The Use of Biometric Attendance Recording System (BARS) and Its Impact on the Work Performance of Cabanatuan City Government Employees

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Abstract

Biometric technology as a means of identifying and verifying an individual's characteristic is widely used in many aspects of peoples' lives nowadays. In this regard, Local Government Unit (LGU) uses this technology to provide a more comprehensive system in monitoring employee attendance and how it may affect their performance. The study assesses the impact of the use about the Biometric Attendance Recording System (BARS) on the work performance of Local Government Unit (LGU) employees based on their Individual Performance Commitment Review (IPCR) rating and the respondents' self-assessment and perception. Noticeably, the majority of the respondents perceived that the use of BARS had a positive impact on work performance. Results also demonstrated a significant increase in respondents' level of performance.

Subject Areas

Applications of Communication Systems, Information Retrieval

Keywords

Biometrics, Performance, Attendance, Transparency and Accountability

1. Introduction

Transparency and accountability are essential components of democratic gov-

ernment and governance, nationally and locally [1]. Transparency connotes "seeing through" the affairs of public officials. And accountability attaches the responsibility to the government to use every single resource for the purpose for which it is intended. The public officials as mental representations of the term "government" are subject to the scrutiny of the public in terms of resource use and service rendered. Thus, the Philippine Civil Service Commission under Section 5, Rule XVII of the Omnibus Rules Implementing Book V of Executive Order No. 292 states that all government officials and employees are required to render eight working hours a day for five days a week, or a total of 40 hours a week excluding time for lunch (Executive Order 292). The normal working hours shall be from 8 AM to 12 NN, and 1 PM to 5 PM. Those who fail to observe the eight-hour workday through consistent tardiness, under time, and loafing from duty during office hours may be administratively charged and penalized with suspension or dismissal from service pursuant to civil service law, rules, and regulations. The CSC urged all government agencies to adopt appropriate mechanisms to strictly monitor and record attendance of employees such as the use of biometric time clocks and other forms of attendance systems [2].

It is a democratic precept that government aims to increase the performance of its employees to provide better public service. The rendition of service is done in an open and accountable system of governance. In adherence to this principle, Local Government Unit (LGU) adopts a new system to ensure that the local government's goals are met and continuous improvement of performance is guaranteed.

To observe and facilitate the strict observance of the prescribed working hours and intensively implement the existing policies on attendance and tardiness, adoption of Biometric Attendance Recording System (BARS) is deemed necessary as the new system of recording attendance of the city employees. It will replace the old method used which is the manual attendance monitoring system.

Biometric verification is an automated method whereby an individual's identity is verified through a device by examining a unique physiological trait or behavioral characteristics such as fingerprint, retina or signature. Biometric traits are unique for every individual; they can be used to prevent theft or fraud. Unlike a password or personal identification number (PIN), a biometric trait cannot be forgotten, lost or stolen.

The use of BARS in the workplace creates diverse perceptions of its effects to work performance specifically and productivity in general. In fact, the usability and acceptance of biometric security services may be affected by the context of use, with two important contextual factors being the perceived benefit to the user and the discerned privacy risks. Application contexts with obvious, apparent benefits and lows risks may lead to eminent perceptions of usability and higher acceptance opinions of biometrics than contexts where there are little apparent benefits and high risks [3]. The issues raised against the use of biometric attendance recording system revolve around the security and benefits to the organization that it could bring [4]. After considering both issues, the advantages out

weight the disadvantages. Among the advantages are: promotes wider window of transparency on the part of the organization, saves time in the preparation of employee records as the system is always updating employee records in real time, installing biometric attendance saves more resources of the organization which would otherwise spent on monitoring attendance of employees. The system is also known for encouraging employees to report for work on time. When an organization used biometric time and attendance clocks, the HR personnel will have a much easier time managing employee absences [5].

Implementing this technology provides all the benefits that are well-worth the investment. Not only will this minimize money lost because of fraudulent time charges, but it will also make workers more productive. On the other hand, it also creates negative perceptions: 1) Biometric identification machines are traditionally more expensive to buy than traditional ones. 2) Some users might reject it because they see these as an invasion of privacy. 3) Biometric identification system is not always entirely accurate [6].

Given the importance of biometric attendance recording system, many of the organizations in the Country both public and private are still using traditional attendance recording system, and studies based on local context are dearth. Many of the studies dwell on the aspect of cost efficiency and the need to invest organizational resources for attendance recording. Quite a number of researchers studied biometrics and its effects on employee performance, very little is known of its effects to local government units. This paper would try to study BARS in relation to overall employee outputs based upon employees' perception and performance evaluation results.

