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Leveraging Organizational Memory to Build Mid-Tier Leadership in Large Enterprises

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Abstract

Leadership roles are key positions that directly impact the top line and shape the future of an organization. The constantly changing economy, increased globalization has rendered leadership identification, leadership development, succession management, and retention of high performers as important business imperatives. With multinationals employing thousands of members as part of their workforce, organizations are in need to formulate a strategy and a standard plan, to identify and capitalize the right talent without any bias, and monitor and facilitate the progress of such members in a comprehensive manner. The performance track and feedback from immediate supervisors are currently the key elements in identifying potential leadership candidates. Structured data from disparate systems does not provide a cohesive summary of the candidates' potential. Used by itself, the supervisor nomination has the inherent subjective bias such as recency and primacy effects. We have proposed and built a system, which consolidates organizational memory and refines through feedback from different assessors. The system analyzes critical parameters such as employee demographic data, job related data, certifications, competencies, awards, performance and operational specifics to arrive at a talent score using a talent algorithm. Moreover, evaluators and unit heads are enabled to provide a collaborative assessment for the individual. The total score is a composite value of the talent score and collaborative assessment. The results obtained from testing over 2000 sample employee profiles in the FYL application, showed an average of 90% effectiveness of the FYL systems' predictability. The FYL system has a heuristic module to augment the digital persona to form a leadership persona for identified potential leaders. These members were tracked periodically on various leadership parameters. Parameters examined were role progressions, diversification of streams and domains, acquired awards and skills, health consciousness and social responsibility level to form an augmented leadership persona and heuristically update the leadership score.

Index Terms—Collaborative Assessment, Digital Persona, Find Your Leader (FYL), Tacit Knowledge

I. INTRODUCTION

With the globalization rapidly growing, organizations operate in increasingly volatile environment, while leveraging new technologies that disrupt traditional processes, leading to change in every aspect of business including the context of leadership [1]. With more and more millennials and digital natives joining the workforce, challenges grow in tandem to lead across diverse cultures and different markets while balancing the values and expectations of the changing demographics. Organizations strive to establish an empowered and distributed leadership across geographies, business units, functional streams and delivery positions in order to be closer to their customers and more agile to seize opportunities and manage challenges. Therefore organizations are placing more emphasis on building talent pipelines for senior and middle level leadership positions [2].

A study by Deloitte states that there will be huge shortage of executive leadership over the next several years and also the most important dimension in talent management is in identification of leaders and succession planning [3]. Organizations adopt a structured approach to identify and develop leadership potentials. Though the nature of the challenges that the current leaders are facing is increasing, the methods used to identify leaders still stay the same and talents sometimes go unnoticed due to ineffective processes [4]. The traditional process of identifying leaders relies more on nominations and endorsements from supervisors. The following challenges are inherent in identifying leaders:

A. Process related challenges

1) Primacy and Recency Effects

The recency effect is a situation when an assessor clearly remembers and is influenced by the most recent set of events or the subordinate he/she has communicated with most recently. The primacy effect occurs in a situation where the assessor remembers very vividly and clearly the very first evaluation and the candidate.

2) Tacit Knowledge

More than any other HR process, building a talent pipeline of potential leaders requires connecting with employees in varying degrees and at different stages. At each of these interactions, pertinent tacit details about the employee are elicited. These tacit details are mostly “soft data and are subjective and time-specific in nature. Examples include the preferences of employee and feedback from a previous supervisor. These tacit details are not stored in the knowledge repository or captured as part of the transaction. We refer to these missing tacit knowledge elements as ‘K-elements’ [5].

3) Heuristic Refinements

Performance metrics of leadership positions are not fed back to the identification process for continual improvement or correction.

B. Scale related challenges

1) Efficiency

In organizations where thousands of employees are employed, conducting a comprehensive search for potential leaders by a single selection body, through mostly manual process, is not plausible.

2) Effectiveness

Failure to recognize leaders from internal sources will lead to increased attrition and decreased engagement levels. Fulfillment of leadership positions from external sources are expensive and has the risk of lower fit and alignment compared to internal candidates.

In summary, if the organizational memory is tempered with statistical process to identify leadership potentials which is refined through supervisor feedback, it will serve to minimize the subjective bias in identification stage.

Additionally, if all the parameters of leadership qualities, related to the identified employee, are collected, consolidated and delivered at continual assessment stages, the senior leaders will be enabled to further assess the identified potential employees, their leadership dimensions and their consistency for mid-level leadership positions.

Thus, a multi-point and continual periodical assessment involving many evaluators and additional leadership parameters will help enterprises build talent pipelines for different development trajectories.

C. Benefits of a Comprehensive Leadership Identification and Development System

With all companies investing in new technologies and diversifying into different areas, the biggest competitive edge a company can have over another is a strong and diverse workforce, where leadership qualities in employees are not unnoticed, but leveraged. The benefits of maintaining a standardized framework of identifying and engaging such talent are listed below.

1) Succession Planning
The practice of identifying and developing in-house candidates for top executive positions is a crucial task of corporate boards. Without a strong succession-planning program, companies will not be prepared to fill openings created by retirements, unexpected departures, nor meet demands for additional leaders resulting from growth or expansion. In such a situation, companies should be proactive in this task rather than being reactive [6].A standardized leadership identification and development framework will be instrumental in succession planning initiatives.

2) Home Grown Leadership
Apart from the succession planning, this framework also adds an added benefit of having a pool of home grown leadership personnel in the company. The cost of hiring an employee externally is higher than grooming a potential candidate within the organization.

3) Arresting Attrition
Consequently, the right talent which is identified, groomed and placed in leadership roles, are most probable to get highly engaged and motivated. Thus arresting attrition and retaining the high performers is a by-product of this framework.

