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SKILL MAPPING ANALYSIS ON PROFESSIONAL ABILITIES OF EMPLOYEES IN IT INDUSTRY

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Abstract
Purpose: This paper provides the knowledge about different types of skills that has to be improvised in the employees by evaluating the lagging skills of IT employees.
Design/Methodology/Approach:
Findings: In the business era, companies' impulse to undergo revamp to remain competitive.
Practical Implications: The Information technology sector (IT sector) is facing huge crisis known as skill gap in their employees which would be the stumbling block of the sector to move further.
Originality/Value: Many companies seek to expand their development and production process with the help of the skilled workforce on the other hand it's a bit tricky recent times where the skill gap is the growing concern in India.

Keywords: Skill mapping, cognitive skills, facilitating skills, socio-emotional skills, power skills and learning skills.

Introduction

A promising country like India where the opportunities are present everywhere the skills are the most predominant one in every industry. The blooming industry like information technology industry where the skills of an employees are the most important factor to determine the success of the company.

Those days they concentrate more on the basic abilities like problem solving skills, decision making skills, communication skills, Interpersonal skills and technical skills of an individual but as the swifting world the IT industries makes up gradation in their specific requirements to the next level. Now a days IT industry mainly focus on cognitive skills, social and emotional skills, power skills, learning skills, facilitating skills of an employees for the mutual benefit for both company and employees.

Recent time's survival in the IT industry is questioned because the companies are expecting more professional skills to undergo in the hybrid work module. The comparison of excepted skills vs obtain value of the skills allows the companies to identify the skill gaps of an employees. Skill mapping is used as the solution to overcome the skill gap possessed by the IT employees.

This helps the companies to organize and encourages variety of reskilling methods. By arranging skill development and training programs at the workplace. To map the lagging skills of an employee the various statistical tools to get statistical evidence to prove the lagging skills.

1.1 Problem Statement

Now a days, Employee of IT industry lagging in certain skills that become the stumbling block of the company to move further in the upgradation manner and many of them get downsized or benchmark due to lagging in professional abilities.

To overcome the situation the research study has been conducted to assess the skill gap of professional abilities such as cognitive skills, facilitating skills, power skills of employee, which would help the company to gain skilled workforce and minimized skill gap.

1.2 Need for the Study

Previously, IT industry concentrate more on technical skills, problem solving skills, communication skills, but as the technology grows the IT industry concentrate more on other advance skills to match with the near future. Based on the perspective of HR, the study deals with the skill gap assessment of professional abilities such as cognitive skills, facilitating skills, power skills of employees with the current survival situation in the IT industry.

1.3 Research Objectives

- To identify the types of skills that help the employees work performance. ➢ To gain insight towards skill gap practices in IT industry.
- To analyse the skill gap between the company's requirement and employee's capabilities.
- To evaluate the skill gap practices in IT industry with focus on the facilitating abilities, cognitive abilities of the employees.

2. Literature Review

Metilda and Neena (2016) deal with 5 different components such as P-E (person to environment) fit, concept of job fit theory, only three components which are PP(person to person fit), P-G (person to group fit), and P-J (person to job fit) are relevant for a fresher recruitment.

To segregate the skills where the industries expectation is higher than the attained skills of fresh graduates they used T-test. In analysis part the Skills with high variation between the industries expected skill and the student's perceived skill level conclude that, the student's level is lower than the industry expectation.

Frederick, Lourrine and Tablatin (2017) presented a paper that deals with the importance of soft and hard skills as perceived by IT internship students and industry with the aim to determine the most important employable soft and hard skills as perceived by the industry partners and IT internship students.

It also examined if there are differences in the importance of various employable skills as perceived by the industry partners and IT internship students with help of the statistical tools such as weighted mean average to determine the importance of certain skills and one-way ANOVA is used for the analysis of the difference in the students respondents and industry representative concluding that, IT graduates must be trained with regards to this aspect for their future employment requirements.

