Analytics as a Predictor for Strategic and Sustainable Human Resource Function: An Integrative Literature Review

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ABSTRACT

Organizations consistently strive for more innovative business practices to enhance their efficiency and effectiveness. Human Resource (HR) Analytics is one such promising practice, which has the ability to impact the organizational success in the near future. One of the prominent reasons behind the evolution of HR function from a mere operational to a strategic role is because of a paradigm shift in the decision making process. Gone are the days, when the decision making in the organizations is inclined towards managers’ intuition or industry best practices. Evidence Based Management practices are increasingly getting recommended, which are primarily based on scientific findings through processed data and unbiased organizational facts. The present study focuses on providing a chronological review of the studies conducted from the years of early 2004 to the late 2013 and highlights the frameworks and models which are vibrant in the literature. Major contribution of this study comes from two theoretical frameworks, first one represents ‘Mapping HR-Analytics-Strategy’ and the second to measure the Return on Investment of HR Analytics (adapted from Phillips ROI Methodology). Future studies can focus on extending the proposed theoretical frameworks into a validated model, and also quantifying the implications of Evidence Based Management practices to HR and Organizational performance can also be explored.

Keywords: Human Resources, Analytics, Metrics, ROI, Strategy.

1. INTRODUCTION

No other function of management has changed multifold than Human Resource (HR) function. The support activity of the value chain began as a mere service provider in the organizations, has been evolving to a higher value charters of becoming a business enabler, business partner and business driver. HR is amidst of undergoing a paradigm shift from collecting efficiency data to effectiveness data. Following the Resource Based View (year), attention of modern HR is driven by Evidence Based Management (EBM) by the significant contribution of the authors such as Pfeffer and Sutton (2006) and Briner, Denyer and Rousseau (2009). Evidence Based Management is derived from the much established Evidence Based Medicine. “It is the evidence that helps us to make the right choices”(Pfeffer & Sutton, 2006, p. 1). Research Studies on measuring the impact of EBM on management practices and business performance are on the rise. Despite the progress that has been made in the academic research (Paauwe, 2009) and the consistent recognition of the importance and value of HR (Boudreau & Ramstad, 2006), only a very few organizations are capable of measuring the real value that people bring to their business (Mayo, 2008). A shift of data collection from activities to the outcomes is the order of the day. Hence there is a need for HR to grow itself from descriptive measures and metrics to predictive and prescriptive analytics.

HR Analytics, Workforce Intelligence and Human Capital Analytics envelopes the term called Workforce Analytics. Attention to the domain of workforce analytics started to increase soon after the global economic crises (Harvey, 2012). Today’s organizations are very much inclined in
collecting more and more HR and Business Data than ever before. Center for Advanced Human Resource Studies (CAHRS, 2010) reports the current practices of HR Analytics as,

- Identifying and managing leaders to drive performance
- Better Risk management
- Traits of front line supervisors linked to performance.
- Dissecting the differences to uncover Key Success Factors.

Martin, L. (2011), in his white paper reveals that MIT, IBM and other top notch companies with respect to performance are three times more sophisticated users of analytics than the lower performers. Companies with the matured talent analytics practice have 8% increase in their sales growth, 24% increase in net operating income growth, and 58% increase in their sales per employee.

Technology giant Oracle (2011) explains the two critical factors which help to identify the workforce impact on the organizational performance. The first factor is the ability of the data user to easily get access to and uses the analytic capabilities and the second is with regard to the data accessibility of not only the workforce but also the operational, financial and customer data at the organizational level. HR Analytics can improve the organization’s bottom line by effective work force cost control. The evolution of Analytics is explained in the fig 1.

![Fig1: Analytics Maturity Model](source: Boston Scientific, 2012.)
2. Objective of the Research

The objective of the present study is to provide an integrative literature review of HR Analytics as an enabler for a strategic and sustainable Human Resource function. In lieu of this, two theoretical frameworks are provided. First framework represents the mapping of HR to Strategy via Analytics. Second framework is with regard to measuring the return on investment of HR Analytics implementation as a business process. Apart from these, few research gaps are identified as part future directions.

3. LITERATURE REVIEW

3.1 Methodology Followed

In order to assess the body of literature, an information search was made on three computerized databases (Proquest, Emerald, Science Direct and EBSCO) together covering the majority of the published literature in organizational and management research. The key words used for this search were HR Analytics, Human Capital, Analytics as Competitive Advantage, Workforce Analytics. A total of 32 studies are conducted, with reference to HR Analytics starting from early 2004 to late 2013 year of publications and out of which 14 studies which are closely relevant with the dealt topic, are selected and examined their significant contributions. Key focus and the findings of each research paper are extracted in the form of a table in the chronological order.

