



“PROMINENCE OF HRA APPLICATION FOR DECISION MAKING IN HRM (INCLUDING CHANGE MANAGEMENT)”

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Abstract: “What gets measured, gets managed; What gets managed, gets executed!!” – Peter Drucker.

Rapid changing business environment has led HR and management to use data and workforce much more efficiently for competitive performance. Analytics gives HR the tool for providing insight that is required to measure and manage functions in order to contribute at strategic level.

The paper is an effort to conduct a systematic review from published journals in the field of Human Resource Analytics. The effort is to shed more light on different issues that relate to the topic such as “what is HR Analytics, it’s evolution, types of HR Analytics, challenges faced in adoption, key enablers, application and future scope of the topic”.

This study is of considerable practical relevance as it highlights numerous empirical research evidence showing the positive impact of HR Analytics in various HR functions and organizational effectiveness. However, the adoption and implementation seems to be limited to certain functions only. Holistically the research shows that HR is pivoting towards a more strategic function and playing a more strategic partner role in the organization’s decision making process.

Exploring the acceptance level of analytics for measuring the different HR functions is the other key objective of this paper. In addition to this, the paper also tries to highlight a gap visibility in transforming change and managing change in organizations using HR Analytics.

Index Terms - HR Analytics, Strategic HRM, Change Management, Organizational Change, Change Typologies/Models, Decision making.

1. Introduction

Human Resource Management (HRM) plays a critical part in any organization. HRM is a function specifically envisioned to capitalize on employee’s performance. The Human Resource (HR) function of current day business scenario has evolved as having more strategic importance. Changing workforce dynamics in VUCA world along with fast innovations are the key reasons for HR to transform the way it functions. HR function is no longer confined to the mere fulfillment of operational needs, it is now playing the role of a strategic partner in decision making as well as close monitoring of business goals.

Measuring and maintaining records of all HR data had been traditionally inherent in organizations. However, with the advent of HR metrics and big data, the same continues to prevail and that too with a much more systematic approach, making move towards HR Analytics. Thus, HR Analytics is defined as *the ability to provide the most accurate analytical-driven evidence-based HR related decisions* [1].

Also, HR analytics is: “*a methodology for understanding and evaluating the causal relationship between HR practices and organizational performance outcomes (such as customer satisfaction, sales or profit), and for providing legitimate and reliable foundations for human capital decisions for the purpose of influencing the business strategy and performance, by applying statistical techniques and experimental approaches based on metrics of efficiency, effectiveness and impact*” (Dooren, 2012)[23].

There are 4 popular types or emerging phases of Analytics:

1. **Descriptive:** *Descriptive Analytics* is a first level of analysis which includes understanding of the historical data, behavior and outcomes. It only describes the relationship and historical data patterns. It involves the use of data visualization, adhoc reports, drilling-down, dashboards and score cards. This is the foundation of any analytics effort. This level does not talk about “why” element of any relationship between variables or data patterns.

2. **Diagnostics:** The next level of Analytics is diagnostic Analytics. This uses visualization techniques to answer “why” element of the relationship between variables and historical data patterns.

3. **Predictive:** Predictive analysis covers a variety of techniques (statistics, modeling, data mining) that use current and historical facts to make predictions about the future. It’s about probabilities and potential impact. Many organizations are moving to this phase in order to actually make evidence-based decisions.

4. **Prescriptive:** Prescriptive analytics is the most recent phase of analytics which goes beyond predictions and outlines decision options and workforce optimization. It is used to analyze complex data to predict outcomes, provide decision options, and show alternative business impacts. Some of the most widely used techniques in this type of analytics are linear programming, simulations and creating mathematical modelling. Prescriptive analytics has two levels of human intervention: (1) decision support, e.g. providing recommendations; decision automation, (2) implementing the prescribed action [44]

Fig 1 highlights the 4 dimensional benefit of using HR Analytics.

The emergence of new economies has opened business opportunities for many organizations. This has resulted in organizations accepting the phenomenon of change. Many organizations now find themselves in a volatile environment whereby the need to introduce and manage change successfully has become a competitive necessity. The environmental variables are political, economic, technological, and sociological in nature. These play an important role in determining the type of change to be implemented and the speed at which the proposed change or changes are to be implemented. Given the scenario, organizations now realize that if they do not change, they will perish. However, this is easier said than done. The fact is ‘change remains difficult to pull off’ and most organizations have had low success rates.

