Artificial intelligence is transforming recruitment effectiveness in CMMI level companies

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ABSTRACT

The paper is to examine the artificial intelligent (AI) on recruitment effectiveness, the study made in CMMI (capability maturity model integration) software companies of Bangalore, collected data through a structured questionnaire from 100 human resource professionals. Around the Bangalore, descriptive statistics and structural equation modelling used to test the hypothesis. The study found that using of the artificial intelligence in recruitment process select right applicant for talent pool for the organization.

Key words: Artificial intelligence, recruitment effectiveness, opportunities, risk factor, utilization and CMMI software companies.

1. INTRODUCTION

The fourth-generation revolution is adopting new technologies covering all disciplines and industry, looking through current lens artificial intelligence introducing all the functional areas of the industry to enhance their sustainability for the future. In this regard, the primary resource for the organization is human; if organization need to meet the needs of the customers in this competitive technology edge, is only possible by hiring talented people. It will be fast recruiting people by using artificial intelligence in the recruitment process.

Moreover, artificial intelligence is now enhancing tools in recruitment practices in Indian and MNC companies. [1] The artificial intelligence integrating all the functions of the process that lead to the human resource professionals screen the top-scoring applicant without having much time.[2]

2. LITERATURE REVIEW

The human resource industry aware of the difficulties in the recruitment process, it will be possible to incorporate the artificial intelligence in various function along with robotics automation process [3]. The recruitment needs to automated effectively through robotics process automation, cognitive insights and cognitive engagement and concluded that technology escalates talent acquisition and develop human resource image[3], [4].

Artificial intelligence tools such as chatbots communicate effectively and screen the application is quick, will reduce the burden for human resource professionals[5]. Another piece of work on artificial intelligence chatbots screen the applicant CV's and will reduce the routine work of the recruiters [6].

The artificial intelligence also escalates screening candidate, the establishment a relationship, unbiased decisions and schedules, moreover, can be engaged applicant via the web, social media communications and mobile platforms will work as front end communication with the candidate [7], [8]. As per [9] artificial intelligence scrap the candidate resume through using public data, will provide past history of the candidate. Artificial intelligence using the process of recruitment that leads to the speed and accuracy in applicant data[10], but the in recruitment process artificial intelligence will replace human efforts in searching right talent for the right job to give right position in the organization [11]. The author identified the area of study and taken-up to reduce the gap between literature and practice.

Table 1 : Constructs and items identified from literature

| Constructs	References
Artificial intelligence, recruitment process,	[11], [8], [12], [7] and [5].

Theoretical framework and hypotheses development

After careful observation of the literature review, the researcher constructed the conceptual framework to find the relationship between the constructs, especially, which are the companies recognized as CMMI level around Bangalore. It will make to design the following hypothesis and can observe in Figure 01.
H1: Artificial intelligence will build opportunities in the recruitment process.
H2: Artificial intelligence will form risk in the recruitment process

H3: Artificial intelligence usage produces an effective recruitment process.

Figure 1 : Conceptual Framework
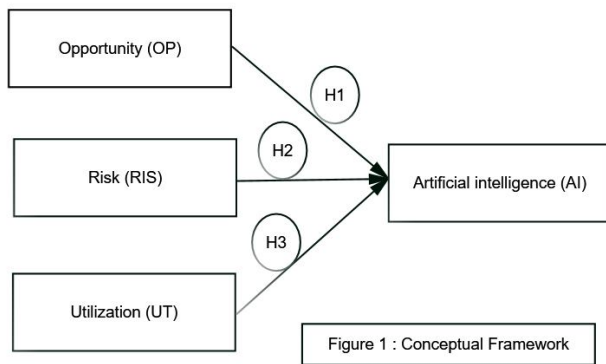
The study is to aim to know artificial intelligence impact on the recruitment process. Therefore, the study was observed to understand the opportunities, risks and utilization of artificial intelligence in the recruitment process.

3. METHODOLOGY

The present study was conducted by using a convenient sample method. It identified construct from literature Table 1, by using the constructs developed questionnaire by using the five-point scale of Likert from range to strongly acceptable (5) to strongly unacceptable (1). To establish quality constructs, the survey (questionnaire) pre-tested with five experts from the field, three from the industry and two from academic reviewed and provided their inputs, the inputs are reflected in the questionnaire. Finally, a questionnaire prepared for circulation among the human resource professionals.

The questionnaire was circulated from March 2018 to October 2019 across the recruiters in Bangalore city having accreditation of CMMI Institute for CMMI level. The study used Questionpro survey system distributed the link via using personal contacts, social media such as LinkedIn, Twitter and Facebook; the selected companies extracted from official web sites of https://www.nasscom.in/nasscom-offices/bangalore and https://www.Indiandata.org. After identification of companies, the well communicated the participants and circulated questionnaire link. The researchers received 126 responses, after proper examination of each questionnaire inputs, found that only 100 questionnaires correctly filled, that were all considered for analysis purpose.