4) Enhances the engagement level of the employee
An employee with strong leadership skills would be positively engaged to the organization, when his/her potential is identified and encouraged. Conversely, the omission or overlooking of this trait can adversely affect the employees' morale.

Outline of the paper:
Section 2 presents related works on leadership identification and development. Section 3 discusses on the current scenario and section 4 explains the proposed framework. Section 5 presents the results and discussion and section 6 is the conclusion

II. RELATED WORKS
Nikola Vlahovic in his paper emphasized the need for companies to leverage Tacit Knowledge from knowledge management systems to sustain the competitive advantage over other players in the industry. The paper examines the use of tacit knowledge for the business imperative of decision making in enterprises. The paper articulates that incorporating tacit knowledge in decision making would provide a competitive edge for the company over other organizations. The paper proposes an information-driven approach, based on ID3 algorithm, which is used to create a model of knowledge that management executives and experts possess. The finalized model contains combined knowledge from all of the experts included in the decision process and therefore it has potential to reveal new relations that have not been explicitly articulated during the knowledge engineering process [7].

VissanuZumitzavan in his study scrutinized the relationship between an organization's top management's personal knowledge management and leadership styles and the top managements approach to sustaining learning in the organization, and consequently examining the increase in organizational performance. Hospitals in Thailand were taken as a case study. Questionnaires covering demographics, number of employees, personal knowledge management, leadership styles and organizational performance, were used to collect data, and different statistical methods were used to analyze it. With a response of 539, the findings indicated that personal knowledge management and leadership styles were associated with organizational performance. In addition, results showed that the association between personal knowledge management and organizational performance is mediated by the leadership style[8].

Meng-Long Shih et al, in their study to explore correlation among personality traits, leadership competence and organizational performance in the Farmers association management. They conducted data envelopment analysis and structural equation modeling. The findings suggested that a leader's charisma demonstrated by chief executive director served as an intermediated variable for affecting performance of the management. The paper suggested that indicators of the leadership competence as well as the personality traits of the individual must be taken into account while electing the leader in the management [9].

Nicky Dries and Roland Pepermans developed a consensus model ofleadership potential which consisted of four quadrants namely, Analytical skills, which dealt with Intellectual curiosity, Strategic insight, Decision making, and Problem solving; Learning agility which comprising factors such as Willingness to learn, Emotional intelligence, and Adaptability; Drive which contained factors Results orientation, Perseverance, and Dedication; and Emergent leadership containing the factors Motivation to lead, Self-promotion, and Stakeholder sensitivity [10]. The conundrum between performance and potential, as well as the gap between leadership potential and successful, mature leadership, were some of the issues that were avoided in their model, thereby making it a valid assessment. Moreover, top managers, line managers, and HR managers agreed upon the practical relevance of the proposed model.

William C. Byham, Audrey B. Smith and Matthew J. Paese, proposed a different method of identifying and grooming leadership talent in their book "Grow your own Leaders". Contrary to conventional methods of handpicking one or two individuals for senior replacement positions, the book explains a method called the acceleration pool for grooming executive talent. Stretch jobs and task force assignments are given to the employees in the acceleration pool. The members are constantly and periodically guided, mentored and monitored. With the inputs from the mentors, peers and the HR, the members in the acceleration pool are considered for sudden replacement positions among the seniors. There is clear plan as to which acceleration pool member is groomed for which domain/function and therefore succession planning is effective. William et al explain that an organization's return of investment tends to deviate positively when the succession management is clearly planned and work transitions from one employee to another are seamless [11].

Kenneth David Strang explored leadership behavior and traits across leaders in different projects and organizations. Employee assessments and 360° peer reviews were compared with qualitative and quantitative statistical measures to analyze correlation between leadership skills, traits, and behaviors across projects. The research identified a gap between general organizational leadership theory and observed leadership behavior in effective projects. The preliminary results suggest that effective leadership behaviors are partly explained by leader traits, skills, and personality. An unusual finding was that the project actually showed that leadership principles from management science were not observed in effective and efficient projects.Instead the project leaders exhibited self-management theory and portrayed specific leadership behaviors according to the situation that demanded it [12].

Judge et al, in the article ‘Personality and leadership: A qualitative and quantitative review’ provide a review of trait perspective of leadership by analyzing it according to the Big 5 personality traits. The authors used the 5-factor model as an organizing framework and analyzed 73 sample data for different correlations. The results with respect to correlation of each big five personality trait were as follows, Neuroticism=-.24, Extraversion=.31, Openness to Experience=.24, Agreeableness=.08, and Conscientiousness=.28. The results showed that the relations of Conscientiousness, Extraversion, Openness to Experience, and Neuroticism with leadership in more than 90% of the individual correlations were greater than 0, extraversion being the most consistent correlate of leadership. These results indicated strong support for the leader trait perspective when traits are organized according to the 5-factor model [13].

David et al, in their book ‘Leader Development for Transforming Organizations: Growing Leaders for Tomorrow’, provided a theoretical model to observe antecedents of leadership development in an organization. The book suggests that to study leadership development of an individual the researcher must collect knowledge details about an employee over different instances and periods of time. The book also suggests that objective assessment of potential leaders’ performance is ideal rather than subjective assessment. Each leader’s unit performance can be assessed to make an objective assessment. However the real potential of the leader may or may not be reflected by the whole unit’s performance [14].

