

AN OVERVIEW OF HUMAN RESOURCE INFORMATION SYSTEMS (HRIS) AND HOW BEHAVIORMETRICS PREDICT EMPLOYEE PERFORMANCE IN AN ORGANIZATION

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Articles

Abstract. Organization faces computation due to technological ideas that is put in place to satisfy their customers. Therefore, the Human Resource has to be on the move to make sure employee work had to make sure customers meet their needs. Organization need to know their performance capacity in other to make arraignment on when a product or service could be ready. This paper provide possible way by the use of HRIS being synchronized with behaviormetrics to study the capacity of employee production when sad or happy mood. Also, steps in of implementing Human resource information system in an organization and possible ways why the system fails is been discussed in this paper. Due to the uniqueness of human conscious and sub-conscious behavioral action profiling of this action are being created to have history of staff emotion study are managed. At the end study, sad and angry mood facial expression is analyzed in a way that it affects human productivity in an organization. Furthermore, with this HRM could forecast employee performance at the end of the day.

Keywords: *HRIS; behaviormetrics; organizational performance; biometrics; Hman Resource; happyand sad facial expression*

1. INTRODUCTION

Organizations in the world are currently being faced with intensive pressure due to the exponential increase in consumer demand, environmental influence, government regula-

tions, and competition. Due to the resent trend and the capabilities of information systems, organizations tend to use the opportunity that comes with it to buy time for strategic decision making. Human resource information systems is an online solution client/server application the compiles data entry, tracking of data, store, retrieve, manipulate and give accurate information about human resource of an organization. HRIS also keeps tracks of all the staff working in an organization, helps in appraisal and notwithstanding computers doing work that couple of employee will do. HRIS covers every aspect of the organization such as employee training, attendance analysis and report, financial planning and forecast, whistleblowing, management strategic planning, and security.

2. Capabilities of HRIS

- Data maintenance: this prevent data redundancy, updating of the module in cases like when new office is opened or increase in staff salary and change in address of staff. Moreover, Davenport and Short (1990) explained that companies should adapt systems that can move along with the change in the technology, such as the upgrade of the internet Ipv6 for Ipv4, 3G to 4G. In other for organization to have stable system backup of the internet and the stor-

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- age hard drive need to be in place.
- Output system: this form aspect of using the information derived from the previous input. These are the display of report of current summary of dealings of a process of production, to obtain history for future planning.
- Create jobs to disable, they are not left out, they tend to be objective and effective than the abled workers.
- HRIS has made communication to be effective in all aspect of the organization, help solve language problems in the organization.
- Equal employment opportunities to the abled and disabled
- Downsizing: this system reduces number of dormant employee as well as carrying out jobs of different people. An enhanced computer system is capable of taking over three to five jobs of staff and however, reduces cost of labor to the organization. With the internet and information system, young or small companies do not fear large companies, consultancy companies like Accenture Plc. which is one of the world leading companies in consultancy and outsourcing which has just an office in Dublin, Ireland. Accenture has more than 250,000 employees that work without having an office, with a personal digital assistance (Samsung Tab, iPod) employee could give report and be trained in Nigeria from outside. Therefore it gives the human resource managers administrative work and as well allows the manager to think of possible was to gain optimal productivity in an organization. With this HRIS reduces administrative cost, it substituted whole office, a branch office could be in a computer device in which the cost of the device cannot be traced in account statement because of its low price Newell (2003). HRIS facilitates business to business communication and customer to customer communication. For e-governance,

it brings the whole world to an office with few mouse clicks.

Outsourcing of HRIS by an organization is the best way of incorporating the HRIS in an organization. This research is aimed at synchronizing HRIS with behavioral biometric system which is called behaviormetrics (Arya Khatri 2013).

Outsourcing of HRIS by an organization is the best way of incorporating the HRIS in an organization. This research is aimed at synchronizing HRIS with behavioral biometric system which is called behaviormetrics (Stefanos Zafeiriou 2010). Biometrics is a system that analysis human behavioral and physiological semantics which is used for enhanced security access. However, notwithstanding physical and behavioral authentication access, behavioral metrics is being used for security access as well.

