Work Force Planning, Literature Analysis: Digitization compels for a Conceptual Model for Data Driven Decisions

Yogita Patra[1] ,Shruti Tripathi[2]

[1](Research Scholar, Amity University, India)
Corresponding Author: Yogita Patra1

Abstract: *A survey by ManpowerGroup—The Skills Revolution—released at the World Economic Forum in Davos asked 18,000 employers in 43 countries across six industry sectors how they expected technology to impact their business in the next two years. Increasing use of digitisation and artificial intelligence in businesses will hit headcount in the world in the short term by cutting job. Quite predictably, data analysts will be the most in demand. This indicates the rapid pace at which skills need to be evolved. [1] (www.economictimes.com, 2017). In this paper, we present a literature review and a conceptual model for data driven decisions through work force planning. To understand the journey so far, 30 articles, published from 2002 to 2017 have been taken into consideration, which considerably capture the essence of the topic in varied fields. A conceptual model is presented at the end of review depicting how managers can build a case for the management to invest time in workforce planning and analytics. Attempt has been made to identify gaps and raise further interest for research in the topic.*

Keywords: *Work force planning, Work force architecture, Talent segmentation, Talent forecasting, Risk mitigation strategy, Digitization, Decision making*

--- ---------

I. Introduction

Today the marketplace has become extremely competitive and global. For organizations to maintain their competitive advantage they need to have a differentiator in terms of highly committed and competent workforce. Hence, there has been a tilt towards Human Resource Management having a Strategic Business Partner (SBP) role in the organization [2] (Robinson and Robinson, 2009) . The HR is not only becoming a partner but a player in strategy". [3] (Bhatnagar and Sharma, 2003) Two key indicators relevant to the concept of strategic business role of HR are- (a) "An HR function supports three kinds of work: transactional, tactical, and strategic. Although SBPs perform all three kinds of work, it is vital that the majority of their work be strategic in nature." (b) "Translating Business Needs into Human Performance Requirements identify gaps and close those gaps with appropriate initiatives." [2] (Robinson and Robinson, 2009)

Tapping the company's special skills or core competencies has gained utmost importance and relevance in present times. Work force planning seems to be answer to this quest. As it is rightly said, "The devil's in the details!" [2] (Robinson and Robinson, 2009) The importance of organizations indulging in workforce planning and intelligence is at its peak in order to avoid ''knee-jerk reactions'' and fall in service standards. Firms because of their ambitious targets first over hire [4] (Sullivan, Workforce, 2002)and then succumb to the detrimental approach to downsizing which might be indiscriminate and limit the ability of organisations to restructure and re-skill. [5] (Melchor, 2013). The result is a substantial decrease in the employee morale as well. [4] (Sullivan, Workforce, 2002) Work force planning automatically builds role clarity and reduces job burn out of employees as well.[6] (Singh Suar and Leiter, 2012). The organizations need to realize that "Being prepared is better than being surprised". [4] (Sullivan, Workforce, 2002) "A workforce planning infrastructure, integrated with service and financial planning, will be at the forefront to support the organization through any challenging phase". [7] [(Rudge, 2011)

HR function's "image and brand" relies heavily on its understanding of "boom and bust" cycles of the business [4] (Sullivan, Workforce, 2002). HR people need to prepare customized solutions for the different phases of the business cycle. But before that is done, four thematic questions that need to be answered, to aspire to create a work force infrastructure are [8] (Anderson, 2004)-

(a) What is the current distribution of today's work force?
  Critical work force characteristics required in the future, aligning with its strategic intent and what is the possible distribution of it in the organization?

(b) With the current policies and programs will we be able to acquire the required work force distribution of the future?

(c) What changes in policies and practices will eliminate or alleviate gaps (overages or shortages) between the future desired distribution and the projected future inventory?

The literature review has been segregated under following sub heads

Figure 1: Work force planning classification
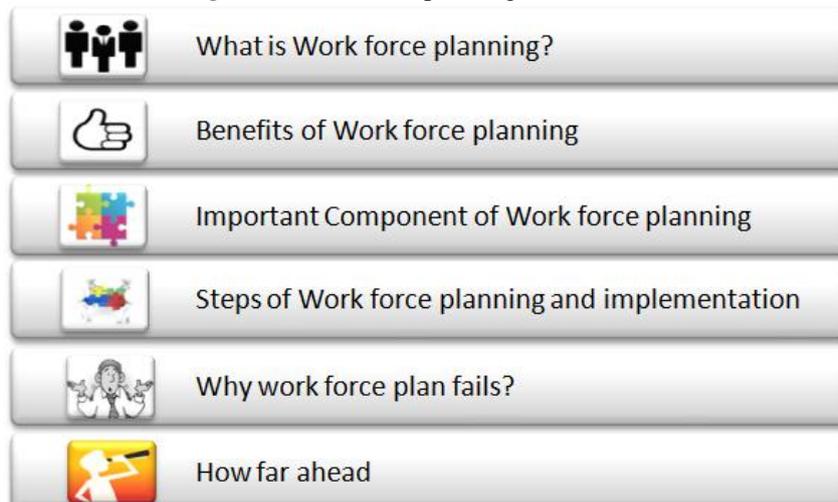
II. Research Methodology

This research paper is based on the study of journals, doctoral dissertations, newsfeed; research papers published in journals, book sections. Article in periodicals have also been taken into account as we feel that the concept cannot have industry connotations unless most recent thoughts are included in the literature review.