1.1. Theoretical Framework

The study adopted Andrew Feenberg's Critical Theory of Technology. Andrew Feenberg argues that technology is neither determining nor neutral, it is in a sense, a mediator of a variety of social activities, and as such he believes that democracy must be extended beyond its traditional bounds to include technology for society (and its relationship with technology) to keep up with the trend and do better than sustain [7].

He also states two rationale behind this:

1) Modern technology is incompatible with workplace democracy. There can be no democratic theory that would destroy the economic foundations of society.

2) Technology is not responsible for the concentration of industrial power; that is a political matter.

By the use of this new technology (BARS) in the City Government of Cabanatuan, it is not just a rational control of nature; both its development and impact are intrinsically social, and the broad possibilities of change in local governance can be realized.

This study focused on the analysis of the impact of the use of BARS in the work performance of the employees of six frontline offices of the Cabanatuan

City Government.

Randomly selected employees from the six frontline offices were the respondents of the study. With regards to data gathering, their IPCR rating for the year 2013-2016 was sourced out from the Human Resource Management Office.

1.2. Statement of the Problem

This study aims to assess the impact of the Biometric Attendance Recording System (BARS) to the work performance of city government employees.

Specifically, it seeks to answer the following questions:

1) How may the work performance of the respondents be described based on their Individual Performance Commitment Review for the year 2013-2016?

2) How may the impact of the BARS on the work performance of the employees be described on the following areas:

a) Attendance;

b) Quality of Work;

c) Quantity of Work; and

d) Timeliness of Work?

3) Is there a significant difference between the work performance of the respondents before and after the implementation of the BARS?

4) What policy recommendations may be proposed based on the findings of the study to improve BARS?

2. Methodology

2.1. Research Design

This study used the descriptive type of research. This type of research is considered to be the most appropriate because it is a research design wherein events are recorded, described, interpreted, analyzed and compared.

This study used both the qualitative and quantitative research designs. The qualitative approach was used to determine and analyze the situation where issues and problems will be identified while the quantitative approach was made by the researcher through the use of the questionnaire which aims to relate the perception of the respondents.

The research study was conducted in the Cabanatuan City Government which consists of 20 departments with more than 800 employees.

2.2. Respondents

The respondents of the study were composed of seventeen (17) supervisors and one hundred three (103) employees of the six frontline offices of the Cabanatuan City Government that provide basic services.

Table 1 shows the distribution of respondents from the six frontline offices.

2.3. Instruments of the Study

The descriptive type of research was employed by the researcher through a

Table 1. Distribution of respondents.

STATUS	GENDER		FREQUENCY
	MALE	FEMALE	
Supervisors	4	13	17
Staff	24	79	103
TOTAL	28	92	120

normative survey by utilizing the questionnaire, also undertook data gathering of IPCR rating of city employees for the period 2013-2016 filed in the HRMO.

An interview guide was devised to identify the benefits of the BARS among the HRMO personnel and additional information required. The researcher will also conduct actual observations in the research locale of the study.

2.4. Procedure of the Study

The random sampling technique was used by the researcher from six offices that render frontline services namely the City Health Office, Office of the City Civil Registrar, City Assessor's Office, City Social Welfare & Development Office, City Treasurer's Office, and CMO-Business Permit & License Division. These offices were chosen because they are the ones that mainly deal with the public's needs and queries.

Due to the limited time involved to carry out this research, it will not be possible to carry out the survey on the total population of employees in the city government. Random sampling which is mostly used by researchers using quantitative research method is a process where a representative sample or a small collection of the population from a larger population is drawn, such that the sample information enables the researcher to study the smaller group and produce accurate generalization about the larger group [8].

2.5. Statistical Analysis of Data

In this study, the researcher will present the impact of the use of BARS to the work performance of the Cabanatuan City Government employees through graphs and tables (Table 2 and Table 3, Figure 1).

In the process, the data gathered will be summarized using frequency and weighted mean to interpret the result.

Other issues and concerns will be presented using textual presentation.

The Figure 1 shows the framework applied in the use of data gathered and the limits of analysis that the paper observed. As the figure posits, there are two means of getting records of attendance at work. One is the biometric system and the traditional Daily Time Record Manual of attendance checking in the government and private organizations. These two systems of checking work attendance create impact on the work performance in terms of attendance, quality and quantity of work as well as timeliness of work submission. Through the use of descriptive quantitative and qualitative methods, the difference between the

Table 2. The response to the instrument will fall into the following rating scale.

