A Study on Measuring the Effectiveness of Human Resources in Organizations

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Abstract

Human resources of an organization are regarded the most important assets than any other tangible and intangible assets. Measuring the effectiveness of HR is important so that the human resources can be managed effectively. Despite several researches by well-known researchers in measuring HR effectiveness, we still tend to get lost while carrying out the process and the process becomes more and more subjective and confusing. The overall results that emerge are that of HR Metrics and Analytics that organizations are now carrying forward in terms of quantifying HR processes and practices while some organizations are also using traditional ways like balanced scorecards. This paper recovers some of the problems being faced by the HRs in different organizations across the globe, and the existing practices that some of the firms are now following in order to quantify HR in their firms found through secondary research. The questions like what to measure? How to measure? When and where to measure? Make measurement of HR processes and practices difficult. This paper includes both qualitative data found which are followed by firms in order to show how HR contributes to business results. A thorough research on the same was conducted. Various articles by well-known HR professionals were read and inferences were noted while looking at the various assumptions that somewhere become a challenge for the HR professionals and what steps are being taken by the organizations and what new innovative practices are coming forward in this field. This helps us to explore and analyze the various HR practices followed by a various firm to measure effectiveness which finally contributes to the business results and help improvise HR measures.

Keywords: Analytics, Engagement, Human Resources, Talent

1. Introduction

You cannot manage what you cannot measure and what gets measured gets done too (Ulrich, 2007).

HR keeps to continuouslyface the problem of identifying the language of an organization which is in terms of numbers and includes statistics, benchmarking, datasheets etc. CEO's and other directors of the board keep asking the HR, Where does the money go? And what are they getting in return?

HRs is really good at understanding and observing attitudes, emotions, feelings, opinions and behaviors to identify strengths of the workforce. But in a boardroom, this data does not have much importance and then their credibility is taken into question. It is important for HR

to work in fields which trigger excitement among the CEOs and other board members which are mostly profits, growth, revenue, and cost. We need to see how HR affects the organization as a whole. They need to keep a check on the quality, efficiency, responsiveness and consistency of the different functions of HR and how they affect business results as well as the financial outcomes of the organization. HRs are now moving towards becoming 'Strategic partners' (Ulrich, 1990) of the firm which is about creating value both in terms of customer value and economic value. It is necessary to make sure HR performs their roles by helping deliver the workforce that can deliver the strategic agenda of the organization. This can be done by measuring the effectiveness and efficiencies of HR practices in a firm. Effectiveness can be measured

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in terms of the impact HR has on each deliverable within the firm. But organizations continue to evolve and is globalizing and advancing technologically. E-commerce, offshoring and virtual organizations are growing, which, along with the changing work culture, change the way companies are designed and distribute the work. With such broad changes, our measurement techniques and the idea, change and evolve, as the factors affecting them keep modifying every day. Some of the organizations are still using old traditional approaches to measuring HR effectiveness, but HR needs to grow and adapt with the change.

The Human Resource function is showing signs of insecurity, desperately searching for an identity and justification within their organization. HR plays supporting role to the main business so HR has to deliver something of value. HR has often poor image and now this profession is anxiously seeking the ways to measure its process effectiveness. There has been great debate on measuring the Return on Investment of HR in monetary basis. HR effectiveness is generally measured in a qualitative and subjective manner rather than quantitatively. But there has been much progress in evaluating the effectiveness of HR in recent years.

HR effectiveness should be measured as it provides various benefits. To manage the human resource efficiently and effectively as well as for the continuous improvement of human resource measurement of HR is important. Since HR has various impacts on business, people and overall performance of an organization, it makes measurement an important factor. HR effectiveness helps to understand the impact on the business by the people.