Literature review covers 31 articles, selected as possible publication for work force planning from 2002 to 2017. The literature review is based on six descriptors as mentioned in the abstract of this paper. The reference of the literature reviewed, has overlaps with respect to the sub topics and hence quoted more than once. This is a useful resource for anyone looking for understanding on details of work force planning. The key findings have been summarized at the end of each sub topic keeping in view the Concept, Key findings and Conclusion from the previous empirical study. On the basis of this critical review, a conceptual model has been framed.
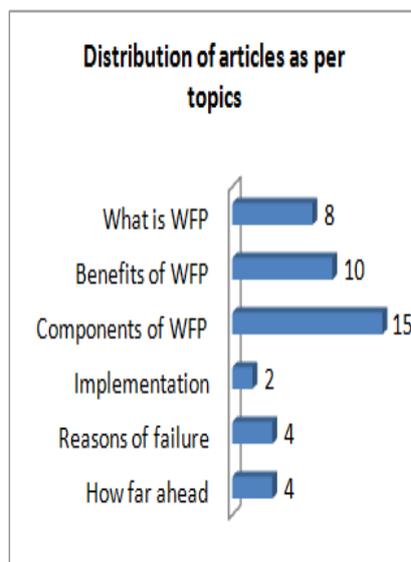
Figure 2: Distribution of articles as per topic

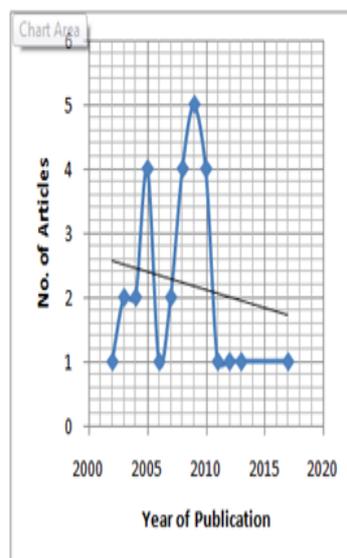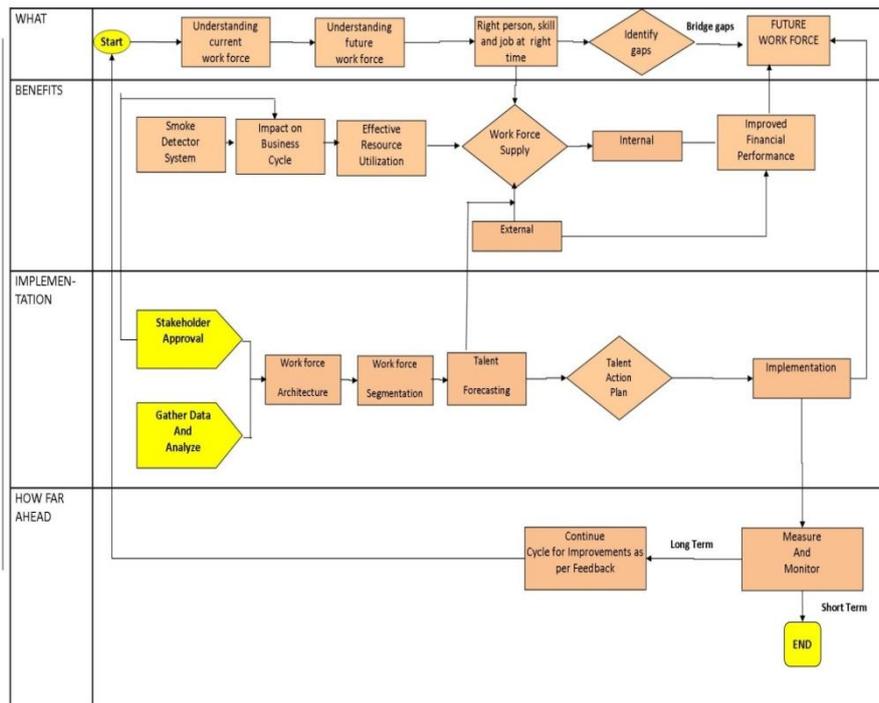**Figure 3:** Distribution of articles as per year of publication

FIGURE 4: Roadmap of Literature Review

III. WHAT IS WORKFORCE PLANNING?

Future staffing needs have to look beyond quantitative perspective of staffing. [9] (Stokker and Hallam, 2009). This change in the attitude towards having effective strategy in place is the key driver for work force planning in organizations.[9] (Stokker and Hallam, 2009) The plan should be driven by the need to determine the right sized work force having the right competencies to meet current and future business objectives and goals of an organization. [10] (Radford, 2010) Workforce planning should be considered as core HR process. It is indeed an important opportunity for HR to 'raise the bar' and be involved in making of the strategic plan for the future of the organization. [11] (Baron Clake Turner and Pass, Spring 2010).