Range	Verbal Interpretation
4.20 - 5.00	Strongly Agree (SA)
3.40 - 4.19	Agree (A)
2.60 - 3.39	Moderately Agree (MA)
1.80 - 2.59	Disagree (D)
1.00 - 1.79	Strongly Disagree (SD)

Table 3. The performance levels were described based on the rating system of CSC as follows.

4.75 - 5.00	Outstanding (O)
3.35 - 4.74	Very Satisfactory (VS)
3.00 - 3.74	Satisfactory (S)
2.01 - 2.99	Unsatisfactory (U)
0 - 2.00	Poor (P)
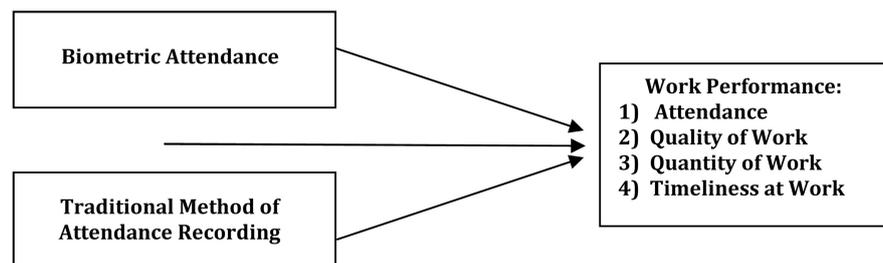
Figure 1. Research paradigm.

two systems is determined and the determination is based on the actual peoples or employees working in the Local Government Units (LGU). The period covered by the comparison is 2013-2016.

3. Results and Discussions

Figure 2 represents the IPCR rating of the respondents from 2013-2016. In the year 2013 before the implementation of the use of BARS, the IPCR rating of the respondents was 4.330 (VS). In 2014, the pilot year when the BARS was implemented by the city government, there was a slight increase in the respondents' IPCR rating which is 4.332 (VS). In the year 2015 & 2016, the respondents IPCR rating were 4.348 (VS) and 4.384 (VS) respectively. There was an increase in the respondents' IPCR rating from 2014 when the BARS was first implemented to the succeeding years 2015-2016 [4.332 (2014) - 4.348 (2015) - 4.384 (2016)].

The respondents' perception regarding the impact of the use of BARS in the work performance of city employees based on attendance is shown in the Table 4:

In order to establish the perception of the respondents regarding the impact of the use of BARS on attendance, three (3) statements were asked to validate the
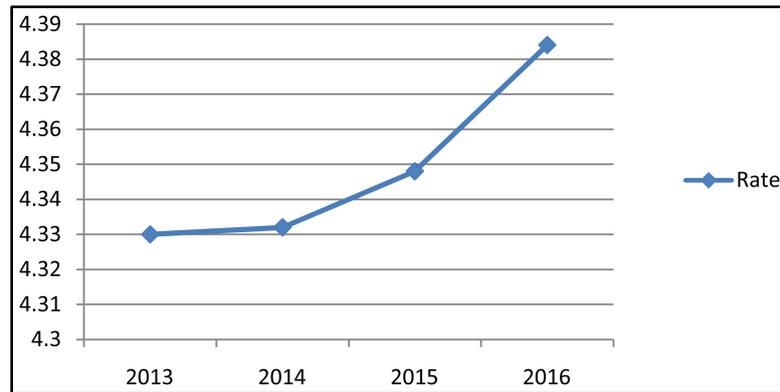
Figure 2. Respondents' IPCR rating.

Table 4. Respondents' perception of the impact of BARS on attendance.

Statement	Weighted Mean (WM)	Verbal Description (VD)
I report for work early.	4.43	Strongly Agree
I refrain from taking longer lunch and coffee breaks.	4.01	Agree
I avoid incurring absences and under time.	4.04	Agree
AVERAGE	4.16	Agree

result. Table 4 shows that based on the point of view of the respondents, the Strongly Agree got the most response to the statement that they are obliged to arrive at work early because of BARS based on the WM = 4.43. When asked if the respondents refrain from taking longer lunch and coffee breaks and avoid incurring absences and undertime because of BARS, both got the most Agree response based on the WM = 4.01 and WM = 4.04 respectively. An average WM of 4.16 arrived which means that most of the respondents agree that the use of BARS had an impact on their attendance.

Table 5 seems to suggest that the respondents Agree on all of the statements that were asked to assess the impact of the use of BARS on quality of work. These are the following interpretation: By coming early to work prepare oneself well before starting assigned tasks (WM = 4.18)/Seldom make mistakes and able to prepare oneself to work (WM = 3.70)/Do not have to do a job over because early and had more time to check work (WM = 3.75). An average WM = 3.87 or with a VD = Agree summarizes that there is a positive impact on the quality of work of the respondents.