3. Literature review

In order to present the theoretical and methodological underlying principles of this research, we base on literatures on Human Resource Information Systems (HRIS) best practices, implementation HRIS, HRIS, why HRIS fails and how HRM can forecast employee productivity through behaviormetrics. Theoretical background will show the effects of synchronizing Information Systems with Human Resource with behaviormetrics system framework and how it increases the organizational performance. Notwithstanding using fuzzy data mining which is a tool the HR uses for staff appraisal and as well talent as part of performance structure of HRIS (Jing, H 2009 and Samson Oluwaseun 2014).

HRIS are set of computerized platform used for communication within and outside an organization whereby every staff have access to the computer device which enables staff to communicate automatically to all aspect of the organization. (Tannenbaum, 1990)T cited that, HRIS is a framework used to procure, store, control, examine, recover and disseminate error free data across HR department of an organization. (Hoch, 2013) also contribut-

ed that HRIS as an incorporated system used to accumulate, store and process and analyze data with respect to an organization HR department. IS has promoted the involvement of management and is used as medium for HRM, the integration of IS to HRM can manage data in relation to the selecting, staffing, advancement, recompense, health and workplace safety, training and improvement. This IS digitalizes the management enterprise, standardize internal and external system, make the organization work in scientific way, network based and however increase labor productivity and performance. The other aspect of knowing the employee and forecast employee productivity by the human resource manager can be extracted by the use of behaviormetrics.

Behaviormetrics is derived for biometrics which is a statistical expression of human biological and medical analysis that deals with unique features that discriminate a person from another (Zhu., J. 2013). Behavioral biometrics is an aspect of that study human conscious and sub-conscious behavioral trait. Behavioral biometrics entails studying the emotion of staff in an organization which classifies emotion into basic human facial expression mood such as happy, sad, and angry and fear (Urvashi Agrawal 2013). The basic human emotion that was found in this research is happy and sad, therefore, this mood of expression affect the performance of some. When happy high performance will be expected and when sad poor and lower under expected performance will be expected by the staff (David Oziem 2004).

1) Implementation of Human Resource Information System

According (Newell 2012) and (Chlivickas 2014), these scholars recommended some steps for implementing HRIS as well as biometric system. Organization need to build up clear objective such as cost reduction, error reduction in the business value chain, loss of files, redundancy etc. Also identify specific areas that need to adopt the information system such as specific organization department like, sales, admin, marketing, finance, monitoring etc. as contributed by (Byars L. L., 2007) he explain 13 steps of implementation of HRIS are described by using simple steps, in select-

ing best technology to suit the organizational environment, culture, ethics or social, that could be implemented life.

Some steps of implementation of HRIS are described by using simple steps, in selecting best technology to suit the organizational environment, culture, ethics or social life.

1. Ideas generation: the inception for idea generation saw the need and report of what HRM in an organization need HRIS to. This design needs management attention and it has to identify clearly HRIS can assist management in decision making.
2. Feasibility studies: this study deals with accessing the potentials of HRIS benefits in reducing cost labor, increase in accuracy, with few errors. However, feasibility studies will always recommend HRIS because of its great potentials to organizations at large.
3. Management support: the results of the feasibility studies are being sent to the management for them to assess its importance and they give their support for the HRIS project to be carried on.
4. Selecting an ad hoc project team which will include HRM representative, technical experts and with a payroll staff.
5. Defining and designing requirements: this identifies specific duties of what HIRS will eventually do. L. L. Byars (2004) show some required statements which are; “ description of how users collect and prepare data, obtain approvals, complete forms, retrieve data, and perform other non-technical task associated with HRIS use” the main aim is to match the mission of the HRIS to the specific needs of the organization.
6. Software and hardware selection: many computer programmers are developed, therefore, organization just need to identify the one that best fits to the organizational needs in relation to payroll, business value