As concisely put by [9] (Stokker and Hallam, 2009), it is all about having the right person, in the right job, with the right skills, at the right time. It can also be stated as implementation of those human resource activities, policies and practices which drive the change and prepare the organization to cope with that change. [12] (Pynes, 2004) Work force planning encompasses forecasting human resource demand and creating schedules that meet with targeted service level goals [13] (Durr, 2003).If the planning is all about numbers based on past trends to predict future supply and demand it is generally referred to as "Hard Work force planning" [11] (Baron Clake Turner and Pass, Spring 2010). "Soft Work force planning" can be stated as core process of people management shaped by organizational strategy and ensures right match of work force to deliver short and long term organization objectives based on strategic framework of the organization [11] (Baron Clake Turner and Pass, Spring 2010). As rightly said, "It's not just about the numbers; it's about the shape of the workforce."[8] (Anderson, 2004)

Stephen Moir, Corporate Director: People, Policy and Law, Cambridgeshire County Council says, "Essentially it is about forecasting both the demand and supply of labour, understanding what you have got now and what you might need in the future". [11] (Baron Clake Turner and Pass, Spring 2010) Workforce planning is the "systematic identification and analysis of what an organization is going to need in terms of the size, kind, and quality of workforce to achieve its objectives". "It determines what mix of experience, knowledge, and skills is required and sequential steps to get the right number of right people in the right place at the right time".[10] (Radford, 2010)

Work force planning and management is not about making complicated spread sheets or buying expensive software only, it is not merely a process; it should be part of the organization culture. [14] (Sheff, 2006) Specifically during the course of mergers, acquisitions and expansion efforts HR people have to manage global work force. "By having a strategy that suits to manage the workforce in comprehensive and holistic manner, they can have a powerful asset at their disposal". [16] (Tichman, 2005)

Fig 5: Work force Planning Model , Source: (Stokker and Hallam, 2009)

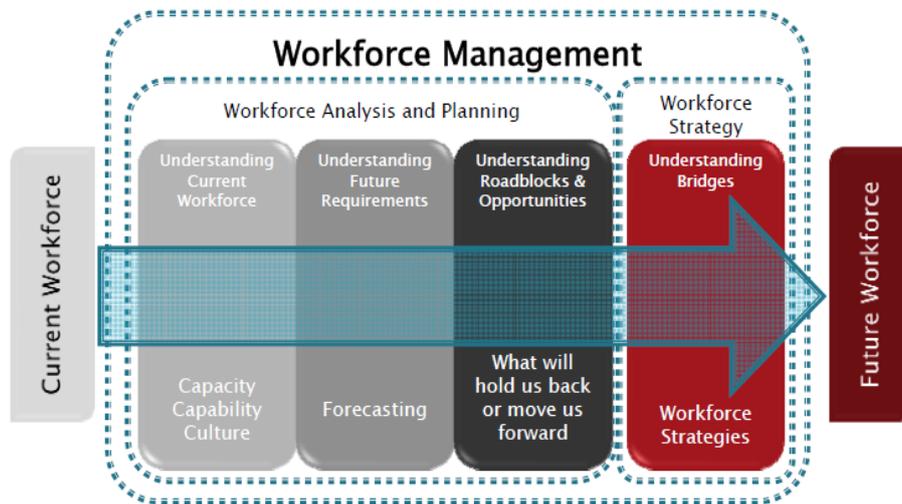**Figure 6:** Summary of Literature review explaining "What is Workforce planning?"

Sub Head	Author & Year	Concept	Key finding	Conclusion
What is workforce planning?	(Pynes, 2004)	Workforce planning to be considered as core HR process. Hard workforce planning and Soft workforce planning	Identified the need to bring changes in the way traditional business is done. Coined famous phrase- "Right people in the right job at the right time".	Workforce planning extends beyond metrics. A strategy leading to managing workforce in a holistic manner can provide organizations with powerful asset. It is crucial to bind it in the culture of the organization.

IV. What are the benefits of workforce planning?

Two pertinent questions the organization needs to reflect on [11] (Baron Clake Turner and Pass, Spring 2010)- (a)What should be the objectives of work force planning from their perspective and the challenges they might face to implement it? (b) Which critical skills will be in short supply and has the capability to derail your business plan?

Data says that 92% of companies implement some level of work force planning. [17] (Frauenheim, 2009) The overall benefits of work force planning include: (a) Helps eliminate stressful trauma because of surprises. [4] (Sullivan, Workforce planning: Why to start now, 2002) HR gets adequate time to fill critical vacancies with the right skills [12] (Pynes, 2004)(b) Allows optimum and effective resource utilization [12] (Pynes, 2004) (c) Smoothening of business cycles by ramp up and ramp down of talent pipeline and talent inventory [4] (Sullivan, Workforce planning: Why to start now, 2002). (c) Realistic projections help in building accurate budgets for training, development and career enhancement. [12] (Pynes, 2004). (d) An organization has its "smoke detector system" in place to identify problems early. [4] (Sullivan, Workforce planning: Why to start now, 2002). (e) "Demand fluctuation and demand uncertainty can be regulated in an effective manner" [15] (Sherali, January 2009). (f) HR gets adequate time to re-skill [18] (Curson and Dell, 2010) if the vacancies have to be filled in by "internal supply". [12] (Pynes, 2004) (g) In service industry workforce initiative is fundamental to achieving cost minimization and service level maximization by scheduling minimum paid agent labour hours. [19] (Castillo Joro and Li, 2009). (h) It is a proven fact that investments in certain human resource activities, specifically with respect to planning, hiring and employee development, have a positive effect upon firm's performance in the form of labour productivity [20] (Koch and McGrath, 1996) (i) It is found to contribute to positive financial performance [10] (Radford, 2010)

"Seemingly trivial problem of providing just the right number of qualified people at the right time is actually highly non-trivial". [21] (Größler* and Zock, 2010)

Figure 7: Summary of Literature review explaining "What are the benefits of Workforce planning?"

