# Role of Digital Technology and Artificial Intelligence for Monitoring Talent Strategies to Bridge the Skill Gap

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**Abstract— At present, digital technology and Artificial intelligence plays a vital role for monitoring the talents and bridge the skill gap needed by various organizations. Take the situation extremely seriously. Employers are experiencing a global skills deficit, which might limit intelligent technology's economic advantages. Long after today's talent shortages have passed, digital developments will continue to alter the need for talents. Incremental improvements to our education and business learning systems will not be enough to achieve such high levels of achievement in such a short period of time. As a result of the challenge, company leaders must reconsider how they train their workforces, from anticipating the talents their firms will require to assisting people in learning and applying new skills throughout their careers. Investing in people is both responsible and cost effective for executives attempting to achieve growth in a highly competitive and quickly changing corporate environment. In this invited paper, the researchers here have trying to the level best to find out the root causes of Skill Gap why occurs and what the main causes behind it? How will it be filled for enhancing the potentiality of workforce of an organization? In this connection, various models have been taken for skill-based learning, tools and techniques for proper study and analysis of the relevant causes/factors behind it, which are inhibit the skill gap in various constraints of organizational growth and development.**

**Keywords— *Bridging Skill Gap, Work Force, Artificial Intelligence, Digital Technology.***

## I. INTRODUCTION

Currently, many professional services companies adopted skill based strategic Planning for achieving; organizational goal through the application of digital technology and artificial intelligence such as Artificial learning (AL) Deep leaning, (DL) and machine Learning (ML) which refers to an AI system which can self-learn and skill-based operation system. Where Accenture's people make a difference by driving innovation and providing customers with high-quality services. The good news is that skill improvement is accelerating. This paper looks at the possibilities of new learning opportunities and offers advice to corporations, entrepreneurs, and governments. Among the concepts are teaching approaches that enable pupils to learn a variety of both technical and fundamentally human characteristics, such as empathy and critical thinking. And it is believed that experience-based skills development, such as on-the-job training and apprenticeships, should be prioritized, have also discussed how engaging and adaptable approaches may promote more individualised, life-long learning, particularly among older employees and those in low-skill professions, who are frequently left out of education and skill-building programmes.

Companies are, in fact, confronting skills issues straight on. It is clear that putting money into large-scale skill development that takes advantage of learning sciences, digital applications, and experiential approaches. These enable our employees to develop a wide range of capabilities, including creativity, analytical, and digital abilities. Artificial intelligence has evolved over the last several years into a collection of sophisticated technologies that are giving businesses across sectors a competitive advantage. AI adoption and investment are surging over the world. According to one estimate, 37 percent of businesses have implemented AI solutions, up 270 percent from four years ago. Over the next three years, worldwide AI expenditure is expected to more than treble, reaching $79 billion by 2022. The way businesses do business is changing as AI use grows. (Source: https://www2.deloitte.com/us/en/insights/focus/cognitive-technologies/ai-adoption-in-the-workforce.html). It is believed that the ground-breaking research, along with experience of rethinking shall lead skill development, will assist businesses and governments in making the required changes to bridge the skill gap.

## II. LITERATURE REVIEW

In the fast-changing education and training sectors, there is a rising need for innovative learning techniques, which offers small businesses with a significant chance for disruptive development. The most inventive entrepreneurs must be on the lookout for new technology or learning breakthroughs, whether they are delivering to larger companies or educational institutions, to have worked with Accenture on assessing the impact of the digital revolution

on skills and jobs, as well as demonstrating how experiential learning can assist large and small businesses bridge the skills gap. The findings of this study will aid value immensely to policymakers and educational leaders in putting in place the investments, incentives, and infrastructure required to transform how teaching and learning take a vital role. Artificial Intelligence has a lot of promise for academic technology commercialization and formal and informal university–industry knowledge transfer (MacBryde, 1997; Schaeffer et al., 2020). Numerous firms in the robotics sector in the United States are "spin-offs" or "spin-outs" of research and development programmes undertaken at universities (Keisner et al., 2016). When partners from various areas collaborate, innovative solutions, new information, and new approaches can emerge, and university–industry collaboration is seen as an essential economic driver (Rajalo & Vadi, 2017). Between 2020 and 2022, sales of professional and personal service robots are expected to expand at a 40 percent to 41 percent annual pace (IFR, 2019b). This is a "technology absorber and provider" of current component technologies, and it is strongly linked to electronic component development (Kumaresan & Miyazaki, 1999; Mayoral et al., 2017). Higgins et al. (2012) discovered that digital learning improves skill of writing more than reading or spelling. Torgenson and Zhu (2003), for example, looked at the influence of digital technology on literacy for skill development.