- chain at large.
7. Training: training of staff of technical ad hoc team and towards the end of the implementation of the HRIS, managers will be trained on how to evaluate dealings per time period and source information from it.
 8. Tailoring the system: this stage involves adapting the system and configuring it in accordance to the organizational needs.
 9. Data collection: before the system will be kicked-up, data has to be entered into the system. Data such as employee datagrams, accounting imputation format etc.
 10. System testing: this is to see if the system output best fits the organizational basic requirements and to analyses is accuracy.
 11. Starting up: start-up process is done to identify some additional errors. This kick-up begins when all data are being manipulated into the system. Startups are advised to be done at odd working time such as weekends.
 12. Parallel running: this involves systematically running the old HR and the HRIS to accurately determine the output of the new system.
 13. Maintenance: in adoption of new systems are ways of doing things losses are meant to be incurred, however, such provision is given in months or years. Errors could be remaining and destruction of configured interface could to perpetrated, therefore, there is need to correction
 14. Evaluation: when the system has been in use for a period of time, the HRIS need to be evaluated to see if it is working according to the initial plan.

2) *Why the system fails*

70% of business fail in adopting HRIS because the fail to continuously manage and control the system, unstructured objectives, installing system that cannot be upgraded and

having less database storage capacity.

Main five missteps that organizations experience with HRIS execution with tested tips to help you evade some of those same pitfalls.

1 - Failure to Effectively Manage Change

Changes in the implantation of HRIS can affect the system; the change should be proportional to employee needs.

- Before take a step in the implementation of the new system, the impact of the change and laid down steps on how to effectively use the most be stated.
- Communicate as often as possible specific ways of addressing staff needs/concerns/suppositions on the change

2 – Failure to Define, Validate, and Support Data Quality

Quality choices hail from quality data. That data needs to be legitimate, solid, opportune, and above all functional, information quality is synonymous with data quality, since poor information quality brings about mistaken data and poor business execution.

- Create clear cut steps of inputting data into the core HRIS functional areas and potential data entry defilement zones.
- Identify ways when and how data will be approved, defining method that will be used in correcting inadequacies.
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3 - Failure to Properly Plan

IT programs are deemed to work successfully, poor planning are the reasons that brings about failure in the system, effective plan should on the database that different department will use should be made in accordance with the organizational objectives and ways of data inputting should be specified.

- Define all business needs, vital objectives, and business process that the HRIS will have effect on before

any result is chosen so that the management will evaluate its end result and see if it has justified their want/needs.

- Under any situation do not incorporate a bad method into your HRIS, set out time to look over the current HRIS and the formal before taking action.

4 – Failure to Administer Data Security Properly

Information security issues in private and public companies security are getting to be more predominant and critical concern to cloud-based HRIS results specifically. HRIS that work through the web can give full data control to 3rd party via cloud computing.

- This can give feedback about encryption levels, detection capabilities, security documentation, security staff, and review logs before determination and also,
- Set aside some time to itemize balance between security and adaptability.

5 – Failure to Understand Legal Requirements

At last, the greatest HRIS mistake made by organizations is the failure to comprehend to the laid down rules for data inputting and information retrieval. Management should be aware of the implication of violating the specific law.

4. Behaviormetrics

TechNavio reported an exponential increase of the use of biometric system with the growth of 22% forecast of voice and facial recognition biometric identification within the period of 2012 -2016 (Magazine 2013). Behaviormetrics is the human behavioral psychology as seen in this field of studies is refers to as the study human emotional subconscious and conscious action skills and emotion in

an organization. System that uses this system identifies who an individual is, who he/she claims to be and how he/she responds in a repetitive situation in an organization Taru (Khatri 2013). However, this system records repetitive behaviors of individuals in an organization using enhanced biometric cameras to capture voice signature verification, computer keystroke and mouse dynamics, gait, smile and face recognition, lips movement, individual odor, eye blinking pattern, and biological signals (Jiang Zhuyz 2013).

