

Relating the Use of Different Type of HR Analytics in Different Strategic Firms with the Use of Social Media within the Organization

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Abstract - The main purpose of this paper is to identify relationship between typology of human resource analytics (HR analytics) used in different types of strategic firms (cost leadership and differentiator) with or without use of enterprise social media (ESM), during talent management (TM) in the organization. Business analytics (BA) has attracted growing attention mainly due to the phenomena of big data. While, studies suggest that business analytics is positively related to organizational strategy. Contingency theory holds that HR management methods are selected in accordance with the types of business strategy. This paper shows alignment of business strategy to HR strategy to HR analytics for organization's long term success and performance. More specifically, we present a conceptual framework, which illustrates how cost leadership (CL) and differentiator (DIFF) strategy firms differ regarding their use of different HR analytics types (descriptive, diagnostic, predictive, prescriptive) with or without use of Enterprise social media (ESM). Chi-square analysis was used to test the interdependence.

Keywords - Cost leader, Differentiator, HR analytics, Talent management

I. INTRODUCTION

How can we use our talent more effectively to execute strategy, and what role does analytics play? Analytics is integrated into core business, operational, and production functions of organisations that capitalise on big data [1]. Despite the pervasiveness of big data in organizations, the use of business analytics in human resource have been overlooked and limited attention has been paid to the use of HR analytics for the management of talent in different firm strategies. Although, experts discuss applying big data to marketing and consumer businesses; there is an even greater opportunity to utilize big data analytics to HR. It is called as talent analytics—renamed as Human resource analytics as per context. HR's use of big data is in its early stage [2]. "Big data" refers to the volume, variety, and velocity of data available in most of the companies. This data is gathered from a variety of sources [3] e.g. websites, social media sites, wikis, blogs, electronic gadgets etc. The need of developing specialised HR analytics capabilities has grown as a result of the emergence of big data, digital technologies, and data science methodologies in human resources situations [4]. Big data, in particular, can be used to improve every step of the hiring process as well as the entire cycle of workforce planning and management, including (attraction), (acquisition), (development) and (retention). Therefore, HR analytics is a process for gathering information about human resources and turning raw data into meaningful knowledge. Additionally, this data's insights and value aid in daily talent management decisions. Hence, HR analytics may assist in delivering on

the promises of the right workforce, the right hiring, decreased turnover, a strong talent pipeline, an engaged team, and the accomplishment of financial and operational goals [5]. The first desire towards analytics was put forward when managers requests the demand of fact-based perceptions and go beyond the intuitive thinking to catalyse descriptive analytics [6] and diagnostic analytics. Today, HR managers have begun to use advanced analytics to make hiring decisions. Regression analysis, trend analysis, and frequency mapping all aid in the concrete depiction of human capital management choices. First is descriptive analytics, it uses historical HR and talent data in the form of reports and visualisations to help managers understand how HR is currently working and how performance is being measured. Next, in order to offer future details of talent competency, performance, and behaviour, predictive analytics is used to anticipate employee attrition or turnover (employee attrition or employee turnover is when employee leaves the organization voluntarily or involuntarily), employee performance and critical behaviour of people in leadership positions. In the end, prescriptive analytics is ultimately involved in managing talent challenges and providing solutions for various HR issues by identifying the causes, creating future HR plans, and improving organisational culture.

Furthermore, HR analytics focuses on enhancing various aspects of human capital by using analytical methods in conjunction with people data to support organizational strategy and enhance performance. In order to survive and succeed in a world that is becoming more and more competitive, firms must make judicious investments in their talent. When closely related to organization strategy [7], the significant use of analytics can be "the promising contributor to the building of great, viable organizations later on" [8]. Therefore, improving the connection between business strategy and HR strategy is important for improving the use of people data because HR strategy facilitates the development of a workforce that meets business strategy requirements, in addition to strategic alignment and engagement by HR professionals [9]. The objective of this paper is:

- 1) To identify whether different business strategy (CL and DIFF) affects HR analytics used in an organization during talent management (TM).
- 2) To know different HR analytics typology used in CL and DIFF firms during TM with the use of ESM (Enterprise social media) / SM (social media) or without use of ESM.