2. Literature Review

In 1980s, first efforts were made to find a link between HR and business results. It was indeed necessary to understand if HR practices affected business performance. How and Why HR adds value? Why was it so criticized? And Why HR and L&D were always questioned about money? A research project OASIS (*Organization And Strategic Information Service*) was conducted which stated some evidence of relationship existing between HR practices and business results (Ulrich, Geller, &DeSouza, 1984; Cowherd & Kaminski, 1986). Since then various projects have been conducted (*1990, 1993*) findings showed that

HR practices were not only varied by strategy but their alignment too had an impact on business performance of the organization. This led to the belief that a way could be found to analyze such practices and their impact in the organization and hence led to more research.

Relationships were also found between HR management effectiveness and productivity, cash flow, and market value. The findings were consistent across market and accounting measures of performance and with corrections for biases. (Huselid, et al 1997).

Through recent studies, we have found that it is not necessary that all functions and departments of HR should be measured against their effectiveness like Job Satisfaction (*Why difficult to obtain?*), Employee Engagement (*whom to and whom not to and why*?). It is more important to understand what is worthwhile to be measured such that a strategic difference can be made in the organization and see what impact HR has on the financial outcomes. For this, we require some benchmarks, data, and credibility to analyze and measure practices. We need to convert HR practices into context such that it enables us to intervene and help impact the organization by bringing a strategic difference and getting a more desirable outcome, but if it does not exist then there will be no value. HR needs to know whether the workforce is aware of their brand, value, market, customers, financial position, business strategy, etc. The workforce also needs to know, what's in for them? As they form one of the major factors that affect our practice and measures.

Research also integrates the theories and findings of micro-level organizational behaviour/human resource management research with the macro level resource-based view of the firm, specifically presenting a firm's human resources as an important potential source of sustained competitive advantage thus measuring the effectiveness of the HR function(Belout, 2006).

In 1995, a major discovery was made by SHRM and CCH (Dr. Cheri Ostroff) societies, to find the impact of HR on financial outcomes. (1) HR professionals see HR issues as important to business performance; (2) line managers should be responsible and more involved in HR practices, and (3) use of HR practices varies widely. And finally, HR index was also developed which depended on four major factors namely, market value, productivity, market/book value and sales (Table 1).

Table 1. SHRM/CCH study of HR quality and business results

	Quartile of HR Index			
Performance index	Bottom 25%	Second 25%	Third 25%	Top 25%
Market/book value	0.15	0.23	0.24	0.40
Productivity index (output/employee)	0.16	0.17	0.20	0.21
Market value	878	1250	2031	3667
Sales	1017	1598	2090	4420

Source: CCH Incorporated, 1995. Human Resource Management: Ideas and Trends in Personnel, Issue 356.

HR knows that they have the most impact on the employees of the organization. But to identify the lows and highs existing in the workplace, it is indeed important to understand how HR practices are affecting the business. Before an HR it is the leader that affects the employees in an organization more. Hence, it is also necessary to develop accountability of the leaders, help them become more talented on all HR factors such that they can attract, grow and keep the right talent in the organization. To maintain this credibility, it requires that the HR partners with the Finance department as they are the ones who are the stakeholders in the firm and can help to understand and provide data for benchmarking. To some extent we can even partner with the IT team as they will help us make our presence online. Through various research and projects conducted a lot of practice to measure HR effectiveness wereidentified.

The effectiveness of Human Resources can also be measured by these HR strategies are referred to as CompetenceAcquisition, Competence Utilization, Competence Retention, Competence Displacement, Behavior Control, and Behavior Coordination. The implications and advantages of this reconceptualization impact the effectiveness of the HR function. (Wright& Snell, 1991).

3. Objectives of the Study

- To study the current trends in HR and recommend the measures to increase the HR effectiveness in an organization.
- To analyze latest trends and to suggest recommendations regarding the effectiveness of HR.

4. Research Methodology

To continue with our work on HR Effectiveness and an

endeavor to bring some clarity for the effectiveness of Human Resources, this paper is based on a systematic review of the literature on metrics used for measuring HR effectiveness which seeksto synthesize the current thinking and evidence. Emphasis is drawn on specifics on certain companies which measure the effectiveness of human resources through balanced scorecard and talent analytics. A model has been conceptualized based on these findings. Literature for this study was predominantly sourced frominternet searches and the use of management journal databases such as EBSCO, EMERALD, Elsevier, and SCOPUS. The paper is qualitative in nature. Theories, models, and metrics are used to study and predict the effectiveness of the HR in the organization.