Sub Head	Author & Year	Concept	Key finding	Conclusion
What are the benefits of workforce planning?	(Koch and McGrath, 1996) (Sullivan, Workforce planning: Why to start now, 2002) (Pynes, 2004) (Frauenheim, 2009) (Sherali, January 2009) (Baron Clake Turner and Pass, Spring 2010) (Curson and Dell, 2010) (Radford, 2010)	To understand the benefits organization needs to reflect on the challenges it would face to implement workforce planning strategy and which critical skills can derail the business plan.	It eliminates surprises by helping organization create talent pipeline and talent inventory. Demand fluctuation and demand uncertainty can be regulated. HR gets adequate time to re-skill.	It leads to optimum resource utilization leading to cost optimization and better revenue and profits. Workforce planning as a strategy cannot be overlooked for improved financial performance of an organization.

V. What is the most important component of workforce planning?

To do work force planning the organization needs to ask two pertinent questions [11](Baron Clake Turner and Pass, Spring 2010)-

(a)What are the planning processes already existing and committed to in the organization? (b) Are the mechanisms to collect data and the skills to work on that data in place in the organization?

Here it is crucial to understand the role of data in building the plan. The information required to develop a work force plan can be divided into four categories-

(a)Qualitative internal- This should come from senior management covering strategic overview as rightly said by Gerard Brossard, Vice President, Global work force planning and management, HR at Hewlett-Packard Co. "Executive support is important" [22] (Creelman, May 2005). The other aspect should come from business managers covering operational overview and HR department covering experience, skills, attitude, performance and potential.

(b)Quantitative internal- This should come from HR department covering turnover, absenteeism data, recruitment capacity, working patterns, succession planning, talent management, skills audit if any [12] (Pynes, 2004). The other aspect should come from business side covering customer information, outsourcing, off shoring or rostering requirements. This is mainly operational data necessary for short and long term decision making.

(c) Qualitative external- These are external factors beyond the control of the organization but have impact on the results of planning process. They cover social trends, developments in technology, changing patterns of customer choice [11] (Baron Clake Turner and Pass, Spring 2010).

(d) Quantitative external- This covers labour market demographics, benchmarking statistics from surveys, government regulations like pertaining to immigration or emigration [18] (Curson and Dell, 2010). This gives clear view of the threats and opportunities that the organization will face.

Figure 8: Summary of Literature review explaining "What is the most important component of Workforce planning?"

Sub Head	Author & Year	Concept	Key finding	Conclusion
What is the most important component of workforce planning?	(Pynes, 2004) (Baron Clake Turner and Pass, Spring 2010) (Curson and Dell, 2010)	To start with the organization needs to reflect on if there are any processes already existing. Are data collection tools and skill to work on that data available in the organization? What are the improvements required?	Information required is divided into four parts-Qualitative internal from senior management. Quantitative internal from HR department. Qualitative external from external environmental factors. Quantitative external from government regulations	It is crucial to understand role of data in developing a plan. At this step organization gets a clear picture in terms of threats and opportunities it will face while doing workforce planning.

VI. What are the steps involved in workforce planning?

(a)Have a clear vision and objectives- The clarity of purpose and expectations need to be set at this stage. It is not only important to state how objectives relate to each other and prioritized but also how they will be

communicated to the stakeholders. Needless to say that HR department will be involved at all stages [5] (Melchor, 2013).

(b)Gather and analyse data- "Having access to as much data as possible and being the owner of the data is a good thing towards achieving the goals of work force planning" [16] (Tichman, 2005). Consolidating that data available with individual subsidiaries which could be in varying formats is the key to a perfect start. [16] (Tichman, 2005) At times analysis is done by employing data scientists. [23] (Rafter, 2017) The data requirement and categorization has already been explained above.

(c)Involve all key stakeholders- Four major stakeholders and their key contributions are [11] (Baron Clake Turner and Pass, Spring 2010)-

- **Executive Management** determines overall framework and defines organizational strategy with inputs on business plan, corporate governance and aims and objectives of organization. It clearly needs to have Digital Business Vision.
- **Senior managers** develop business plan at unit level. They provide information on future business directions and resource requirements. They share operational plans with HR department
- **Line managers** provide input like skill gaps, rostering requirement etc into operational plans. They develop departmental plans. Their role is crucial in effectively communicating the strategy developed for future goals to the team members.
- **Human Resource Department** gives inputs on people management metrics. They translate business plans into activities required to be undertaken to reach organizational goals set at the beginning. They will guide on developing skills, fresh hiring, performance and workforce capabilities.
- **Work force planning Specialists** collect and analyse data to build a work force plan for discussion with all the stakeholders. Josh Bersin, Delloitte says that "If you are in HR you need IT people to help you. I don't think it will ever go away" [23] (Rafter, 2017).

