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Recruitment Effectiveness in Social Network Sites: A Predictive Analysis Using Machine Learning

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1.1 INTRODUCTION TO THE CONCEPT OF STUDY

Searching for potential employees and encouraging them to apply for positions within the organisation is a helpful procedure known as recruitment. There will be opportunity to hire better candidates when more people apply for employment. On the other side, job seekers are also looking for companies that will hire them. A connection activity called recruitment brings people with employment and people looking for work together. The phrase "recruitment" simply means identifying the source from which potential employees may be chosen. The scientific recruitment method results in improved reputation, lower labour turnover, more productivity, better pay, and good morale. It encourages people to apply for jobs, thus it is a good thing. Reaching out, luring in, and making sure are the main goals of recruitment.

1.2 THEORETICAL BACKGROUND OF THE STUDY

A recent development in the field of human resource management is the use of social networking sites for recruitment. Employers think it's okay to use these websites for online background checks while making recruiting decisions in order to acquire a rapid impression of the applicant. Recruiters can learn more about job candidates' education and professional backgrounds by looking at their profiles on social networking sites. Additionally, recruiters have the option to get in touch with potential applicants and have a non-committal conversation with them. Recruiters can look for potential candidates and establish long-lasting relationships with them by using social networking sites. Social networking sites can serve as a talent pool for young professionals and recent grads with a variety of social capital. Candidates can be filtered by recruiters.

1.3 REVIEW OF LITERATURE

Ashutosh Muduli and Jeegnesh J. Trivedi (2020)[1] Recruiting managers have been embracing social media recruitment due to social media's growing popularity, according to the study "Social Media Recruitment: The Role of Credibility and Satisfaction." There hasn't been much research on the effectiveness of social media recruitment from the perspective of the recruiter. The diffusion of innovation theory has an impact on how the study measures the effectiveness of social media recruiting utilising various prehire and posthire recruitment outcomes. How Social Media Profiles Affect Hiring Decisions: Social Networking Sites and Employment Sara Sameen and Samia Cornelius (2015)[2] Hiring managers have started utilising SNSs like LinkedIn and Facebook to assess applicants since the internet became widely used in the 1990s. SNSs have facilitated connections between employers and candidates, particularly for recruitment and reference checking. Dalia Elkersh, Katie Yancey, Michael C. Budden, and Jamie Vicknair (2010) [3] Employers' usage of social networking sites as a recruiting technique Online social networking is frequently used. Social networking sites are being used more frequently by employers and recruiters to evaluate candidates during the hiring process. Employers are increasingly using social networking sites as a tool for candidate screening. A survey found that social networking sites were used by 45% of businesses—more than twice as many as the previous year—to evaluate job applications. This data demonstrates how frequently these websites are used as tools for human resources. Online social networks are a growing tool for recruiting and candidate screening. Nickolas Ollington, Gibb, and Harcourt (2013)[4]. The popular press has given the growing practise of recruiters using online social networks a lot of favourable coverage. In order to better understand how these networks' organisational structure and governance procedures can aid this process, this research makes use of social network theory. The authors ask, "How can recruiters successfully use online social networks to attract and evaluate potential job applicants?" Ukasz Sukowski and Micha Chmielecki's (2017)[5] article, "The Use of Social Networking Sites in Modern Recruitment: Empirical Study," Businesses now have new opportunities for communication and collaboration thanks to the way that technology is currently developing and how the Internet is used. Due to social media's introduction into the business sector, there is a desire for knowledge concerning social media recruiting trends, especially the world of hiring. Current texts on social media and hiring have been analysed to understand how social media is impacting the recruiting industry. It focuses on how companies and recruiting experts use social media to locate and hire bright people. Roxanne Briscari (2019)[6] During the employment process, social networking sites are used. Due to the variety of chances available and the scarcity of eligible applicants, businesses are obliged to come up with innovative techniques for hiring new personnel. This study aims to identify the relationships between social networks and social networking sites and the employment process, as well as how it affects both employers and employees. We'll also talk about how social networking sites have benefited the company's human resource management system. The purpose of this study is to