Claudio et al in their article on retaining High Potentials within the organization constituted that a popular strategy to do so is conduct programs aimed at “high potentials”— the people that a company believes may become its future leaders. The authors interviewed executives from close to 70 companies that have programs for their high potentials. These organizations spanned from small to large, across the world. An important finding of the research was that, three sets of activities were found to be crucial to effectively manage the next generation of leaders in an organization. The first activity was, organizations needed to establish a clear set of strategic priorities to decide the methodology by which it groomed the high potential candidates. The second set of activity involved careful selection of high potential candidates for senior and challenging positions. The third and most crucial set of activity involved, managing the high potentials, i.e. development, rewards and retention [15].

Siqueira in the book 'Governance, Communication, and Innovation in a Knowledge Intensive Society' showcased results where a group of employees (superiors as well as subordinates) were given a social score exclusive from their hierarchical position. The results showed visible difference between organizational hierarchy and social score for an individual. Employees with a better hierarchy did not necessarily have a higher social score. Social score was calculated based on peers and other employees' feedback and rating on a said employee. Therefore Siqueira additionally concludes that a subordinate with a high social score might be a hidden, unidentified leader [16].

III. CURRENT SCENARIO

Identifying qualified and able candidates to fill current and future leadership roles, and developing a wide-ranging leadership program to cultivate and develop the leaders of the future is a major challenge faced by large companies today [17]. More than 75% of respondents in "2008 IBM Global Human Capital Study," recognized building leadership talent as their current and most significant capabilities challenge [18]. Many articles emphasize the need for companies to organize and execute leadership development programs and talent management programs to identify and groom employees for leadership positions [19].

In many enterprises, leadership potential is assessed based on purely performance ratings, experience, result orientation and operational skills. However, a well-rounded leader must be assessed for various other parameters including social responsibility, health consciousness, business skills (soft skills), customer feedback etc…

The framework introduced in this paper is a leadership identification system Find Your Leader (FYL), which has been extended to create leadership persona of potential leader employees, which enables senior members and evaluators to examine, monitor and facilitate their leadership development.

IV. PROPOSED SYSTEM FRAMEWORK

A. Objectives of the system

The objectives of this paper are to

1. Present the framework of an application to identify leadership potential among mid-level employees in the workforce of the organization, and facilitate their leadership development.
2. Form digital personae for all employees whose profiles are uploaded in the application, and form leadership personae of employees identified as potential leaders.
3. Updation of the personae and re-calibration of weightages of attributes.
4. Leverage the application to monitor the identified potential leaders and measure their evolvement as a leader from the leadership personae, over a period of time.

B. Embedding K-Elements in HR Processes Framework

Earlier published paper, “Embedding K elements in HR Processes” explained that data obtained from different HR processes and data stored in knowledge sources are seldom consolidated nor used in real time [5]. It introduced a framework that leverages, or continually refines such vast amount of data, be it explicit or tacit, and termed these data as Knowledge Elements (K Elements). Similarly formerly published paper on building attrition predictor model, leveraged the embedding K-elements framework to analyze employee data and build an attrition predictor engine [20].

This paper extends and enhances the Embedding K Elements in HR processes framework, to address the business imperative of identifying potential leaders to build mid-tier leadership positions. The identification, consolidation and iterative refinement of the K elements are crucial in extending this framework [5].

C. K-elements to create digital persona profile

Initially two modules to knowledge-enable the process of identifying talent pipeline of mid-level leaders are built [21, 22]

1. Talent Assessment from explicit knowledge
2. Tacit knowledge collection and Improvement through Collaborative Assessment

Table 1 below depicts the list of tacit and explicit Knowledge Elements in identifying potential leaders from mid-tieremployees base.

TABLE ILIST OF KNOWLEDGE ELEMENTS

	Knowledge Elements	**Score**		
Explicit Knowledge Elements	Demographic Details - Years of Experience	Talent Score	Total Score	Digital Personae
	Certifications			
	Role			
	Skills and Expertise			
	Domain Experience			
	Performance and Appraisal Details			
	Awards Details			
Tacit Knowledge Elements	Structural Assessment Details	Collaborative Assessment Score		
	Evaluator remarks (qualitative)			
	Social Collaborative Score (Likes, remarks from network members)			

Figure 1 below, depicts the K elements identified and leveraged to arrive at a leadership score initially for all mid-level employees' details loaded in the system [23].

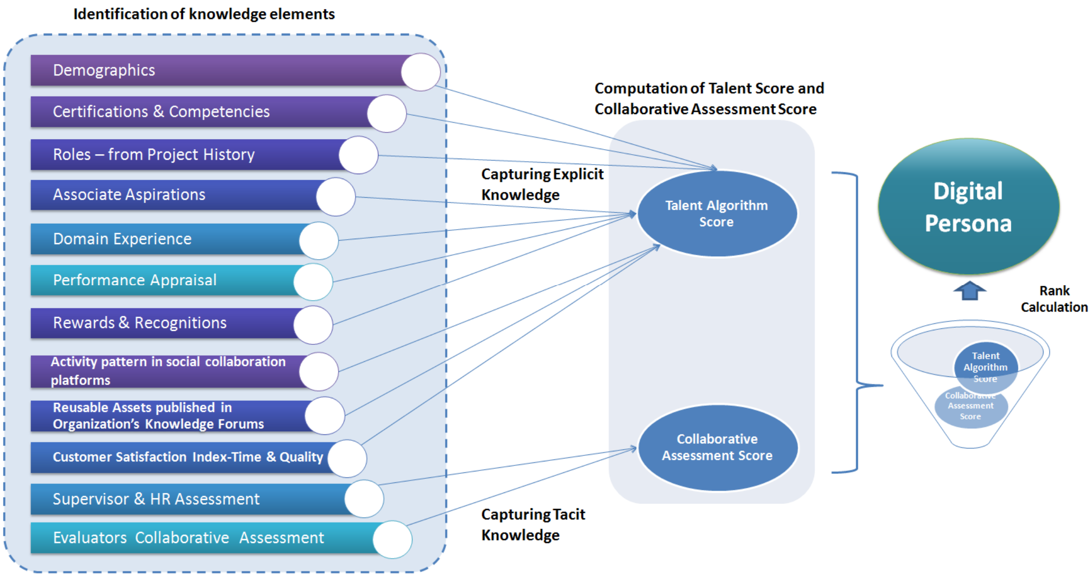

Fig.1. FYL - Base Framework

D. Modules in the FYL system

1) Talent Assessment Score

The FYL system derives explicit knowledge from various knowledge sources in the organization such as Human resources management system (HRMS), Performance management system, Workforce management system, Rewards and recognitions system, Learning portal, Competency management system, Travel and Visa Management System, Leave & relocation records. These explicit knowledge elements contribute towards the talent algorithm where different weights are applied to determine a talent score [21, 22].