II. LITERATURE REVIEW

A. Business Strategy

To gain a competitive edge, organisations typically use three competitive strategies, such as cost leadership (CL),

differentiation (DIFF), or focus [10]. The *CL strategy* entails dominating the market at the lowest possible cost (e.g., Walmart). This focuses on economies of scale which enhances production efficiency and reduces expenditures [11]. With *DIFF strategy*, the firm aims to stand out in the market along dimensions that buyers value (e.g., Volvo with its cars' safety). An organisation needs to be ready to adjust to rapidly changing markets and technological advancements. They keep track of evolving trends in their marketplace, aggressively search for new emerging opportunities, and devote more resources to product development. Similarly, *Focusers also carve out a certain market niche* (e.g., Novo Nordisk as a leader in diabetes medications).

The same concept was explained by [12], classify firms by their adaptive decision patterns into *prospectors, defenders, analyzers, and reactors*. Where, a *prospector strategy* is similar to DIFF focuses on product innovation and market opportunities. The defender strategy is same as CL looks for market stability and offers and attempts to safeguard a constrained product line for a specific subset of the prospective market. Next, *analyzer firms* are hybrids, combining the characteristics of prospectors and defenders. Lastly, *reactors* merely respond to environmental change and only adapt strategically when necessary [12].

B. Organization Structure

Success, competence, functionalities and operational capabilities of an organization depend on the structure of an organization. Organization structure aids to understand, how the people are coordinating or how their jobs are divided and co-ordinated. "Organizational structure includes the nature of formalization, layers of hierarchy, level of horizontal integration, centralization of authority (locus of decision making) and pattern of communications" [13]. "Structure follows strategy". The organisational structure affects how a strategy is implemented. The structure of a company is often decided upon by top-level management personnel in accordance with its strategy. So, we have concentrated on five significant elements of structure, namely standardization, centralization, formalization, specialization, complexity, and complexity of the workflow process.

C. HR Analytics or business analytics in human resource management

The term "talent analytics" refers to business analytics in HR. We have also seen a range of lexemes (such as HR Analytics, Talent Analytics, Workforce Analytics, and People Analytics) used to refer to this subject. Despite its increased popularity. Rather, HR analytics has originated from past research on the impact of different HR practices such as selection, training, retention etc., which has a long history in HRM and OB (organization behavior). What is novel, however, is that HR analytics in today's organizations has moved from "measuring the levels associated with a specific workforce characteristic (e.g. what is our cost per hire?) to acknowledging the effect of the talent on execution of business strategy (e.g. how might

a rise in the quality of our project managers impact our new product cycle time?)". HR analytics, an evidence-based strategy, deals with data on employee performance and HR practices. HR analytics give businesses the capacity to address a variety of additional HR issues, such as employee engagement, diversity, inclusion, and turnover, in addition to recruitment and selection [14][15].

D. Types of HR analytics or Business analytics

Business analytics is divided into four stages, with different degrees of value, difficulty and intelligence [16] are:

1. *Descriptive analytics*, answering the questions "What has happened?" 2. *Diagnostic analytics* "Why did it happen and "What is happening now?" 3. *Predictive analytics* answering the questions "What will happen?" and "Why will it happen?" in the future. 4. *Prescriptive analytics*, answering the questions "What should I do?" and "Why should I do it?" Table I is taken from source [17].

TABLE I

Analytics Question	Talent/People Analytics Solutions
What has happened? (Descriptive)	Talent- dashboards and reports Scorecard and key performance indicators, Human capital cubes, Triggers and alerts.
What's happening and Why? (Diagnostic)	Talent - segmentation, profile analysis for turnover and retention, Market research employment conditions, Employee satisfaction survey, Voice of candidate analysis, Voice of employee analysis, Competitive intelligence: Who is hiring? Where and when? Candidate social media analytics, Text analytics, Candidate mobile analytics, Candidate and employee social graph analytics.
What Will Happen? (Predictive)	Talent Predictive models -Talent and candidate predictive models, Talent acquisition, Talent targeting and selection, Talent retention, Talent reward and incentive program, Talent promotion, Talent attrition (voluntary churn), Talent involuntary churn (termination due to bad performance) Talent Scorecard -Forecast market opportunities, Forecast number of new employees, Forecast new and existing employees, Forecast number of lost employees, Forecast turnover by business function, Forecast bottom line
What should I do and Why? (Prescriptive)	Optimization - Talent- life cycle management Talent relationship management, optimization

