

# A STUDY ON JOB STRESS DUE TO BIOMETRIC ATTENDANCE PUNCHING

**Akhil Thomas, Mahatma Gandhi University**

**Siby Zacharias, Mahatma Gandhi University**

## ABSTRACT

*Most of the employees working in IT field are being electronically monitored in the workplace. The time spend by the employees in the workplace is one of the measure to estimate performance of the employees. Employees are supposed to spend the prescribed time in the workplace and the manager monitors it with the help of biometric punching system. Biometric attendance and the salary of the employees are linked in almost all the IT firms. This study must represent the first in a relatively unexplored area. There seem to be very few studies of stress due to Biometric punching. The study was conducted among 154 IT employees in Info Park, Kerala, India to identify the Relationship between Demographic Variables of the employees and Job Stress Due to Biometric Attendance Punching. The study identified that most of the employees working in IT parks are facing stress due to the implementation of biometric attendance system. It was identified that stress level of employees due to biometric attendance is independent of educational qualification, experience, age and department in which employees are working but it is associated with the gender of the employees. Female employees are found to be more stressful than male employees.*

**Keywords:** Biometric Attendance Punching, Electronic Monitoring, Demographic Variables, Job Stress.

## INTRODUCTION

All though employee monitoring has been done by the organizations since centuries, the development in science and technology widened the scope of monitoring in recent years. Organizations uses employee monitoring for several reasons such as to track employee performance, to avoid legal complications, to protect trade secrets, and to address other security issues. Employees in most of the cases knows that they are electronically monitored but are not sure in all the cases. Many organizations effectively use monitoring instruments to improve the performance of their workers and guarantee consistence with policies. Employees becomes concerned about electronic monitoring and electronic monitoring methods once it has an impact on their job or job surroundings. Unless and until they are unaware of it. Monitoring in some cases prompts higher feelings of anxiety in employees and might create feelings of distrust and disappointment. From ancient time onwards monitoring was used by the supervisor in order to evaluate the performance of the employee and implement control over them.

Electronic monitoring differs from more traditional forms of monitoring (e.g., direct observation) in that electronic monitoring can occur continuously and can record voluminous data about multiple dimensions of work. Traditional monitoring often relies on the presence of a human observer with all the known limitations of perceptual processing. Other differences between these types of monitoring exist: electronic monitoring is novel, traditional monitoring is not; electronic monitoring can be hidden from workers, whereas traditional monitoring is usually noticeable; electronic monitoring requires machinery, traditional monitoring uses supervisor labor (Stanton, 2000).

## Background of the Study

(Effy, 1999) Defined electronic monitoring as the process of collection, storage, analysis, or reporting of information concerning employees' activities by means of computer, electronic observation and supervision, telephone service observation, telephone call or other form of visual, auditory or computer-based technology which is conducted by any method other than direct observation by the supervisor.

A survey conducted by American Management Association in 2001 reported that around 82% of organisations are employing some kind of electronic monitoring (AMA, 2001). Employees reacts to electronic monitoring in several ways. There are many studies done by researchers regarding the reaction of employees towards electronic monitoring.

E-monitoring is the use of electronic technology to directly monitor, supervise and evaluate employee's performance. According to (Al-Rjoub et al., 2008) E-monitoring technology can be categorized into three different categories:

**Category 1:** Focus on performance, such as measuring the use of computer time, the telephone conversation content or measuring keystrokes.

**Category 2:** Focus on employee behavior, such as measuring the use of resources, testing an employee's predisposition to error, or tracking worker location via identification badges

**Category 3:** Focus on employee characteristics, such as their truthfulness or the state of their health.

(Tabak & Smith, 2005) Conducted study to identify the relationship between employee privacy rights, development of trust between management and employees, and electronic monitoring in the workplace. The research proposed a positive relationship between individual disposition to trust and cognitive categorization of employees and management as trustworthy. It was found that trustworthiness leads to lower levels of turnover, increased organizational commitment, and lower levels of electronic monitoring. The study identified that electronic monitoring has deep ethical implications with respect to workplace outcomes such as employee perceptions of privacy rights, fairness judgments, quality of work-life, and stress-related illness Express (2018).