For the purpose of this study already installed biometric system in an organization can be used for predicting or forecasting employee productivity. Behaviormetrics creates a profile system for the entire employee in an organization which stores happy, sad, angry suppressed and fearful mood (Chuan-Yu Chang 2010). Happy or sad profiling will be used for the purpose of this study. Happy will denote sad face and sad will denote angry or sad facial emotional recognition.

A. Properties of Behaviormetrics System

Using the seven qualities of properties of the system, we will see how it helps in the implementation and the synchronization of behaviormetrics in human resource information system.

a) Universality — every staff in an organization should have general idea of the system and its characteristics and can be accessed anywhere.

b) Uniqueness — every individual must have different biometric features and characteristics.

c) Permanence —individual biometric features and characteristics vary, in that it could be used for assessment.

d) Collectability — the characteristics and features must be modeled in an easy to acquire and accessed way, quantitative measurable way and must be measurable quantitatively and easy to acquire.

e) Performance —biometric model for measurement must be accurate and the level of fault acceptance must be stated

f) Acceptability—the acceptance level of biometric system could be ascertained.

Human face has been proven to as a way

of knowing someone emotional expression or a way of transmitting someone emotional expression (Urvashi 2013) Agrawal. This facial expression movement or motion beneath the skin of the face communicates social expression of an individual and emotional status (Arya G. J. 2014).

B. Smile and Sad Recognition

For this system to be effective, powerful cameras with high fast photography and zooming leans ability is needed to generate series of smile and moody face maps. Facial maps are composed of underplaying structural deformation of relevant muscles that moves with the fashion of someone's smile are sad face (Lou Benedict 2004). These facial underplaying wrinkles and muscle forms part of each staff profiling in the biometric system (Kenny Hong 2013).

5. Methodology

A. System Design

- The already in use architectural biometric system for authentication of security access using human individual psychology and behaviors will be harnessed. Behavioral biometrics is already in use. Figure 1 below shows the facial emotion tracking system (Agrawal U. 2013).
- Video camera input: this is the enrolment stage of each staff in the biometric system, whereby at the approach of the camera the video captures scan the face of the individual Khatri 2013.
- Processing the image using YCbCr tool extract facial color components from image, video collected from a digital system. This tool cleans a picture because it deals with contrast and brightness of a picture.

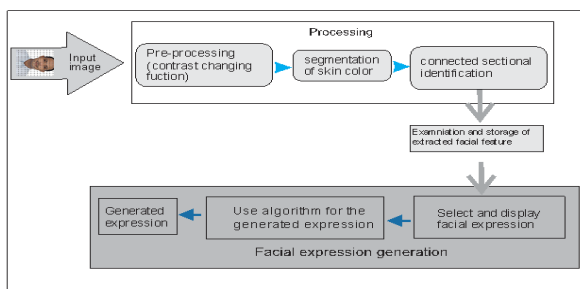


Figure 1. Showing the process of expression generation

- Skin color segmentation that is converting the color input of GRB (green red and blue) image to a gray link structure, this gets the picture ready for face texture extracting.
- Area of identification: this scans the gray like image in group its pixels connectivity based feature. Pixels group features are grouped into the emotional structure of the face. Gabor filter gave an age of filtering human textures representation and discrimination features.
- Facial texture extraction: this identifies the eyes, lips features which is used to determine the facial human emotion (Arya G J 2014). These expressions are stored in the organizational data base which can be referred in the future for predicting employee performance (Samson Oluwaseun 2014). This facial expression trait are being recorded so as the system will get used to each staff and its emotion. This stage of expression identifies the happy and sad mood of facial image using the facial processing identification texture of the behavioral biometrics system installed in an organization (Arya G J 2014), figure 2 shows the algorithm of facial expression schematics.

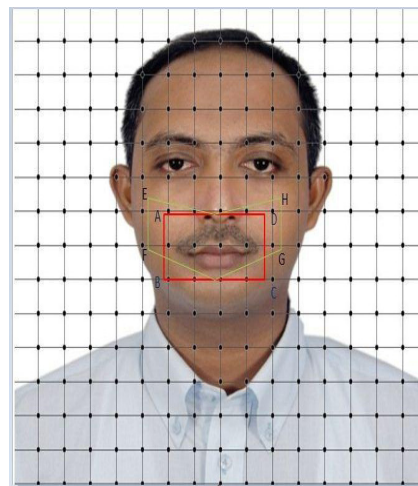


Figure 2. Showing the modeling of facial context used for emotion generation (Arya G. J. 2014).