Table 6 shows that the respondents perceive that the use of BARS had an impact on the quantity of work. It is evident because all of the statements got the Agree response. On the statement: By coming early to work, it helped accomplish more things in the office got WM = 3.93. On the last statement when asked if by being early, was able to meet or even exceed target output has a WM = 3.90. An average WM = 3.91 interpreted as Agree response only means that most of the respondents believe that the use of BARS had an impact on the quantity of work.

Table 5. Respondents' perception of the impact of BARS on quality of work.

Statement	Weighted Mean (WM)	Verbal Description (VD)
I come to office early, prepare myself well before starting the assigned tasks.	4.18	Agree
I seldom make mistakes at work because I was early and able to prepare myself to work.	3.70	Agree
I do not have to do a job over because I was early and had more time to check my work.	3.75	Agree
AVERAGE	3.87	Agree

Table 6. Respondents' perception of the impact of BARS on quantity of work.

Statement	Weighted Mean (WM)	Verbal Description (VD)
By coming early to work, it helped me accomplish more things in the office.	3.93	Agree
By coming early to work, I was able to meet or even exceed my target output.	3.90	Agree
AVERAGE	3.91	Agree

From the above Table 7, it shows the impact of the use of BARS on the timeliness of work of the respondents. Both the statement got the Agree response which only means that the respondents believe that somehow the use of BARS had a positive effect on the timeliness of work based on the arrived average WM = 3.68 with a VD = Agree. The statement: Finish assigned tasks at an earlier time got a WM = 3.70 and Notice output for the time required is higher than expected got WM = 3.66.

There is a significant difference between the work performance of the respondents before and after the implementation of the BARS because as presented in Figure 2, there is a continuous increase in the IPCR rating of the respondents from 2013 to 2016. That is based on the data gathered from the record on file and cannot be denied by anyone. Interestingly, the respondents have the same view with regards to the impact of the use of BARS in the work performance. Based on the respondents' point of view, there is a difference on the level of performance from the time when there is no BARS and the time that it is implemented by the city government as shown in Table 6.

Table 8 illustrates that 60% (65/109) of the respondents believe that the level of performance before the implementation of BARS is 3 and 63% (69/109) of the respondents believe that 4 is the level of performance after implementation of BARS. The respondents were asked to rate work performance on a scale of 5 to 1 where 5 is the top performance, and 1 is the worst performance. It is now safe to say that there is a significant difference in the work performance of the respondents before and after implementation of BARS.

Table 7. Respondents 'perception of the impact of BARS on timeliness of work.

Statement	Weighted Mean (WM)	Verbal Description (VD)
I was able to finish assigned tasks at an earlier time.	3.70	Agree
I notice that my output for the time required is higher than expected.	3.66	Agree
AVERAGE	3.68	Agree

Table 8. Respondents' self-assessment on level of performance before & after implementation of BARS.

LEVEL	Before BARS	%	After BARS	%
5	20	18%	27	25%
4	23	21%	69	63%
3	65	60%	13	12%
2	1	1%	0	0%
1	0	0%	0	0%
TOTAL	109	100%	109	100%

Problems and issues with the use of BARS were discussed by the researcher with the HRMO personnel during interviews. There are some minor setbacks, but it is nothing compared to the substantial benefits that this system has to bring. The respondents convey that there is now more ease in monitoring employee attendance and faster generation of reports. Here are some policy recommendations that will further improve BARS: 1) Upgrade the fingerprint scanner to make biometric verification faster. 2) The BARS should be interconnected with another HR system like payroll, leave credits, etc. for easier counter-checking and verification and 3) Formulate a more comprehensive way that will integrate BARS with the traditional attendance monitoring system to ensure employees' presence during office hours.

4. Conclusion

The over-all conclusion is that the use of BARS has a positive impact on the work performance of the employees of Cabanatuan City Government. Although there are minor issues and concerns, it can easily be addressed by the authorities. It appears that majority of the respondents believed that it has a significant effect on the level of performance.

Recommendation

Based on the result of data gathered, the continuous increase in the IPCR rating and self-assessed positive impact of the use of BARS on the level of performance of respondents are enough inspiration to come up with the following recommendations:

1) Continuously upgrade biometric standard,

2) Immediately address biometric issues and concerns,

3) Limit access control to avoid system interference, and

4) Never cease on formulating precautionary measures to minimize attendance fraud.

However, like any other security methods, biometrics has its limitations. Therefore, it is essential to manage these limitations and at the same time; to properly enhance the success factor of the biometric system.

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