HR measurement as a part of a balanced scorecard (Kaplan &Nortan, 1993). It is based on the stakeholder model (Friedman, 1985) and aims at satisfying three major stakeholders in an organization: investors (*financial performance*), customers (*customer satisfaction, retention, etc*.) And the employees (*great places to work*), only then can business be termed successful. Out of these three stakeholders, satisfying an employee is the most difficult one to achieve.

Talent Analytics as a tool has also been used to measure the effectiveness of the Human Resources.

5. Findings and Observations

The balanced scorecard is based on three factors, namely, financial and customer outcomes and business processes (Table 2). If it lacks in focusing on these four dimensions, then the organization might be facing a challenge and it might be investing at the wrong place. It is directly aligned with organizations strategies, core values, mission, and vision.

Table 2. Balanced Scorecard

Employee				
Investor	**Customer**	**Productivity**	**People**	**Process**
Stakeholders	Employees	Ratio: output/input	Feel, do, know	How we get things done
Shareholders		Revenue per employee	Satisfaction	Leadership
		Cost per employee	Commitment	Innovation
		Units produced per employee	Competence	Speed/cycle time
		Profit per employee	Turnover/retention	Learning
			Grievance	Unity/shared mindset
			Absenteeism	Equity

Source:Kaplan and Nortan, 1993

GE, ***General Electric*** also uses a balanced scorecard but they don't call it by the same. They are more focused on measuring the impact of HR in productivity and values of the firm. They translate all their values into behaviors and, through different mechanisms they track and monitor them to measure the GE values (Table 3).

Table 3. Balance scorecard used by GE to measure the values

Value	Performance	
(Do you behave according to the GE values?)	Do you reach your	Financial objectives?)
	Low	High
High	2	4
Low	1	3

Motorola also came up with a balancedscorecard which identified six questions to check if the employees are being treated fairly. Each manager/ supervisor was expected to have his/her subordinates fill the same once a quarter such that the scores of each subordinate are converted into a score for their respective managers. In

most of the firms which are following this practice of a balanced scorecard, measure their different process in terms of diversity, values, etc. and translate them to points which are then integrated into a balanced scorecard which helps to measure business results and performances (Table 4).

The example of balance scorecard is as follows:

In questionnaire method, a form was designed which basically includes major HR activities. These HR activities should be rated by different members of the company such as employees and line managers. It is mandatory for HR manager to fill the form as the deviation on the rank is measured on the basis of how HR has given a score to them. All other members are told to rank the HR activities in a total of 5. HR has also ranked themselves on the same question in a total of 5 scores. The deviation of HR ranking with that of other members ranking in each category is checked and the effectiveness of HR is evaluated. It checks HR effectiveness in each category/ segment (Table 5).

Table 4. Example of balanced scorecard on financial measures

	Financial			
To succeed financially, how should we appear to our shareholder.	**Objectives**	**Measures**	**Targets**	**Initiatives**
	To increase customer satisfaction and loyalty by 20%	• customer satisfaction survey score • Value delivery time	• Increase by 20% • In > 4 days	• Everyday customer interaction • Facilitating feedback

Table 5. Example of questionnaire method

Particulars	HR manager ranking	Line manager Ranking	Ratings	Effectiveness
Providing timely and proactive inputs for the strategic planning process	4	3	Over rated	Ineffective
The HR is of enabling nature and not of restrictive nature	2	4	Under rated	Ineffective
HR as change leadership first initiate transformation within HR functions.	3	3	Balance	Effective

Various metrics are also used to measure the effectiveness of HR. To use metrics, HR activities are broadly classified into 3 categories for evaluation. That is:

1. 1) Staff Turnover
2. 2) Staff Engagement
3. 3) Exit Interview

Staff Turnover

Measuring Technique:

- Start by calculating the number of people who have left in 12 months.
- Compare it with that of the previous year.
- Divide whether it is an unwanted staff turnover or not. (Employees who wanted to leave the company and employees who didn't want to leave the company)
- Calculate the cost (direct and indirect) of the employee who has left the company such as working hours, knowledge cost etc.
- Compare the revenue contributed to the company by this employee with the cost of leaving the company.