E. HR Analytics and talent management (TM)

The three components of talent management (TM) are talent acquisition, talent development, and talent retention. The process of attracting and hiring a high-potential workforce is known as *talent acquisition*. The process of educating the existing talent to enhance their skills and competences in order to meet the firm's present and future requirements in order to accomplish firm growth and to create a succession plan for key roles within the firm is known as *talent development*. Next, *talent retention* involves motivating and engaging the talent pool to improve their commitment towards the organisation's success [18]. Organizations can use data-driven analytics to make talent decisions regarding their top performers and other crucial talent pools rather than depending on intuition,

gut instinct, or guesswork in order to achieve a competitive edge. Additionally, analytics offer consistent, accurate, integrated, reachable, and pertinent employee data that aids firms in monitoring the competences, abilities, attitudes, behaviour, demographics, and performance of employees to make crucial TM decisions. [14]. In addition, it aids in filling talent gaps and establishing leadership pipelines, to name a few. One of the most popular uses of analytics by HR is talent profiling for high-potential individuals. By carefully gathering insights from workforce data in terms of demography, cost, competency, and performance, analytics aids firms in identifying their talent gaps [19]. Not only talent segmentation can be used to identify and target the most valuable employees for targeted action [14]. But also to make decisions on the talent supply chain, a crucial talent pool (such as high performers and high potentials), and how to attract and keep the best talent. [14]. Therefore, determining need-fit can aid in keeping top performers.

F. Enterprise Social Media (ESM) / Social Media (SM)

Companies and employees are now confronted with virtual working environments, the adoption of new methods for the seamless execution of activities, and engagement strategies aimed at improving employees' work-life balance. Data that once was difficult to capture now comes in torrents from social media sites and newer sources such as video cameras and sensors known as "Big Data". As a result, researchers are using this data with HR analytics to take insights out of it. According to [20], there are five approaches of how companies can apply ESM: (1) introducing internal Enterprise Social Networks (ESNs), (2) using publicly available Online Social Networks (OSN) (3) creating enterprise-owned, publicly accessible social networks, (4) enhancing existing communication technologies (e.g., e-mail) with social functionalities, or (5) developing tools that include capabilities to support social networking applications. Here, we are focusing on ESM platforms for internal company use during TM. As put by [21], user-generated texts on social media platforms reflect "many facets of real life, including attitude." Users are prime candidates for personality detection because they freely voice their thoughts, emotions, and feelings, and the confidential information they share can be analysed for personality indicators. [21]. 'Persona' includes, (1) demographics and interests, (2) personality traits as captured by psychological models ("psychographics"), (3) intelligence and learning styles, (4) knowledge that describes the persona's expertise and experience in a specific domain, and (5) cognitive processes how the persona processes information. Persona profiles can also include personality traits [21], such as the "Big Five".

III. RESEARCH METHODOLOGY

Research framework and Propositions

Based on the literature review, developed few propositions. This study is designed to the relationship between type of HR analytics used in strategic firms (CL and DIFF) along with and without use of ESM respectively.

These propositions and their supporting theories and statements are discussed below:

A. Without use of ESM in CL

"Reference [22]" framework suggests that organizations that follow a CL strategy, has great similarities with the defender strategy. In order to maximise efficiency, these businesses will put a strong emphasis on numerical and functional flexibility with short-term connections, little talent development and training, and external pay comparison. In terms of recruitment, selection and placement, they are less concerned about recruiting new talents from outside and more concerned about developing current employees. The CL strategy is primarily linked to incremental organisational change, often known as change by fine tuning [23]. CL firms are more characterized by top-down management, hierarchical channels, centralized control, and the like [12], their succession planning is also organized more in a top down fashion. Also performance appraisal are done on the basis of tenure [24]. These organizations are hardly inclined to use coaching. They barely have a training and development system. If a midlevel manager leaves the organization, they don't replace him/her. Midlevel managers are likely to stay until retirement. Hence, we saw that lot of data is available about the employees in CL firms because talent management is done internally. Also, the mechanistic structure and stable environment of CL firms makes them predictive in nature. So, HR analytics used to gain insights out of the data in CL firms will be predictive or prescriptive. Since, we have lot of information about employee, it will be easy to predict what will happen next. In the light of above research findings we have developed following proposition:

H1: *HR analytics used for talent management will be predictive / prescriptive in cost leadership (CL) strategy firms without use of ESM.*

