331	.272		-1.219	.225
	Rewards Recognition	.218	.089	.218	2.441	.016
	Time Allocation	.000	.047	.000	-.005	.996
	Nature of Work	.029	.085	.032	.338	.736
	Workplace Arrangement	.390	.068	.451	5.757	.000
	Leadership Management	.499	.095	.300	5.228	.000

a. Dependent Variable: Employee Performance

Table 23: independent variables individually affect dependent variable.

The preceding equation demonstrates how independent variables independently affect the dependent variable (Employee performance). Due to the statistical significance ofthe results, Sig values less than 0.05 indicate that the Null Hypothesis can be rejected and the Alternative Hypothesis can be accepted. In the model column, information about the predictor variables is contained. The first variable (constant) denotes the constant, which in textbooks is referred to as the Y intercept. The Y intercept is the height of the regression line where it intersects the Y axis. In other words, this is Employee's predicted value. The preceding equation illustrates how independent variables independently affect the dependent variable (Employee performance). Due to the statistical significance of the results, Sig values less than 0.05 indicate that the Null Hypothesis can be rejected and the Alternative Hypothesis accepted. In the model

column, information about the predictor variables is contained. The first variable (constant) denotes the constant, which in textbooks is referred to as the Y-intercept. The Y-intercept is the height of the regression line where it intersects the Y-axis. That is, this is the predicted value for Employee performance when all other variables are set to 0. The 'B' values are the coefficients of the regression equation that was used to forecast the dependent variable using the independent variable. The B value represents the effect of a single independent variable changing by 1% on the performance of night shift employees. According to the graph above, increasing Rewards Recognition by 1% results in a performance increase of 0.218. Although time allocation is increased by 1%, employee performance remains unchanged due to the B value of 0.000. 0.996, on the other hand, was interpreted as a significant value. It is greater than 0.05. In the software industry, this factor became insignificant and had no effect on employee performance. As a result, it is deemed unsuitable.

Nature of Work interpreted 0.736 as a significant value. It is greater than 0.05. As a result, performance was improved by 1%. However, in the software industry, the Nature of Work factor became insignificant and had no effect on employee performance. As a result, it is deemed unsuitable. Workplace conditions are improved by 1%, and the performance factor is increased by 0.39. Furthermore, leadership management has been increased by 1%, and the performance factor by 0.499.

When all B values of independent variables are considered, Leadership Management has the greatest effect on performance when its factor is changed (increased / decreased). Otherwise, when its factor is changed, the variable of Rewards Recognition has the least effect on employee performance.

As a result, the following sequence can be depicted:

Leadership Management > Workplace Arrangement > Rewards Recognition

Thus, it is clear that the research has accomplished the first sub objective of identifying the most critical factors in shift work and the order in which they occur through above

enlightenment.

The second sub objective was to establish a connection between shift work factors and night shift work. By comprehending the most critical factors and their sequence, it becomes clear which factors should be developed in order to enhance employee performance.

performance in night shift. So organization's commitment for enhances those most important factors that has a highest effect on employee performance will definitely increase the employee performance in night shifts.

H1: As a result, the relationship between Rewards Recognition and employee job performance was identified and analyzed. This is a healthy relationship. There is a mutually beneficial relationship. And conducted an analysis of the factors affecting employee performance in the software application support industry. When reward and recognition are increased by 1%, job performance on the night shift improves by 0.218. As a result, it is a critical factor affecting employee performance in the software industry.

H2: The second objective was to define and analyze the relationship between employee time allocation and performance. However, this objective was discarded. In the software engineering industry, this was not a significant factor affecting employee performance.

H3: The third objective was to establish and analyze a correlation between job characteristics and employee performance. This objective, however, was abandoned. In the software industry, this had a negligible effect on employee performance.

H4: The third objective was to establish and investigate a relationship between job characteristics and employee performance. This objective, however, was abandoned. In the software industry, this had a negligible effect on employee performance.

H5: As a result, we identified and analyzed the relationship between leadership management and employee performance. There is a mutually beneficial relationship.

And examined the effect on employee performance in Sri Lanka's software application support sector. It has been increased by 1%, while the performance factor has been increased by 0.499. As a result, it is the primary factor affecting employee performance

in the night shift software industry.