Knowledge of Human Resource metrics and workforce analysis can be traced from the era of scientific management itself. Taylor (1911) and Munsterberg (1913) contributed significantly to industrial and organizational psychology. Hawk (1967) introduced many of the HR Metrics’ which are commonly used even today. Then came Dr. Jack Fitz-enz (1984, 2002), through the Saratoga Institute contributed towards measurement of HR function. Around 30 metrics are formulated from this work. Studies conducted by Huselid (1995) on High Performance Work Systems (HPWS), resulted that the significant differences in organizational effectiveness is associated with the systematic management of human resources. Managers’ thinking about the metrics has got refinement, soon after the introduction of balance score card by Kaplan and Norton (1996) measures performance on four primary perspectives. About the same time, HR score card is derived out of balance score card by Becker, Huselid, and Ulrich (2001), which takes care of the alignment of HR activities and corporate strategy and organizational outcomes. Then came Cascio (1987) and Fitz-enz and Davidson (2002), introduces the audit metrics. Finally, the Society for Human Resource Management (SHRM, 2010), a body of knowledge, has been consistently contributing to varied number of metrics that are very useful to the organizations to measure their HR effectiveness.

The following Table briefly summarizes the past studies from the year 2004 to 2013.
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<tr>
<th>S.no</th>
<th>Authors</th>
<th>Title</th>
<th>Key Focus &amp; Findings</th>
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<tbody>
<tr>
<td>1</td>
<td>Lawler et.al (2004)</td>
<td>HR Metrics and Analytics: Use and Impact</td>
<td>Authors highlight the felt need of using metrics and analytics in the HR function of the organization to play a strategic role. The growing use of information technology is a clear positive sign with respect to the change.</td>
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<td>2</td>
<td>Levenson &amp; Alec (2005)</td>
<td>Harnessing the power of HR Analytics</td>
<td>The author compares the usefulness of Return on Investment (ROI), cost benefit and impact analysis. He also explains why the time is right for HR to build an HR analytics center of expertise and create a foundation of analytic skills across the function.</td>
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<tr>
<td>3</td>
<td>Boudreau &amp; John (2006)</td>
<td>Talentship and HR Measurement and Analysis: From ROI to Strategic Organizational Change</td>
<td>The authors highlight the effectiveness of the LAMP framework for organizations and gives the caution of over emphasizing measurement can lead to information overload results in little additional relevance.</td>
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<tr>
<td>4</td>
<td>Dr. Jac Fitz-Enz (2007)</td>
<td>Beyond Benchmarking: Value-Adding Metrics</td>
<td>Author introduces a framework named Human Capital Management (HCM) -21), so that the HR function can move beyond benchmarking operating variables and focus on more strategic issues. Value is derived in the future via Leading indicators and intangibles. Increase in interest among intangibles is due to the adoption of technology and information in the place of physical assets.</td>
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<td>5</td>
<td>Royal &amp; Donnell (2008)</td>
<td>Emerging Human Capital Analytics For Investment Processes</td>
<td>Authors contribute four tools for human capital analysis to use a systems approach that can assist</td>
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 securities analysts to be more systematic in their approach to analyze the management quality of publicly listed companies. This is important, because is shown in a firm’s management systems. These tools provide more strategies for the securities analysts to be more systematic, in analyzing the intangible details of publicly listed firms on global stock exchanges.