We can use these steps to measure HR effectiveness in such a way that if HR department is not able to maintain positive revenue of most of the employees as a result of comparison than HR processes can be taken as ineffective. However, the revenue can be further be compared to the following parameter to get clearer and measurable outcomes.

The most acceptable parameter for comparison of revenue and cost can be comparedto the entry cost of new entrants. The entry cost of new entrants is as follows:

- Senior level of new entrant staff cost: 400 % of the salary of the senior level staff who left the company.
- The middle level of new entrants cost: 150 % of the salary of the middle level staff who left the company.
- The entry level of new entrants cost: 30%-40% of the salary of the entry level staff who left the company.

If HR department is able to produce a positive ROI from most of the employees and is able to balance the cost of the new entrants with the revenue of the staff who has left the organization at the same hierarchical level then the HR is said to be effective.

Staff Engagement

Measuring Technique:

- The only way to measure staff engagement is engagement survey. Various techniques can be used as a tool to measure staff engagement. For example, a questionnaire method in term of evaluating the effectiveness of staff engagement can be used. This is a tool which will further help to measure the effectiveness of HR efficiency. Different analysis tools such as bar diagram, pie charts, table representation, etc. can be used as an outcome of the survey. This outcome of the survey can be further tested using a different tests such as ANNOVA test, Chi-square test and KMO and Bartlett's test to get more accurate and empirical information on HR effectiveness.

Exit Interview Program

Measuring Technique:

- Independent exit interview.
- Ask them what they liked the most about their role and what they actually hated about their role.
- After collating overtime responses, trend analysis can be done to get more accurate information.
- Improvement in the score indicates proper communication of dissatisfaction of an employee which is being undertaken by the company which directly measures the effectiveness of HR.

These factors can be chosen on the basis of nature and need of the organization as a tool for evaluating the HR effectiveness.

When to measure:

This technique can be adopted in quarterly basis as the frequency of these parameters keeps on fluctuating more often.

6. Current Trends in Measuring the HR Effectiveness

Nowadays, organizations are following practices which differ for different levels and departments like in a manufacturing plant, for Operational metrics it would be activity based and for Boardroom or top management level employees it would be more of a business value based.

Organizations face a big challenge wherein they

assume that the structure of workforce, they have now could be the same in the future or the customers they have will remain loyal to them throughout, etc.

Such challenges make it difficult for a firm to achieve positive returns, make a profit or grow in the market.

A new practice then came up, *HR Auditing*, which includes HR metrics and Workforce Analytics.

Audits are a way to maximize function, role and its impact on the organization.

Two commonly used HR analytics tools are HRIS and HCM metrics.

These practices do not guarantee us that we will receive ROI after implementation, but it surely will help to understand the trend, if we learn to use this data to increase our efficiency and affect financial outcomes. Metrics help us to communicate results through the numbers which is what the CEO and other board members expect. It also helps us to work towards achieving expectations and signify what is important. HR can also track yearly trend, measure the cost involved, and quantify HR processes such that the impact of these initiatives on the business results can be measured. And now a great number of organizations are using metrics to audit their HR activities.

There are two major factors that affect metrics. These are workforce as a whole and talent in the organization for which strategic workforce planning is necessary. For example, looking at the recruitment trend, we can identify *Cost per hire* and how it has changed with time and if the cost involved in recruiting the employee was worth.