A study conducted in Kenya to identify the relationship between CCTV surveillance and employee engagement among 384 commercial bank employees found a positive correlation between CCTV monitoring and employee's engagement. The study proposed that in order to avoid employee negative reaction consultation and involvement of employees is necessary before implementing CCTV in the organization. The study also stated that Management should also create an environment of trust and the outcome of any surveillance should be used for constructive purpose as this will create a good ground for employee's engagement (Gichuhi et al., 2016).

(Kolb & Aiello, 1996) Conducted a laboratory study in order to identify the relationship between electronic performance monitoring and the stress level of the employees. Laboratory subjects worked on two relatively simple computerized tasks and employees were told either that their work would be monitored via a supervisory computer networked to their terminal, or that their work would not be observed. All other work climate variables were held constant. Afterwards they answered questions aimed at measuring how stressed the test made them feel. Interestingly, neither the monitored nor non-monitored group felt an increase in stress. However, it was found that in those participants with an external locus of control, monitoring decreased their levels of stress, while the opposite effect was demonstrated in those with an internal locus of control.

A detailed study among software employees in Sri Lanka identified how the perception of employees towards electronic monitoring affects their job satisfaction. Researchers gathered data from 380 employees of a software company, in order to assess employee's job satisfaction as well as their perception of task satisfaction, relevance to work, invasion of privacy, level of infringement, rationale of employer and judgment of effectiveness. It was found that job satisfaction was positively correlated with those workers who had a positive opinion of electronic monitoring. This supports the idea that monitoring is fair, unbiased and provides a fuller image of the employee. However, it did also show that the greater the perception of invasion of privacy, the lower the job satisfaction was, and this was also true in those that felt that monitoring made their work more complex. Interestingly, by looking at subgroups it was found that the effect that monitoring had on job satisfaction was much weaker in those employees with a higher professional experience (Samaranayake & Gamage, 2011).

In order to understand how attitude of employee towards electronic monitoring affects Job satisfaction, Job autonomy, attitude towards authority and perceived discrimination at work place a study was conducted in Britain among employees who are electronically monitored (Swami & Furnham, 2015). They developed a 16 item scale in order to measure the positive and negative attitude of employees towards electronic monitoring (Ambrose & Alder, 2000). Higher scores on Negative Aspects of Surveillance were significantly associated with lower job satisfaction, lower job autonomy, greater perceived discrimination at work, more negative attitudes to authority, and greater left-wing orientation while higher scores on Positive Aspects of Surveillance were significantly associated with greater job satisfaction and more positive attitudes toward authority.

Even though there are many studies related to the reaction of employees towards various electronic monitoring devices such as CCTV and computer monitoring, no study has still taken place related with the response of employee towards biometric attendance marking, which is also a direct electronic monitoring mechanism. This paper aims to study the relationship between demographic variables and job stress due to biometric attendance punching among IT employees in Info Park in Kochi, Kerala. A biometric time and attendance system is a time clock that tracks some unique physical characteristic of each employee when they clock in or out. Biometric data comes in many forms, such as vascular patterns, fingerprints, iris patterns and voice recognition. The bio metric attendance system includes the following advantages (Exaktime, 2018).

- Ease of use for clocking in employees or crews
- Automated data collection saves time
- Elimination of time theft and buddy punching
- Seamless integration into payroll systems, account systems and billing systems
- Better security for both employees and supervisors

The biometric system in IT firms are auto-linked to salaries. Moreover IT firms uses biometric punching in order to ensure that employees are spending prescribed time in the office. If anyone reports late for work or leaves his work early a salary deduction is made Singla & Gill (2011).

## RESEARCH METHODOLOGY

### Research Design

In this study, Descriptive research procedure is used for describing the present situation in organisation and analytical research to analyze the result by using research tools.

### Population

The study was conducted among four different IT firms in Info Park namely AFI Technologies Pvt. Ltd, Orion India Systems Pvt. Ltd, Pumex InfoTech Pvt Ltd and TutorComp Infotech (I) Pvt. Ltd. The four organisations employees 321, 190, 411 and 119 employees respectively. All the four companies are running in a three shift timing in which employees are supposed to work 8 hours in the company.

### Sample

154 employees from four different companies who were punching their attendance using biometric system were taken for this study. Sample constitutes 15% of the population. Sample was taken through stratified random sampling method. The sample included employees proportionately from four companies

### Data Collection

Structured questionnaire was distributed among employees in order to collect data. Stress level of the employees was measured by modifying the questionnaire prepared by (Nair & Kumar, 2014).

