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## Biometric Attendance Management System: A University Perspective

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**Abstract:** *Employees working in the workplace are electronically monitored in this digital age of globalization and digitalization. Managing attendance by old-style methods is a tedious job putting signatures on attendance registers these days. Universities working under the influence of digitalization have adopted biometric attendance management systems. This study is an attempt to study the advantages and disadvantages of a biometric attendance management system installed in the context of a university. The convenience research approach was employed as a research design to carry this research. It is qualitative research, and the data gathering gadget was the observation and discussion method. Researchers observed biometric attendance management system operation critically and minutely for around two months and noted various modes and behaviors drawing outcomes. Findings displayed that the biometric attendance management system has certain advantages and disadvantages. Advantages encompassed real-time in and out tracking, easy attendance record maintenance, work performance improvement, and controlling employee absenteeism. Conversely, disadvantages comprised job stress, disturbance due to load shedding of electricity, fear of salary deduction, and delay reaching to classes.*

**Key Words:** Biometric, Attendance, Management System, University, Perspective

### Introduction

This is a digital world. Several scientific inventions occur due to the growing influence of digitalization in the field of science and technology. Human beings get benefit from these digital capitals for personal and professional purposes. The biometric attendance management system is a novel invention of the 21<sup>st</sup> century. It is used to monitor employee

attendance in universities. It augments the work performance of the organization because employees attend offices in time and remain available at the campus during scheduled job hours. It is a robust and reliable system compared to the manual system of putting signatures on muster rolls. Employees signed on muster rolls before induction of this system when they entered in departments. In

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certain organizations, muter rolls contain 'in and out' timing columns. The manual attendance system was good for a few employees since it offered the facility of putting signatures any time and any day with consent of the boss. Employees could enjoy many leaves, keeping the boss happy with certain gifts and gratification. Conversely, a biometric attendance system does not allow such type of facility because it generates automatic computer record of present and absent days. The biometric attendance system is connected with multiple computer servers and monitored by many administrators. There are various forms of attendance recording, i.e., displaying staff cards, using thumb impressions, and showing face. Face screening and staff cards were found popular during the days of the COVID-19 pandemic because it stopped the coronavirus spread among employees. The biometric attendance system is very easy to use and does not require any technical assistance or training to use it. A biometric attendance management system was newly installed in a university. Hence, it generated an interest among researchers to study its advantages and disadvantages for university employees.

### Literature Survey

Globalization, internationalization, digitization and industrialization are the main bases of change in the 21<sup>st</sup> century. This century is under the influence of digital technologies (Saykili, 2019). Universities pass through rapid developments in the field of digital technology due to digital developments in the field of computer technology. The biometric attendance management system is a novel invention of computer technology. It monitors worker attendance and improves work performance (Akinduyite et al., 2013). Attendance record made through the biometric system captures accurate data and identifies staff 'in and out' duty time (Shehu & Dika, 2011). Employee attendance has a direct impact on work performance (Ononiwu & Okorafor, 2012). The biometric attendance management system has the strength to block doubtful attendance entry and ensures real employee recognition. Employees observe proper

duty time; therefore, it increases work productivity. Organizations spend a hefty amount to stop employee absence from duty. A manual attendance system does not guarantee worker ID and fail to maintain a proper presence record. Abid Ali et al., (2018) stated that government spends millions of rupees to develop a monitoring system to address the problem of poor attendance and illegal absenteeism in academia (Abid Ali et al., 2018). Employees facilitate each other putting signatures for showing present on duty in the manual attendance system. Employees sign for their colleagues in the manual attendance register system (Ali, 2015). They are habitual of doing duties on a rotation basis. Employee identification is paramount that actual employee performs duty (Abid Ali et al., 2018). No doubt, this trend is going to disappear day by day, but still, it persists in organizations located in far-flung areas of the country. A biometric attendance management system blocks absenteeism practices considerably. It is free from errors, but since humans operate this system so; any mistake is possible. Activenanda (2016) noted that the biometric attendance system is free from errors compared to the manual system. Employees rush to record attendance in the biometric system early in the morning. This impression is fit in their minds that real 'in and out' timings are closely monitored through vigorous check and balance. In case of being late or leaving duty early without permission, their salary can be deducted. Money is the problem of every employee due to high inflation in the country so, one can afford salary deductions.