## III. OBJECTIVES OF THE STUDY

For the smooth conduction of the aforesaid research assignment, the following research objectives have been taken such as;

1. To know the relevant factors which are enhancing the employee's potentiality of work force performance in an organization,
2. To study the reliable causes which are de motivated the employee's skill-based performance for innovation of new things and products,
3. To examine the real skill Gap in between the employees, staff and the management related to well workforce management and its well deployment for a long-term performance, and
4. To analysis the real cause and effect of skill gap why not sufficient bridging till today despite of, searching for talent hunt.

## IV. RESEARCH METHODOLOGY

In this section, in order to justify the research work with the aforesaid research problem (due to covid 19 pandemic), the researchers have chosen both the methods of data collection such as primary and secondary mode of data collected through direct survey, on line survey (google form), telephonic interview, e-mails etc. and able to collect 380 respondents' data out of 600 targeted respondents and coined the phrase "skills paradox" to describe the situation. Small and fast-growing firms are at the forefront of technological advancements and digital business strategies that are transforming our society. Smaller firms, however, are typically the least equipped to reskill their own employees when emerging technologies change the nature of work. Organizations that lack the financial resources to engage in training may be overwhelmed by the sheer scope and complexity of continually reskilling personnel.

**Hypothesis:** Two types of research hypothesis such as Null Hypothesis ($H_o$) and Alternative Hypothesis ($H_e$) in order to justify the research problem and its solution have been chosen.

***Null Hypothesis (Ho):*** This hypothesis refers about the role of digital technology and artificial intelligence for monitoring talent strategies to bridge the skill gap is not sufficient to overcome the current workforce problem seems in most of organization; it needs more strategic planning to overcome this at the present scenario. Which is related with number of extraneous variables or constraints?

***Alternative hypothesis ($H_e$):*** This hypothesis refers about the cause and effect of skill Gap and how it will be bridging besides the application of digital technology and artificial intelligence, here, some of alternative way of solution as expected the researcher for enhancing the research work and activities such as: Hunting the Talents,(Searching .Hiring good work force), recruiting and selecting good quality of skillful workforce, training them properly as needed themselves, motivating towards work, proving good salary, and fulfill all desired things related with their workforce performance and its empowerment. As the technology is disrupting every country and industry around the globe.

Here, the motivation and methodology focus on the internal commitments as the methodology bridges so many personal gaps such as researchers' personal motivation, group behaviour, team work and its effectiveness etc. in order to fulfilling an organizational objective. 'Methodology' refers as a process or procedure adopted by the researchers to do their research work in a systematic or scientific way for getting a good result related with research problem. Thus, in this research work, we have tried to implement the most recent brain of research activities in order to bridge the research problems and needs and to justify the research hypothesis by proper experiments, examination, analysis of data, finding results and finally testing its hypothesis, interpretation of result by which, researchers were able to success writing an outcome-based conclusion.

## V. MEANING AND CONCEPT OF SKILL GAP

As the skill gap is concerned, it is a significance gap in between an organization desired skill and the present potentialities of existing workforce (worker/employees). Without this any organization may not go for production and grow, by using this properly organizations grow for a long-term basis and do competitive in market for achieving business goal with support of the organizations strategic plan policies and good decisions by the management or authority.

**Causes of Skill Gap:** The following causes are liable for filling the bridge gaps in between the gaps of employees, Behaviour, work efficiency, mindset, nature of the work performance etc. such as:

a) Frequent Job Change or Mentality to Change the job due to job dissatisfaction,
b) Proper education/training, skills which aging the need for skills,
c) Lack of Business knowledge and experience in investment of capital in new venture, and
d) Lack of Communication.

**Biggest Gaps for Bridging:** The followings may be the most

emerging areas;

a) Fundamental skills Basic skills of employees,
b) Technical skills and Professional skills,
c) Dynamic Leadership with good foresight,
d) Advanced Management skills,
e) Emotional /Artificial Intelligence,
f) Application of Digital Technology for communication and feedback assessment, and
g) Languages and good Communication skills etc.

**Why Organizations are facing Skill Gaps:** Currently, many organizations facing the skill Gaps which is difficult for bridging like:

a) There is a great mismatch in between the actual skills needed by an organization (Workforce at present and future), and the capabilities of workforce in future,
b) Lack of adequate training providing to the employees and staffs during hard times and struggling to catch up in reality,
c) Lack of highly skilled manpower, resources need for increasing the productivity and profitability, and
d) There is a high percentage of baby boomers in the current workforce which are leaving the job without notice.

