

# A Study on Using Business Analytics to Improve Performance Appraisal Systems at Drishti Structural Engineering Pvt Ltd, Nagpur

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**Abstract**— The performance appraisal systems are an integral part of the Human Resource Management since they have direct effect on the motivation and productivity of employees as well as the effectiveness of the organization. Nevertheless, the conventional appraisal techniques are usually associated with being subjective, biased, lacking in consistency and failure to track the performance in real-time. In recent years, business analytics became one of the potent representatives of the solution to these constraints, allowing to make decisions based on data and conduct objective evaluations of the performance. The paper is dedicated to the use of business analytics in order to enhance the business performance appraisal system of Drishti Structural Engineering Pvt Ltd, Nagpur. The aim of the study will be to consider how analytical instruments, including key performance indicators (KPIs), dashboards, and data visualization tools can positively affect the transparency, accuracy, and fairness of employee appraisal procedures. The paper employs a conceptual and descriptive research methodology on the basis of the secondary sources of data and theoretical discussion of the HR analytics models. The research results suggest that business analytics included in the performance appraisal systems can greatly limit the evaluator bias, enhance appropriateness of employees evaluation, and promote the feedback mechanism in time. In addition, it increases managerial decision making as they will have real time data on employee productivity and project performance. The research arrives at the conclusion that the implementation of the business analytics into performance appraisal systems is associated with the enhanced organizational efficiency, the increased employee satisfaction level, and the more proper correlation of personal performance with the organizational objectives. It suggests that the organizations should firm up their HR practices based on data to gain sustainable performance improvement and competitive advantage.

**Keywords**—Decision-Making, Data-Driven HR, Organizational Efficiency, Business Analytics, Performance Appraisal, and HR Analytics, Employee Performance.

## I. INTRODUCTION

In contemporary business setting, more and more organizations are applying data-based approaches in order to achieve a better decision-making process and performance overall. The Human Resource management is very vital in attainment of organizational targets and performance appraisal system is one of the most critical functions in HRM. It assists in the assessment of employee input, training requirements, as well as the promotions, rewards, and professional development decisions.

Old-fashioned performance appraisal systems have been highly accused of being subjective, unequal, and affected by individual prejudice of managers. Such restrictions may cause dissatisfaction of employees, a lack of motivation, and inefficient performance assessment. Most organizations use manual appraisal decisions that are not necessarily reliable in capturing the actual current organizational employee performances and productivity levels.

Due to the increasing growth in technology, business analytics have become one of the effective tools that can help organizations to gather, process, and analyze gigantic amounts of data to produce valuable insights. Business analytics assists in converting raw performance data into information that can be put into action and hence the employees can be evaluated more reasonably and truthfully. It also enables real-time performance tracking in terms of dashboards, key performance indicators (KPI) and data visualization tools.

Employee performance is major factor that determines successfully completion of engineering project at Drishti Structural Engineering Pvt Ltd, Nagpur. Nevertheless, similar to other companies, the performance appraisal system currently in place

is to a large extent dependent on manual assessment and the opinion of the managers. This opens an opportunity to implement business analytics to identify the process of appraisal as a more transparent, objective, and efficient one.

This paper seeks to examine how the business analytics can be applied in enhancing the performance appraisal system in the Drishtti Structural Engineering Pvt Ltd. It centers on increasing precision, minimizing subjectivity and betterment of decision- making when evaluating employees. Organizational productivity and workforce management through the implementation of the analytics-based tools in HR processes will help organizations achieve improved organizational productivity and a better workforce management.

## II. LITERATURE REVIEW

The performance appraisal system and business analytics literature point to the fact that a serious change has been made in the way of the traditional, judgment based, evaluation approaches into the ones based on the data and supported by the technologies. Researchers have highlighted that the conventional performance appraisal systems are usually subjective, halo effects, recency effects and there is no standardized evaluation criteria which limits their effectiveness in measuring the employee performance.

In most studies about Human Resource Management, performance appraisal is not just an extensive tool of evaluation, it also is a strategic process of enhancing development of employees and productivity of the organization. Nevertheless, a lot of organizations continue to use manual appraisal systems that are usually inconsistent and unable to provide live information about the performance of employees.

According to the recent literature of business analytics, it is argued that the implementation of analytics in HR functions, also referred to as HR analytics or people analytics, improves the quality of decisions through the provision of data-supported information. Dashboards, scorecards, and predictive models are some of the business analytics tools that enable organizations to quantify employee performance based on Key Performance Indicators (KPIs), productivity rates, and behavioural data.