The score that is compiled based on the quantitative value of the K-Elements and Categories is Talent Algorithm Score.

$$\textit{Talent Algorithm Score} = \sum_{i=1}^{n} (w_i * X_i) \qquad (1)$$

Where w is weight of the K-Element, $X_i$is quantitative value of the K-Element and$i$ refers to the K-Element. In general, quantitative value of K-Elements are computed and then multiplied with weightage of the K-Element based on stream and then final Talent Algorithm Score for various streams are computed.

Framework for Evolving the K-Elements weightage

- An organization can have different streams i.e. HR, Sales, Delivery, Corporate and Technical Expertise.List of the qualified best leaders from each stream, are benchmarked.
- Based on an empirical study, and the benchmarked leaders' profiles, weights are assigned to each attribute. Statistical tools are used to validate the list of identified attributes and their weights.
- The system computes talent score for each employee profile in system and compares the results against benchmarked leaders.
- Periodically,performance of the identified leaders are fed into the system, the system analyzes the leadership persona and score progressions and re-calibrates the K-Element weightages based on the information of best performed leaders.

2) Collaborative Assessment Score

The collaborative assessment score consists of two modules, namely the structural feedback score and the social collaborative score. These modules form the tacit aspect of the employee's leadership score.

a) Structured Feedback from Leaders

The FYL application sources tacit knowledge through collaborative assessment from leaders from various streams, who have been assigned as evaluators. A particular candidate in FYL can be evaluated by multiple evaluators; therefore removing the possibility of the subjective bias of an evaluator's to drastically affect an employee's collaborative score. The evaluators are required to rate the employees on a scale of 1 to 10 on various parameters and aspects related to Leadership in that particular stream. The questions and parameters differ from stream to stream. The structural feedback is calculated with the following formula.

$$\textbf{\textit{Structured Feedback score}} = \sum_{j=1}^{m}\left(\varphi_j * Y_j\right) \qquad (2)$$

Where φ is weight of the personal hierarchy of the leader who provides feedback, Y is value of the collaborative assessment and j the feedback of the individual leader. To minimize the subjectivity, the evaluation of a potential leader can be done by multiple evaluators. This ensures that a candidate's collaborative scoring does not rely on one individual. These assessments contribute the collaborative score for the creation of each employee's digital persona in the FYL application.

b) Social Collaborative Score

Voluminous "digital trails" of data from knowledge management systems and social networks are now available for analysis [24].Though organizations can get extensive data from their enterprise systems, this data sometimes need to be augmented with more attributes obtained from social collaborative forums. HR can no longer confine employee data to its silo. Organizations need access to those data to be successful [24].

In this module, the FYL framework is augmented with the social collaborative score. The module is incorporated in such a fashion that the organizations internal collaboration platform can be linked to obtain the likes, recommendations and other endorsement activities performed by the employee’s network of colleagues and peers. The network length, that is the distance between the employee and his/her peers and colleagues who like/comment on the employee’s profile and the quantitative value of their activities such as no/of like, recommendation for a certain role or stream, are used to calculate the score.

$$\textit{Social Collaboration feedback score} = \sum_{k=1}^{l}(N_l * Z_l) \tag{3}$$

Where N_l is the Network length i.e. the distance between employee and the peer who participates in the collaboration, Z_l is the quantitative value of social collaboration and l is the number of social collaborative parameters taken into account.

3) *Digital Persona Formation*

Explicit knowledge is fed into the profile of the employee and is heuristically refined by the tacit knowledge captured in collaborative platforms and the digital personae of the employee are formed.FYL gives variety of collaboration through digital persona and some of them includes

1. Business Leaders can evaluate any person and record the observation for any candidate belonging to any stream.
2. Other peers in the organization can endorse the profile, recommend the person for any particular role or stream and suggest a role or stream for the person

Digital persona displays complete profile of associate along with the associate capabilities, leadership score and fitment of the associate for various roles and streams.

$$\textit{Leadership score for any stream} = \sum_{i=1}^{n}(w_i * X_i) + \sum_{j=1}^{m}(\varphi_j * Y_j) + \sum_{k=1}^{l}(N_l * Z_l) \tag{4}$$

This functionality helps the leadership team identifiers with best possible list of leaders based on the required skill set demand by aggregating respective Talent Algorithm Score and Collaborative Assessment score.

Figure 2 below elucidates the FYL modules, the formation of digital personae of the employees, augmenting it to leadership personae for identified potential leaders and the consequent recalibration of weightages framework.

