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Role of Human Resource Analytics in Health Care Organizations

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Abstract

Human Resource (HR) capital is difficult to acquire and manage. Health workforce being unique in nature by their expertise, skills intended to provide quality patient care requires to be dealt cautiously keeping in view the imbalance between demand and supply. The health care organizations are facing problems in recruiting and maintaining talent. The goal of administrator is to manage employees to achieve organizational goals by applying data mining and analytics.' What is happening now' to 'what is expected to happen' and 'what the management can do' type questions were asked and answered with the utilization of predictive analytics. Analysis of present data collected systematically, its synthesis, interpretation, execution and implemented with logic makes intelligent decisions for better future. Predictive talent analytics will embrace 65% of Indian companies in coming years.72% of health care organizations and 80% of IT are implementing HR analytics in recruitment and selection. To realize these benefits, leaders, HR professionals and managers need to understand and appreciate the tools and metrics as a fundamental process to search talent and retain. The data analytics will shape the future of the health care while maintaining the quality of care and service delivery and achieve numerous other goals including disasters and reduce HR costs. The top management and HR managers are required to develop strategies and initiatives to visualize data base and utilize it properly for the benefit of the organization.

Key words: Human Capital, Health Care, Analytics, Metrics, Strategies

JEL Classification: M50, I10

Paper Classification: Conceptual Research Paper

What gets measured, get managed , What gets managed, gets Executed

------ *Peter Ducker*

Introduction

Of all the resources, men, money, material, machines, means and measurements, the human resource is difficult to acquire, manage and retain. Everything has a right way to do and it has a method. The basic Human resource functions are from recruitment to retirement and involve systems approach to staffing for achieving the objectives of an organization. According to 2006

WHO report on health, human resource is renamed as 'health work force' whose job is to protect and improve health of the community (WHO, 2006).

The term work force has replaced the word manpower due to the increased numbers of women in any industry or profession. This work force includes diverse clinical, nursing, paramedical, technical, non-clinical, administrative and supportive staff with varied degrees of knowledge, qualifications, skills, attitudes and aptitudes. Data capturing, utilization of data and predicting capabilities is the challenge for hospital administrators. With HR analytics, they can gauge employee engagement, whether work force has the skill to reach business objectives and assess Return on human capital.

Methodology

An extensive search was made to understand the history and evolution of big data, analytics, human resource analytics, types, applications, challenges and limitations. The conferences and Analytics summit information has been analysed and inferences were drawn. The search was extended to the related topics, articles, books, opinions, notes, views, basic Human Resource functions analysis and their metrics, recent advances in HR analytics and its application in health care and hospitals were considered for the study and conclusions.

Literature Review

The information after reducing, summarizing and adjustment of variations like age, sex population comparisons leads to data which with experience based on social and political values produce intelligence (Park, 2005). The analysis of present data is done for future decision-making process for effective achievement of organisational goals.

Metrics: The core of HR Analytics is the 'metric' and metric can be explained as data that conveys meaning in each context. Metric is different from numbers. Data needs to be evaluated regarding data for its speed of generation (velocity), Volume, worth (Value) and types (Variety) and quality or trustworthiness (veracity) (IBM, 2013).

The given example illustrates the concept of HR Metric and Analytics.

A	Nursing Staff Turnover 11.5	Data
B	There is a 4% increase in turnover rate	Metric
C	Appropriate leadership styles of Nurse managers resulted in higher attrition of 4% over the previous years	Analytic

The 'C' is HR analytics. From the example it becomes clear that HR Analytics is not so much about numbers, as it is to do with logic and reasoning.

Analytics is different from analysis, which is number crunching. Analytics uses analysis as a tool to understand the numbers. Analytics measures why something is happening and what is the impact of what is happening (Erik van Vulpen, 2018). HR analytics should have the capability of monitoring the data deeply and predict the future. It should generate reports that make decision-making simple and accurate. Metrics should be tangled directly to the organization's current business issues and to be effective, should not just report results, but also show a cause-and-effect relationship.

A metric should provide a complete story that includes a measure of quantity, quality, time, cost, and patient satisfaction. It should also measure ROI, cost benefit ratios etc, with a benchmark

with similar organisations. The organization needs to compare these results with a benchmark that might include prior experience, similar statistics from a competitor, or internal goals.

HR Metrics: Most organisations have no idea of the impact of turnover on the organization but when the cost of turnover is 35% of an organization's profits, it has a big impact on organization. By utilising HR metrics, organizations will be surprised to know how much their HR functions can save on hiring, staffing, and separation costs (Marler, and Boudreau, 2017).