## ANALYSIS

### Nature of Job and Stress

The employees selected for the study were classified as teachers, officers, and office assistants, based on the type of job they are doing. Rules and regulations, work environment, routine work schedule, working time, career prospects, punishment, etc., differ from employee to employee based on the position in which they are working, which will have a direct influence on the level of job stress experienced by the employees due to biometric punching. So the level of stress has been analyzed on the basis of the department in which employees are working. The mean stress score, range and S.D. across different sectors are given in the below Table 1.

Table 1 CATEGORY OF EMPLOYEES AND JOB STRESS-MEAN SCORES						
Department of employees	No. of respondents	Percentage	Mean score	Range Minimum Maximum		S.D
Data Analysis	85	55.19	40.68	18	63	8.37
Testing and development	44	28.94	42.41	19	66	7.61
Customer service	25	16.23	42.85	20	64	9.01
Total	154	100	41.99	19	66	8.29

*Source: Primary data*

It is found that the average stress score was marginally higher among employees in customer service compared with employees in other departments, and was the lowest among the employees in data analysis departments. The average job stress score of employees in Testing and Development department officers was found to be between employees in data analysis department and employees in customer service department. Further, to study the association between level of stress due to biometric punching and position of employee, a cross analysis was done which is given in the Table 2.

Table 2 CATEGORY OF EMPLOYEES AND JOB STRESS				
Department	Low level stress	Medium level stress	High level stress	Total
Data Analysis	12	58	15	85
Testing and development	7	32	4	43
Customer service	5	16	5	26
Total	24	106	24	154

Source: Primary data

It is seen that medium stress was experienced by a majority of the respondents (68.8%) from the three categories of IT employees due to biometric attendance marking. 19.23% of employees in customer care department face high stress followed by employees in data analysis department with 17.64%. Further 74.41 per cent of the employees in testing and development department face medium stress.

This was further subjected to statistical test using Chi-square with the following hypotheses.

$H_0$ : There is no dependence between nature of job and stress level due to biometric punching.

$H_1$ : There is dependence between nature of job and stress level due to biometric punching.

Table 3 CHI-SQUARE TEST RESULTS		
Pearson chi-square	D.F	P Value
6.76	4	0.14

The null hypothesis is accepted as the value ( $p > 0.05$ ) is not significant at 5 per cent level of significance and it is proved that there was no significant difference between nature of job as regards level of stress. Hence it was concluded that level of stress due to the implementation of biometric punching and nature of job were not mutually dependent shows in Table 3.

### Age and Stress

Age is considered as a major factor in determining the attitudes and behaviour of human beings. Occupational stress, which is expected to be related to age of the employees, may differ from employee to employee. To study the association between level of stress based on stress score and different age groups, a cross-analysis was done. It is depicted in the Table 4.

Table 4 AGE OF EMPLOYEE AND JOB STRESS				
Age	Low level stress	Medium level stress	High level stress	Total
30 and below	7	46	9	62
31-40	11	41	12	64
41-50	6	14	3	23
51 and above	0	4	1	5
Total	24	105	25	154

Source: Primary data

It may be observed that a medium level of stress was prevalent among the majority of all the age groups under study. Among the highly stressed group, respondents belonging to the age groups of 31-40 (48%) accounted for a higher representation and employees above 50 were the least affected group. This indicates that as one advance in age, job stress due to biometric punching also tends to increase and it is at its peak at the age group of 31-40 and then starts to decline. The degree of variation in the responsibility of employees in relation to their age and experience indirectly indicate this result shows in Table 5.

This was further verified using a Chi-square test for interdependence, using the following hypotheses:

$H_0$ : There is no dependence between age groups and stress level due to biometric punching.

$H_1$ : There is dependence between age groups and stress level due to biometric punching.

Table 5 CHI -SQUARE TEST RESULTS		
Pearson Chi-square	D.F	Value
9.193	6	0.163

The null hypothesis is accepted as ( $P>0.05$ ). It is concluded that there was no dependence between age and level of stress due to biometric punching and hence they were independent.

### Gender and Level of Job Stress

There are a lot of physiological and natural differences between men and women. Further, some differences are enforced by the society, which vary according to time and place. It is called “gender disparity” which may make the job stressful. To study the association between levels of stress because of biometric punching based on stress score and gender, a cross-analysis was done. It is given in the Table 6 given below.