Sinha, Srujan and Daw (2018) conducted a research **studies** on human cognitive study inferred how the human brain deals with cognitive ability of the individual. This paper brings out the gist of the previous researches regarding cognitive abilities done so far about the human brain capacity with the respect to cognitive study and suggested a biometric measures and ML approaches.

Ross and Hora (2018) explore the employability narrative, a view that focuses on whether colleges and universities provide students with the skills they need to be productively employed after graduation. The authors conclude that skills are best viewed as multifaceted and situated assemblages of knowledge, skill, and disposition—or cultural models—and urge the adoption of more nuanced views among educators,

employers, and policy makers that take into account the cultural and contextual forces that shape student success in the workplace.

Manjunath and Sharavan (2019) presented a study on enhancement of workforce by assessment of skill gap which has the main objectives of measuring the relationship between skill gap determinants and employee performance and evaluate the impact of skill gap by Correlation and regression are the statistical tools used for the data analysis.

They conclude that the research confirms that at Sanria Engineering Pvt ltd there is a skill gap between expected and the actual skills of the workforce. The regression results provide evidence that technical skill lone may not improve performance of employees and interpersonal skill even important for performance of frontline employees, may not impact the enhanced performance.

Rupal Singh (2019) presented a paper that deals with the skill gap assessment in a company which is a key to survival and the author ensure that the workforce is well trained, knowledgeable and better equipped to perform the job in the Amul company Nagpur.

He concluded from the research that different department employees are lagging in the ICT (Information and Communication Technology) area. The study revealed that the major part of the employees lacks ICT and basic technical skills with respect to different departments.

Samantha Kaiser (2019) conducted a research that deals with the employer and college students what kind of things employer found in college students are lagging from their own hiring experiences with a help of a open ended questions and the data has been analyzed by two different methodologies such as audio-recorded and transcript which has been used to collect the quantity values from the employer experience using open coding process was used as well as to convert the text into numerical values.

Martin J. McKenney and Holly A. Handley (2019) discussed about a composite skills gap model has been developed that can be adapted to any occupation and give quantitative results to help determining worker-to-job fit and help identify gaps.

This type of model addresses the shortcomings identified in previous models by getting the worker and position information into the same language for comparisons. With technology moving towards automation, robotics and artificial intelligence, this type of model can identify what skills are necessary for "re-tooling" the workforce to meet the needs to support these systems.

Shoko Yamada and Christian S. Otchia (2021) findings indicate the level of basic cognitive skills - does not necessarily correspond to participants' educational backgrounds. The non - cognitive skills - needed to perform tasks accurately and with confidence are important for both written test performance and higher wages.

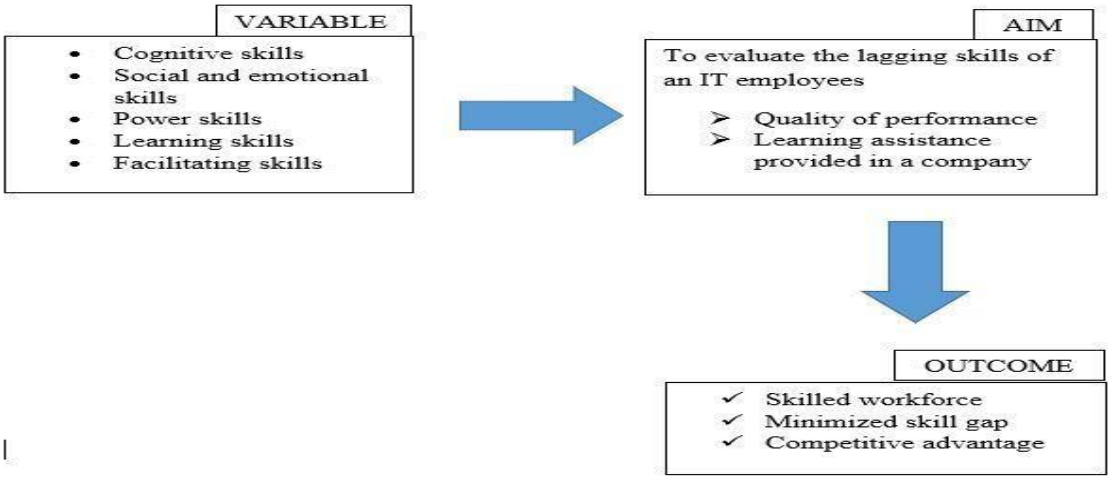
Employers reward people with practical skills and knowledge directly related to work, the results empirically support the position championed by some academics that the labour market effects of schooling and skills are different.