B. Without use of ESM in DIFF

In DIFF firms similar to *Prospectors*, focuses on differentiated products. They scouts for talent from outside because they want innovative workforce and have organic structure characterized by decentralization, lack of formalization, and high levels of complexity [25]. Hence, it's difficult to predict the performance of potential employee hired from outside and organic structure of organization makes it complex to find STAR performers. They are not very much predictable due to highly volatile environment. These firms have a "make" orientation, implies, a performance appraisal system that focuses on the long term, with a lot of training and career development and it is done on the basis of contribution in job performance. Coaching practices are more present in DIFF firms and keep track of new trends in marketplace, aggressively search for new emerging opportunities, and focus on product development. So, HR analytics used will be descriptive or diagnostic because they don't have much past data of the potential employee. Also, changing roles of current employees with lot of positive and negative data about them and uncertainty in the environment, along with

the change in real time data makes it tough to predict. So, we have developed following proposition:

H2: HR Analytics used for talent management will be descriptive/diagnostic in differentiation (DIFF) strategy firms without use of ESM.

C. With the use of ESM in both CL and DIFF

Social Media platforms are currently being used in four major HR areas: hiring, collaboration, communication, talent management, and internal branding. With the use of advanced social media (SM), enterprise social media (ESM) and virtual teams, HR analytics for CL and DIFF is predictive or prescriptive. With the help of ESM / SM, lot of positive and negative data is available about the employee. And data can be collected like personality, cognitive maps, genetic predisposition (individuality) and his/her values, attitudes and opinions on key issue without his/her knowledge (in an unobtrusive manner) [21]. Social media analytics-based behavioural assessment can also give businesses access to predict knowledge that can raise the quality of hires in both CL and DIFF firms. Numerous studies have examined the connections between social media use and users' personalities as well as the choice of media, level of use, perceived richness, and pattern of interaction with individuality, ambition, conversation, teamwork, and quality of life from the viewpoint of HR professionals. Recruiters and managers can access a variety of hidden useful information via social media or ESM, including information about a candidate's personality, behavioural model, preferences, hobbies, and friend networks that may not be available elsewhere .So, we have developed following propositions:

H3: HR Analytics used for talent management will be predictive/prescriptive in cost leader strategy firms with the use of ESM.

H4: HR Analytics used for talent management will be predictive/prescriptive in differentiation strategy firms with the use of ESM.

IV. RESULTS AND DISCUSSION

The targeted population chosen were U.K., U.S. and Europe firms. Participants were data scientists, senior managers, heads of HR department and C – suites used HR analytics and ESM for talent management. Out of 500, we get 236 questionnaires completely filled after rejections. The usable questionnaires were coded into the statistical package for social scientists (SPSS) v25. Random sampling was done to choose sample.

Organization structure and Business strategy were rated on Likert scale 1 to 5 (Strongly agree to Strongly disagree), While constructs like “Use of ESM” (2 categories) and “type of HR analytics” (four categories) were categorical scale. Then, cluster analysis was done with k-means clustering. The main purpose of cluster analysis is to identify separate groups of CL and DIFF using questions of business strategy and organization structure.

TABLE II- CLUSTER ANALYSIS

Number of Cases in each Cluster		
Cluster 1	CL	90.000
Cluster 2	DIFF	146.000

Valid case	236.000
Missing case	0.000

TABLE III- CHI-SQUARE ANALYSIS FREQUENCIES

Strategy	Use of ESM	Count of resp.	Type of HR Analytics				Total
			Des A	Diag A	Pred A	Pres A	
CL	ESM	OF	5	16	20	5	46
		EF	5.9	22.5	14.4	3.2	46.0
	No ESM	OF	6	26	7	5	44
		EF	5.4	20.5	13.2	4.9	44.0
DIFF	ESM	OF	5	25	49	27	106
		EF	8	29	45.7	23.2	106.0
	No ESM	OF	6	15	14	5	40
		EF	3	11	17.3	8.8	40.0

Note1: No cell has frequency count less than 5.

Note2: Cost leader was coded as (CL); Differentiator as (DIFF); Organizational strategy as (OS1); Organizational structure as (OS2); Enterprise social media (ESM); No Enterprise social media as (No ESM), Descriptive analytics as (DesA); Diagnostic analytics as (DiagA); Predictive analytics as (PredA); Prescriptive analytics as (PresA), OF as Observed frequency, EF as Expected frequency.