4.6 Summary of the Chapter

The analysis of independent variables began with the performance of employees on the night shift. All variables were analyzed using their indicators to ascertain the factors affecting employee performance during the night shift. In addition, we established the fundamental relationship between the independent and dependent variables, which is shown in Figure 1. In addition, the presentation and analysis of data enabled the study's objectives to be met in a satisfactory manner.

And made the findings public in accordance with the data that had been analyzed.

CHAPTER FIVE

5. CONCLUSION

5.1 Research outcomes based on demographic analysis

5.1.1 Demographic analysis

The characteristics of the respondent are revealed through the application of demographic analysis. According to the results of this survey, the vast majority of employees (78.7% of 150 employees) are male. Female employees account for 21.3% of the 150 respondents. This demonstrates that, in comparison to previous research, female employees now play a significant role in software companies. When it comes to age, the majority of employees are between the ages of 30 and 35, accounting for 44% of the 150 respondents. Because software companies are built on the backs of middle-aged engineers, they account for the lion's share of total employment.

The majority of respondents in this study were degree holders, accounting for 64.7 percent of 150 employees. Given that a bachelor's degree is the bare minimum requirement for employment in the information technology industry, the majority of employees hold a bachelor's degree. There are 150 employees, with the majority of them having between four and six years of work experience. As a result, the information technology industry in Sri Lanka is expanding, and the majority of staff are trainees and engineers, which explains why the majority of employees have between four and six years of work experience.

5.1.1 The findings of research into the independent variables

Employees in Sri Lanka's information technology application support industry are being studied to discover the association between job performance and night shift factors such as shift time allocation, nature of work, workplace arrangement, recognition and rewards, management, and leadership of employees.

The findings of this study cannot be applied universally to other organizations. Thus, there is an opportunity for additional researchers to conduct research on the effects of other

factors on the job performance of their employees who work night shifts. On the other hand, this study examined the effect of five factors associated with shift work on the performance of its employees. As a result, other researchers now have the option of conducting qualitative research rather than quantitative research. When all B values of independent variables are considered, leadership management of conduct has the greatest effect on performance when its factor is changed (increasing / decreasing). Otherwise, when its factor is changed, the variable of Rewards Recognition has the least effect on employee performance.

As a result, the following sequence can be depicted:

Leadership Management > Workplace Arrangement > Rewards Recognition

On other Nature of Work and Time allocation insignificant factors to impact to employee performance in the software application support industry. They were rejected.

5. 2 Recommendation

Recommendation 1: Enhance the Leadership skills

After analyzing the results for bivariate correlation analysis in Section 4.6.5 it is concluded that leadership has a positive relationship to the job performance during the night shifts. So it is important to have good leadership to the support team. If the employees feel that their higher leadership is thinking about them and they are providing extra attention to their problems and help to keep their well-being then there is a high chance that the employees put their extra efforts towards the night shifts.

Recommendation 2: Establish a proper systematic management system

According to the bivariate correlation analysis in Section 4.6.5 proper management has a positive impact on job performance in night shifts. The companies should have proper systematic management systems for the night shift functions like night time escalations, leaves, and time-offs, appraisals, etc. So employees will be satisfied with the unbiased management system

Recommendation 3: Engage the employees for management decisions.

Management should consider the employee's ideas when taking management decisions. For example, managers can get ideas from team members when creating the shift rotations. This will help to create the best possible shift rotation that will match everyone's needs.

Recommendation 4: Providing proper infrastructure to work during the night shifts.

Based on the result for bivariate correlation analysis in Section 4.6.4, it is concluded that if the company can pay attention to providing the infrastructure and work arrangement will increase the willingness to attend for night shifts and the job performance also can be increased. Management can arrange proper transportation for the night shift employees, also they need to consider the workplace environment where the employees are having access to foods, drinks, and facilities for rest. Also, there should be proper communication points available during the night for any escalation or help. This will increase the employee's confidence in their working environment and this will definitely increase the employee's performance.

Recommendation 5: Provide compensations and rewards for the employee's commitments.

The bivariate correlation analysis performed in 4.6.1 has confirmed that there is a direct connection between the compensations and the employee's performances during the night shifts. The company needs to consider the extra commitment done by the employees during the night shifts and they need to validate and provide proper compensation for it. Also, the company needs to estimate the extra hours of work done by the employees and provide an appreciation for it. This will increase the employees' performance and they will engage in a longer period of time during the work.