Changing organizations effectively is an art, not just a science. It requires insight, imagination, courage, skill, leadership, and even wisdom. Change management has been defined as ‘the process of continually renewing an organization’s direction, structure, and capabilities to serve the ever-changing needs of external and internal customers (Moran & Brightman 2000). However, in order to address this process, one also needs to understand the various types and categories of changes along with their reasons and originations.

One way to categorize change is to define in following way:

- a. Continuous and incremental Vs discontinuous and radical
- b. Planned Vs unplanned
- c. Catastrophic Vs evolutionary
- d. Positive Vs negative
- e. Strong Vs weak
- f. Slow Vs rapid
- g. Internally stimulated Vs externally stimulated

One of the other popular categorizations of change is framework with three types(Summary in Table 1):

- (1) Smooth incremental change
- (2) Bumpy incremental change
- (3) Discontinuous change also called as “frame breaking change”

Another interesting way to classify change is:

1. Adaptive change
2. Innovative change
3. Radically innovative change

Adaptive change encompasses the transfer of change from one organizational unit to another unit thus, it is a repetition of change through imitating the once adapted change. Innovative change is a change of idea or new ideas, devices or methods. Radically innovative change is a change that is considered the most difficult to attain because it has a tendency to threaten the administrative confidence and disadvantages to the workforce. Example: Considering changes that involves reorganization or an addition to new products or services.

Research also shows another categorization of change as [52]

1. Transformational Change: It can also be called quantum change.
2. Incremental change: This deals with the introduction of change in smaller scale gradually.
3. Remedial change: This is considered as an urgent change that solves or remedies the current and existing problem.
4. Developmental Change: This is an organizational change that focuses on improving what already existed on continuous basis, but no radical change made.

Whatever may be the reason and type of a change, it needs to be managed carefully by organizations to survive and thrive. And thus, the whole concept of change management!!

“Change Management is a process that supports required changes in organization’s direction, approach or strategy. Change management is the structured approach to moving an organization from the current state to the desired future state.[53]

Several models can be applied to manage change, however, for purposes of this study, the most common 3 models are summarized here, namely: Lewin’s Change Model, Kotter’s 8-Stage Model and McKinsey’s 7s Model.

Lewin’s Change Model: This change model is primarily focused on planned changes. The framework consists of unfreezing, changing and refreezing. Unfreezing is the state of unleashing the current system or procedure. Changing is the state of moving forward from the old system into the new system. Refreezing is the act of institutionalizing the change or incorporating the change into the strategic objective of the company. Fig 2 shows the diagram of the change model.[64]

Kotter’s 8-Step Model: Kotter’s model of change emphasized the importance of the holistic approach in dealing with change efforts. If taken considered well, it may cause about 70% failure to many organizations. Fig 3 shows the diagram of the Kotter’s change model.

McKinsey’s 7s Model: McKinsey model identifies seven areas of change and further divides them into two categories: the soft and the hard areas. The hard areas consist of the system, strategy and structure while the soft system areas include skills, style, and staff. Shared values which are normally difficult to manage but considered as the foundations of the organization, sits in the middle of the framework which acts as the source of sustainable competitive advantage.[52] Fig 4

This literature review is an attempt to explore and understand if HR Analytics can be used as a tool to track change management and contribute in successful driving of the change.

2. Review of Literature

2.1 HR Analytics

2.1.a Evolution and phases of HR Analytics

Human Resource Analytics (HRA) or People Analytics is not an entirely new concept. HRA has emerged as a new trend and challenge in the business context emphasizing the strategic value of Human Resource Management (HRM). So, evidently HRA is a concept that is less than two decades old [1][37].

As mentioned earlier, the earlier phases of Analytics were limited to finding trends and patterns in the data, and finding the cause for the same to some extent!! However, Analytics seems to pick up the pace and now, it not just tries to predict the future, it also tries to prescribe the solution for the same as well. Analytics allows organization to strike a balance between intuitions, belief and experience, with genuine facts and evidence: —It helps focusing on what really matters and on what works and what doesn’t work.[34]

Analytics has gathered a lot of attention during the last years. Although descriptive and predictive analytics have become well-established areas, prescriptive analytics has just started to emerge in at an increasing rate. Research also shows that there has been a paradigm shift in the role of HR from being an operational partner to strategic decision making business partner.