Moreover, they feel fear that due to non-observance of scheduled duty hours, they can lose jobs or lose annual increments as a punishment. Annual confidential reports (ACRs) can be marked poorly, which can hamper their promotions in higher grades. They shall never be able to challenge such action at any forum because the university has a digital attendance record.

A biometric attendance system is a source of blackmailing for lower employees because bosses force them to perform personal duties after office hours. Some bosses are habitual of victimizing and harassing employees for nothing. Therefore, the

government has established harassment cells in universities to redress such complaints. Moreover, ombudsmen offices have been set up at provincial and federal level for this purpose. The need is for management should understand the genuine problems of lower-class employees, which is already a downtrodden class of society. If an employee makes a mistake erroneously, he should never be disgraced and humiliated in any way. Pakistan has remained under British colonel rule for a longer period of time; hence, that legacy still persists in organizations of Pakistan that employees should be threatened, suppressed, depressed and humiliated to obey their illegal orders. It has been best seen that because of unnecessary humiliation, disgrace and disregard, employees face stress, and depression. Resultantly, these factors affect their work performance. Noteworthy to mention, if this stress and depression persist longer, they commit suicides or receive heart attacks. In fact, executives always come late in the offices, and they are not accountable to anybody, whereas; they draw a salary from some government department. Not only this, but they draw extra perks and privileges and enjoy luxurious life at the cost of the organization beyond the rules. Unfortunately, this practice has been best seen in universities of Sindh province, where retired Professors are appointed as head of universities. In renowned world universities, the work scenario is entirely different from Pakistan. Faculty responsibility is taking scheduled classes and supervise M.S, MPhil and PhD students. It is pertinent to mention that professors are well aware of their academic duties and responsibilities; hence; they perform them with all honesty, devotion and dedication. More specifically, they consider duty as their moral and professional duty. Sadly, faculty is treated like lower employees in universities of Sindh province. They stand in a line during in & out' duty hours to record attendance on the biometric machine. This approach makes their morale quite down. It is highlighted that universities should design a system that measure and compute faculty output and performance in a different dimension. They should be evaluated in terms of academic courses taught, research papers published, research

students supervised, research projects supervised and research grants grabbed from the Higher Education Commission (HEC) of Pakistan.

A computerized attendance management system has the advantage of keeping an intact record. One person can manage it and prepare payrolls for salary disbursement. Administrator has just to put, update and monitor the system minutely. He has to guarantee a possible level of security by storing data on a database (Nadar Prince et al., 2016). The scope of the biometric attendance system is going to be expanded to diverse university departments. This system is going to be installed in classrooms, examination centres and students' hostels. It shall save time and maintain the safety and security of students. Security is a burning issue in Pakistan; hence; safety measures should be implemented in universities through the use of digital technology. It shall minimize problems of administration, and students shall seek education in a safe environment. The biometric attendance system is user friendly, and students can use it easily without any training and demonstration. They have to show the face to the installed biometric device at different stations of the university.

Akhil Thomas et al., (2022) study on job stress due to biometric attendance found employees faced stress due to the biometric attendance system. [Gichuhi et al., \(2016\)](#) studied electronic monitoring and its relationship between CCTV surveillance and employees' engagement and found management should generate an environment of trust and surveillance should be for constructive purposes. Abid Ali et al., (2018) studied the biometric attendance system association with performance, job related stress and university teachers' satisfaction in Pakistan. Results established that the biometric attendance system has a noteworthy influence on teachers' performance. Moreover, this study recommended the application of a biometric attendance system in academia to improve employee performance. Hamed [Al-Rjoub et al., \(2008\)](#) explored perceptions of employees about electronic monitoring and found employees accepted electronic monitoring as a technology tool and it improved employee behavior. A research