Table 6 GENDER AND LEVEL OF JOB STRESS				
Gender	Low level stress	Medium level stress	High level stress	Total
Male	11	43	9	65
Female	12	61	16	89
Total	23	104	25	154

Source: Primary data

A close look in the above table shows that male dominated both in high level and medium level stress. Out of 27 employees feeling high level of stress 16 are female (59.25%) and in medium level they constitute 58.05%. In all categories dominance of female was seen.

This is further validated using a Chi-square test for interdependence using the following hypotheses:

$H_0$ : There is no dependence between gender and stress level due to biometric punching.

$H_1$ : There is dependence between gender and stress level due to biometric punching.

Table 7 CHI –SQUARE TEST RESULTS		
Pearson Chi-square	D.F	P Value
7.822	2	0.02

The null hypothesis was rejected for absence of 5 per cent level of significance as the value of P was less than 0.05. This implies that there was dependence between gender and stress level due to biometric punching. The level of stress was more among female respondents than among males shows in Table 7.

### Educational Qualification and Level of Job Stress

Education is a factor which has great impact on the character and decision-making capacity of an individual. It is believed that the educated are good in taking critical decisions. Education helps in proper understanding of all situations which will help the employees to manage the pressure from the job. An effort has been taken to analyze the significance of the relationship between educational qualification and level of job stress due to biometric punching.

To test the association between level of stress based on stress score and educational qualification of different respondents, a cross-analysis was done and the result is stated in the following Table 8.

Table 8 EDUCATIONAL QUALIFICATION AND LEVEL OF JOB STRESS				
Educational qualification	Low level stress	Medium level stress	High level stress	Total
MCA/M.tech/B.tech	8	13	6	27
Bsc	9	30	16	55
BBA/B.com/BA	20	45	7	72
Total	37	88	29	154

*Source: Primary data*

It is found that irrespective of the educational background, the majority in all groups belonged to the medium stress level. 29.09 percent of Bsc graduates faces high level of stress followed by 21.42 per cent of MCA/M.tech/B.tech degree holders. 48.14% of doctoral level degree holders and 54.54% of BBA/B.com/BA graduates feels medium level stress.

The significance of the relationship between education and level of job stress due to biometric punching was tested using Chi-square statistics, based on the following hypotheses:

$H_0$ : There is no dependence between educational qualification and stress level due to biometric punching.

$H_1$ : There is dependence between educational qualification and stress level due to biometric punching

Table 9 CHI –SQUARE TEST RESULTS		
Pearson's Chi-square	D.F	P Value
4.44	4	0.34

The null hypothesis is accepted as the value ( $p>0.05$ ) was found statistically not significant at 5% level of significance. Hence, it was concluded that difference in the educational qualification did not make any change in the stress level of university employees due to biometric punching and that educational qualification and stress level due to biometric punching were independent shows in Table 9.

### Experience of the Employees and Job Stress

Experience helps employees to gain more knowledge, understanding and confidence. It also adds to the responsibility of the person. Hence, experience and level of stress are related to each other.

A cross-analysis was done to test the relationship between level of stress and experience of, as given in Table 10.

Table 10 EXPERIENCE OF THE EMPLOYEES AND JOB STRESS				
Years of experience	Low level stress	Medium level stress	High level stress	Total
Less than 2 years	6	29	7	42
2-5 years	4	38	9	51
5-10 years	7	18	5	30
10-15 years	6	14	3	23
More than 15 years	1	3	4	8
Total	24	102	28	154

Source: Primary data

It may be observed from the Table that medium level of stress was prevalent among the majority of the respondents (70.12%), irrespective of their length of service. It is observed from the Table 10 shows that employees whose length of service was between 2-5 years dominated in the highly stressed (32.14%) and medium-stressed groups (37.15%). This may be due to the high level of responsibility fixed upon them during this stage, and the efforts taken by them in order to step high in the organisation ladder. Further statistical test was done using Chi-square to test the independence, based on the following hypotheses:

$H_0$ : There is no dependence between length of service and stress level.

$H_1$ : There is dependence between length of service and stress level.