This minimizes human prejudice and enhances evaluation system transparency.

Research shows also that companies that adopt analytics based appraisal system have greater employee satisfaction and engagement since employees tend to see the appraisal process as fair and objective. Moreover, analytics also makes it possible to track the performance continuously without using the annual or semi-annual reviews only.

Within the engineering and project-oriented organizations such as Drischti Structural Engineering Pvt Ltd, literature points to the fact that performance measurement is complicated by the diversity of tasks and dependency on the project. Thus, business analytics may be utilized to an advantage in making evaluation criteria standard and to correlate the performance of employees with the project results.

On the whole, the literature sources verify that business analytics could serve as the effective means of changing the traditional performance appraisal systems into more efficient, transparent, and data-driven performance appraisal.

## III. RESEARCH METHODOLOGY

The research design that will be used in the current research is aimed at examining how business analytics can enhance the performance appraisal systems at Drishtti Structural Engineering Pvt Ltd, Nagpur.

### 3.1 Research Design

The research of the study is founded on the descriptive and conceptual research design, as the authors are interested in comprehending and elucidating the correlation among business analytics and the performance appraisal effectiveness.

### 3.2 Nature of Research

This is a qualitative study in the sense that it is concerned with the conceptual knowledge, theoretical and analytical interpretation instead of the quantitative experimentation.

### 3.3 Data Collection Method

The research is rooted mainly on the secondary sources of data and they are: Scientific publications

and magazines.

Human Resource Management and Business Analytics Books. Electronic publishing and case studies.

Theoretical HR analytics models.

### 3.4 Research Approach

The effect of business analytics tools on enhancing the accuracy and fairness of performance appraisal is assessed through a conceptual analytical approach, which focuses on the role of creating KPIs, dashboards, and data visualization systems to improve performance appraisal accuracy and fairness.

### 3.5 Tools and Techniques Used

Key Performance Indicators (KPIs) HR scorecards and dashboards.

Visual methods of data representation. Theory models of performance measurement.

### 3.6 Scope of the Study

It is confined to the knowledge of business analytics in performance appraisal systems of the engineering-based companies taking the example of Drishti Structural Engineering Pvt Ltd, Nagpur.

### 3.7 Limitations of the Study

The research is founded on secondary and conceptual information alone. The absence of primary survey or statistical analysis.

Real-time organizational implementation may have different findings. Restricted to theoretical explanation of HR analytics systems.

## IV. COMPANY PROFILE

Drishti Structural Engineering Pvt Ltd is an engineering consultancy firm that is privately owned by the firm based at Nagpur in Maharashtra. The firm is active in offering structural engineering services, comprising of structural design, structural analysis, project planning and consultancy services on residential, commercial and industrial construction projects. It is also influential in aiding infrastructure to grow through provision of safe, efficient, and economical engineering solutions.

The organization adheres to the high quality, technical precision, and punctuality in project delivery. It collaborates with a group of engineers, designers, and technical professionals who will work

on different levels of structural project implementation. The success of the operations at the company is largely dependent on the performance of employees, technical expertise, and co-ordination of project teams.

The productivity of employees in such a setting, which is engineering-based, has a direct effect on the project efficiency, safety standards, and client satisfaction. Thus, the proper performance appraisal system will be needed to assess the contribution of employees, detect the gaps in the set of skills and enhance the general performance.

Today the performance appraisal procedure in Drishti Structural Engineering Pvt Ltd is highly grounded on the managerial observation, project completion reports and subjective evaluation procedures. Although this system offers fundamental evaluation, it does not offer an accurate assessment based on data, transparency, and real-time monitoring of performance.

As the value of digital transformation and business analytics is growing, the organization has a strong likelihood of embracing the concept of data-driven HR. By adding business analytics to its performance appraisal system, it is possible to improve the level of objectivity, promote the level of decision-making, and link the performance of employees to the organizational objectives.

## V. THE ROLE OF BUSINESS ANALYTICS IN PERFORMANCE APPRAISAL SYSTEM

Business analytics is a transformative tool in the current Human Resource Management as it helps organizations to make data-driven judgments in matters relating to employee performance appraisal. With reference to the Drishti Structural Engineering Pvt Ltd, business analytics would contribute greatly to the efficiency of the performance appraisal system.

Theoretically, business analytics can be defined as the systematic application of data, statistical tools and analysis methods to understand employee performance and help managers to make decisions. It can be used to transform crude performance data into valuable insights to be applied in fair and transparent assessment.

### 5.1 Improvement in Objectivity

Conventional methods of appraisal are normally

marred with individual prejudices and subjective decision making. Business analytics mitigates this problem based on measurable performance metrics like the rate at which tasks are done, efficiency of a project and quality measures.