study assessed performance of employees through a biometric attendance system. Findings revealed that this system boosted work potential among employees (Afolalu et al., 2016). Adewole & Oloyede, (2014) research stated that manual attendance of employees raises fake leaves and absenteeism of employees which eventually affect organizational performance. Gloria Omari et al., (2019) studied employees' absenteeism in forensic science laboratory and found many employees absent from duty that affected work performance. Mady & Hilles (2017) said that employees performing duties on time produced productive profits for organizations. Aqsa et al., (2017) stated that a biometric attendance system in academic institutions has been introduced to make employees efficient and task-oriented. Institutions have adopted a biometric attendance system tracking employees' attendance and time to improve their performance (Akinduyite et al., 2013). Samaranyake & Gamage (2011) indicated that a study was conducted to know the perception of software employees about electronic monitoring and job satisfaction. Results of this study revealed that job satisfaction was definitely connected with workers who had a constructive opinion about electronic monitoring. Further, this study supported the idea that monitoring should be impartial, unbiased and provides complete employee image.

### Study Objective

The study objective was to identify the advantages and disadvantages of a biometric attendance management system in a public sector university of Pakistan. It was a new and novel initiative on the part of university management; hence, it generated researchers' motivation and interest to study the advantages and disadvantages of a biometric attendance management system in a university context.

### Study Questions

1. What are the advantages of a Biometric Attendance Management System in a University?

2. What are disadvantages of a Biometric Attendance Management System in a University?

### Research Method

This research uses an exploratory case study method. It is a qualitative study and was conducted in the context of a university of Pakistan. Biometric attendance system installation was a motivation tool for conducting this study. The convenience research approach was used research design by default. This research study engaged the use of the qualitative research method which involved the process and analysis of data to draw meaningful outcomes from observation. Moreover, discussions were made with colleagues for data validation. Nevertheless, researchers were focused on drawing results which allowed them to obtain data and turn them into information sharing as study findings. Observation and discussion were data collection technique. Researchers monitored attendance management and recording system for about two months and noted various modes and behaviors. Observation is a research method creating naturalistic events to gain insights and define their qualities and characteristics (Berg, 2004). Observation is of four types, complete participant, participant-observer, observer-participant, and complete observer (Merriam & Tisdell, 2016). A complete observer approach was employed in the context of this research. Complete observer research participants act behind the mirror (Merriam & Tisdell, 2016).

### Findings & Analysis

#### Finding: Part-1

1. What are the advantages of a Biometric Attendance Management System in a University?

The findings of Research Question 1 are presented as under:

### Real-Time 'In and Out' Tracking

Biometric attendance management system offers

various advantages for universities. It ensures 'in and out' timing of employees from duties and generates robust record. When employees will observe proper office timings consequently their work performance shall improve and it shall be visible to all. Employee efficient work performance impacts on financial health of the organization and improves productivity of the organization. Due to proper observance of office time employees are assigned various new tasks and work projects and department heads check their performance on a daily basis. Employees having certain assignments and projects in hand try to learn new skills and techniques to perform those projects and assignments in an efficient and productive way. A busy worker always performs something good for the organization which uplifts the image of the organization at national and international level. A busy employee always believes in hard work and never involves himself in campus politics. It has been witnessed that campus politics destroy the abilities and capabilities of employees. Political workers disrupt the peaceful environment of the organization and get promotions in higher grades through blackmailing tactics. Since, the hands of the management are never clean so, they easily come in blackmailing of employees. Such a trend ultimately damages the integrity and reputation of organization at all fronts. Studies establish a connection between biometric attendance management system and performance of organizations ([Akinduyite et al., 2013](#); Cupido, 2011; [Shawl, 2013](#)). There is a positive association between biometric attendance system and organizational performance (Mulumba, 2012; Omobogo, 2015; [Adewole et al., 2014](#)). Biometric attendance system shares a large amount of data with multiple stakeholders ([Ravishankar Yadav et al., \(2014\)](#)). Computer generated attendance is better than manual methods because it reduces errors (Loretta Newman et al., 2008).