Collectively, the exploratory and empirical case studies show that HRA is widely getting adopted by organizations for improving their employee performance and getting optimal return on investment (ROI).

2.1.b Why HR Analytics?

Peter Drucker mentioned once that if one wishes to execute something, one needs to manage it. And in order to manage something, it needs to be measured properly. With the advancement of HR metrics and various tools, it has become easier to measure and then manage data related to any HR function. Thus metrics are numerical data that reflect some descriptive details about the given outcomes or processes. It not only creates interest in measurement and analysis but also makes it simple to calculate and report. It further evaluates and report HR indicators that it translates into better organizational performance. This enables to translate information into meaningful reports that helps the managers to make different and better choices. Thereby, translating to better organizational performance. Also, it helps to bring a change in manager’s decision-making behavior by reporting HR indicators using a ROI-based approach.[22][39]

With the advancement and development of effective HR metrics and people analytics, this might be the source of competitive advantage in future for organizations. Decision makers in HR will gain the ability to manage and improve their programs and processes more effectively through the use of HR analytics. Thereby improving the effectiveness of the entire workforce.[22].

2.1.c Enablers for HRA adoption and Moderating factors.

Research shows that HR Analytics is emerging and helping HR to get established as strategic partner. However, reviewing multiple papers show that there are few enablers for HR analytics. In literature, a number of ingredients can be identified that a people analytics team needs in order to implement HR analytics effectively [27]. Key ones are

- (1) Senior management support
- (2) Data and infrastructure
- (3) Knowledge, skills, abilities, and other characteristics (KSAOs)

Utilizing workforce data and analytics is utterly important to strengthen HR's contribution to organizations. An individual's analytical ability is explained with the help of LAMP framework. LAMP framework can be articulated to explain how HR can move to leverage rigorous principles of decision science in engaging workforce management. LAMP stands for (a) **Logic**—ensuring a clear causal logic connecting measures and relevant business outcomes, (b) **Analytics**—engaging analysis that clearly tests relationships between measures and outcomes, (c) **Measures**—identifying the right data and ensuring high-quality data, and (d) **Process**—ensuring a process for incorporating the insights from rigorous analytics into business decision making.

HR professionals with higher analytical abilities likely use their analytical skills to make better business decisions. They are more likely to leverage insights from data to create momentum towards needed changes. This ability to use and interpret data and information allow HR professionals to discover new insights. This analytical ability also allows HR professionals to communicate and coordinate better with other functions in the organization.

The empirical study tested 5 hypothesis to check the relation between enablers and performance. Analytical skills was taken as independent variable and performance as dependent variable. For the given basic dependent and independent factors, 5 hypothesis testing was performed through statistical tests. **1)** Hypothesis 1 suggests a positive relationship between an individual's analytical ability and performance. **2)** Hypothesis 2 predicted that the positive relationship between analytical ability and individual performance will be stronger for HR professionals in high-tech than in low-tech industries. **3)** Hypothesis 3 predicted that the positive relationship between analytical ability and individual performance will be stronger as the extent to which a company engages in HR analytics increases. **4)** Hypothesis 4 predicted that the positive relationship between analytical ability and individual performance will be weaker as the job level of the HR professional increases. **5)** Hypothesis 5 predicted that the positive relationship between analytical ability and individual performance will be stronger for HR generalists than for HR specialists.

Summarizing, the study shows that HR professionals with higher analytical skills have higher overall individual performance. Also they create more value, both for external and internal stakeholders of the business.

2.1.d Challenges in HRA adoption

Research showed key enablers for HRA adoption and also relevant study is been done to showcase that data plays a big role in enabling adoption. However, it is equally challenging for HR professionals to deal with this data thereby making this as one of the biggest challenges along with being enabler!! Adding to this is the big data concept in recent times and the frameworks driven by big data.