Big Data in HR refers to talent acquisition, development, retention, productivity, training programs performance, and organizational performance. Big data analytics involves collecting data from different sources and making data products that are used by data analysts for business. Life Cycle includes problem definition, data acquisition, storage, mining and analysis. Different models should prepare for assessment and implementation (Cognizant's, 2017).

This involves integrating and analyzing internal metrics external data for business problem solving of organizations which increases revenues and cut down costs through betterment in processes.

HR Analytics

Conventional employment activities which pertain to talent pool, time management, progressive performance, work efficiency must be changed to strategic way of work force design and cutting-edge executions by effectively utilizing HR analytics data.

Many health care institutions are maintained with low cost shared services centres with high number of headcounts rather than talented pool, thus resulting in not meeting ROI (Return of Investment). In this concern, the HR analytics is most useful tool which has been opted by institutions. HR specialists need to spend more time on value creating activities rather than on projects with less value (George and Kamalanabhan, 2016).

Types: The conventional (Descriptive) analytics to the predictive and prescriptive analytics are the various types of analytics which evolved over a period (Grillo, M. ,2015).

The management process to identify core competencies and ability to develop and maintain relationships are assessed by capability analytics whereas competency acquisition analytics identifies the current levels with the required and planned', either in house or through recruitment channel analytics which analysis history of employee and measures return per employee. Employee churn analytics assesses staff turnover rates to predict the future and reduce employee churn. It can be identified through employee satisfaction index, employee engagement level, surveys and exit interviews (Bernard Marr, 2016).

HR Analytics- Strategic Management

Breaking the information overload and proper presentation of available data is the key factor in HR analytics for proper business priority decisions.

The common basic phases are gathering raw data, right framework of elements, metrics planning, define attributes, data analysis, strategy formulation, execution and evaluation.

The HR manager needs to analyse 'What is happening? Why did it happen? What is likely to happen? What should I do about it?' The pertaining data need to be collected with foresight or predicting the future.

Work force analytics is more quantitative whereas Talent analytics is more qualitative to analyse turn over and to provide strategies for retention. There are four core functions which are integral part of HR analytics which include the acquisition, optimization, development and compensation. The top management along with HR shall utilise these analytics to develop strategies.

Discussion

In health care organizations, the role of human resource management is still not at the expected level. The HR departments are not oriented to 21st century and are struggling to use HR Analytics effectively to prudent workforce trends, minimize risks and maximize returns especially in health care organizations where the costs of attrition, poor hiring sub optional compensation, poor performing employees, bad training are too high. In present day scenario, the costs of healthcare are escalating. It is the prime duty and responsibility of Human resource department to apply HR analytics approach to benefit staff, patients and hospital to reach quality goals. This data based, metric oriented HR analytics will enable to make quality objective decisions in the terms of how to recruit, whom to hire, how to keep employees informed and engaged through their tenure with the organization.

The objectives of HR analytics in health care organizations are more crucial in maintaining the quality care. These are 1. Predicting turnover rate especially among consultants, technical staff and very important nursing staff, 2. Predicting the right fitment for aspiring employees, 3. Establishing linkages between employee engagement score and working in progress (Akhilesh Tuteja and Ira Gupta, 2015).

In HR Analytics, the HR metrics measured are recruitment, retention, training, performance, career management, compensation, benefits and organizational effectiveness. The turnover rates and targeted retention should be focussed at key result areas of the hospital like Radiology, Cathlab, operational theatres, emergency and intensive care units and related specialties.

Attributes for HCO at macro level

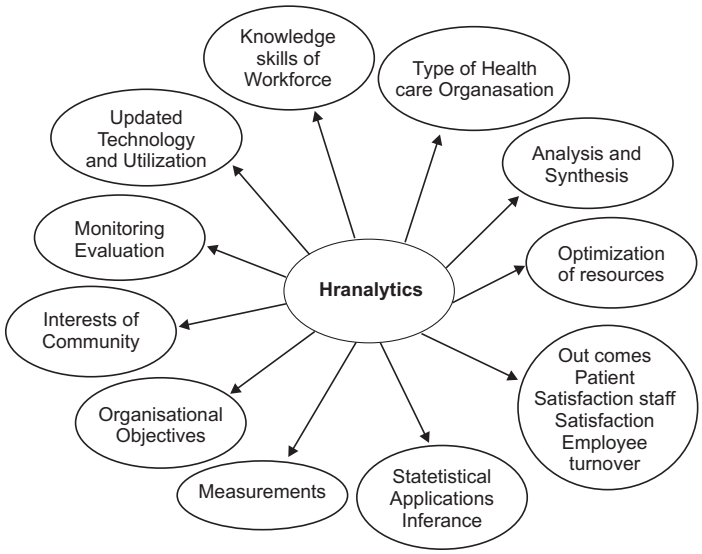
The HR analytical attributes for Health care organizations range from basic collection of data from various patient care areas-clinical, nonclinical, supportive and administrative divisions, analysis and synthesis keeping in view of the interests of the community at large and quality patient care.