C. Facial expression algorithm

- Extract the facial feature points identifying the nose, chin, lips, down to the jour.
- Analysis on the expression change on the

image stating set of requirements.

- State the mean value of the corresponding facial expression generation
- Mesh facial wrapping algorithm bilinear inscription coding. This creates models representing the facial texture as indicated in figure 2 above using alphabets to represent the facial quadrangle and schematics. A, B, C, and D representing the vertex part of the quadrangle and E, F, G, and H denote show the vertex part of the face mapping (George Wolberg 1998)..
- This is the monitoring stage in that it repeats step 4 so as to obtain in time modification of the quadrangle mapping of the face. Moreover, match the present and the concurrent mapping obtained.

This algorithm manipulate the geometrical mapping and schematics the face so as to generate the facial gesture emotion. Figure 3 show the bilinear outcome of happy facial expression denoting eye corners expanding, the lips rising. Figure 5 show the sad expression in that the eye side and the lips will contrast. This could obtain all the facial expression, but due to the aim and objectives of this stud we are limited to only sad and happy mood.

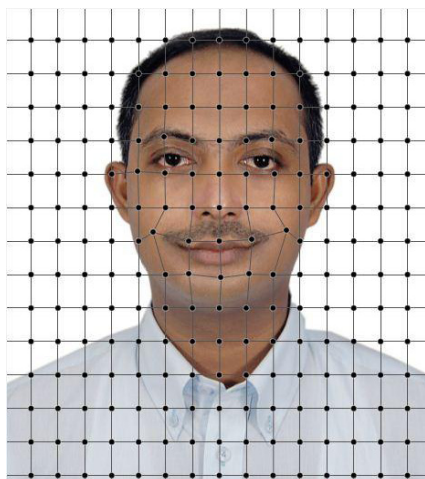


Figure 3. Showing happy mood of facial expression generated by behaviormetrics system (Arya G. J. 2014).

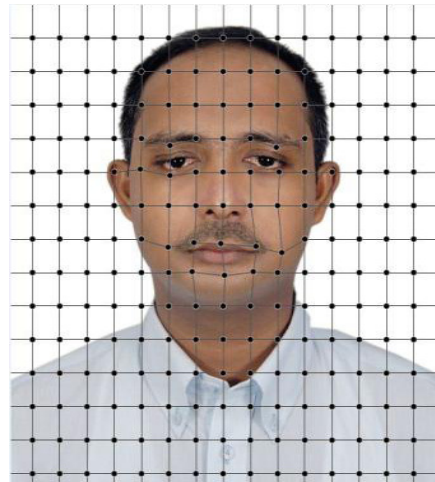


Figure 4. Showing sad mood of facial expression generated by behaviormetrics system (Arya G. J. 2014).

This study try to find possible way a manager through behavioral biometric system forecast employee productivity in certain rang of time. When employee productivity cannot be forecasted, it becomes a problem to the management. This proposed system could proffer cost effective and reasonable solution by providing a computerized way to study employee activates and productivity.

Conclusion

With this data being encapsulated in individual employee database records, the system framework captures individual behavioral phycology in two ways which are when happy or sad. When happy explain the probability of individual best performance output while when sad explains the probability of low output. HR Manager now with the help of the system compiles the result of the entire employee in an hour of work resumption in a day. With this the manager could ascertain daily output performance and as well predict monthly output with the help of history.

Recommendation

This system is recommended at all sectors such as education, government, retail organization, production and manufacturing organization, transport, truism etc. This can only work in an organization that has an already running biometric system.

With this the HR could intensively know the all the employee performance capacity and how he/she could motivate the employee.

Conflict of interests

Author declare no conflict of interest.

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