(d)Develop work force architecture- Each organization has to develop their respective plan. "No one size fits all approach needs to be taken". [16] (Tichman, 2005) To do this, two steps that are a necessity-

(i)Work force segmentation-Key roles are identified according to the value created by each profile. Strategic and core roles are value creators and requisite and noncore roles are value supporters. [24] (Brush and Ruse, 2005)

- Strategic: roles critical for desired growth involved in innovation. They are knowledge workers and roles are difficult to copy. It requires specific skill set and is unique in nature.
- Core: roles critical to deliver quality product or services to customers. These require skill set which is not readily available in the job market and is costly to train.
- Requisite: roles that support organization to meet its objective but can be staffed differently to do cost optimization. These roles can be outsourced and are readily available in the job market.
- Noncore: roles that are not aligned with the strategic goals of the organization and can be eliminated in course of cost optimization.

(ii)Work force architecture- This particular talent segmentation matrix built by [25] (Walker and Merryman, 2005) refined by the researcher [26] (Lavelle, Winter 2007) is useful in segmenting the present work force. Once this exercise has been done it clearly shows the future path and helps in defining the activities required to reach the set out objectives.

FIGURE 9: Workforce architecture: Segmenting staff talent, Source: (Lavelle, Winter 2007)

	Low Talent Scarcity/Cost	**High Talent Scarcity/Cost**
High Business Impact	High Skill Replacement Talent	Critical Core/Contingent Expertise
Low Business Impact	Market-sourced Skill needs.	Time-bound Mastery Level, Professional Talent

(e)Talent forecasting-It is a process of predicting future changes in demand, supply and doing gap analysis of resources. [4] (Sullivan, Workforce planning: Why to start now, 2002) Demand analysis measures future workloads and gives way forward to future competencies required by the firm. Supply analysis gives clarity on whether the firm should depend on talent management activities or external recruitment to fill the resource gap. Gap analysis compares the demand and supply to identify if supply exceeds demand or demand exceeds supply. [8] (Anderson, 2004) The action plan of the organization is dependent of the conclusion drawn from this exercise.

This being the most crucial step involves-
- Thorough knowledge of work force
- Operating environment(internal and external) which will impact the future course of organization
- Identify from where this competency gap can be filled in.
- Give way forward to developing the strategy

Figure 10: Stakeholder Management and Communication Strategies, Source: [5] (Melchor, 2013)
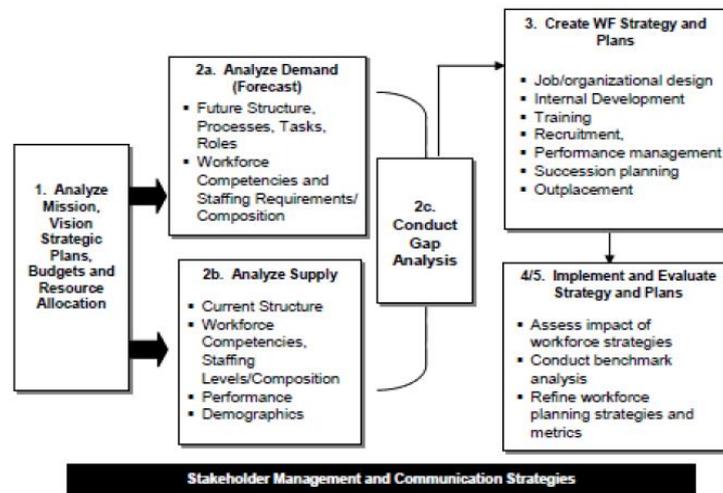
(f)Talent action plan- Based on the above exercise a talent action plan will mark all the talent management steps that a manager will have to take to close the gaps. The action plan can be categorized into three main points-
- Internal re-skilling and cross training [27] (Fowler Wirojanagud and Gel, 2008)or training of crucial competencies keeping in mind the growth and profitability of the organization
- Sourcing and recruiting from external pool of talent if the key skills are not available within the organization
- Define metrics to determine the effectiveness of work force planning

(g)Develop risk mitigation strategies- This step creates a bridge between strategy and operations. Mitigation strategy may include redesigning of processes like recruitment, succession planning, diversity planning. The choice of alternative will depend on priority or based on urgency when the specific gaps pop up.[10] (Radford, 2010)

(h)Measure and monitor strategies- Regular assessment is required to map how well the organization is meeting its mark against the establish goals. The impact of mitigation plan has to be tied to these goals. [10] (Radford, 2010) As work force planning is an ongoing process, it needs to be monitored closely so that required changes can be initiated timely. [5] (Melchor, 2013)

(i)Keep it simple-When Hewlett-Packard initiated work force planning for Gerard Brossard, CEO "Simplification was the key objective". [22] (Creelman, May 2005) The system should not be so complex that people would use the complexity of the framework as an excuse for non-implementation. It should never be looked at just from the numbers stand point. The need is to develop a doable implementation plan. [28] (Cotten, 2007)

Work force planning strategies should not remain static. Constant tweaking of the plan is required. It cannot be taken as "once and done" kind of activity- Nick Nyphus, Ameriprise. [17] (Frauenheim, 2009)

Figure 11: Summary of Literature review explaining "What are the steps involved in Workforce planning?"