After analyzing the results for bivariate correlation analysis in Section4.6.1, it is concluded that employee recognition has a positive, moderate relationship to job performance. Hence when the company is recognizing its employee's works during the night shift, then the performance can be increased. As an example, when an employee performs well during the night shifts, the manager can pay attention to it and try to pay their gratitude immediately.

Also, their efforts can be considered in the performance appraisal, and then leaders can keep track of these incidents and add some points.

5. 4 Limitations of Research

In research, the sample size is extremely important. The reason for this is that if the sample size does not include all employees in the IT sector, the results and recommendations may be inaccurate. Despite the fact that the sample size in this study is limited to 150 employees, it would be preferable if researchers were able to collect data from more than 400 employees in future studies.

5. 5 Future research directions

This study could easily be expanded in numerous ways. It is preferable to increase the sample size, as sample size is significantly more critical in quantitative studies than in qualitative studies. The sample size should be proportional to the population's interest in information technology application support. If the sample size is insufficient, the accuracy of the data will suffer.

Additionally, by expanding the geographic distribution of the questionnaire, we can reduce bias and improve the data's accuracy. Because certain data will be altered based on the employees' location.

Apart from that, by utilizing multiple data collection methodologies such as interviewing, screening, disseminating via the internet, social media, and handing over soft copies, we can collect more accurate data.

5. 6 The Summary

According to the study, working the night shift significantly affects job performance. Flexible management and leadership, according to the findings of the study, have a significant impact on job performance. Job performance is moderately influenced by the organizational structure of the workplace, as well as by rewards and recognition.

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APPENDIX A: QUESTIONNAIR

1. What is your age? *
   - <30
   - 30-35
   - 35-40
   - 40 +

2. What is your gender? *
   - Female
   - Male

3. Highest educational qualification attained. *
   - Bachelor's degree
   - Master Diploma
   - Master Degree
   - PhD

4. How many years of overall work experience do you have? *
   - <2 year
   - 2+ years to 4 years
   - 4 + years to 6 years
   - 6 + years

5. Do you have any dependents (children/elderly relatives/differently-abled)? *
   - No Dependents
   - 1 Dependent
   - 2-5 Dependents
   - Above 5 Dependents

6. What is your marital status? *
   - Single
   - Married

7. How many years have you been working on night shifts? *
   - <1 year
   - 1+ years to 5 years
   - 5+ years to 10 years
   - 10+ years

8. My company gives reasonable compensation or extra payment for the night shifts. *
   - Strongly Disagree

- Disagree
- Neutral
- Agree
- Strongly Agree

9. My company does not encourage the extended hours after the agreed shifts time. *
- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

10. Night shift works are recognized over the day workers during the performance appraisals. *
- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

11. Employees satisfied with recognition/ reward got in night shift work. *
- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

12. More learning opportunities and career progression can be achieved during the night shifts. *
- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

13. My company creates the night shift Rota including regular break times for the night shifts. *
- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

14. Night shift rota is well designed with unbiased allocations towards the persons.*

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

15. When it comes to the night shift rotations it is easy to work continuously in the entire week. *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

16. It would be better to have a day off after each night shift to balance the social life and health life. *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

17. I normally like to attend fewer night shifts during a month. *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

18. Most of the time I need to perform repetitive tasks in the night shift which can be performed with practice and less effort. *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

19. My company provides easy access to common facilities like foods, drinks during night shifts. *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

20. My company arranges proper, hassle-free transportation for night shift employees. *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

21. There are ample facilities to rest or take brake if any employee gets tired during shift time. *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

22. There is a proper arrangement of contact points for any emergency or escalation during the night shifts. *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

23. My management provides extra attention to the shift workers and their well-being. *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

24. There is a proper communication channel to report issues/problems face innight shifts to higher management. *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

25. Those who do well on all the night shifts stand a fair chance of being promoted and being recognized. *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

26. My supervisor/Manager continuously helps the Shift workers to maintain their work-life balance. *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

27. It is easy to get a leave or time off from the shift work and there is a proper process for it. *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

28. I feel that rewards and extra payments motivate me to do more night shifts. *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

29. I feel that more break time helps me to perform my work well in the shifts. *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

30. I feel that there is no negative impact on my health by doing the night shifts. *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