The talent of employees in terms of knowledge, skills and experience apart from their attitude and motivational level are essential in exercising patient care. Employee satisfaction needs to be monitored along with attrition rates analysis. The enhanced expectations from patients and updated technology or equipment with increased cost of care are other challenges. The Return on investment and revenues need be balanced(Yuksel, 2014).

The imbalance between the available work force for providing quality patient care to the total population and supply is a great challenge for the nation especially the planners. Individual organizations whether public or private have to struggle to staff, maintain or retain the talent. The senior leaders or the top management, the functional managers, the operational managers are required to develop strategies and initiatives to visualize data base and utilize it properly for the benefit of the organization. Here comes the role of Analytics to assist the administration in providing the information and to take appropriate decisions for quality patient care (ET Bureau,

2018). The demand and supply of work force is always mismatched, and the administrators struggle for optimum utilization if existing versus attracting new talent. The HR analytics assist to bridge this gap in this complex environment.

Exhibit: HR Metrics – Attributes in Health care organizations



The organizations will have a range of highly competent to incompetent people, but it is said that the routines are performed by average competent employees in the organization. To strive for quality, it is the responsibility of management to identify the talent and retain talent keeping in view of retirements and separations. The succession planning, career planning, training and development are other challenges for the HR manager. Studies are to be made to analyze the employee attrition, employee satisfaction with aim of patient satisfaction (Koontz, 2010).

Studies on reasons for employees leaving the organization reveal lack of career growth opportunities, inflexible schedule of work, hostile environment, outdated policies, lack of management and immediate supervisor support and empathy and shift in values of the company (Marcel Schwantes, 2018).

Health Care Industry Perspective

Health care organisations especially hospitals with their functions as preventive, curative, training, education, bio social research and rehabilitative and outreach to community are categorised as Service motto industry having round the clock access with empathetic service deliveries. Health care industry has been the corner stone to national development. This industry provides healthy human through primordial prevention, health promotion, cure and rehabilitation services. The industry is now resourcing an exceptional growth in the number of hospitals, rapid growth in technology, new models of medical management and overall a paradigm shift in the understanding of health care. Naturally the issue of quality is an important concern. The actual component of health care industry is skilled and trained human work force, who takes quality decision during health care activities (Lewelyn-Davies and Macaulay, 1966).

Globalization of technology advancements, exchange of knowledge, treatment protocols, health care insurance, higher level of expectation then the stake holders, making the hospital

HR department now more crucial in acquisition of talented and skilled work force. Accurately matching work file skill and talent with organization requirement is the number of the day. This health care analysis helps to maintain a healthy balance between expected patient care and talent pooling.

The work force dealing with them ranges from unqualified, semiskilled to skilled, technically sound, knowledgeable professionals with varying attitudes, behaviours and ever-changing needs, wants, expectations and motivational levels varying with time and situation.

In this scenario, the top management and HR managers face challenges in decision making while managing the workforce. The strategic interventions combined with data and technology support is essential to gain competitive edge in the globalised market.

Applications

A key objective for any analytics system in healthcare is to produce a valuable output for those taking care of patients, doing research, or making other decisions about how the organization functions.

The platforms where Analytics are used include Electronic Health Records (EHR), Laboratory Information Management Systems (LIMS), Instruments used for diagnostic or monitoring purposes ranging from CT scanner, MRI to Echo vital sign monitors and PACS in radiology where raw data or pictures are used for analytical purposes. Healthcare systems now use typical enterprise-level IT systems (e.g., People or SAP) to manage their human resources and supply chains. (Ward, Marsolo, and Froehle, 2014).

The potential adoption of Analytics in Health care is in patient flow, disaster care delivery, access, efficacy of the systems and medical records.

Electronic health records (EHR) has already been proved to be an accepted mode of capturing patient data, storage and retrieval which assists for providing quality patient care. Radio frequency identification systems (RFID) that are applied in hospital include identification of inpatient admissions, antenatal mothers and newborn, access systems to high secured areas like server rooms, stores, pharmacy, examination division etc.