Sub Head	Author & Year	Concept	Key finding	Conclusion
What are the steps involved in workforce planning?	(Anderson, 2004) (Walker and Merryman, 2005) (Tichman, 2005) (Brush and Ruse, 2005) (Cotten, 2007) (Fowler Wirojanagud and Gel, 2008) (Baron Clake Turner and Pass, Spring 2010) (Radford, 2010) (Melchor, 2013) (Rafter, 2017)	A clear vision and objective can go a long way in working out a plan. Involving all the stakeholders is as important as data collection and its valuable use. It is imperative to have workforce specialists who are dedicated to work on the data only at all given times.	Developing workforce planning architecture to do talent forecasting is a crucial step. Basis that a talent action plan is to be developed. It is sensible to keep the plan simple for ease of understanding by all stakeholders and its implementation.	Risk mitigation strategy should be built in the workforce plan which creates a bridge between strategy and operations. Measuring and monitoring is as important as building the plan. The monitoring can be done as frequently as convenient to the organization.

VII.   Implementation Of Workforce Planning

The questions that organization should reflect on are [11] (Baron Clake Turner and Pass, Spring 2010)-

- Have you been able to agree consensus on work force plan with your management?
- Have you identified individuals or groups that will take responsibility of all aspects of the plan?
- Are managers equipped with necessary skills to implement the plan successfully?
- Is your communication channel effective enough to communicate the objectives clearly and capture feedback?

The implementation should cover all the following aspects [5] (Melchor, 2013)-

- It is critical to develop a spirit of collaboration and support among all stakeholders
- Front line managers need to have clear understanding of business objectives and their contribution in collecting data to build an error less plan as far as possible. They should be flexible to incorporate new ideas
- The organization should build incentives for managers to put their full focus and dedication to the work force plan
- Consistency needs to be maintained in implementing all HR activities like recruitment and retention of high skill talent
- HR staff should be trained and re-trained in the analytical and administrative skills to do work force planning. The success of it can be measured by asking if work force planners are exhibiting right capability and competency. Have work force planners achieved strategic business partner status? [10] (Radford, 2010)
- Support and push from the Top management is most crucial for implementation

Figure 12: Summary of Literature review explaining " Implementation of Workforce planning?"

Sub Head	Author & Year	Concept	Key finding	Conclusion
Implementation of workforce planning	(Baron Clake Turner and Pass, Spring 2010)	Create consensus on the plan by all the stakeholders. Equip the managers with essential skills. Support and push required from the top management.	Collaboration and support is essential from everyone. Incentivise managers to have their full focus on the success of the plan. Create communication channel for receiving clear feedback.	Consistency and continuity required by the managers for the successful implementation.

VIII.   Why workforce plan fails?

The question arises if work force planning provides such intuitive sense then why does it fail? The reasons can be [12] (Pynes, 2004)-

- HR professionals lack the capability required to move human resource management to a more strategic role [28] (Cotten, 2007)
- There is non-cooperation between multiple concerned departments. Trust and open communication between all departments is lacking
- Employees unwilling to embrace the change might sabotage the whole process
- Financial costs involved are beyond the allocated budgets and are plagued by short term outlook rather than long term planning
- Top management might discard the whole theory as change in policies takes time to show results and management might be looking for "quick fix solutions"

- Budget constraints to re-skill HR professionals in work force competency like interpretation and analysis of data, decision making, negotiation and persuasion, strategic planning and critical thinking [10] (Radford, 2010)
- Depending on the size of the organization, one might need to buy software to analyse and interpret data for work force planning. The representatives are not able to build proper business case to top management for the capital investment and show attractive ROI. The managers need to explain what the software does and how it can help the organization reduce cost and improve service [29] (Bucci, 2008)

At times the failure of strategic plans, based on statistics, is not able to keep pace with the fast-moving reality. This leads to abandoning of new outlook en masse. In place of that, more immediate strategies such as talent planning are adopted which are harmful for constructive decision making for the future [11] (Baron Clake Turner and Pass, Spring 2010).

IX. How far ahead should your workforce plan look?

Workforce plan is a document that needs continuous attention. It should be refreshed and reviewed rather than being set in stone [11] (Baron Clake Turner and Pass, Spring 2010). If it is kept flexible, only then it allows for repeating the workforce planning cycle several times per year instead of only once per year [21] (Größler* and Zock, 2010). So, from a one year period taking short term perspective to planning for three or five years taking long term perspective is the general norm in the organizations. Specifically, if the planning team is working with senior management, the plan is from a long term perspective i.e. over a three year period [7] (Rudge, 2011). Looking from a country's perspective, government work force planning period ranges from one to three years. Five countries (Austria, Ireland, Korea, the Slovak Republic, and Spain) have implemented a planning period of four to five years; in Mexico and Chile, the period is more than 6 years.[5] (Melchor, 2013) In Korea, workforce plan is established by each central ministry every five years. Current workforce: its size, disposition, structure and composition, recent change, personnel management practices, and current competency levels are analysed. Then predictions for next five years are done: personnel size, composition, and the competencies required for achieving any mid- or long-term vision and strategies. Further the gap is estimated between the current level and future demand. If a significant gap is identified, likely issues are analysed, and possible alternatives are reviewed. Finally, gap reducing strategies are developed so that, by the end of the five-year period, the objectives of the workforce plan are met.[5] (Melchor, 2013)

X. Proposed Conceptual Model

From the shortlisted papers for the literature review, a prominent model emerged. The model was formulated by[10] (Radford, 2010) which consolidates organizational considerations with the whole life cycle of workforce planning. Based on that and further improving the concept, a model is being proposed which considerably emphasizes on the impact on the performance and financials of the organization. In this proposed model, additional information related to Talent management steps that emerge as a solution for HR to be more of a strategic partner, have been added.