Thirumal and Christobell (2022) discussed about the various skills of the employees in demand ιν recent times according to the IT industry. This paper gives you an insight knowledge about the different preceptive of the skills namely cognitive skills - facilitating skills, social and emotional skills, power skills and learning skills

Research Model

The research model is presented in Figure 1.

Figure 1. Research Model design



Source: Own study.

Methodology

4.1 Instrument Measures

Various measurement scales are employed in this study. All items were measured by a 5-point Likert scale ranging from 1-strongly agree to 5-strongly disagree also dichotomous scales were used. It is easy to construct the questionnaire.

4.2 Reliability analysis

Reliability testing were conducted among 25 respondents. There are 30 number of questions prepared for customers to check the reliability of questionnaire. Using MS-Excel reliability test done and Cronbach's alpha is 0.85.

4.3 Validity analysis

Content validity is archiving by formulating literature contents and research results of many experts and scholars. Therefore, the scale could cover the requirements of the research theme adequately.

4.4 Data Analysis

The population for this study is infinite. Using Cochran's formula, the sample size is 384. Due to time constraint, data collected from 127 samples. Data have been collected from the IT employees around the globe.

Demographic analysis: male (46.5%), female (53.5%), age between 22-32(81.9%),
UG (57.5%), PG (36.2%), married (27.6%), unmarried (70.9%) and entry level (42.5%), mid-level (37.8%), senior-level (19.7%)

5. Results and Discussion

5.1 Factor Analysis

Factor analysis of all the variables from the questionnaire are presented in the following Tables 1 to 4.

Table 1. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.849
Bartlett's Test of Sphericity	Approx. Chi-Square	1415.111
	Df	300
	Sig.	.000

Table 2. Communalities

	Initial	Extraction

I am able to actively conceptualize, apply, analyze, synthesize and evaluate the information I gathered	1.000	.557

I am confident with the level of concentration I am able to maintain	1.000	.575
I update myself with every new technology arises in the IT sector	1.000	.328
I never forget my schedules and deadline targets	1.000	.641
I am empathy enough to understand my peers	1.000	.529
I am able to socialize with everyone in the workplace	1.000	.670
I am patience enough to listen and pay attention while others speak	1.000	.596
I can handle negative comments on my own	1.000	.543
I have the capacity to handle work pressure	1.000	.481
I can manage my priorities even with the busy day	1.000	.653
I can communicate what I think without any skeptical attitude	1.000	.490
I try to organize key points in a systematic way	1.000	.498
I solve a problem by focusing on its main point	1.000	.573
I am prepared for any sudden meetings and presentations	1.000	.542
I am able to collaborate with others	1.000	.554
I am able to adapt new environment	1.000	.491
I think out of the box in the crisis and come out with the creative solutions	1.000	.686
My actions are consistent	1.000	.498
I follow the work ethics	1.000	..690
I respect my subordinate's ideas and suggestions	1.000	.630
I am capable of overcoming my limitations with self-learning in workplace	1.000	.736
Learning facilities provided in my company is enough for the upgradation of quality performance in my work	1.000	.631
My job role gives me good knowledge than before	1.000	.737
I learn new things in my workplace every single day that helped me to move further in the career goal	1.000	.765
I inspire others through my learnings and knowledge gained	1.000	.619
Extraction Method: Principal Component Analysis.		