Additionally, the variables are given coding to get appropriate result, in Opportunity (OP) variable, there are total 3 items such as OP1, OP2 and OP3, Risk variable, there are total 3 items such as (RIS), RIS1, RIS2 and RIS3, in Utilization (UT) variable, there are total 4 items such as UT1, UT2, UT3 and UT4. Table 02 displays the demographic profile of the respondents.

4. ANALYSIS AND RESULTS

Table 2: Classification of survey respondents

	Responses	Percentage
Firm ownership		
Private companies	62	62.00
Associate companies	38	38.00
Total	100	100
Size (employees)		
500-1000	45	45.00
1001-1500	34	34.00
Greater than 1501	21	21.00
Total	100	100
Response experience (in year) in the software sector		
5-10	59	59.00
11-15	28	28.00
Greater than 15	14	14.00
Total	100	100
Respondents experience (in year) in the current organization		
4-10	42	42.00
11-17	52	52.00
Greater than 17	06	06.00
Total	100	100

Source: Primary data

The Table 2 shows that regarding companies 62 companies from private and 38 associate companies, in the matter of employees size in between of 500 to 1000, 45 employees are involved 1001 to 1500, 34 employees and the rest of the employees are from 1501 and above. Regards to experience 5 to 10 years 59 employees 11 to 15 years, 28 employees and the greater than 17 years of experience, 14 employees are involved. The matter of current organization experience 4 to 10 years, 42 employees 11 to 17 years, 52 employees and more than 17 years of experience six employees are involved.

CONTRUCT VALIDATION

The study has assessed the constructs; it is to ensure the statistical appropriateness. First, the study tested the Cronbach's alpha was used to know the validity of the reliability of the constructs.

COVERGENT VALIDITY

For fact related constructs, the study conducted confirmatory factor analysis (CFA) comprising of three first-order constructs was conducted using of AMOS 25 version software. The standardized CFA indicating the correlations in between the individual items and the constructs values

given Table 3, the items within every three first-order factors loading of >0.05, with the corresponding ration of 1.95, this will indicate there is a strong convergent validity.

Table 3: Confirmatory factor loading of effectiveness of recruitment process and artificial intelligence

Constructs and items	OP	RIS	UT
Opportunity (OP)			
OP1	0.76		
OP2	0.81		
OP3	0.83		
Risk (RIS)			
RIS1		0.83	
RIS2		0.84	
RIS3		0.76	
Utilization (UT)			
UT1			0.84
UT2			0.88
UT3			0.78
UT4			0.76

CONSTRUCT RELIABILITY

The degree of consistency of reliability, if the values ranges in between values ranges from 0 to 1, [13], with higher values indicating high reliability. As per the [14], the acceptable threshold for reliability is 0.70 can observe the values in the parenthesis in Table 4.

Table 4 : Mean, standard deviation, square root of AVE, correlation and reliability of the constructs

Construct	Mean	SD	SRV	OP	RIS	UT	AI
OP Items (3)	(0.89) 3.59	0.75	0.81	0.72	0.66	0.69	0.75
RIS Items (3)	(0.79) 3.46	0.64	0.71		0.75	0.81	0.74
UT Items (3)	(0.81) 3.58	0.79	0.82			0.70	0.69
AI Items (1)	(0.83) 3.47	0.82	0.85				0.73

Note : Parentheses values indicate Cronbach Alpha.

Table 4 presented the values of the opportunity of artificial intelligence in recruitment process mean 3.59 and standard division (SD) is 0.75, in the area of risk the mean value is 3.46 and standard division (SD) is 0.79, in utilization of artificial intelligence in recruitment process mean is 3.58 and standard division (SD) is 0.79. Moreover, the mean of artificial intelligence 3.47 and standard division (SD) is 0.83. The values of the correlation range in between the 0 and 1. If the constructs range between 0 and 1 indicate that there is a positive relation in between the correlations.
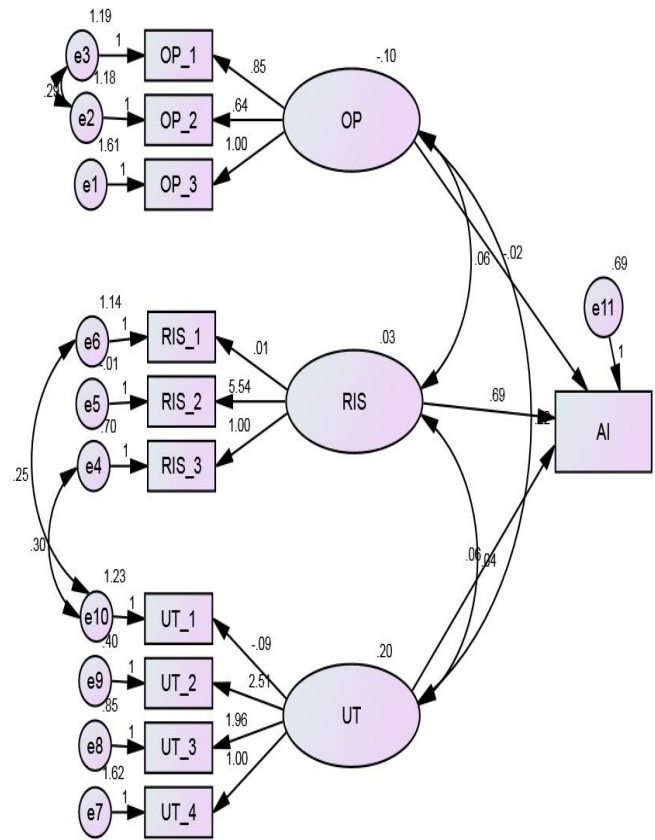