The exploitation of big data has become immensely popular with organizations these days. Considering the low cost to store the data and cheaper available technologies for production, has made acceptance of big data much easier. Big data is large volume of structured and unstructured data generated by the routine activities of organization. Alternatively, Big data can also be represented through 3Vs – Volume, Velocity and variety. Volume refers to the amount of data that are produced by various sources such as social media, business transactions, and Internet of Things. Velocity, represents the speed at which data is produced, while variety refers to the formats. There are 2 more dimensions for this - variability and complexity. Variability refers to the frequency of the data, while complexity refers to the fact that the multiplicity of data sources makes it difficult to work with them because of diverging data schemes underlying the data collection. In the context of big data management, the concept of a “data lake” has become very popular. Data lakes allow companies to store several types of data at a low cost, as they do not require the data to be transformed so as to fit a prescribed data model. Managing all these dimensions for data and then generating insights from such data becomes a challenge for HR Professions.[17]

Another extended challenge for HR professionals is the limited exposure and understanding of IT infrastructure in order to manage this kind of data. They broadly depend on their IT function to manage such technicalities and hence procuring and using any change in data in real time becomes a challenge for HR professionals. Though this is a challenge, however, Big Data can help OD practitioners look above and beyond their traditional organizational perspective to infer insights that are much more proactive than existing methods. [26]

2.1.e Case studies with Hypothesis testing for applications

In order to play a strategic role in organizations, HR needs to develop its ability to measure how human capital decisions affect the business and vice versa. Analytics can provide insight needed for many applications[39] like (1)To keep employee learning with changing skill requirements (2) Gathering information about which recruiting channels are producing the best employees (3)Identifying high potential employees and support succession planning (4)Discovering the underlying reasons for employee attrition/turnover (5)Determining recruitment and selection process (6)Establishing effective training and career development initiatives (7)Identifying factors that lead to employee satisfaction & productivity (8)Estimating employee engagement, capability and skills forecasting workforce requirements (9) Succession Planning.

With the application of analytics; HR function is able to implement a pragmatic approach to help executives make the right investments based on effective analysis and initiatives. The goal is to assess the past and present to predict the future based on facts and data. With the collection of the right data and using analytics to monitor performance even laggards can become leaders.

The case study based literature has two foci. First one is to cover the study that provides practical and empirical examples of organizations that have implemented HR analytics and recommendations for successful implementation. Second one is to cover studies done by scholars or practitioners who have consulting experience in the area of HR analytics.

HRA can help various HR functions to address many questions in their respective discipline. Some of the decision making questions which HRA is addressing in planning and staffing are (a) Did the utilized source of recruitment create the expected group of potential candidates for selection? (b) Does the candidate possess appropriate Knowledge, Skills and Attitude (KSA) that match with the job specification? (c) Is the candidate interested in the job being offered to him/her? (d) What induction method would have the highest impact? Some of the other decision making questions for training and development are (a) What T & D methods would have the maximum impact on employees' job effectiveness? (b) What is the ROI (Return on Investment) of training program? (c) What training programs would assist to address the identified employee training needs? (d) What is the level of transfer of training of the employees? [39]

Like-wise HRA can help to address many such similar questions for remuneration, performance appraisal, Health and safety management, grievance handling or law management relations. Project Oxygen is well known and talked about project of HRA by Google. The project was carried by PiLab wing of Google. This project was taken by Google HRA to test the role of supervisors in employee performance. Proper empirical study was carried by PiLab and statistical results showed that managers play a huge role in non-technical aspects of an employee life cycle like skill building, motivation and mentoring. This is considered to be the one of the esteemed application testing project in HRA.

2.1.f Future of HRA

In spite of its excessive prediction capability, prescriptive analytics adopted by the business organization is just 3% with structured data. The future research has to support the increasing demand of analyzing the unstructured data in the growing market. Prescriptive analytics has proved its effectiveness in realizing the business value and predicts the results based on it. However, the efforts are required to furthermore address the gap between the production of analytical results and its application for a specific business.

The research on prescriptive analytics is in a miserable quantity that requires better addressing with consistence performance. Also, stability issues have to be considered, which are still desolate area of research.

2.2 Change Management

2.2.a Change and Models of Change Management

"The Only Constant in Life Is Change." - Heraclitus

Change has different dimensions and can be caused by various factors. These factors influence change thereby directly and indirectly impacting the organization's goals and objectives. These factors can be categorized as Internal and External factors. Internal factors include technologies, operational changes and processes, internal laws and policies, conversion of government organizations to private enterprises, organizational modernization initiatives, changes in management decisions and others. While external includes competition between companies in the same industry, increasing pressures of globalization, political, economic, socio-cultural, technological, legal, and environmental forces. Organizations and societies often experience pressure for change, which are both internal and external.