Table 3. Total variance explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.384	33.537	33.537	8.384	33.537	33.537	3.810	15.240	15.240
2	2.157	8.626	42.167	2.157	8.626	42.164	3.063	12.251	27.492
3	1.669	6.674	48.838	1.669	6.674	48.838	2.959	11.836	39.328
4	1.275	5.102	53.940	1.275	5.102	53.940	2.825	11.298	50.626
5	1.229	4.918	58.858	1.229	4.918	58.858	2.058	8.232	58.858
6	1.118	4.470	63.328						
7	.962	3.846	67.174						
8	.860	3.439	70.613						
9	.825	3.302	73.915						
10	.705	2.821	76.736						
11	.651	2.604	79.341						
12	.642	2.566	81.907						
13	.554	2.218	84.125						
14	.524	2.097	86.221						
15	.475	1.899	88.120						
16	.446	1.783	89.903						
17	.408	1.631	91.534						
18	.354	1.417	92.950						
19	.335	1.340	94.291						
20	.309	1.235	95.526						
21	.284	1.135	96.661						
22	.255	1.020	97.681						
23	.233	.932	98.614						
24	.176	.704	99.318						

25	.171	.682	100.000						
Extraction Method: Principal Component Analysis.									

Table 4. Rotated Component Matrix

	Component				
	1	2	3	4	5
Power skills- Collaboration	.703				
Cognitive skills- Critical thinking& logical reasoning	.671				
Social and emotional skills- Patience	.640				
Cognitive skills- Memory	.604				
Social and emotional skills- Socialization	.576				.478
Power skills- Adaptation	.558				
Facilitating skills-Problem solving	.430				
Facilitating skills- Prioritization		.657			.434
Facilitating skills-Always prepared		.622			
Social and emotional skills- Handling work pressure		.604			
Facilitating skills- proper communication		.596			
Power skills- creative solutions		.548		.428	
Power skills- consistency		.541			
Learning skills- learning in work place			.810		
Learning skills- Professional knowledge			.805		
Learning skills- Upgradation quality			.691		
Learning skills- Inspired	.477		.567		
Cognitive skills- processing					
Power skills- Respect others				.767	
Learning skills self- learning				.715	
Power skills- Obeying work ethics	.428			.697	
Facilitating skills systematic and organized				.424	
Cognitive skills- updating of knowledge					.701
Social and emotional skills-/ handling negative comments					.591
Social and emotional skills- Empathy					.488
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.					

5.2 Interpretation

From Table 1 it is inferred that Kaiser-Meyer-Olkin test value is 0.849 which is more than 0.5, can be considered good and valid to conduct data reduction technique. Bartlett's test of Sphericity significant to a level of significance is <0.001 which shows that there is high level of correlation between variables, which make it adequate to apply factor analysis.

From Table 2 it is inferred that the extraction value is ranging from 0.481 to 0.765 which shows that minimum variance share of items after extraction is 48.1% and maximum variance share of item is 76.5%.

From Table 3 it is inferred that the total variance contributed by first component is 33.537%, by second component is 8.626%, by third component is 6.674%, by fourth component is 5.102% and by fifth component is 4.918%. The Eigen value for first factor is 8.384, second factor is 2.157, third factor is 1.669, fourth factor is 1.275 and for fifth factor is 1.229.