Analytics analysis pertaining to patient flow includes the flow of patients in an outpatient i.e. from entry to exit, emergency room, Operation theatre, intensive care units allow to identify contact points, delays and how the human resource is utilised and decisions related to further recruitment requirements. Global positioning systems (GPS) are an asset in disaster planning, onsite treatment, logistics of transfer, pre preparedness with the objective of Golden hour and reduce mortality and morbidity. Recently GPS were also used in tracking the Biomedical waste management and sanitation monitoring in hospitals.

Hospitals provide services by utilizing various technical and nontechnical staff with assistance from technologies and equipment. Analytics by technologies assess real time location of assets and effective utilisation of these valuable resources. The adoption of Electronic medical records and data mechanisms making use of analytical tools under umbrella of clinical analytics enhance patient care quality and assist clinicians for better monitoring, prognosis and early detection of diseases. For example, biostatistics and epidemiologic analysis, Monte Carlo and discrete-event simulation, data mining, Bayesian statistics, optimization modelling, social network analysis and agent-based simulation, etc.

Chronic disease registries like Chronic Renal failure, Diabetes, Hypertension, stroke, blindness registries guide the organisations and policy makers to appropriate decisions for effective use of resources such as pre visit planning and increase patient participation. These registries are of great help in Organ transplantation programme. Patient flow data analysed with statistical/empirical discrete event simulation or closed mathematical modelling helps to monitor and plan for better utilisation of hospital resources.

Indian Scenario

India has one 0.7 beds for every 1,000 population whereas US has one bed per every 350 patients, doctors to population ratio is 1:1800, which is considerably low when compared to the minimum recommended doctor to population ratio of 1:1000 set by WHO. The recommendation of 5 beds per 1,000 population, to combat this poor doctor-patient ratio, India needs to add 1.54 million doctors and 2.4 million nurses to match the global average (Jibu Mathew, 2017). Nearly one million Indians die every year due to inadequate healthcare facilities and close to 700 million people have no access to care. 70 per cent of the population still lives in rural areas with limited access to clinics. Around 80 per cent of specialists live in urban areas. India's public health expenditure was estimated to be around 1.28 per cent of the country's GDP. In comparison, the United States' budget estimates showed an outlay of over 17 per cent of the fiscal year 2018 (Himani Chandana, 2019).

Challenges

The challenges include defining the role of key stake holders including doctors, nurses, service providers, community and decisions based on data, finding and retaining personnel capable of performing analysis, data quality and privacy and governance. Empowering these individuals and increasing the quality and transparency of decision-making are key goals for any business analytics initiative for the long-term strategy and decision-making based primarily on data. This is essential for transformation to evidence-based medicine. Because data are shared and updated frequently, routine decisions can be more easily automated, or augmented with decision-support systems. The challenge is whether this data helps in enhancing the health of the people. The cost incurred against the benefit is still to be answered.

Strategy

Human capital and HR Metrics

'Human capital metrics measure the human capital optimisation. These metrics include length of time from start of recruitment process to hire, number of employees in the 25-35 age bracket, number of employees who successfully complete the probation period, percentage of workforce approaching retirement. The operational or effectiveness indicators for HR process include absenteeism Rate., average turnover rate and costs, training costs. Employee productivity, cost per hire, job satisfaction / engagement rating, time to Fill., turnover Rate. etc. (Martin Blumeneu and Jakob Rehermann, 2020)

Tools and Metrics

While considering into data pool, will have detailed and in-depth reviews of the cost aspects, hiring costs, wage costs, welfare cost, statutory costs, training and development costs and employee recreation as well allowances and perks and so on which shall be useful for analysing the data.