## VI. DATA COLLECTION

Both primary and secondary data collecting approaches were used to perform the study work in order to acquire data/information from a variety of organisations, including MNCs, PDUs, national, state, and private industries/organizations. The data table is presented here for the readers' perusal and perception in order to bridge the skill gap.

TABLE I. DATA (CATEGORY OF ORGANIZATION, NUMBER OF RESPONDENTS, SKILL PERFORMANCE)

| **Category of Organizations** | **Measurement tools & Techniques/ Bridge the Gap** | **Work force Quality** | **No of Respondents** | **No of positive Response for filling the Skill Gap** | **Level of Performance** | **Skill Level** |
|---|---|---|---|---|---|---|
| **Multinational Company (MNC)** | Filling the Skill Gap | Leadership | 70 | 70 | Highly | Excellent |
| **National** | Filling the Skill Gap | SAP Knowledge | 90 | 85 | Moderate | Very Good |
| **State** | Filling the Skill Gap | Initiative | 70 | 68 | Average | Good |
| | Gap | | | | | |
| **PSU** | Filling the Skill Gap | Creativity | 80 | 80 | Moderate | Very Good |
| **Private** | Filling the Skill Gap | Well Management | 70 | 70 | Moderate | Good |
| **Total** | | | 380 | 373 | | 74.6 % |

TABLE II. PARAMETER /MEASUREMENT OF SKILL GAP ANALYSIS

| Organizations | Respondent | | | | Application of AI and DT | Bridging Skills | % of Positive Response |
|---|---|---|---|---|---|---|---|
| | T | +ve. | -ve | N | | | |
| MNC | 70 | 35 | 35 | - | DT/AI | Yes | 70 (100%) |
| PSU | 80 | 38 | 42 | - | DT/AI | yes | 80 (100%) |
| National | 90 | 43 | 42 | 05 | DT/AI | yes | 85 (94.45) |
| State | 70 | 36 | 32 | 02 | DT/AI | yes | 68 (97.14%) |
| Private | 70 | 32 | 38 | - | ---- | No | 70 (100%) |
| Total | 380/5 | 184 | 189 | 07 | | | 373/5 (98.16%) |
| Mean Value | 76.00 | 36.8 | 37.08 | | | | 74.6 |
| Mean Difference | 0.2 | | | | | | Total MD-1.4 |

*NB: T- Total (with equal gender Equilibrium) +Ve (Positive), -Ve (Negative) N- Neutral/No response*

Here, the Semiotic Models of Mean Value of positive response in bar chart of respondents related with the Application of AI and DT for filling the Skill Gap.

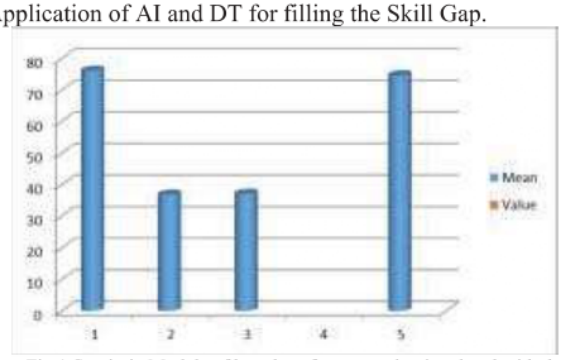


Fig.1 Semiotic Models of bar chart for respondent's related with the filling of Skill Gap

**Required skills are needed for bridging the skill Gap:** Most of workforce (skill employees) in an organization works hard for achieving business Goal in to a great extent for a long-term success of individual and organizational performance related with number of factors of skill-based abilities such as;

i. Ability of critical sales and competencies,
ii. Business acumen,
iii. Leadership skills,
iv. Technical knowledge and skills,

v. Experience in handling the problem,
vi. Good communication skills and command of voice,
vii. Social linkages,
viii. Innovative thinking/Skills,
ix. Adaptability with environment/situation,
x. Execution of well and advanced action plan, and
xi. Others skilful act and activities of training to be needed to employees.

## VII. DIFFERENT MODELS

There is no standard technique for conducting a gap analysis since it must be tailored to the needs of the organisation. A typical Gap analysis, on the other hand, might go through many steps. The following models have been drawn for better analysis of the issues.