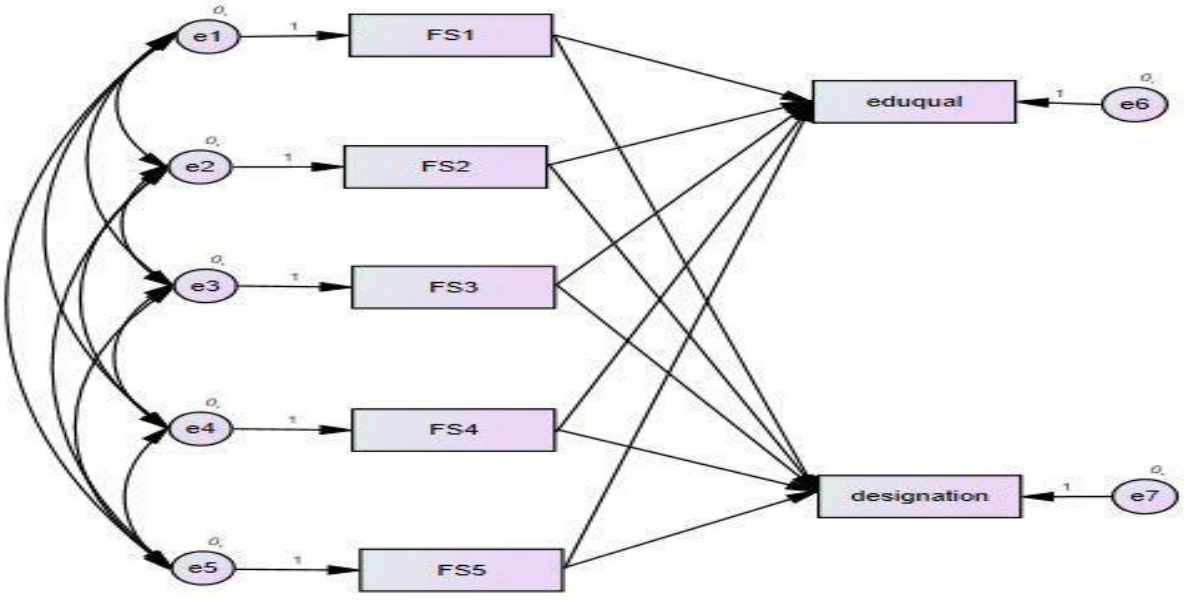
From Table 4 it is inferred that the high loading factor be power skills - collaboration (.703) followed by cognitive skill - critical thinking and logical reasoning (.671) further followed by social and emotional skills - patience (.640) and then by ognitive skills - memory (.604)

5.3 Structural Equation Modelling (SEM)

Structural equation modelling is a multivariate statistical analysis technique that is used to analyse structural relationships. It is a combination of factor analysis and multiple regression analysis and is used to analyse the structural relationship between measured variables and latent constructs. There are two types of variables used:

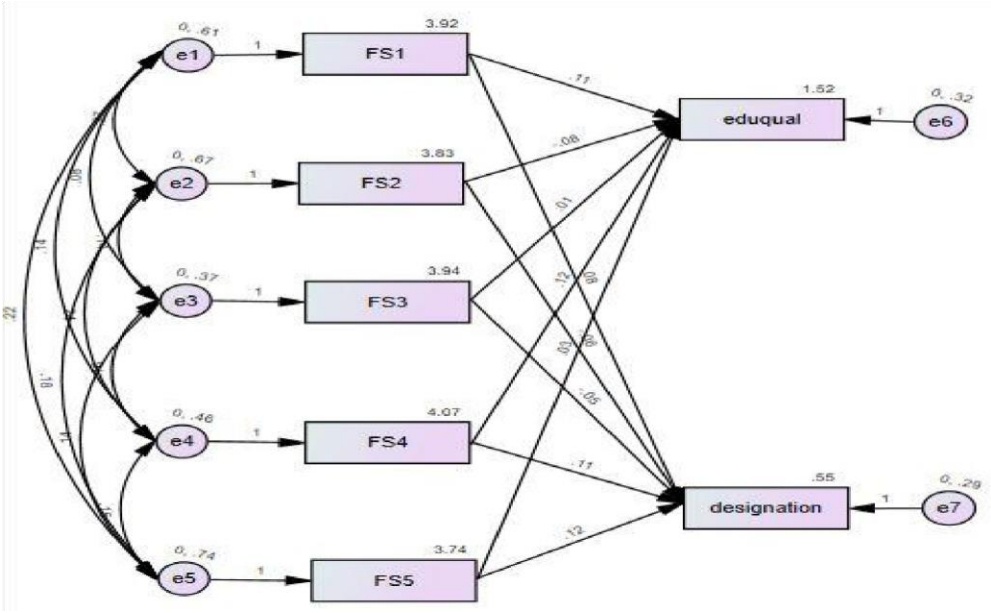
- Endogenous variables(dependent)
- Exogenous variables(independent)

Figure 1. Input path diagram



Source: Own study.

Figure 2. Unstandardized estimates Output path diagram



Source: Own study.