#### 5.2 Key Performance Indicators (KPIs) Utilization.

The essence of the analytics based appraisal system is made up of KPIs. They assist in setting the specific performance benchmarks on the employees regarding productivity, precision, collaboration and time lines of the project implementation.

#### 5.3 Real Time performance tracking.

Business analytics allows tracking the performance of employees continuously using dashboards and the reporting mechanism. This aids the managers to know the performance trends and to take corrective measures in time.

#### 5.4 Data-Driven Decision Making

Analytical reports enable managers to make informed decisions based on promotions, training requirements and rewards instead of depending on their intuition.

#### 5.5 Transparency and Employees Trust.

When the performance assessment is done through observable and quantifiable information, the employees will regard the system as being fair leading to motivation and job satisfaction.

#### 5.6 HR Decision Making through Predictive Analysis.

In the future, advanced analytics can be used to predict the future trends in employee performance, risk of turnover and training needs so that HR can plan in advance.

### VI. DATA ANALYTICS AND RESULTS

The data analytics part elaborates the conceptual implications of business analytics on business

performance appraisal systems at Drishtti Structural Engineering Pvt Ltd, Nagpur. It analyzes according to the principles of HR analytics and performance evaluation models that are based on KPI.

Business analytics enhances performance appraisal because it transforms qualitative employee performance to measurable performance parameters including productivity, quality of work, punctuality, and efficiency in completing projects. This makes it possible to evaluate more objectively, transparently and accurately than the traditional systems where evaluation was based on subjectivity.

#### 6.1 KPI-Based Performance Analysis Conceptual.

The key performance indicators that are looked at in the analytics based appraisal system include: Efficiency of project completion.

Technical accuracy

Structural design quality of work. Team coordination

Timely delivery of tasks Employee engagement level

The following indicators are the basis of performance scoring and evaluation.

#### 6.2 Analysis of the impact (Before vs After Analytics)

The diagram below shows how performance appraisal systems have been improved after introduction of business analytics:

#### 6.3 Interpretation of Diagram

As depicted in the diagram, the performance appraisal system will be enhanced greatly after introduction of business analytics.

Key observations include:

The level of transparency enhances through assessment based on data. Discrimination is minimized because KPI is used to make decisions. Correctness of employee evaluation is enhanced.

Fairness results in employee satisfaction.

The process of decision-making is quicker and more accurate.