32. I'm very satisfied with the workplace environment arrangement. *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

33. I feel that my company is really caring for me and it help me to work in shifts. *
    - Strongly Disagree
    - Disagree
    - Neutral
    - Agree
    - Strongly Agree

Annexure

Crosstabs

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Gender * Education	150	100.0%	0	0.0%	150	100.0%

Gender * Education Cross tabulation

Count

		Education			
		Bachelor Degree	Post Graduated diploma	Post graduate degree	Total
Gender	Female	17	5	10	32
	Male	80	13	25	118
Total		97	18	35	150

1.2 Reliability

ALL VARIABLES

Reward Recognition.

Case Processing Summary

		N	%
Cases	Valid	150	100.0
	Excluded	0	.0
	Total	150	100.0

a. List wise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.831	5

Time allocation

Case Processing Summary

		N	%
Cases	Valid	150	100.0
	Excluded	0	.0
	Total	150	100.0

a. List wise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.828	5

Nature of Work

Case Processing Summary

		N	%
Cases	Valid	150	100.0
	Excluded	0	.0
	Total	150	100.0

a. List wise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.855	5

Workplace Arrangement

Case Processing Summary

		N	%
Cases	Valid	150	100.0
	Excluded	0	.0
	Total	150	100.0

a. List wise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.866	5

Leadership management

Case Processing Summary

		N	%
Cases	Valid	150	100.0
	Excluded	0	.0
	Total	150	100.0

a. List wise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.707	5

Job performance

Case Processing Summary

		N	%
Cases	Valid	150	100.0
	Excluded	0	.0
	Total	150	100.0

a. List wise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.864	5

1.3 Correlations

Correlations

		Rewards Recognition	Job Performance
Rewards Recognition	Pearson Correlation	1	.729**
	Sig. (2-tailed)		.000
	N	150	150
Job Performance	Pearson Correlation	.729**	1
	Sig. (2-tailed)	.000	
	N	150	150

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		Time Allocation	Job Performance
Time Allocation	Pearson Correlation	1	.395**
	Sig. (2-tailed)		.000
	N	150	150
Job Performance	Pearson Correlation	.395**	1
	Sig. (2-tailed)	.000	
	N	150	150

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		Nature of Work	Job Performance
Nature of Work	Pearson Correlation	1	.435**
	Sig. (2-tailed)		.000
	N	150	150
Job Performance	Pearson Correlation	.435**	1
	Sig. (2-tailed)	.000	
	N	150	150

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		Workplace Arrangement	Job Performance
Workplace Arrangement	Pearson Correlation	1	.858**
	Sig. (2-tailed)		.000
	N	150	150
Job Performance	Pearson Correlation	.858**	1
	Sig. (2-tailed)	.000	
	N	150	150

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		Leadership Management	Job Performance
Leadership Management	Pearson Correlation	1	.741**
	Sig. (2-tailed)		.000
	N	150	150
Job Performance	Pearson Correlation	.741**	1
	Sig. (2-tailed)	.000	
	N	150	150

**. Correlation is significant at the 0.01 level (2-tailed).

Regression

Variables Entered/Removed

Model	Variables Entered	Variables Removed	Method
1	Leadership Management, Time Allocation, Rewards Recognition, Workplace Arrangement, Nature_of_Work[b]	.	Enter

a. Dependent Variable: Job Performance

b. All requested variables entered.

Model Summary

Model	R	R Squared	Adjusted R Squared	Std. Error of the Estimate
1	.889[a]	.791	.784	.27682

a. Predictors: (Constant), Leadership Management, Time Allocation, Rewards Recognition, Workplace Arrangement, Nature_of_Work

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	41.799	5	8.360	109.092	.000[b]
	Residual	11.035	144	.077		
	Total	52.833	149			

a. Dependent Variable: Job Performance

b. Predictors: (Constant), Leadership Management, Time Allocation, Rewards Recognition, Workplace Arrangement, Nature_of_Work

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.331	.272		-1.219	.225
	Rewards Recognition	.218	.089	.218	2.441	.016
	Time Allocation	.000	.047	.000	-.005	.996
	Nature of Work	.029	.085	.032	.338	.736
	Workplace Arrangement	.390	.068	.451	5.757	.000
	Leadership Management	.499	.095	.300	5.228	.000