5.4 Interpretation

Model Identified:

The model is s recursive model that is a set of relationships in which the effects flow in one direction only and there are no feedback loops such that effects are sometimes also cause.

Table 5. Regression Weights

			Estimate	S.E.	C.R.	P	Label
Eduqual	<---	FS1	.113	.074	1.529	.126	par_1
Eduqual	<---	FS2	-.084	.073	-1.149	.250	par_2
Eduqual	<---	FS3	.015	.092	.158	.874	par_3
Eduqual	<---	FS4	.119	.087	1.365	.172	par_4
Eduqual	<---	FS5	.032	.064	.495	.620	par_5
Designation	<---	FS1	.084	.070	1.198	.231	par_6
Designation	<---	FS2	-.060	.070	-.861	.389	par_7
Designation	<---	FS3	-.055	.087	-.629	.530	par_8
Designation	<---	FS4	.106	.083	1.275	.202	par_9
Designation	<---	FS5	.122	.061	2.002	.045	par_10

Source: Own study.

From Table 5 it is inferred that the variable Inspire others to knowledge have huge dependency on exogenous variable designation with CR value of 2.002.

The model fit summary is presented in Table 6.

Table 6. Model fit summary

Model fit	Recommended value	Value
Chi-square	p>0.05	19.457
Root mean square error of approximation (RMSEA)	<=0.08	.381

Comparative fit index (CFI)	>=0.90	.826
Tucker lewis Index (TLI)	>=0.90	-3.874
Normal fit Index(NFI)	>=0.90	.855
Incremental fit Index(IFI)	>=0.90	.861

Source: Own study.

From Table 6, the root mean square error of approximation (RMSEA) has 0.381 value which is less than the recommended value

The Squared multiple correlation (R-square) is presented in Table 7.

Table 7. Squared multiple correlation

	Estimate
FS5-Inspiring others	.000
FS4-Problem solving	.000
FS3-Systematic and organized	.000
FS2-Proper communication	.000
FS1-Prioritization of work	.000
Designation	.074
Educational qualification	.048

Source: Own study.

From Table 7 it is inferred as the independent variable designation has a high impact on dependent variable at the extend of 74% and Education qualification has a less impact on dependent variable at the extend of 48%.

6. Recommendations and Suggestions

- Cognitive skills had a huge impact factor on employee work performance in IT companies. Educational qualification does not have any impact over employees in terms of cognitive skills. In such situations the management can give much importance to spatial reasoning, Attention to details, critical reasoning, concentration test while hiring new candidate.
- Learning is the essential part in the IT industry. The management can improvise their learning platforms in workplace by having a sponsored interactive session with expertise of the field and Hands on training program, rewards can be encouragement of the employees.
- Learning in workplace can be a good option for the employee. The management can improvise their personalized experience by creating custom learning opportunity like initiating campaign for entry level people with stackable course, flexibility to the course of their own.
- The management can identify and empower vulnerable learners and focus them to be expertise in their field on own, this can inspire others to learn more new skills which could be mutually benefit option.
- The companies might have their skill development initiative and relocate the different teams to new location to minimize the collaboration problem between employees and improvise the socializing of an employee so the organizations have a social culture. The individual can use company social gatherings to meet senior executives and act professionally by maintaining professional persona & manage conversation in professional mannerism.

- The management can make schedule the week in a Microsoft teams/outlook calendar and have review call to check the progress and reported documents can be collected by team leaders or project leader.so that no employees can forget their targets and taglines.

7. Conclusion

Skilled worked force will be the key resource of the success of the organization. To create the strong skilled workforce the management has to concentrate more on the employee's progress by looking into the lagging part of an individual and try to improvise by upgrading some changes in the everyday tasks.

This helps the management to create a mutually benefited options both for employees and management. The professional abilities of an employee can be improvised by providing learning assistance in the workplace and customized with stackable courses according to their field of interest.

This paper gives you the knowledge about the lagging factor of an employee to be noted with a small sample size. It might be helpful for the tier 2 companies to upgrade themselves to the tier 1 level with competence.

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