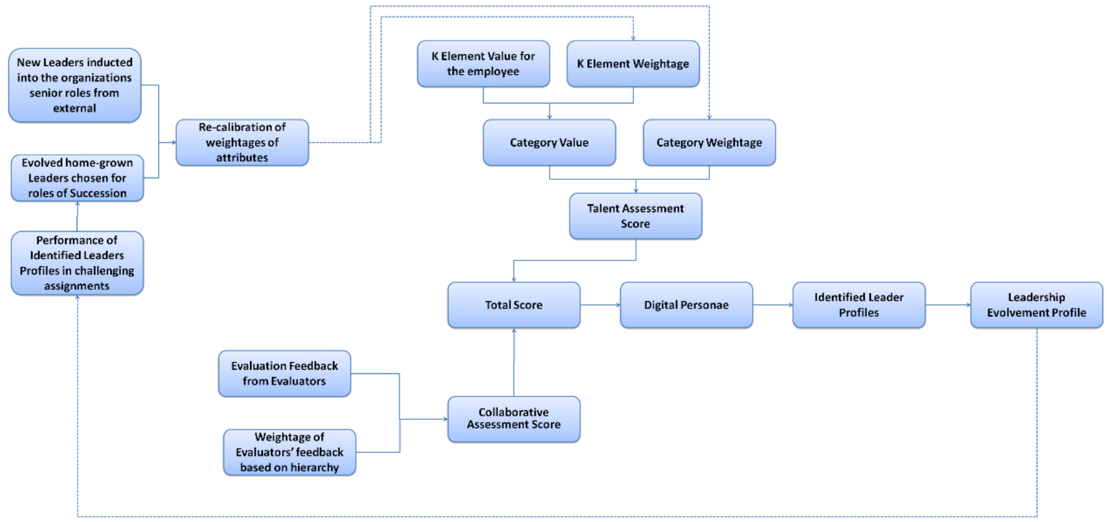

Fig.2.FYL Modules

4) Leadership Personae of Potential Leader

Once potential leaders in middle level positions, are identified by the FYL system, the next step is to monitor the progress of these employees and facilitate them to evolve into actual leaders.

The growth aspirations of all these employees are captured in detail and a thorough plan for their growth in their area of expertise is charted out in subsequent connect sessions with senior business leaders and HR personnel.Such potential leaders are inducted into challenging job profiles in their stream or across streams.

Focused interventions like training programs, role progression, geography rotation etc… in line with their aspirations are incorporated from time to time while tracking the different milestones in the employees' assignments. These potential leaders are also given opportunities to shadow work along with the senior management in the organization.

Throughout the course of these assignments, the FYL identified employees are monitored and their progress and milestones are tracked. The performance of the employees through the years, the new certifications and skills acquired, awards and appreciations acquired, the no of hours pledged and fulfilled for health and social responsibility, the role progressions, rotation of streams etc… are parameters monitored by the system.

New parameters such as health consciousness and social responsibility have been incorporated into the leadership persona. Employees in leadership roles face daily challenges of heavy travel, high-stress situations, exercise habits and long schedules of meetings. Apart from health benefits of an active lifestyle for the individual, ensuring good health of an executive is a valid business decision, because with higher roles comes more intense pressure and tougher targets. A health conscious and fit leader would be better at work productivity and performance and in turn lead by example to his/her subordinates. Recent articles state that personal health and professional performance are inextricably linked [25].

Furthermore social responsibility of leaders is emerging as a new paradigm of leadership. Leadership and corporate social responsibility both require similar commitments and skills. It involves taking tough decisions in short term to achieve long term goals, motivating and inspiring sub teams towards achieving those goals,creating ethical culture and treating all stakeholders well [26]. Assessing the commitment of the potential leader in social initiatives would help add value to his/her leadership persona.

The FYL system thus captures as many Knowledge elements from the organizational knowledge sources that reflect the progress of the employee and update it iteratively in the system.

Based on the progress, the iteratively updated leadership personae, the results exhibited and the experience obtained by the potential leader, in the challenging assignments he / she has undertaken and the feedback is obtained from senior business leaders from time to time.

Feedback from supervisors in the different special assignments can be obtained based on readiness of the employee and retention status advised. Sample readiness statuses include:

- Ready to move: The supervisor recommends the candidate to move to another special assignment after successful completion of the current one.
- To be groomed: The supervisor provides feedback on more grooming options for the employee.
- Continue in the same level: The supervisor suggests additional service of the employee in the current assignment.
- Low potential: The supervisor expresses lesser satisfaction on the employee’s performance and makes appropriate suggestions for improvement.

Similarly a Retention status feedback can also be sought from the supervisor/evaluators, some examples being:

- Must Retain at all cost
- Must Retain
- Good to retain
- Retain

Finally additional reviews and structural assessments by senior leaders in unit level, decide the possible future role progressions of the associate and whether his/her profile can be actively considered for critical succession roles among senior positions. The senior leaders can review the leadership personae with the employees leadership parameters, the supervisors feedback, the past retention status feedbacks from all supervisors, and assess whether the candidate is a seasoned evolved leader.

The leadership personae enables the senior management to observe the leaders track record in the challenging assignments, examine the maturity of the leader in terms of leadership qualities and thus build a leadership pipeline for roles of succession among the senior positions.

Having identified such employees with a seasoned experience in challenging projects will ensure that critical senior positions will always have a pipeline of in-house home grown effective leaders who can always take up the role in their respective discipline seamlessly.

Figure3 depicts the augmentation of digital personae with different leadership parameters to track the evolvement of the potential leaders into seasoned leaders.

As future enhancements, identifying major past illnesses of potential leaders from their previously disclosed sick leave data, analyzing their social media activity in internal as well as external collaborative platforms, acquiring the past customer feedbacks from various projects and further structural assessment from next level of leaders can be added on to the leadership persona.