From the literature review certain aspects that emerged are:

- ✓ There is a positive effect of HR playing a strategic business partner role on the performance of the organization.
- ✓ There is positive impact of integrating workforce planning into strategy on the financial well being of an organization.
- ✓ There is positive effect of retention strategy (talent management steps) on the optimum resource utilization in an organization.
- ✓ There is positive effect of career pathing on the retention of employees in an organization.
- ✓ There is a positive impact of workforce planning in defining the apt training and development needs of the organization.
- ✓ The above mentioned findings have given definite direction for the conceptual model which is an enhancement of the model suggested by [10] (Radford, 2010).

Figure 13: Proposed Conceptual model proposed after extensive literature review
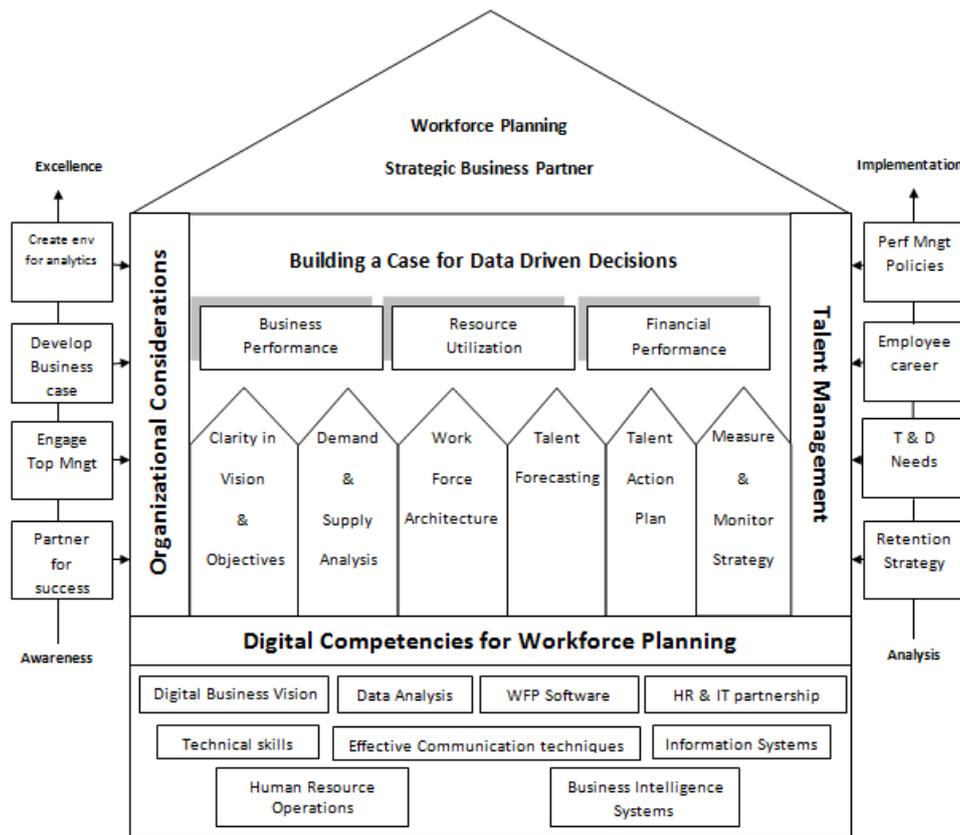
XI. Gap Identified

The vendor landscape for workforce management software is huge. The software uses sophisticated algorithms to do forecasting and reviews. They take past data to make a "best fit model" to meet specific organizational requirements. [17] (Frauenheim, 2009) Users can work on the same platform with other businesses. [30] (Brynko, 2008) The mathematics of these is beyond the scope of this paper. An important new concept called "Work force Optimization" which is an amalgamation of forecasting and scheduling, quality monitoring, e-learning and performance management has evolved. [13] (Durr, 2003) Work force planning is an avid part of work force optimization but does not cover all aspects of developing and monitoring a highly skilled and competitive work force while touching cost optimization as well. The e-learning, performance management and cost based calculations are beyond the scope of this paper and pave way for further research in this field.

XII. Conclusion

A sincere effort has been made in this paper to considerably cover concept, keeping in view the professional terrain. Concluding, as stated by David Ludlow,CEO, SAP "There's an increased market awareness of work force planning. It is potentially one of the next big things, like talent management has been." [17] (Frauenheim, 2009) The organizations need to keep the plan current and it being regarded as a "living document" which continues to guide the organizational strategies [9] (Stokker and Hallam, 2009). Organizations need to develop Digital Business Vision which will help to inculcating a habit of data driven decisions which are more scientific in approach. At any given time collaboration and coordination of HR and IT cannot be ruled out. Research has proved that the resource capability and effective utilization of the organization contributes to its competitive advantage which in turn contributes to the organization's performance. [31] (Newbert, 2008). Future empirical research can be carried out to validate this conceptual model.

References

[1].   **Journal Papers**
[2].   www.economictimes.com. (2017, January 18th). Digitisation will hit Indian employees the most: ManpowerGroup survey . New Delhi, India.
[3].   Robinson and Robinson, D. G. (2009). Strategic Business Partner:Aligning People Strategies With Business Goals. In D. G. Robinson and Robinson, Strategic Business Partner:Aligning People Strategies With Business Goals (pp. pp.9-31). Berrett-Koehler Publishers.