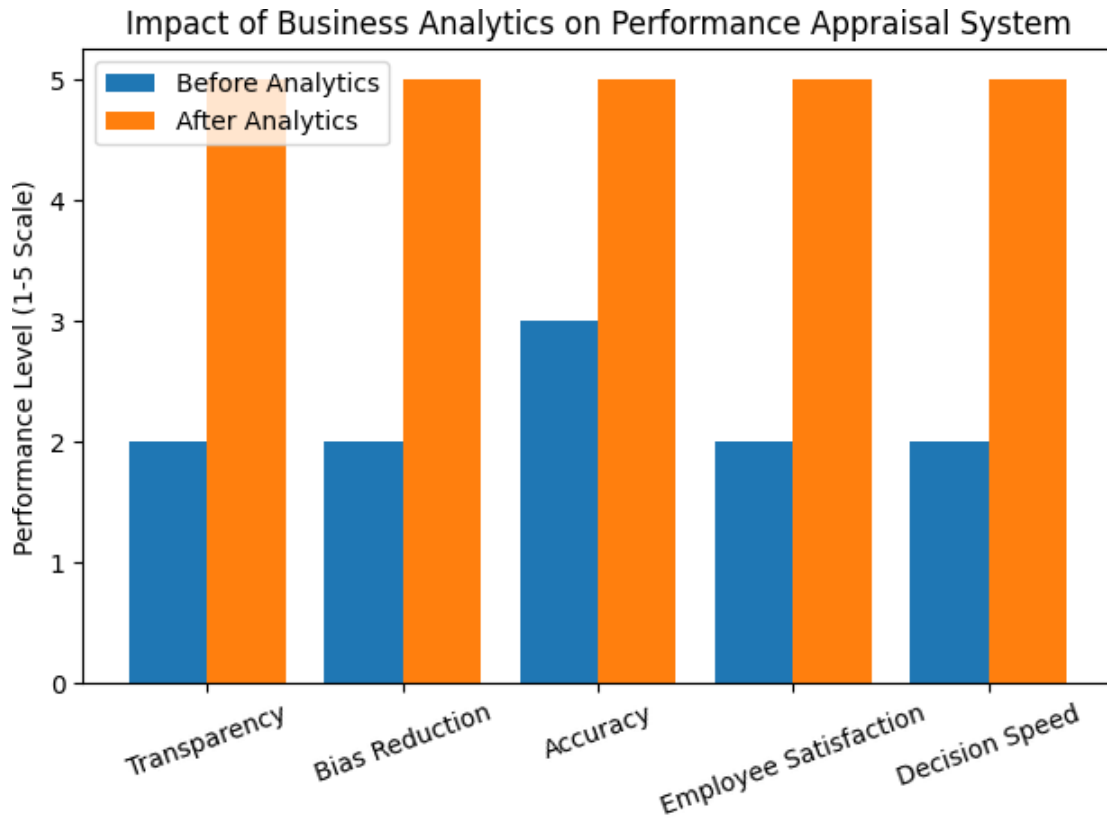


Fig 6.1 KPI-Based Performance Analysis Conceptual.

As the data analysis shows, business analytics converts the traditional appraisal system into a form of the performance evaluation frameworks that are structured and transparent, as well as efficient. This will enhance productivity in the organization and increased trust in employees towards the appraisal process.

## VII. FINDINGS AND DISCUSSION

According to a study on the application of business analytics to performance appraisal systems in Drishti Structural Engineering Pvt Ltd, Nagpur, there are quite a few insights that can be made. The conventional performance appraisal process within the engineering organizations mostly relies on the judgment of the managers and other periodic evaluations that normally result to subjectivity and inconsistencies in the evaluation of the employees.

The results suggest that the application of business analytics to the execution of performance appraisals contributes greatly to the evaluation quality of employees. Key Performance Indicators (KPIs), dashboards, and record-based metrics contribute to improving the transparency of the decision-making process and lessening bias. These performance

factors include productivity, project completion efficiency, technical accuracy and contribution to a team, which the employees are evaluated on based upon.

It is also noted that analytics-based appraisal systems encourage using continuous performance monitoring as opposed to using annual reviews. This gives a feedback in good time and assists employees in bettering their performance within the project lifecycle. Also, objective-based appraisal systems promote better faith among employees in the appraisal process since objective information is used to make decisions than subjective views.

All in all, the research proves that business analytics is instrumental in enhancing fairness, precision and effectiveness within performance appraisal systems.

## VIII. FUTURE SCOPE

The future outlook of this study is very bright since the use of digital technologies in Human Resource Management is on the rise. Companies are progressively moving towards advanced analytics-based HR systems, that create a number of prospects on enhancing them:

- Artificial Intelligence (AI) and Machine

Learning (ML) to be integrated in performance appraisal systems.

- Real-time automated employee performance tracking infra system development.
- Predictive analytics to predict employee performance and turnover risk.
- On-the-job adoption of mobile based HR dashboards as well as real time performance feedback.
- Growth in workforce planning and talent management of big data analytics.
- Remote accessibility through the adoption of HR analytics cloud-based solutions.

In years to come the performance appraisal systems will be automated, data driven, intelligent and less human directed and this will enhance the accuracy in decisions and the automativeness of the systems.

#### IX. RECOMMENDATIONS

According to the study, it is recommended that Drishti Structural Engineering Pvt Ltd should change as follows:

- Adopt KPI-based performance appraisal systems in order to make sure that there is objective performance appraisal.
- Embark on HR analytics application to track real-time performance.
- Train personnel and HR personnel in deanalytic tools and methodologies in data analytics.
- Minimise use of subjective judgement in appraisal of employees.
- Implement transparent performance boards that are made available to both employees and the management.
- Implement continuous feedback measures rather than periodic appraisal periods once in a year.
- Balanced measurement of qualitative and quantitative performance measures should be combined.

These suggestions will be used to enhance fairness, performance and accuracy of performance appraisal system.

#### X. CONCLUSION

The research finds that business analytics is instrumental in changing old systems of performance appraisal to new data-driven systems. In Drishti

Structural Engineering Pvt Ltd, Nagpur, analytics improve the level of transparency, decrease the element of bias, and the precision of employee performance appraisal.

Business analytics helps organizations to abandon subjective evaluation techniques in favor of objective evaluation systems that are based on KPIs. This does not only enhance the quality of decisions, but also makes employees more satisfied with the appraisal process and also more trustworthy.

Summing up, business analytics should be adopted in performance appraisal systems to enhance the efficiency of the organizations, enhance the practice of human resource management, and realize long-term sustainable growth in the contemporary competitive business world.

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