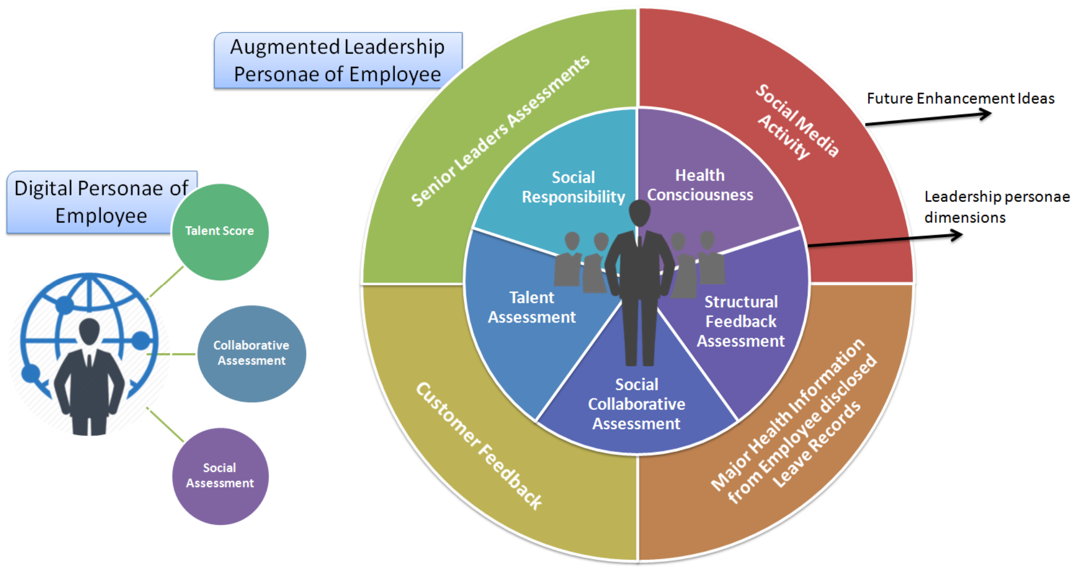

Fig.3.Leadership Persona

The benefits of this leadership persona of the employees with potential are

- Key positions in challenging assignments are staffed with such potential leaders who depicted high performance
- Retention and grooming of potential leaders and an augmented digital persona depicting their work record, achievements, and certain leadership parameters.
- As a result of these potential leaders working in different project, many critical special assignments can be completed

Figure 4 depicts a complete instance of an employee's identification as a potential leader by leadership score generation, and consequent leadership persona creation

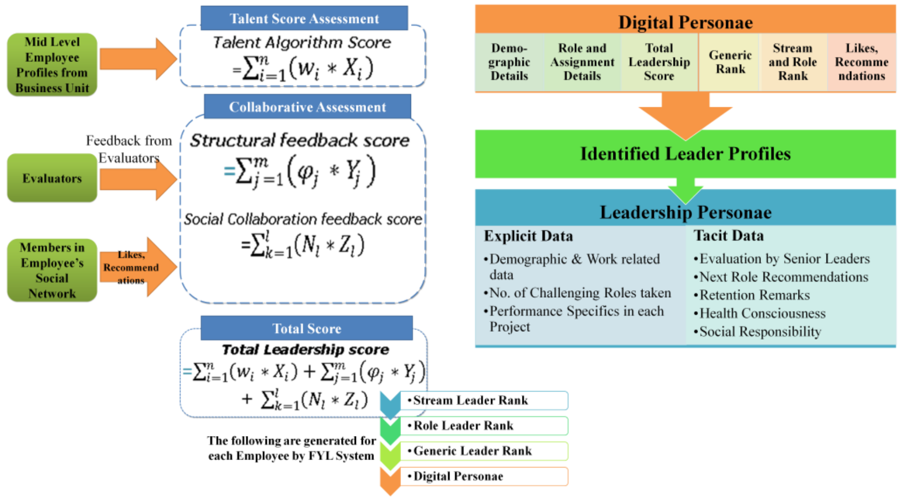

Fig.4. FYL Framework

E. Features of the System

- The FYL system commences with creating the complete digital persona of all individuals details loaded into the system.
- The system is capable of extracting data from multiple sources like Excel, Databases, and XML.
- These attributes are mapped to the enterprise databases, with the end result that values of the attributes can be extracted from the enterprise systems.
- The system arrives at a suitable matrix of attribute/ weight for a given leadership stream.
- The above process is repeated for every leadership stream, such as Delivery, Sales, Technical, etc.
- Conversely, when a new leadership position is created and an external person is hired for the position, then the system is capable of reverse-engineering and arriving at a set of key attributes for the new position
- The system is flexible so that an organization can create its own K-Elements and map it with the appropriate sources if needed.
- The performance of leaders identified through the engine does not need to be separately tracked. Their performance track is part of their leadership persona and will be automatically updated when the corresponding source system is fed with their performance appraisal. The above heuristic also updates the weights for attributes to be in line with the performance feedback loop. This automatic and continual feedback improves the prediction accuracy.

V. Results and Discussion

The repository for the FYL application had details of the participating candidates consolidated from multiple enterprise systems. The talent score and collaborative assessment scores were consolidated and a total score was arrived at for each associate. The total score was used to rank the employees' profiles. As a result the top potential leaders from the employee list in the application were identified.

To validate the FYL systems leadership identification, a set of 2168 records were taken. Actual leaders were 158 in number and rest of the records was added as controlled data.

The FYL application was executed with these records as input. The results below showed that the overall predictability of the FYL application was above 90%, when cross checked with the actual number of potential leaders profiles which were present among the total employee records.

TABLE IIRESULTS

Parameters	Technical Stream	Sales Stream	Delivery Stream
Total records	111	48	2009
No of records added as controlled test data	94	26	1890
Actual number of leaders records	17	22	119
Potential leaders identified by FYL Algorithm	15	20	108
Potential leaders identified by Statistical Tools	14	19	97

Moreover the potential leaders from the given employee list were identified using statistical algorithms namely the Correspondence Analysis algorithm and K means Clustering Algorithm.