[4]. Bhatnagar and Sharma, J. A. (2003). Strategic HR Roles in India: A Rhetoric or Reality? Indian Journal of Industrial Relations, Vol. 38, No. 4 , pp. 409-424.
[5]. Sullivan, J. (2002). Workforce planning: Why to start now. In J. Sullivan, Workforce (pp. pp.46-50).
[6]. Melchor, O. H. (2013). "The Government Workforce of the Future: Innovation in Strategic Workforce Planning in OECD. OECD Working Papers on Public .
[7]. Singh Suar and Leiter, P. D. (2012). Antecedents, Work-Related Consequences, and Buffers of Job Burnout Among Indian Software Developers. "Journal of Leadership & Organizational Studies , 83–104.
[8]. Rudge, A. (2011). Workforce planning helps Birmingham to ride storms of change: City council seeks to avoid knee-jerk reactions. Resource Management International Digest, Vol. 19 Iss 1 , pp. 12 - 14.
[9]. Anderson, M. W. (2004). The Metrics of Workforce Planning. Public personnel management, Vol 33, No.4 , pp.363.
[10]. Stokker and Hallam, J. H. (2009). The right person, in the right job, with the right skills, at the right time. A workforce-planning model that goes beyond metrics. Library Management, 30(8/9). , pp. 561-571.
[11]. Radford, A. B. (2010). BRIDGING THE GAP OF WORKFORCE PLANNERS AS STRATEGIC BUSINESS PARTNERS: A GROUNDED THEORY STUDY. "A Dissertation Submitted to the Faculty of Argosy University Washington, DC , Publisher-Proquest.
[12]. Baron Clake Turner and Pass, A. R. (Spring 2010). Workforce Planning, Right People, right time, right skills. CIPD guide.
[13]. Pynes, J. (2004). The Implementation of Workforce and Succession Planning in the Public Sector. Public personnel management, Researchgate .
[14]. Durr, W. (2003, November). The missing pieces of workforce management. Customer Inter@ction Solutions , p. pg. 54.
[15]. Sheff, H. (2006, May). Why Aren't YOU Using Work Force Management? Call Center Magazine , p. pp.26.
[16]. Sherali, X. Z. (January 2009). Two-Stage Workforce Planning under Demand Fluctuations and Uncertainty. Journal of the Operational Research Society 60 , pp. 94-103.
[17]. Tichman, B. (2005, September/October). Managing Data for the New Global Workforce. Compensation and Benefits Review , p. pg. 53.
[18]. Frauenheim, E. (2009, October 19). Talent planning for the times. Workforce Management, 88, 11; ABI/INFORM Collection , pp. pg. 37-43.
[19]. Curson and Dell, J. M. (2010). Who does workforce planning well? Workforce review team rapid review summarywell? International Journal of Health Care Quality Assurance Vol. 23 No. 1, , pp. 110-119.
[20]. Castillo Joro and Li, I. ,. (2009). Workforce scheduling with multiple objectives. European Journal of Operational Research 196 , pp.162–170.
[21]. Koch and McGrath, M. J. (1996). Improving Labor Productivity: Human Resource Management Policies do Matter. Strategic Management Journal, Vol. 17, No. 5 , pp. 335-354.
[22]. Größler* and Zock, A. A. (2010). Supporting Long-term Workforce Planning with a Dynamic Aging Chain Model: A Case Study from the Service Industry. Human Resource Management,Volume 49, Number 5 , pp. 829–848.
[23]. Creelman, D. (May 2005). Six easy pieces. Workforce Management,84, 5; ABI/INFORM Collection , pg. 59.
[24]. Rafter, M. V. (2017, January/February). Cracking the code on workforce analytics. Computerworld Digital Magazine , pp. pg22-27.
[25]. Brush and Ruse, M. (2005). Driving strategic success through human capital planning: How Corning links business and HR strategy to improve the value and impact of its HR function. HUman resource Planning,28(1) , pg. 49-60.
[26]. Walker and Merryman, J. (2005). Workforce architechture:Aligning talent with strategy through segmentation. West Vancouver, British Columbia: The Walker Group.
[27]. Lavelle, J. (Winter 2007). On Workforce Architecture, Employment Relationships and Lifecycles: Expanding the purview of Workforce planning and Management. Public Personnel Management , pg. 371.
[28]. Fowler Wirojanagud and Gel, J. W. (2008). Heuristics for workforce planning with worker differences. European Journal of Operational Research 190 , pg.724–740.
[29]. Cotten, A. (2007). Seven Steps of Effective Workforce Planning. Washington, DC 20005: IBM Center for The Business of Government.
[30]. Bucci, D. (2008, June 27th). Comparing and Justifying Workforce Management Systems. Customer Inter@ction Solutions, ABI/INFORM Collection , p. pg.22.
[31]. Brynko, B. (2008, July/August). Near-Time: Building a better work force. Information Today , p. pg. 32.
[32]. Newbert, S. L. (2008). Value, Rareness, Competitive Advantage, and Performance: A Conceptual-Level EmpiricalInvestigation of the Resource-Based View of the Firm. Strategic Management Journal, Vol. 29, No. 7 , pp. 745-768.