Thus, Change is inevitable and unavoidable. We discussed about 3 most popular change models in earlier sections. Research shows that there are multiple models and frameworks to address change implementation or to address "resistance to change". More importantly, managing resistance to change in an effective manner helped organizations in smooth implementation of change. Organizations use different change models to implement change management effectively.[52]

2.2.b Resistance to change and techniques to handle it

Change is difficult, and many people not only resist it but seek to undermine it. Unsurprisingly, McKinsey study found that merely 26% of transformation initiatives succeed [49]. Literature research shows that most of the organizations treat resistance to change as a psychological concept. Research shows resistance to change as "behavior which is intended to protect an individual from the effects of real or imagined change".

Without change, there is no progress. However, people at work do not welcome change, and key people may resist it the most. People resist change in different situations. Some of them are:- (1) If the nature of the change is not made clear to the people who are going to be influenced by the change. (2) If the change is open to a wide variety of interpretations (3) If those influenced feel strong forces deterring them from changing (4) If the people influenced by the change have pressure put on them to make it instead of having a say in the nature or the direction of the change (5) If the change is made on personal grounds (6) If the change ignores the already established institutions in the group (7) If the change threaten someone's status (8) If change isolates someone (9) Last but not the least, the failure to change can then lead to a repeat of that event [49][50][51]

Research also shows that there are 5 key beliefs underlying any change (1)**Discrepancy**: Discrepancy refers to the belief that a change is needed; that there is a significant gap between the current state of the organization and what it should be. (2)**Appropriateness**: Appropriateness reflects the belief that a specific change designed to address a discrepancy is the correct

one for the situation. (3)**Efficacy**: Efficacy refers to the belief that the change recipient and the organization can successfully implement a change. (4)**Principal Support**: Principal support is the belief that the formal leaders (vertical change agents) in an organization are committed to the success of a change. (5)**Valence**: Valence reflects the belief that the change is beneficial to the change recipient; there is something of benefit in it for them. Research paper also suggests that these five beliefs play an important role in the three steps of the change process: diagnosis, creating readiness, and change adoption & institutionalization.

Most successful transformations have one thing in common: Change is driven through empowerment, not mandated from the top. Some of the key prescriptions mentioned in literature for resistance to change are (1) Appointing transformation champions who then focus not only on immediate goals but also on the process of change itself. (2) Broaden staff interests. (3) Use understandable terms. (4) Take a new look at resistance. "Another attitude that gets staff men into trouble is the expectation that all the people involved will resist the change." (5) Develop new job definitions. The new job definition should be broadened from "the generation of ideas" to "the generation and implementation of ideas." (6) Change communications is never a one-and-done event. Studies have found that continual communication is a leading factor in a transformation's success. (7) Empower leaders and managers to lead through change. Find creative ways to involve employees in the change. [49]: Summarizing, the 4 key ingredient recipe to manage change is "Inspire, Inform, Empower and Engage." [47][48][49]

2.2.c Role of organizational culture and leadership in change implementation

"Leadership and learning are indispensable to each other." - John F. Kennedy

Leadership is one of the never ending discussion topics. Leadership can be approached in many different ways and there are various styles of leadership that can be talked about. Leadership is about inspiring people with a vision and strategy, ensuring people feel empowered, inspired and enriched by the leadership shown. Leadership can also be described as the ability to establish vision and direction, to influence and align others towards a common purpose, and to empower and inspire people to achieve success. Thereby, it helps define the culture, help guide and shape an organization's direction. [50]

Research suggests that leaders must promote change by creating vision and giving empowerment. Change management strategies and the effects of shifts in organizational culture are examined as moderating variables in the change process. [45]

The paper talks about the change readiness model. It has 2 contexts – Internal and external. The model talks about what does a change agent needs to do in order to bring a change. Active participation, persuasive communication and management of external information play a critical role in driving a change. [50]

The other institutionalizing Change model puts emphasis on two things – first, the five change recipient beliefs and second, the influence strategies that change agents could use to shape these five beliefs. Apart from the above mentioned 3 key elements of driving change, this model also talks about HRM practices, formalization activities and diffusion practices. The 4 chronological steps discussed in this model are readiness, adoption, Commitment (including Compliance, identification and Internalization) and Institutionalization. [49][51]

3. Research Objectives

This study contributes to the literature by exploring and understanding the nuances of HR analytics. The paper focuses on addressing the following 3 key objectives:

1. Understanding HR Analytics and Change management along with their various facets.
2. Analyzing the evolution and adoption of HR Analytics in various HR functions through multiple empirical case studies.
3. Exploring the research gap for using HRA in driving change better.