<p>| 6 | Chhinzer et.al(2009) | Challenging Relationships: HR Metrics and Organizational Financial Performance | The paper suggests that the amount of progress made in empirically validating few relationships is not enough. The black box still exists. The intellectual community has introduced few measures and theories strengthening the relationship between financial performance of a firm and HR metrics. Despite that, a specific action plan to assist the organizations is yet to be created, to enforce better human resource strategies. |
| 7 | Magau &amp; Roodt (2010) | An Evaluation of the Human Capital Bridge Framework. | The results signify that HR management is not yet completely aligned with respect to the strategic business objectives, so that it can become a strategic business partner. The study recommends the use of HC Bridge framework can be used as a method to link up human capital processes with business strategy to leverage business results and to demonstrate value-add. |
| 8 | Bhushan &amp; Kapoor, (2010) | Business Intelligence and its use for Human Resource Management | This paper explains the importance of business intelligence systems helping the business to gain the competitive advantage. All the four sub systems of a BI system are briefly |</p>
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<td>9</td>
<td>Boyd &amp; Gessner (2011)</td>
<td>Human Resource Performance Metrics: Methods &amp; Processes that demonstrate you care</td>
<td>The paper explains that the performance appraisal techniques can be rooted in methodologies that ignore or de-emphasize the value of employee well-being. The analysis results a context in which all HR practices can be asked with respect to the meeting the requirements of a social justice agenda in the upcoming area of corporate social responsibility.</td>
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<td>10</td>
<td>Jon Ingham (2011)</td>
<td>Using a Human Capital Scorecard as a Framework for Analytical Discovery</td>
<td>The author suggests that the best way to tie up the entities of analytics and strategy is through a human capital scorecard. The scorecard is derived from a strategy map like the original balanced scorecard, which connects inputs, human resource activities and human capital outputs together and also depicts how these are linked to HR’s impacts to the bottom line growth.</td>
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<td>11</td>
<td>Kapoor &amp; Sherif (2012)</td>
<td>Human Resources in an Enriched Environment of Business Intelligence</td>
<td>The paper signifies one of the most vital problems of educating multinational companies to align their HR processes and practices to the altering global labor market conditions. By adding BI and Data analytics in the DNA of HRM protocols and database strategies they can very well attract develop and retain their top talent and be a fore runner in the global business competition.</td>
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<td>12</td>
<td>Hota &amp; Ghosh (2013)</td>
<td>Workforce Analytics Approach: An Emerging trend of Workforce Management</td>
<td>In this paper, the author explains the workforce analytics as the new corporate mindset. Also reveals that adopting non aligned analytics strategy is increasing,</td>
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which results the future of the firms in doldrums. Having an end to end range of analytics capabilities supported by an integrated analytics strategy, organizations are advised to enlarge, or cut short, the distance between themselves and competitors to their own competitive advantage.

| 13 | Dulebohn & Johnson (2013) | Human Resource Metrics and Decision Support: A Classification Framework | This study highlights, the issue is that although HR managers have developed a greater number of metrics, a lack of guidance is still lurking around with respect to where to apply those metrics, and to incorporate them into Distributed Support Systems (DSS) and Business Intelligence tools, eventually adding value to the HR. Hence, a framework is provided along with some guidance to researchers and managers. In addition to the framework, the type of metrics to be considered and DSS fit HR activities in alignment to the level of organizational functional details and decision support hierarchy involved is also given in detail. |
| 14 | Marten et al (2013) | A Framework for Business Analytics in Performance Management | The paper suggests that with the adequate use of data and analytical methods, business dynamics can be controlled. These are called Performance Analytics. In this way, analytics can provide the added competitive advantage which is not totally considered with regard to conventional or advanced PMSs. |

Source: Authors Complied Table

Table 1: Literature Review

There are certain keywords which are constantly used in the domain of analytics and some of them are explained below.

**Measure:** Data that is collected with no specific goal in mind.

**Metric:** A measurement with a goal of gauging some quantifiable component of a business performance. Measure becomes Metric when you set goals.

**KPI’s:** Key Performance Indicators are the Metrics that reflects critical factors for success. They help to measure progress towards strategic goals. They must be selected and customized based on objectives and priorities of each organization. For instance time to Fill Critical Roles, Employee Engagement Score etc.

**Analytics:** Analytics is different from Analysis, which is the equivalent of number crunching. It uses analysis and then builds on it to understand the ‘why’ behind the figures or to predict the decisions. It is the methodology of logical analysis based on the carefully constructed metrics which depends on the problems and opportunities an organization faces. DATA is the unit of Analytics.

![Fig 2: Mapping HR-Analytics-Strategy](image)
Employee Turnover is 13.5 % Per Annum (Measure or Data). There is a 4% rise in the attrition rate on a year on year basis (Metric). Inappropriate leadership styles of managers resulted in higher attrition of 3% on a comparable basis (Analytics). Once the right measures and metrics of each of the core functions of HR is chosen, bodies of Business Intelligence takes over to provide useful patterns and valuable insights.

Fig.2 depicts the framework that links the three silos i.e HR, Analytics and Strategy. Internal factors envelopes the details with regard to organization’s Recruitment and selection Policy, Firm size, cost of the activities undertaken etc. External factors comprises of the details with regard to Labor Market, Competitors, Supply and Demand, Political-Social- Legal environment etc. Information Intelligence consists of Enterprise Systems, Data Marts, Data Bases, Spread Sheets and computer language programming. Modeling Intelligence mostly comprises of operation research techniques such as Linear Programming, Decision Analysis, and Simulation etc. Statistical Intelligence consists of basic descriptive and inferential statistics, Multivariate techniques, and econometrics etc. Information Intelligence and Statistical Intelligence can be leveraged through Data Mining techniques. Modeling Intelligence and Information Intelligence can be leveraged through Online Analytical Processing (OLAP).