### 7.1 SWOC Analysis Matrix

| | |
|---|---|
| **Strength**<br>▪ Searching Talented workforce & assigned them any work leads to get organizational Performance<br>▪ Enhancing Leadership Quality<br>▪ Management Practice<br>▪ Innovative Mind/Idea<br>▪ Creativity<br>▪ Filling the skill Gap by AI | **Weakness**<br>▪ Lack of application of AI and DT in the Process of Production<br>▪ Unable to talent hunt of real workforce and its mobilization<br>▪ Lack of Knowledge and Skills |
| **Opportunities**<br>▪ Opportunity for enhancing workforce Skill<br>▪ Possibility of enhancement of Knowledge and skills | **Challenges**<br>▪ Facing new challenges of application of AI and DT<br>▪ How to manage workforce properly<br>▪ Filling the skill gap properly by the expert gap analyser<br>▪ Facing Challenges of problem identification and its solution |

Source: Compiled by the researchers

It focuses on the internal environment's strengths and shortcomings, as well as the opportunities and dangers of the external environment. It assists a person in determining the correct position in the industry or market, such as:

- Collaborate with appropriate teams/departments to form a team.
- Make a SWOC analysis matrix; may use the one below or one of the followings.
- Make a list of the company's internal strengths and shortcomings.
- Note down a list of the industry/opportunities markets and risks.
- Rearrange each bullet point such that the most important is at the top and the least important is at the bottom.
- Examine how can utilise the strengths to combat dangers and reduce weaknesses, as well as how to take advantage of opportunities to avoid danger and eliminate flaws.

Create a plan of action to address the root causes of the problem. When a company is going through a time of transition, this model and tool can help you understand how the many components of the organisation interact with one another.

### 7.2 Gap Analysis Tools

Once the gaps have been discovered, it is necessary to investigate why they exist and what may be done to close them. This work may be accomplished using a variety of gap analysis models. We've included a few Gaps analysis tools that one may utilise below.

Here's a brief introduction to understanding how to perform a cause-and-effect analysis using a fishbone diagram.

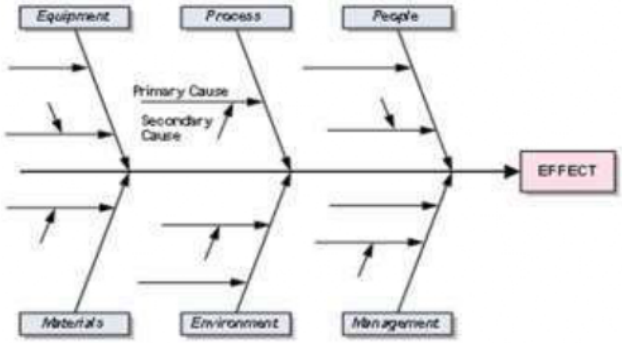


Fig.2 Fishbone Diagram for Cause-and-Effect Analysis

Source: https://www.kodyaz.com/pmp/ishikawa-diagram.aspx

A cause-and-effect diagram, often known as an "Ishikawa diagram", is a tool for finding the root cause of a problem or consequence. It lays out the six important components, i.e., equipment, material, process, environment, people, and management show how they establish connection to the main issue.

### 7.3 McKinsey 7s

The 7s allude to an organization's essential interconnected parts. Any of the following financial responsibilities can be helped by McKinsey 7s:

- To aid in the understanding of any gaps that may arise in the business.
- Determine which areas need to be improved in order to improve business performance.
- During a merger or acquisition, align procedures and departments.
- Examine the outcomes of future changes in the company.

The following figure explains about this:

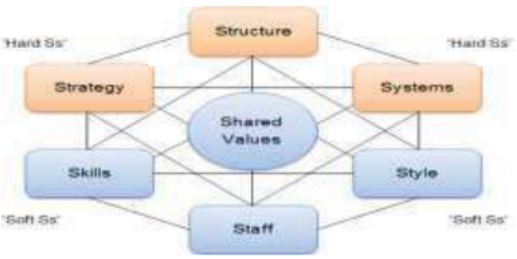


Fig. 3 McKinsey 7S skill gap Analysis Model

Source: https://theintactone.com/2018/12/26/sm-u4-topic-10-mckinneys-7s-framework/

(Hard components, which are physical because they can be controlled, and soft elements, which are intangible because they cannot be controlled, are split into two types.)

**Hard elements:** Strategy – the strategy for gaining a competitive advantage for your firm, Structure – the structure of the organisation, and Systems – Employees use business and technical infrastructure to do their everyday responsibilities.

**Soft elements:** Shared values – a set of values or characteristics that the company espouses, Style – the organization's leadership style and its interaction culture, Staff – the staff in general, and Skills – workers' essential abilities.