A recent study conducted by People Matters, 2016 March,which states that out of the 72 firms that were surveyed, about 96% do not have dedicated HR resources for auditing, and only 52% of the companies perform audits to use it as an early warning systems while the guiding principles of HR audits in 70% organizations is to examine the organization's compliance with already established regulations and company policies, while 66% use the Employee life cycle model (*from recruitment to separation*), and 51% use review supporting systems. It was found that companies audit mainly compensation and payroll, record keeping, legal compliances, policies and procedures, employee separations, recruitment, etc. processes as it is important to know the major activities conducted within the department which are affecting the business most. Through the research, it was also found that auditing helped us to benefit by identifying gaps that exist within departments and teams as no department of HR is completely mature and correcting risk gaps. It also benefited us by helping litigation avoidance and cost avoidance.

HRs can also calculate Return on Investment (ROI) to measure value of HR practices on business results

'Hurdle Rate' is the minimum ROI organizations require from project investments.

$$ROI = \frac{\text{Value received from investment}*100}{\text{Cost of Investment}}$$

For instance, if an organization is an employer of choice and is providing extensive benefits, job security and great performance, the attrition rate of the firm will be very low as the bottom performers of the organization are not leaving the firm, which in turn will reduce productivity, reduce motivation to work, and increase pressure on the good performers as we cannot hire new talent and all of this, in turn might reduce our ROI (SAP labs).Whereas if a firm is more of an employee of choice, then only the best performing employees will be in the organization who are self-motivated to work and thus will surely help us increase our ROI.

Table 6. Talent analytics maturity model

Level	Analytics	Description	% of companies followed
4	Predictive Analytics	Development of predictable models, scenario planning, Risk Analysis and mitigation, integration with strategic planning	4%
3	Strategic Analytics	Segmentation, statistical analytics, development of "people models". Analysis of dimensions to understand the cause and delivery of actionable solutions.	10%
2	Proactive-Advanced Reporting	Operational reporting for benchmarking and decision making. Multi-dimensional analysis and dashboards	30%
1	Reactive-Operational Reporting	Ad hoc operational reporting, Reactive to business demands, data in isolation and difficult to analyze	56%

Source: Deloitte, 2012

In the case of Google, it accommodates practices of both kind and hence is always on the top of the list of great places to work. Calculating Economic Value Added (EVA) as a part of metrics.For all HR activities, returns in calculated through cost of capital which is considered as a benchmark for calculations and the net operating profit is later deducted.

For example, in **IBM,** they perform three levels of auditing- at peer level, where one team audits the other within the department, at a corporate level, where an external team conducts the auditing but within the organization and in the third level, a statutory audit is conducted by an external team outside the firm. They even conduct HR audits every trimester in the organization and it goes on for around 2 to 4 weeks. They even have an operational excellence and reporting team within HR who look at the life cycle of the employee until separation.

In *Aditya Birla Group*, audit focus is on strategy alignment, process improvement, and identifying aspects that need a review. They have leveraged their multi-business structure to embed audit process as a part of their workflow, with a 'maker-checker' approach in governance.

In the case of *Infosys Technologies Limited,*HRV was found to be positively related to the value added per employee, turnover per employee and cost per employee and negatively related to return on HRV. Theresults of correlation analysis suggest that HRV influences efficiency and profitability of the Infosys positively. In the valuation of human resources, Infosys follows Lev and Schwartz model, the future expected return during the service life of employees is converted into the present value by discounting it. Therefore, discount rate plays important role in the human resource valuation.

Kochi Refinery Limited (**KRL**)discounts the future expected return of employees at the constant rate of 15 percent. This helps in keeping the HRV near to the reality based on the input of the model. This also makes it clear that any change in HRV is due to change in the present value of actual future expected earnings of the employees responding the change in material factors such as average age, manpower cost, the number of employees etc.

A number of functions are used under metrics to conduct a measurement of HR effectiveness, like dashboards, reporting, benchmarking, data mining, predictive analysis, operational excellence, and workforce modeling. To conduct all of this we need data, which can be found through HRIS, which is now widely used

in the firms as an ERP model to integrate all the data of the organization in one place, making it easy to assess and examine data. In turn making it easier to conduct timely audits, and real-time analysis showing evidence of how HR impacts the business. Nowadays, most of the HR activities like Employee time and attendance, payroll, announcements, performance review, applicant tracking system, learning and benefits tracking are all carried through HRIS in major firms.