The high value insights generated will be so much of help to the strategic decision makers to go make evidence based decision rather than a decision made by intuition or best practice. In this process, the cost centered, service provider HR function leaps to a play a strategic role, there by becoming a strategic business partner and in turn contributing for a sustainable business.

5. Return on Investment of HR Analytics

The rise of HR Analytics competencies in a business has an equal impact in enhancing the accuracy to measure the Return of Investment (ROI) of the HR function per say. The very thought of implementing HR Analytics solutions in the enterprise as a strategy, troubles the top management with two issues. One would be the feasibility & transition of the existing job processes and the other related to the economic efficiency of the implementation. ROI is a performance measure which draws the value between cost and the benefits. Everything cannot be counted and every counted thing does not gain prominence. ROI is both a boon and bane. In the world of cut throat competition, no organization wishes to implement unless and until its top management perceives the true value out of it. ROI plays an invaluable role in this context.

Staples’ (2011) explores some of the key questions to be asked by correlation the data points from different sub functions of HR.

- How does the performance of an individual employee or group relate to the compensation of that individual employee or group?
- How does Compensation & Benefits policies affect attrition rate of the organization?
- Do we know who our top talent is and do we have succession plans in place to retain them?
- What are the recruitment channels that our top performers are picked from?
- Are we getting ROI on our training and development activities?
There is no formal model present in the literature in order to measure the implementation of any HR Analytics implementation. The present study tries to fill the said gap by proposing a generic framework. The framework is derived from the most widely used ROI methodology developed by Dr. Jack J. Phillips and Dr. Patti P. Phillips which is depicted in Fig 3. The much acclaimed Phillips ROI model is reframed to the context of HR Analytics which helps to measure the business impact by monitory value. The Phillips ROI model consists of four sequential steps which are Planning & Evaluation, Data collection, Data Analysis and Reporting.

- Identify the key objectives of HR Analytics implementation and develop the corresponding evaluation plans.
- Once the successful KPIs are defined, they are to be measured twice, before the implementation of HR Analytics and after.
- Identify Key Performance Indicators (KPIs) of the employees with respect to the HR Analytics, as performance measurement can be carried out through KPIs.
- After isolating the irrelevant components from the difference between the KPIs, monetary value is derived out of it.
- The monetary value is calculated using the simple formula of Return on Investment = (gain from investment - cost of investment) / cost of investment. The results are reported and then communicated to all the key stake holders. The top management is likely to be convinced, if and only if the value of ROI is positive real number.

Fig 3: ROI Framework
6. Conclusion & Future scope

The study has been focused in providing an insightful literature review of how HR function in the modern day business organizations can leverage upon Analytics to become a strategic business partner. The present study contributes two theoretical frameworks to the knowledge domain. First framework addresses the strategic prospects of the HR function, a journey from a mere service provider to strategic business partner. Very few studies made a mention of the Return on Investment of an HR Analytics as a business process. Highly acclaimed Phillips ROI methodology is used as a base to develop the proposed ROI framework.

Paauwe (2004) and Baron (2011) concluded from their studies that HR analytics is context-specific entity. In continuation to this, King (2010) argued that the workforce information changes with respect to the industry verticals and horizontals. Here comes the dilemma on HR Analytics as a best fit or a best practice. Close examination of previous studies and their findings reveal that, HR Analytics might be seen as a universalistic approach, without contextual differences (Dooren, 2012). The pace, at which Academic literature is growing with respect to HR Analytics, is not in sync with Industry implementations. Even though organizations might be working on improving their data based decision making, very few of them are successful to base their human capital decisions on reliable data. Data quality plays a pivotal role in this context. Apart from these, lack to analytical capabilities to process data, cost incurred in collecting the data, top management acumen towards evidence based management, and the return on investment of the whole process are few of the concerns that are hindering the pace of HR Analytics to be made a business strategy in the business world.

Future studies can focus on extending proposed theoretical frameworks, by testing and validating them thereby new models can be created. In this whole process, employee’s perceptions regarding the change from traditional decision making to evidence based decision making can also be studied. Lastly, measuring the risks and challenges of the physical implementation of HR Analytics, both in terms of tangible and intangible factors can have a huge research potential that is to be explored.

Nevertheless, HR Analytics is still at its infancy. It is strongly believed that would be a sustainable business strategy in the near future. Most of the companies are still waiting for that one big success story so that they can imitate at a meager risk. Changes in the workforce demographics, dynamics and diversity would make HR Analytics an imperative for sustainable business performance.
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