The first objective is to provide an integrative analysis of the literature on the topic of HR analytics through the lens of ROI to provide scholars, executives and practitioners with a comprehensive yet practical view of the topic. The second objective is to systematically analyze the literature from the ROI perspective, highlighting scientific evidence to assist decision makers in determining how to adopt HR analytics. And the third objective is to understand the scope of using HRA as a tool to drive change effectively.

4. Methodology

This paper is a review paper in which a step-wise review and analysis methodology is implemented. The initial search resulted in 81 papers related to HR Analytics and 30 papers related to change management. The search also included works that do not necessarily contribute to the field of analytics and change management. Hence, the relevant papers were filtered with the following criteria:

1. The papers contribute to the field of HR analytics and Change Management
2. The publication date is between January 2014 and February 2021
3. The publication type is journal, book or conference.

This filtering resulted in 55 HRA papers and 21 Change management papers. The research design of this study is exploratory in nature. The existing literature has been derived from various online sources such as Elsevier Products, Emerald e-Journals, Indian-Journals, Sage Online Journals, Springer, Wiley Online Library, Google scholar etc.

5. Findings

HR Analytics is an emerging discipline that can help in enabling HR to fulfill the promise of becoming a true strategic partner. Also, it will empower an organization to streamline strategic business goals with those of HR metrics.

Decision making is a crucial aspect in every organization. It needs much investigative approach and critical observation of past events to make any decision. HR analytics is a tool which will have a major influence on decision making in organizations in the coming years. HRA will make an organization enable to use the wealth of their employees and that will lead to better decisions which automatically improve the organizational performance. The effective HRA application can help decision makers in many ways like - forecasting the demand and supply of people, right candidate for right job, assessing training needs of employees, implementing pay for performance and maintaining effective employee information to decide on rewards and managing employee discipline. Overall it helps the HR managers to make decisions based on data.

Various studies investigate the impact of change on the organizations. Findings revealed that, Change is difficult most of the times. There are multiple reasons that people resist to change and there are multiple ways in which the resistance can be addressed. Research shows that changes that are planned for long-term, reflects more positive contribution to the organization's success than changes that are initiated for short-term. Findings also suggests that, change that are intended for long-run purposes should be aligned with that strategic plan of the organizations

6. Conclusion

This study has been done to understand the HR analytics and does it has any relation with the change management in organizations. It revealed that there is a gap and inconsistency in existing literature related to the application of HR analytics for change management. The existing literature shows that analytics is in consistency with data and business. However, further study is required to explore the application of HR analytics and how it can help to drive change better.

The results also imply that many young businesses with few employees have not yet grasped the importance of HR analytics or perhaps they lack the capacity or knowhow to apply them. Thus, future research should also focus on this area to produce results that can help and guide smaller businesses on how they can optimize their human resource for the best outcomes in terms of organizational strategy and development.

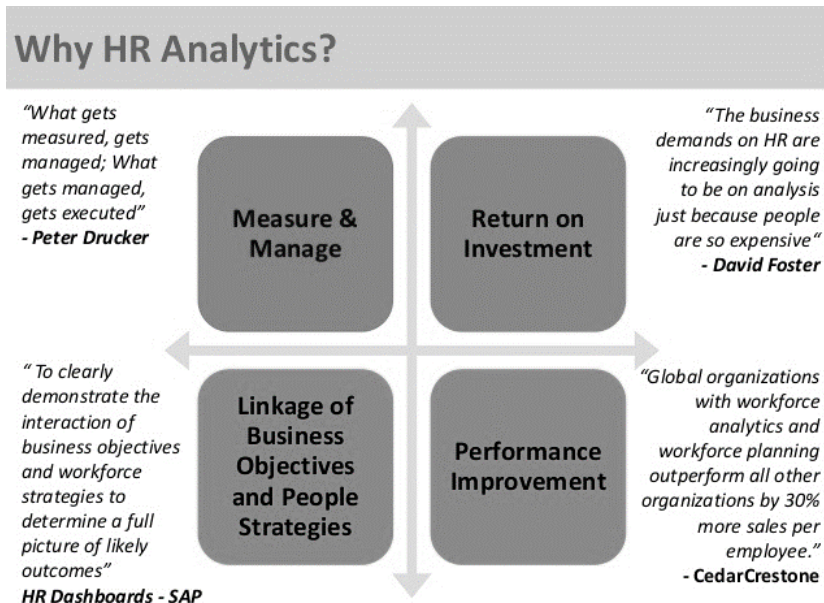
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Fig 1