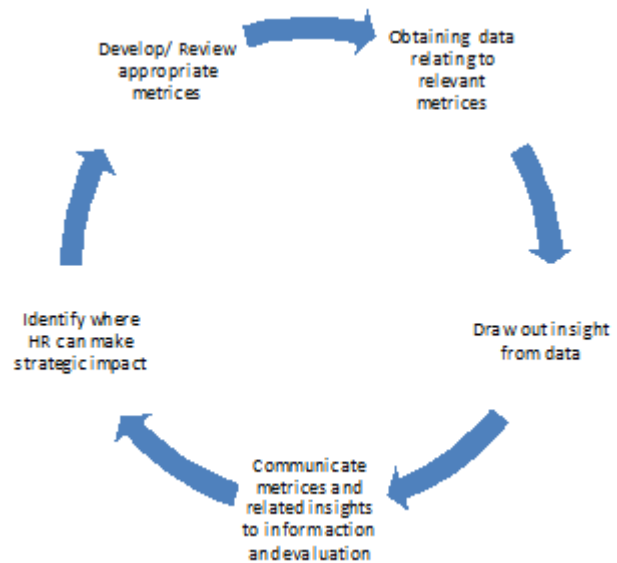For maximum impact we can follow following format of HR analytics:

Figure 1. HR analytics.

7. Results and Conclusions

Various HR practices can now be measured and their effectiveness can be linked to the business results, with the growing technology everything can now be done online, making the process fair and transparent. Financial and customer outcomes along with value creation are now possible. HR Auditing is expanding and organizations are taking steps to enhance the approach. HRs are moving from a transactional HR to a transformational HR by not only leveraging the investment in their workforce but also making sure that all the practices of HR impact the business results and financial outcomes.

So going through this study, we could observe that HR Practices have come a long way from Balanced Scorecards to HR Auditing.

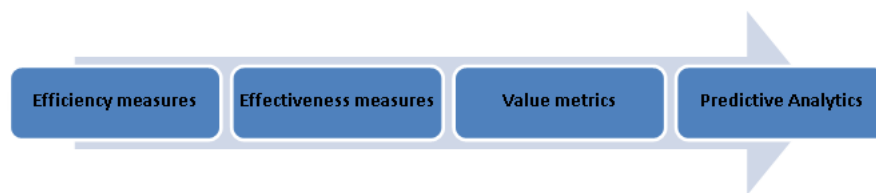From the above study, we can say that how HR

Figure 2. HR effectiveness measurement.

effectiveness measurement has evolved. The evolution of measuring technique of HR can be further explained by the following diagram:

Efforts have been started to understand organization strategies and accordingly prepared a roadmap for checking the outcomes which are affecting the business results by the use of HR Metrics and analytics.HR analytics have become a tool for carrying out functions and processes in the organization. Some of the metrics like Surveys can be used to track and analyze behavior change, training results, corporate employee satisfaction, etc. Whereas Business metrics can be used for performance appraisals and annual reviews. One important thing to take care is while conducting HR auditing, organizations should choose functions that affect their business results, basically optimizing the full process in an efficient way. They can compare the new data with the past data, to check if any value is added. On the basis of the findings, desired improvements can be made.

Different processes can be analyzed individually like under Recruitment Analytics we can calulate

$$\text{Recruiting source yield} = \frac{\text{Number of applicants hired}}{\text{Number of applicants from recruiting source}}$$

Calulate,

$$\text{Monthly turnover rate} = \frac{\text{Number of separations in a month}}{\text{Number of Employees, which helps us to keep a track of the infant mortality rate (1 year)}}$$

Calculate *Percentage of first choice candidates*, which enables us to identify where our firm stands and what steps can a firm take to be the first choice of employees.