Table 11 CHI –SQUARE TEST RESULTS		
Pearson Chi-square	D.F	P Value
9.0	8	.34



The null hypothesis is accepted as the value ( $p>0.05$ ) was found statistically not significant at 5 per cent level of significance and hence it was concluded that there was no dependence between length of service and level of stress due to biometric punching shows in Table 11.

## FINDINGS

The study identified that most of the employees working in IT parks are facing stress due to the implementation of biometric attendance system. After doing Karl Pearson's Chi square test it was identified that stress level of employees due to biometric attendance is independent of educational qualification, experience, age and department in which employees are working but it is associated with the gender of the employees. Female employees are found to be more stressful than male employees.

The employees believed that biometric punching system has made their lives more mechanized. Most of the employees are working more than 8 hours when they have work pending and the same employees salary is deducted when they are late to their work.

## RECOMMENDATIONS

1. Considering the stress level faced by IT employees due to biometric punching, stress audit should be done, which can offer a facility to have a scientific look at the mental health status of employees.
2. The company officials should take the initiative to identify the employee group who are affected with stress, they should know why they are feeling stress. After knowing the reason the company must take steps to resolve it.
3. In order to avoid clash with employees, their opinion regarding biometric attendance must be taken into consideration.
4. If possible companies must think of introducing flexible time working (i.e., employees can come at any time to office but must leave the office after spending 8 hours there) and working from home facilities in order to reduce stress among them.

## CONCLUSION

This study must represent the first in a relatively unexplored area. There seem to be very few studies of stress due to Biometric punching. In this study Job stress due to biometric punching has been related with few demographic profile of the employees in IT companies in Info Park Kerala. The study can be done in the same population to identify their attitude, perception etc. towards biometric punching. In a deeper level study we can analyse how the reaction of employees towards biometric punching affects their job satisfaction, job commitment, motivation etc.

## REFERENCE

- Al-Rjoub, H., Zabian, A., & Qawasmeh, S. (2008). [Electronic monitoring: The employees point of view](#). *Journal of Social Sciences*, 189-195.
- AMA. (2001). AMA survey workplace monitoring and surveillance. American Management Association.
- Ambrose, M., & Alder, G.S. (2000). [Designing, implementing, and utilizing computerized performance monitoring: Enhancing organizational justice](#). *Research in Personnel and Human Resource Management*, 187-220.
- Effy, O. (1999). [Management Information System](#). New Delhi: Galgotia Publications Pvt. Ltd.
- Exakttime. (2018). [What is a biometric time clock?](#) Retrieved from <https://www.exakttime.com/time-clock-app/biometric-time-and-attendance-system/>
- Express, T.N. (2018). Getting Govt staff to work. Trivandram, Kerala, India.

- Gamage, C., & Samaranayake, V. (2011). [Employee perception towards electronic monitoring at work place and its impact on job satisfaction of software professionals in Sri Lanka](#). *Telematics and Informatics*, 29(2), 233-244.
- Gichuhi, J.K., Ngari, J.M., & Senaji, T. (2016). Employees' response to electronic monitoring: the relationship between cctv surveillance and employees' engagement. *International Journal of Innovative Resesarch and Development*, 141-150.
- Kolb, K., & Aiello, J. (1996). [The effects of electronic performance monitoring on stress: Locus of control as a moderator variable](#). *Computers in Human Behavior*, 407-423.
- Nair, D.G., & Kumar, G.S. (2014). [An analytical study on occupational stress among bank employees in Kerala](#).
- Samaranayake, V., & Gamage, C. (2011). [Employee perception towards electronic monitoring at work place and its impact on job satisfaction of software professionals in Sri Lanka](#). *Telematics and Informatics*, 29(2), 233-244.
- Singla, L., & Gill, P.S. (2011). [Managing occupational stress: A study of marketing executives in public and private life insurance companies](#).
- Stanton, J.M. (2000). [Reactions to Employee Performance Monitoring: Framework, Review, and Research Directions](#). *Human Performance*, 13(1), 85-113.
- Swami, V., & Furnham, A. (2015). [An Investigation of Attitudes toward Surveillance at Work and Its correlates](#). *Scientific Resesarch Publishing*, 1668-1675.
- Tabak, F., & Smith, W.P. (2005). [Privacy and electronic monitoring in the workplace: A model of managerial cognition and relational trust development](#). *Employee Responsibilities and Rights Journal*, 173-189