**How to apply (step by step)?**

a) Assemble a skilled team,

b) Double-check that all of the components are appropriately aligned (look for gaps and weaknesses in the relationship between the elements),

c) Determine the condition in which these elements are best aligned,

d) Create a strategy for realigning the components, and

a) Moving forward, implement the improvements and review the 7s on a regular basis.

Here's a look at how to use the McKinsey 7s model in greater depth.

### 7.4 Nadler-Tushman's Congruence Model

This methodology is used to discover performance gaps inside an organisation, according to the Nadler-Tushman congruence paradigm.

It is founded on the idea that a company's performance is determined by four factors: work, people, structure, and culture. The higher the level of compatibility between various parts, the better the performance, which has explained in below figure.

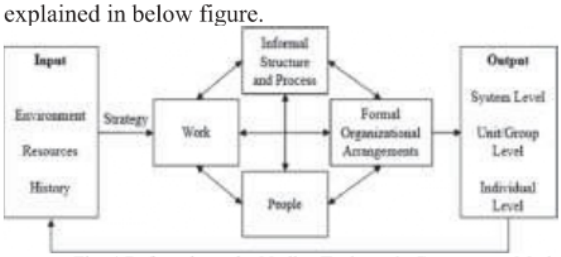


Fig. 4 Refers about the Nadler-Tushman's Congruence Model
Source: https://business-essay.com/dell-company-change-management/

**How to apply?**

- Collect all information that points to the signs and symptoms of poor performance.
- Inputs such as the environment, resources, and history must be specified and analysed. Define the company's strategy as well.
- Determine which outputs are necessary to fulfil the strategic objectives at the individual, group, and organisational levels.
- Determine the discrepancies between desired and actual production, as well as the issues that accompany them (and mark down the costs associated with them as well).
- Collect data on and explain the fundamental nature of the organization's four primary components.
- Assess the degree of consistency between these elements.
- Examine the relationship between poor congruence and output-related issues. Examine if the problems are due to the poor 'fit' of the four primary components.

Create a plan of action to address the root causes of the problem. When a company is going through a time of transition, this model and tool can help you understand how the many components of the organisation interact with one another.

### 7.5 Burke-Litwin Causal Model

There are 12 interconnected components, which are as follows:


Fig.5 Refers about the Burke-Litwin Causal Model
Source: https://cio-wiki.org/wiki/Causal_Model_of_Organizational_Performance_and_Change

**How to apply?**

- Find out what is causing the need for change, whether it is the external environment, transformational causes, or something else.
- Determine one of the factors in each group is to blame for the current predicament.
- Examine the essential element as well as the other 11 elements, paying specific attention to those that are closely related to the one you've discovered.

Determine the modifications that need to be made to the primary element, as well as the other few elements with which

**Table 3 Results**

| Category of Organizations | Work force Quality | No of Respondents | +Ve Respondent | Level of Performance | Ranking | Skill Level |
|---|---|---|---|---|---|---|
| **Multinational Company (MNC)** | Leadership | 70 | 70 | Highly | 01 | Excellent |
| **National** | SAP Knowledge | 90 | 85 | Modera | 04 | Very Good |
| **State** | Initiative | 70 | 68 | Averag | 05 | Good |
| **PSU** | Creativity | 80 | 80 | Modera | 02 | Very Good |
| **Private** | Well Management | 70 | 70 | Modera | 03 | Good |
| **Total** | | 380 | 373 | | | 74.6% |

**Hypothesis Testing:** Here, with the help of the aforesaid result from the analyzed data table, and understood that filling skill gap is a tuff work by the authorities of management as related with the taken Null Hypothesis (Ho) which refers about the role of digital technology and artificial intelligence for monitoring talent strategies to bridge the skill gap is not sufficient to overcome the current workforce problem seems in most of organization in order to filling the skill gap because it needs more strategic planning to overcome this at the present scenario .so that the Null hypothesis (Ho) is true henceforth it was rejected and the Alternative Hypothesis (He) is accepted due to its it is authenticity of requirement in order to hunting various workforce skills with a scientific planning and strategy for overcome the skill gap visible in most of organizations.

## VIII. CONCLUSIONS

In conclusion the above said discussions are proving the role of digital technology and Artificial Intelligence is not sufficient for bridging the skill gap only because its application is limitation in various organizations ,again it may enhancing the skill gap for proving skillful knowledge to the employees for its real application but some extent it may not be possible due to its networking problem, lack of learning for its application, high amount of infrastructure, un adequate planning and training its application in remote areas. However, the research findings proofs that, DT and AI is the back bone and blood stream for surviving the workforce in organizations in order to filling the various skill Gap.

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