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<http://www.iaeme.com/JOM/index.asp>

Fig:2

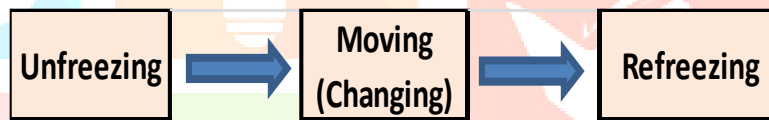


Fig:3

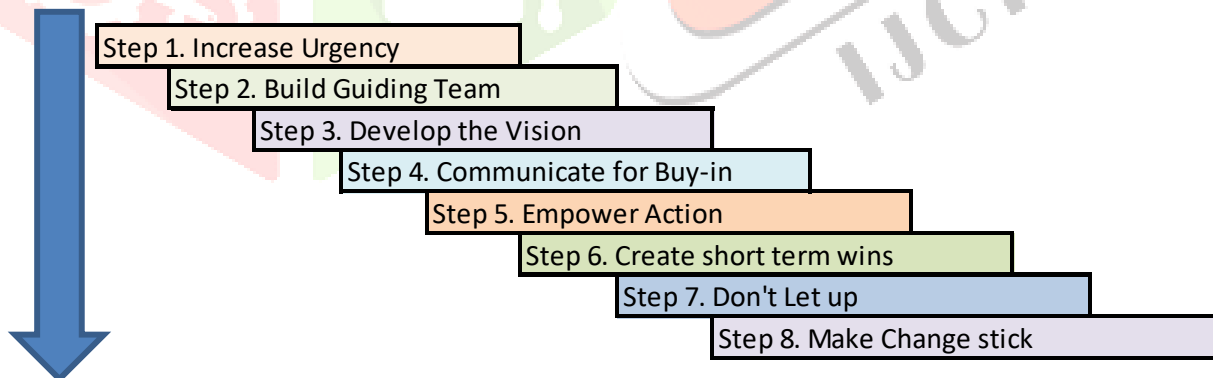


Fig:4

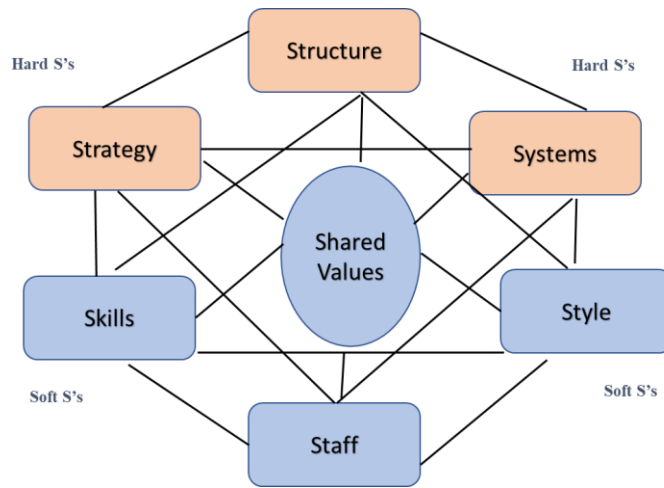


Table:1

Varieties of Change			
Varieties of Change	Smooth Incremental Change	Bumpy Incremental Change	Discontinuous Change
Definition	Change which evolves slowly in a systematic and predictable way	Periods of relative tranquility punctuated by acceleration in pace of change	Change which is marked by rapid shifts in either strategy or culture or in all the three.
Example	Organizational culture evolving overtime	Changing demands for products resulting from the advent of computer-based office systems.	Privatization of previously publicly owned utilities.