### Easy Record Maintenance

Biometric attendance management system facilitates record-keeping effortlessly. It has capacity to adjust present, absent and casual leave days

without any hard work and effort. It is a computer-generated record therefore; it offers less chances of errors. Biometric system of attendance is free from errors ([Activenanda, 2016](#)). Head of departments can easily access this account and check-in and out reporting timings of employees. Paper-based attendance system does not offer any such facility and system and it is a very laborious job for administrators to calculate the days. In this system everything is calculated manually so there are greater chances of errors. Many errors occur in the manual system and employees always record such complaints to the registrar and finance departments. The quality of biometric attendance management system is that one person can manage it easily. He can prepare payrolls for disbursement of monthly salaries. The in-charge person has just to put, update and monitor the process. However, he has to guarantee possible level of security by storing data on database (Nadar Prince et al., 2016). Biometric attendance management system shares a large amount of data with students, faculty and staff ([Ravishankar Yadav et al., \(2014\)](#)) and it is reliable because manual methods produce errors (Loretta Newman et al., 2008).

### Work Performance Improvement

Biometric attendance management system improves employees work performance since they stay longer time hours at the organization. Employees timely occupy seats and perform office works and projects assigned to them by management. They are assisted by fellow colleagues in case they find any kind of difficulty to complete the task in time. Head of departments also guide them to be capable in workplace jobs and prepare them better human capital for the organization. In this way, employees contribute their share in the progress and development of the organization. [Ononiwu & Okorafor \(2012\)](#) stated that employees timely presence at a workplace increases productivity which ultimately leads to organizations working performance. Employees try to learn from each other and share information and knowledge that increases cooperation and coordination among them. Studies show a positive

relationship between biometric attendance and organizational performance (Mulumba, 2012; Omobogo, 2015; [Adewole et al., 2014](#)). So, biometric attendance system is useful for universities and it generates coordination among employees. Organizations monitor employee to track their work performance (Akhil Thomas et al., 2022). Employees have become worried about electronic monitoring because it has an impact on their jobs (Akhil Thomas et al., 2022). Biometric attendance system has been introduced for university staff to make them efficient and task oriented ([Aqsa et al., 2017](#)). A research study assessed employees' performance after Biometric Attendance System installation and found that it boosted work potential among employees and provided a base to promote balanced dedicated workers ([Afolalu et al., 2016](#)).

### **Controlling Employee Absenteeism**

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Biometric attendance management system controls employee absenteeism from duty jobs. Biometric attendance system records accurate data and keeps records for reference which can be referred at any time. Hence, biometric attendance system is an effective system to block employee absenteeism. Even administrators cannot grant unnecessary and illegal leaves to staff. Computer generated attendance record is robust compared to manual system since manual procedures are never free from errors (Loretta Newman et al., 2008) and they deduct absentee employees. Employees become are worried about electronic monitoring (Akhil Thomas et al., 2022) system because it does allow any employee to be away from job duties. Due to biometric attendance system even in summer vacations no vocational staff has to perform duties whereas; it has remained practice that employees perform duties on rotation basis due to less load of office work. Supervisors use monitoring to analyze employee performance and implement control over them (Akhil Thomas et al., 2022). In many institutions, poor attendance and unauthorized absenteeism are persistent practices (Abid Ali et al., 2018). [Ali \(2015\)](#) noted that in manual attendance system employees sign for their colleagues. Manual

attendance of employees increases fake leaves and absenteeism of employees which eventually affect the performance of an organization ([Adewole & Oloyede, 2014](#)). Gloria Omari et al., (2029) studied employees' absenteeism in forensic science laboratory and found employees absent from duty that affected work performance.