Calculate *Average Onboarding time*, which in order to reduce will help us to save on the average salary for an employee on those days.

HR Auditing can also lead to increase in employment, wherein most organizations will favor HRs to conduct the audit as domain knowledge of HR and comprehension of HR functions is imperative. Organizations can also outsource it to HR Analytics providers like *SMD, PeopleSoft*, etc. The real purpose of such audits can only

be achieved if the recommendations are implemented which is also the biggest challenge being faced by the organizations and will only help us know the degree of success of the audit. So, the need of thehour is to make this process efficient for achieving greater growth of people as well as organizations.

References

1. Ulrich, D. (2007). Measuring Human Resources: an overview of practice and prescription for results..
2. Jamrog, J. J.&Overholt, H. M.Measuring HR and Organizational Effectiveness.
3. Thomson, S. How is the effectiveness of a HR strategy measured.
4. Guest, D.& Conway, N.The impact of HR practices, HR effectiveness and a strong 'HR system' on organizational outcomes: a stakeholder perspective.
5. Robinson, B.Introduction to HR Metrics and Workforce Analytics.
6. Betty,R.(Dick).The Next Generation of HR Metrics.
7. People Matters.(2016, March). 7(3).
8. Retrieved from http://catalinaconsultants.com.au/3-metrics-for-measuring-hr-effectiveness/
9. Retrieved from http://www.dohertyemployment.com/blog/how-effective-your-hr-department
10. Retrieved from http://www.mcleanglobal.org/public/MGC/publications/Evaluating%20HR%2005.pdf
11. Retrieved from http://catalinaconsultants.com.au/3-metrics-for-measuring-hr-effectiveness/
12. Retrieved from http://www.dohertyemployment.com/blog/how-effective-your-hr-department
13. Retrieved from http://www.ppma.org.uk/expert-guides/guide-to-measuring-hr-effectiveness/guide-to-measuring-hr-effectiveness-why-is-it-important-/
14. Retrieved from http://www.ppma.org.uk/expert-guides/guide-to-measuring-hr-effectiveness/guide-to-measuring-hr-effectiveness-what-to-measure-/
15. Retrieved from http://www.quickmba.com/accounting/mgmt/balanced-scorecard/
16. Retrieved from http://www.businessballs.com/balanced_scorecard.htm
17. Retrieved from http://www.hbs.edu/faculty/Publication%20Files/10-074.pdf

18. Retrieved from http://onlinelibrary.wiley.com/doi/10.1002/hrm.1002/full

19. Retrieved from http://www.tandfonline.com/doi/abs/10.1080/095851900339828

20. Retrieved from http://www.tandfonline.com/doi/full/10.1080/09585192.2012.679950?src=recsys

21. Retrieved from http://www.aon.com/attachments/human-capital-consulting/2012_Defining_High-Performance_HR.pd

22. HR Effectiveness Survey. (2014). Florida GulfCoast University.

23. Walters, G. (2011)TheEffectiveness of Human Resources function within a public utility.

24. Yeung, K. A. (Guest Editor). (2014).Introduction: Measuring Human Resource Effectiveness and its impact.

25. Ulrich, D.(2010). Measuring Human Resources: an Overview of practice and a Prescription for results.

26. Greene,J. R. &Ronza, P. Effective Human Resource Management Strategies.

27. Harris, S.(2011, January). The Top Best Practices for the High-Impact HR Organization.

28. Retrieved from https://www.researchgate.net/publication/233167888_Strategic_human_resource_management_effectiveness_and_firm_performance, 2001

29. Retrieved from dchr.dc.gov/sites/default/files/dc/sites/dchr/publication./hr_effectiveness.com

30. Vijayakumar, K. (2013). Metrics for Measuring HR Effectiveness - HR Scorecard.

31. Ramezan, M. (2009, June)Measuring theEffectiveness of Human Resource Information System in national Iranian oil company an empirical assessment.*Iranian Journalof Management Studies*, *2*(2).