K means clustering, shows the result that attributes such as Years of Experience, Performance Track, Domain Experience provided a significant probability of F value less than 0.1. All the attributes/parameters used to identify a leader where used in the algorithm and the accuracy of the K means clustering method was overall ~ 82.28%.

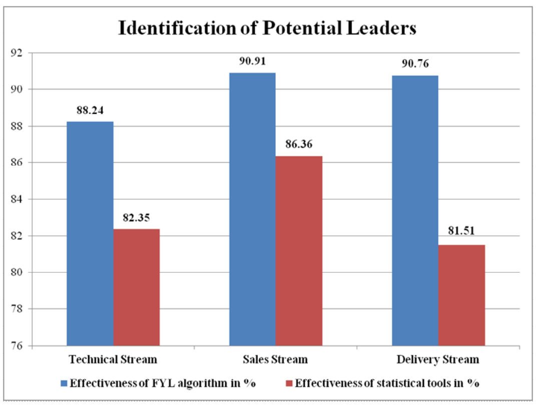

Fig. 5.Identification of Potential Leaders by FYL System and Statistical Tools

As a result of Correspondence Analysis Algorithm we obtained weights for different attributes by column analysis and the weights for the candidates by row analysis. In column analysis the attributes such as Skills and Expertise, Domain Experience, and Performance Track obtained higher weightage than other attributes. The leaders for sales, technical and delivery streams were identified by the rows analysis. The algorithm identified the actual leaders' profiles with more weightage than other profiles which were added as test data.

The FYL system was extended to monitor and track the progress of the identified potential leaders. The candidates' progress was monitored on various aspects.

As an extension from initial analysis, attributes such as Domain Experience and Performance Track, which were identified by both statistical tools as important attributes, can be assigned more weight in the application and can be parameters also used to track the progress of a potential leader.

Over a period of two years, the performance track of the potential leaders was monitored and the results obtained (refer figure 6) clearly indicated that the potential leaders performance levels have been overall between 4 and 5, 5 being the highest.

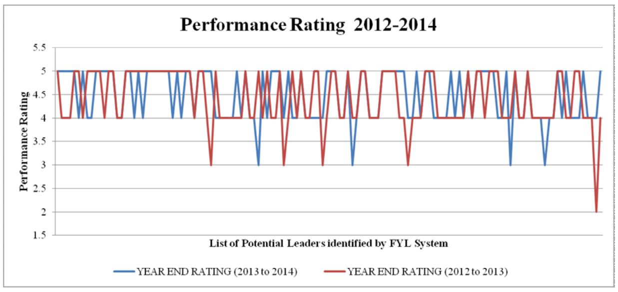

Fig. 6.Performance Track of Potential Leaders

These details emphasize the fact that these identified potential leaders were consistent in their high performance.

Figure 7 indicates the role progression of the potential leaders between 2012 and 2014. It clearly highlights that a majority of the employees had progressed to higher roles or had taken laterally equivalent roles.

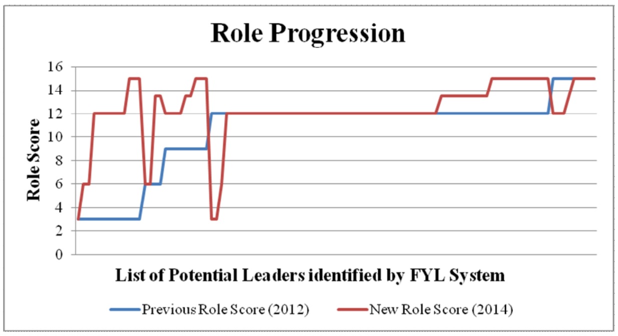

Fig. 7.Role Progression of Potential Leaders

Consequently, the updated results established that the potential leader profiles identified by the FYL system, maintained a consistent high performance as well as progressed in their roles, acquired new certifications and skills, and hence their leadership personae was created with additional leadership parameters.

VI. CONCLUSION AND FUTURE ENHANCEMENTS

The FYL application based on the K Elements framework, incorporated tacit knowledge along with explicit details to identify the leaders' profiles. The framework suggested in this paper was able to successfully delineate associates with leadership potential with an accuracy of 90%.The identification and selection of knowledge elements used in computing the talent algorithm was validated with statistical process. Theeffectiveness of the framework compared favorably with the manual process.

Moreover the potential leaders were guided into challenging assignments, and their evolvement as a leader was tracked with other parameters of leadership incorporated into the framework. The following are the outcomes from the data analysis:

- Design of the K Elements framework in Find Your Leader system
- Accuracy of FYL algorithm is better than statistical tools
- Identification of leader profiles from all streams.
- Assessment of potential leaders according to different leadership parameters

The FYL application can be applied to any product or service organization. The immediate benefits accrue in the minimization of time and efforts expended in manual identification and the attendant subjective bias.As the framework also provides a talent score for different development trajectories, it also serves as a guide to determine a career path among different leadership streams.The major elements required to build a successful leadership pipeline for mid-level positions are:

- Identifying the relevant K elements required to assess Talent Score
- Discovering the correct Knowledge sources from where data can be obtained
- Applying correct calibration of weightages and iteratively modifying and improving the system by comparing profiles of identified leaders as benchmarks.

The application can further be enhanced by connecting to and incorporating details from external sources to identify appropriate attributes and calibrate the weights assigned to knowledge elements.

REFERENCES

[1] James M. Kouzes and Barry Z. Posner, "The Truth About Leadership", August 2010.