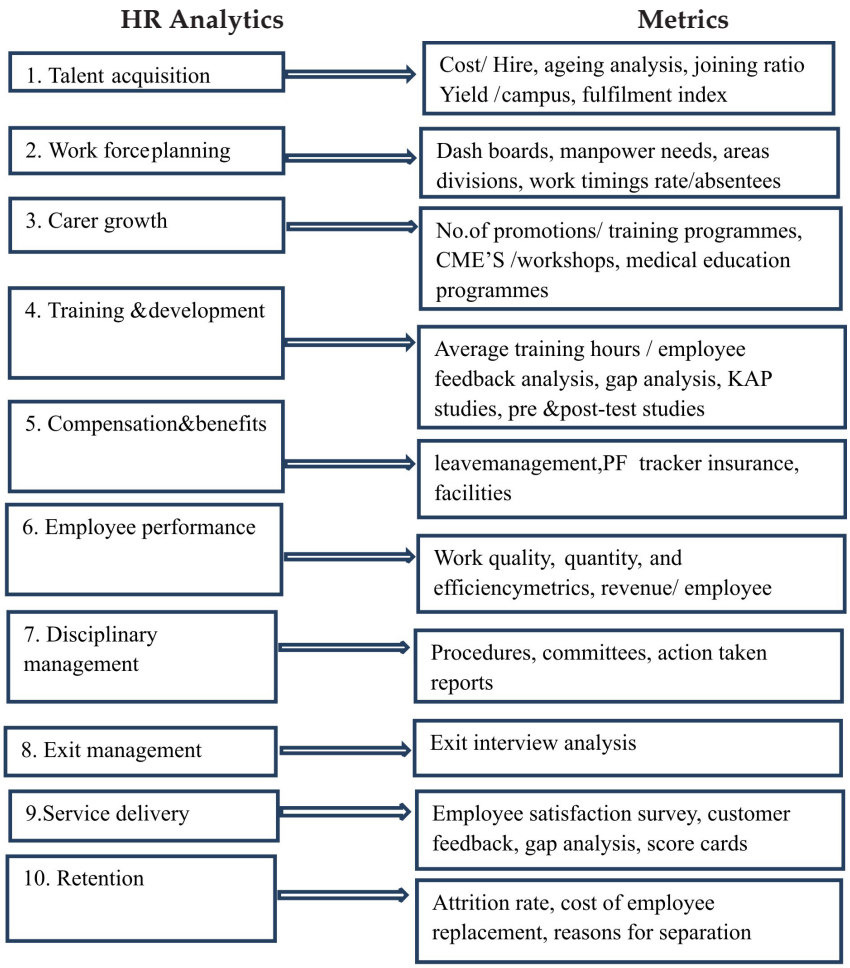
The second challenge is to define Time Around Task (TAT) for every human resource process which is interlinked with operational portfolios. To see the progressive performance of the employee and for taking the appropriate decision, the quality based appraisal system should be placed in order and frequent reviews are required to enhance the quality of work deliveries.

The system-based applications and software tools like ERP, MIS, Microsoft office suite etc will help in the analysis of the big data into crispy modules to develop the HR analytics. Employee satisfaction survey reports will understand the levels of expectations and management information to take necessary proceedings to reduce attrition rates.

Essential criteria for successfully adopting HR dashboard: It should be simple, flexible economically viable, use credible methodology and techniques. Based on theoretically sound principles, process should include the costs of the solution, use an acceptable ROI and the process used must have a successful track record. (CHS Alliance and Ann Start, 2016)

Chart showing HR Analytics & Metrics

CHART-1



Key HR Metrics for Evaluation

Health Human resource planning shall be carried out to determine the work divisions and key performance indicators for evaluating operational needs and enhancing the patient service metrics. Effective Training needs to be identified for quality patient services and enhancing the employee capabilities to meet up to date industry expectations and is helpful for evaluating the employee performance with pre and post training analysis.

The prime responsibility is to show career growth /path to each position so that attrition rate will fall and will help to avoid the operation disturbances and provide continuity of patient care.

In employee exit process, the health care organisations are following exit interview mechanism to understand the reasons of attrition and help to implement retention strategies.

High-Performer Turnover Rates show how many high-performing employees are leaving the company. Span of management control and measurement of total cost of work force and career path ratio and talent management index are metrics that work together across employee life cycle. The objective of top management and managers should be to create performing work force for effective organisational insight and business results.

Conclusions

The Demand and supply need to be balanced for providing quality patient care to the total population which is a great challenge for the planners. Individual organizations whether public or private struggle to staff, maintain or retain the talent. The senior leaders or the top management, the functional managers, the operational managers, HR managers are required to develop strategies and initiatives to visualize HR analytics and utilize it properly for the benefit of the organization.

Analytics is increasingly weaving itself into the fabric of healthcare and will fundamentally shape the future of medical care and service delivery. It can improve the efficiency of healthcare while improving the quality of care, mine genetic data, reduce costs, effectively respond to disasters, and numerous other goals. Most organizations feel they are still using data analytics on an ad hoc basis. HR leaders conceded to lagging in using the full potential of data analytics. Almost 70% representative organizations from the IT, ITeS, BFSI and Healthcare industries plan to make predictive analytics a fundamental aspect of their engagement and recruitment strategies in coming years.

The Future

Even though the concept is available for many years which is applied in business and technological industry, it is proved to be valuable and applicable for health care organisations with the visionary leadership and HR Professionals practicing with logical thinking shall evolve successful results in quality patient care.

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