Figure 2: Structural Equation Modeling

Structural Equation Modeling and Hypotheses Test Results

Table 5 : Model Fit Indices

Fit Index	Range	Result	Recommended level
Chi-square/degrees of freedom (χ2 /df)	0 (ideal fit) to ∞ (1(perfect fit)	2.314	>0.90
Confirmatory Fit Index (CFI)	0 (no fit) - 1(perfect fit)	0.497	>0.90
Goodness of Fit (GFI)	0 (no fit) - 1(perfect fit)	0.791	>0.90
Normed Fit Index (NFI)	0 (no fit) - 1(perfect fit)	0.704	>0.90
Tucker-Lewis Index (TLI)	0 (no fit) - 1(perfect fit)	0.681	>0.90
Root Mean Square Error of Approximation (RMSEA)	0 (ideal fit) to ∞ (1(perfect fit)	0.003	>0.90

The   structural equation modeling (SEM) using AMOS 25 version software was used in the study for testing hypothesis relationship. The overall   model fit and goodness-of fit

Table 6 : Hypotheses test results

Hypothesized relationships				β	S.E	t-value	p	Hypotheses Result
H1	Opportunity	→	Artificial Intelligence	.656	.216	5.346	0.007**	Accepted
H2	Risk	→	Artificial Intelligence	.600	.121	8.300	0.022*	Accepted
H3	Utilization	→	Artificial Intelligence	.712	.483	7.257	0.001**	Accepted

*Significant at p< .05; ** Significant at p< .01; β –standardized coefficients; S.E. –standard error*

The results of H1, H2 and H3 displays that artificial intelligence have a significant, directly to the recruitment process of variable utilization has strong relationship (β=0.712,p<0.05), in the another variable of opportunity (β=0.656,p<0.05) direct impact on artificial intelligence and risk variable of recruitment process (β=0.600,p<0.01) also relation with artificial intelligence. Moreover, the "t" values for opportunity 5.346, risk, 8.300 and utilization 7.257. In summary all of three hypotheses are supported.

5. DISCUSSION

The aim is to know artificial intelligence on the recruitment process and to understand the opportunities provided by the applications of artificial intelligence. The recruiters stated that using artificial intelligence useful in finding new talent. Even applicant comfortable of finding the right job through artificial intelligence. The artificial intelligence is providing two sharp edge information for recruiter and applicant. This mechanism will establish a productive system of recruitment.

The recruiters commented on using artificial intelligence in the recruitment process. They have mentioned that artificial intelligence using in in whole recruitment process is a risk, can be used in initial stages of recruitment, not all the steps. If developers changed their algorithms according to the requirement of the industry, it could be possible; otherwise, it will hard to replace human efforts.

Artificial intelligence utilization in the recruitment process, the respondents stated that it is possible to make the speed of recruitment and also it will gain time and cost-effective. The artificial intelligence of using in the recruitment process, the recruiters will get the right applicant for the right job for the correct position, this will enhance the quality of the applicants in the pool of talent. This strategic approach launches the employer reputation in the market.

6. CONCLUSION

The present study conducted on artificial intelligence influence on the recruitment process made a study on opportunities, risk and utilization of using artificial intelligence, the recruiters revealed that using artificial

intelligence in the entire process of recruitment is not suggestable. However, artificial intelligence is useful in the initial stage of the recruitment process. Artificial intelligence applications encourage the applicant to apply, to select the potential applicant for the right job for a suitable position, will contribute to the talent pool. The active talent pool establishes the productive and employer reputation before its competitors. Moreover, the study has limitations, to study artificial intelligence influence in the recruitment process by having CMMI level companies around Bangalore city. The study considered artificial intelligence providing opportunities, risk and utilization in the recruitment process in selected organizations.

7. FURTHER RESEARCH DIRECTIONS.

The study explained the artificial intelligence utilization in the recruitment industry, especially the recruitment process. The study taken in Bangalore based CMMI level companies having 100 samples from among the human resource professionals. This study can extend by having more sample size, other parts of the country in India like Hyderabad, Chennai, Pune, Delhi and other. It is possible to have a comparative study between the CMMI level companies, in between cities, in-between countries. The survey can be possible in between CMMI level and non-CMMI level companies.

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