[2] John Mattone, “Identifying and Developing Future Leaders“, The Chief Executive, January 2013 Available:http://chiefexecutive.net/the-ceo-imperative-identifying-and-developing-leaders-and-future-leaders

[3] Alice Kwan, Jeff Schwartz and Andrew Liakopoulos, “Redrafting Talent Strategies For The Uneven Recovery”, Talent Edge 2020, January 2012.

[4] Mike Horne, “Are You Prepared for the Coming Leadership Crisis?”,LeadershipActs. Available: http://www.leadershipacts.com/article4.html

[5] Suceendran. K. M, Saravanan Ramachandran, Sarukesi K, “Embedding K-Elements in HR Processes”, Advances in Engineering, Science and Management (ICAESM), 2012.

[6] Donald Delves, “The Critical Task Of Succession Planning”, Forbes Inc., March 2011. Available: http://www.forbes.com/sites/donalddelves/2011/03/31/the-critical-importance-of-succession-planning/

[7] Nikola Vlahovic, "Discovering Tacit Knowledge in Business Decision Making", WSEAS Transactions on Business and Economics, March 2008,Issue 3, Volume 5, pp. 72-81

[8] VissanuZumitzavan, "The impact of different styles of ‘personal knowledge management’ and ‘leadership’ on ‘organisational performance’: a case of healthcare Industry in Thailand", WSEAS Transactions on Business and Economics, 2014, Volume 11, pp. 430-441

[9] Meng-Long Shih, Shouhua Lin, Shu-Hua Hsiao, Liang Ming Huang, Chaochang Chiu, K. Y. Chen, “The Study of the Correlation among Personality Traits, Leadership Competence and Organizational Performance”, WSEAS Transactions On Business And Economics, January 2009, Issue 1, Volume 6, pp. 11-20

[10] Nicky Dries and Roland Pepermans,”How to identify leadership potential: Development and testing of a consensus model”, Human Resource Management, May/June 2012,Issue 3, Volume 51, pp. 361–385.

[11] William C. Byham, Audrey B. Smith, Matthew J. Paese, “Grow Your Own Leaders: How to Identify, Develop, and Retain Leadership Talent”, Financial Times/Prentice Hall, February 2002.

[12] Kenneth David Strang, “Examining effective technology project leadership traits and behaviors”, Computers in Human Behavior, 2007, Volume 23, Number 1, pp. 424-462.

[13] Judge, Timothy A.; Bono, Joyce E.; Ilies, Remus; Gerhardt, Megan W., “Personality and leadership: A qualitative and quantitative review”, Journal of Applied Psychology, Vol 87(4), Aug 2002, pp.765-780

[14] Edited by David V. Day, Stephen J. Zaccaro, Stanley M. Halpin, ‘Leader Development for Transforming Organizations: Growing Leaders for Tomorrow’, January 2004.

[15] Claudio Fernández-Aráoz, Boris Groysberg, Nitin Nohria, ‘How to Hang On to Your High Potentials’, Harvard Business Review, October 2011

[16] Sean W.M. Siqueira, Governance, Communication, and Innovation in a Knowledge Intensive Society, IGI Global - Publisher, June 2013.

[17] Point of View: “The Growing Challenge of Global Leadership Development”, Mercer & Oliver Wyman, Harvard Business School Publishing Conferences, 2007. Available: https://www.mmc.com/knowledgecenter/The_Growing_Challenge_Of_Global_Leadership_Development.pdf

[18] “Unlocking the DNA of the Adaptable Workforce”, The Global Human Capital Study 2008, IBM.

[19] Megan M Biro, “5 Greatest Challenges ahead for the HR and Leaders”, Society for Human Resource Management (SHRM), 2012 Available:http://www.forbes.com/sites/meghanbiro/2012/11/11/5-greatest-challenges-ahead-for-hr-and-leaders/

[20] Suceendran. K. M, R. Saravanan, Divya Ananthram, S. Poonkuzhali, R. Kishore Kumar and Dr. K.Sarukesi, “Applying Classifier Algorithms to Organizational Memory to Build an Attrition Predictor Model”, World Scientific and Engineering Academy and Society (WSEAS), 9th International Conference on Computer Engineering and Applications (CEA '15), February 2015.

[21] Suceendran K. M, Saravanan Ramachandran, SanthalakshmiChittibabu, Dhilip Kumar and PrathapKarunakaran, “A Computer Implemented Method and System to identify leaders in various workgroups”, India Patent Application No 3907/MUM/2013, Filing Date: Dec 2013.

[22] Suceendran K. M, Saravanan Ramachandran, SanthalakshmiChittibabu, Dhilip Kumar and PrathapKarunakaran, “A Computer Implemented Method and System to identify leaders in various workgroups”, USPatent Application No 14/493 998, Filing Date: September 23, 2014

[23] Suceendran. K. M, Saravanan Ramachandran, Dhilip Kumar, Divya Ananthram, Dr. K Sarukesi and SudhakarPandiarajan, ”Leveraging Organizational Memory to Build Talent Pipeline for Mid-level Leadership”, World Scientific and Engineering Academy and Society (WSEAS), 9th International Conference on Business Administration (ICBA '15), February 2015.

[24] Thomas H. Davenport, Jeanne Harris and Jeremy Shapiro, “Competing on Talent Analytics”, Harvard Business Review, Oct 2011.

[25] Tyler C.Cooper, Healthy Leaders, Healthy Businesses, Texas CEO Magazine, July 2011. Available: https://texasceomagazine.com/departments/healthy-leaders-healthy-businesses/

[26] John Carson, “Why Leadership and CSR Are Tightly Aligned”, Huffington Post, May 2012. Available: http://www.huffingtonpost.com/jon-carson/why-leadership-and-csr-ar_b_1532875.html?ir=India