### **Automating Payroll Processes**

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Biometric attendance management system has an advantage over muster roll-based attendance system in multiple ways. In manual system office assistants count present, absent and leave days manually and send attendance to finance departments for payroll purpose. In biometric attendance system payroll is generated automatically and finance department takes the attendance from this computer-generated system. Organizations have developed biometric attendance system and use attendance of biometric system for preparing payrolls and disburse salaries among employees at the end of every month. Manual system of preparing payrolls engage too much time and it has large scope of making mistakes. Conversely, biometric attendance management system generates attendance record automatically through mode of employee attendance in shape of face screening, fingerprint and staff card system. One person from finance department IT section can manage this record and prepare payrolls. He has to monitor the process properly while preparing payrolls because it is directly related with staff salary where there is no space for any mistake. IT administrator has to guarantee a probable level of security by storing data on database (Nadar Prince et al., 2016) for preparing and disbursement of employee salaries on the basis of days present on the duty.

### **Findings: Part-II**

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2. What are disadvantages of Biometric Attendance Management System in a University?

The findings of Research Question 2 are presented as:

## **Job Stress**

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Biometric attendance management system generates stress among many employees. Because, they consider if they became late on duty, they shall be punished in terms of salary deduction. An impression has been floated in the market that a biometric attendance management system can be used to target employees because of management personal grudge. It has been seen that many employees do not care about scheduled office timings because they are dear to management. It gives air to employee apprehension that few employees are favored and others are targeted. Public sector organizations, especially universities of Sindh province are never free from political influence, so employees who has political backing never care about biometric attendance management system. They are working with political parties and draw salary from universities. Employees face stress due to biometric attendance system (Akhil Thomas et al., 2022). Monitoring generates feelings of anxiety among employees which leads to distrust and disappointment (Akhil Thomas et al., 2022). Abid [Ali et al., \(2018\)](#) studied the biometric attendance system relationship with performance, job stress and satisfaction of university teachers in Pakistan and found biometric attendance system has substantial negative connection with job stress.

## **Disturbance due to Load Shedding of Electricity**

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Pakistan faces energy crisis over the last many decades. However, it has intensified when the new government has come into power. The public is informed that it is all because of fuel shortage in the country and the previous government did not issue any arrangements for buying fuels from other countries. The major cities of Pakistan face 10–12 hours load shedding of electricity daily. On the other front, it has reached almost 16–18 hours ears per day in rural areas of the country which has badly hit every sector of life, including education. In case of loadshedding of electricity, employees are unable to record their ‘in and out’ office timing hours. Thus, the purpose of biometric attendance system is

still fruitless in the country like Pakistan. Biometric attendance system installation consumes handsome amount of money and every university of Pakistan is facing a financial crisis. They are so badly hit that they are unable to pay salaries to employees. Due to load shedding of electricity biometric and manual system of attendance go together in many universities. Hence, biometric attendance is less advantageous for underdeveloped countries like Pakistan.

## **Delay Reaching to Classes**

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Universities share faculty with each other and they take classes in various departments. Due to biometric attendance management system teachers first visit parent departments for recording attendance and then move to classes in other departments. It consumes lot of time and delay and in certain instances heads of departments complain to higher authorities that this teacher is irresponsible and always comes late in the class. The management keeps it on the record and when extension of any employee comes, they lose jobs because of the biometric attendance management system. It is the responsibility of management to trust upon faculty and they should be allowed to perform duties without any harm. It is worth noting that classes are more important than attendance and teachers always should be given flexibility to perform their duties as their moral responsibility. In this context, biometric attendance management system is disadvantageous for the faculty.

## **Conclusion**

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The purpose of this study was to examine the advantages and disadvantages of biometric attendance management system in perspective of universities of Pakistan. Findings showed that biometric attendance management system has certain advantages and disadvantages. Advantages included real time in and out tracking, easy attendance record maintenance, work performance improvement, and controlling employee absenteeism and disadvantages encompassed job stress, disturbance due to load shedding of

electricity, fear of salary deduction, and delay reaching to classes. In the case of faculty monitoring and surveillance, this system is not advantageous. Because, job nature of faculty is entirely different from lower-class employees of the university. Faculty observes late timing hours taking postgraduate classes and supervising M.S., M.Phil. and PhD students. Thus, this system needs to be

flexible as per the nature of faculty. The amount spent on this system it would be better to spend on academic to boost academics and research in the university. The study tends to be done to study other universities of Pakistan to identify advantages and disadvantages of biometric attendance system in universities.



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