TABLE IV-TABLE VALUE CHI-SQUARE for all four hypothesis

Strategy	χ^2 table value	P-value	Fisher's Exact Test	P value	Cramer's V	P-value
CL (with/without use of ESM)	8.691*	0.034	8.778*	0.03	0.311*	0.034
DIFF (with/without use of ESM)	9.206*	0.02	8.824*	0.02	0.251*	0.025

*Denotes significance at P value<0.05.

DISCUSSION OF HYPOTHESIS:

H1 and H3: The p-value =0.034 < α =0.05 and Cramer's V=0.311, Therefore, there is a significant relationship between different HR analytics types and CL strategy with and without use of ESM. And the strength of relationship is good as per Cramer's V [26].

Use of ESM * HR_Analytics_type in CL strategy firms Crosstabulation % within Use of ESM and No ESM

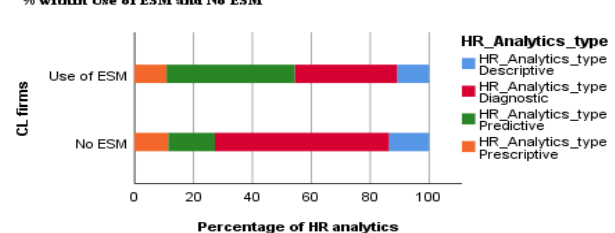


Fig. 1 TYPE OF HR ANALYTICS USED IN CL FIRM WITH AND WITHOUT USE OF ESM.

Fig.1 bar chart implies that with the use of ESM during TM, HR analytics is associated to predictive analytics more (shown by green bar) while without use of ESM it is more of diagnostic analytics (shown by red bar).

H2 and H4: The p-value =0.02 < α = 0.05 and Cramer's V=0.251 Therefore, there is a significant relationship between different HR analytics types and DIFF strategy

with and without use of ESM. Also, the strength of the relationship is good. The Fig.2 bar chart below implies that with the use of ESM during TM, HR analytics is associated towards predictive and prescriptive analytics more (shown by green and orange bar) while without use of ESM it is more of Diagnostic analytics (shown by red bar).

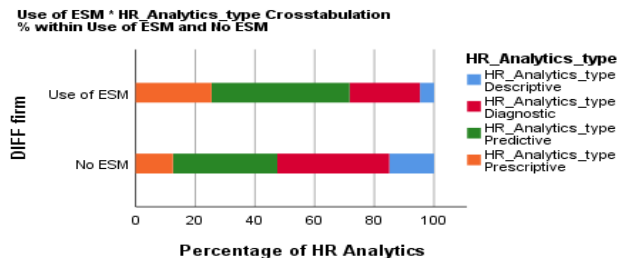


Fig. 2 TYPE OF HR ANALYTICS USED IN DIFF FIRM WITH AND WITHOUT USE OF ESM.

TABLE V- FINAL RESULTS

Strategy type	Use Of ESM	DescA	DiagA	PredA	Presc A
CL	ESM			Yes	
	No ESM		Yes		
DIFF	ESM			Yes	Yes
	No ESM		Yes		

V. CONCLUSION

The study presents the strong association of business strategy (CL and DIFF) and different types of HR analytics used in the organization. As per TABLE V above, the study also revealed that HR analytics used in CL firms with the use of ESM will be predictive and HR analytics used in CL firms without use of ESM will be diagnostic. Whereas, HR analytics used in DIFF firms with the use of ESM will be predictive or prescriptive. HR analytics used in DIFF firms without use of ESM will be diagnostic. This study accepts **H2, H3, H4** alternate hypothesis that there is a relationship between different HR analytics typology and business strategy with / without use of ESM while it rejects **H1**. Table VI shows the null hypothesis rejected and accepted status. This study helps the managers to predict the star performers before hiring, retaining before employee leave, promoting key employees, reducing absenteeism and other talent management practices.

TABLE VI

Null Hypothesis	Status
There is no interdependence of predictive / prescriptive analytics and CL firms with the use of ESM.	Rejected
There is no interdependence of predictive / prescriptive analytics and CL firms without use of ESM.	Accepted
There is no interdependence of descriptive / diagnostic analytics and DIFF firms without the use of ESM.	Rejected
There is no interdependence of predictive / prescriptive analytics and DIFF firms with the use of ESM.	Rejected

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