examine the kind of adjustments that the online environment makes to the hiring and selection procedures, as well as how these adjustments are put into practise within the organisational environment. The effects of unprofessional social media material on recruiter perceptions, by John Bret Becton, H. Jack Walker, and Paul H. Schwager (2019)[7,] The purpose of this study is to investigate the techniques HR professionals take to evaluate job candidates' suitability for the position and tendency to engage in undesirable workplace behaviours. the MST's Dr. W. Schoenmakers and the ECS's Dr. R. Wesselink (2017) [8] Employment and Selection Processes and Social Media Social media's acceptance and growing accessibility have Social networking sites (SNSs) like MySpace and Facebook were made possible by the proliferation of high-speed internet connection. The use of social media in HR practises is influenced by its popularity, especially when it comes to hiring and selection processes. There may be a great temptation for HR staff to check out a job applicant's social networking profile. On the one hand, social networking sites (SNSs) provide a wealth of information that goes beyond or even contradicts the documentation that an applicant has submitted. However, the validity, fairness, and dependability of using SNSs may and should be examined. In addition to Helle Kryger Aggerholm, Sophie Esmann Andersen (2020)[9,] The purpose of this study is to investigate how a "Social Media Recruitment 3.0" new paradigm of strategic recruiting communication works. Web 3.0 social media recruitment communication strategy influences, enhances, and challenges conventional recruitment communication management, drawing on a specific example of a Web 3.0 recruitment campaign. of high-speed internet access sparked the development of social Web 3.0 social media recruitment communication strategy. In the past year, recruiting practises have changed along with the rest of the globe, according to Stephanie Collier Jensen's article, "How To Do Online Hiring The Right Way" (2021)[10] . Even while we all hope that things will eventually get back to normal, it's possible that things won't look exactly the same as they did before. More than half of workers would prefer not to return to their jobs after the outbreak is over. Hiring managers must be prepared for the potential that the conventional hiring processes, such as many in-person interviews, college talent evaluation, days of paperwork, and talent appraisal might not function in the modern workplace. The time has arrived to improve hiring, onboarding, and recruiting processes conducted online. Thank goodness, electronic communication with candidates is now simpler than ever thanks to the wealth of technology at our disposal.

1.4 STATEMENT OF THE PROBLEM

Organizations all across the world have benefited from using traditional recruitment techniques that worked effectively for them when it comes to hiring. The world of today is evolving with technology, and this development also affects how hiring is done.

a) Whether or not the recruitment procedure using social networking sites is effective.

b) Traditional recruitment methods or social networking sites are both efficient.

The purpose of this study is to determine how effectively social networking sites may be used for organizational recruitment.

1.5 OBJECTIVES OF THE STUDY

The study's primary goal is to identify the most effective social networking site recruitment strategy.

- Finding the best recruitment strategy—traditional methods or social networking sites—is as simple as comparing them.
- To determine whether the recruitment process is being impacted by the model that was built.
- To determine the efficiency of social networking sites for the recruitment process using machine learning algorithms.

1.6 METHODOLOGY

This essay seeks to investigate the best social networking sites for recruitment. Using a combination of terms relating to the employer of choice, person-organization fit, and employer of branding, I started looking for recent papers (past five years from 2021) in ProQuest and Research Gate.

1.6.1 RESEARCH DESIGN

A research design is a plan outlining the steps to take in order to gather and analyse the necessary data. It serves as the framework for the research strategy. The primary data that was gathered for this project's study was analysed using a descriptive research design that used the survey method.

1.6.2 SAMPLING FRAMEWORK

Sampling Type:

For the above study, the convenience sampling method is used, which is done with readily available data. That is, the responses collected from the employee of the organization.

Sample Size:

The responses were collected from 81 employees out of 100 employees.

1.6.5 DATA COLLECTION

The developed questionnaire is used to gather the main data. The major article used as a reference for generating the questionnaire is "THE USE OF SOCIAL NETWORKS SITES IN THE RECRUITMENT PROCESS" by Brişcariu, Roxana. The questionnaire is based on an article from ResearchGate and ProQuest. Bucharest, Romania: Management Research and Practice, Vol. 11, No. 4, Dec. 2019, pp. 5-10.

1.6.6 ANALYSIS USED

The analysis is segregated into two parts, the first part is to understand the developed model's effectiveness and the second part is to analyze the effectiveness of the characteristics of the model developed towards effective recruitment.

SMART PLS software and Machine Learning Algorithm is used for the analysis part.

In SMART PLS the following analysis are done

1. Bootstrapping

2. Factor Analysis

3. Cronbach's Alpha test
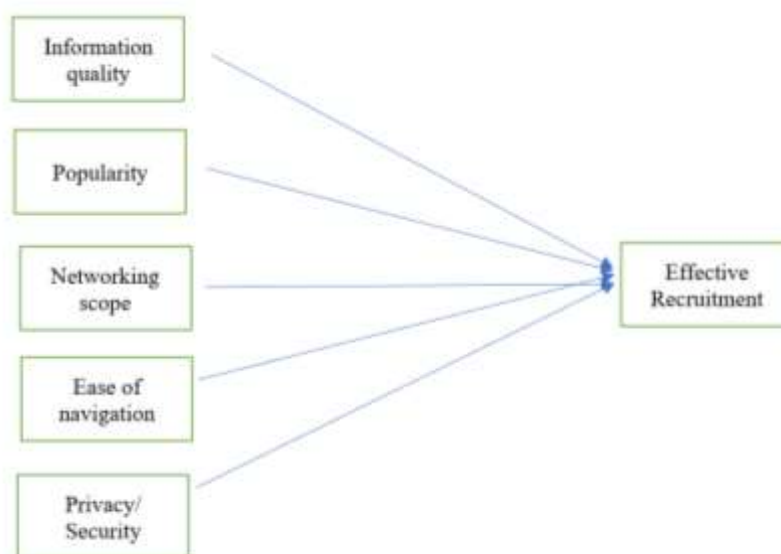
4. Fornell- Larcker criterion

In Machine Learning the following Classification algorithm is used for analysis

1. K-Nearest Neighbor

2. Logistic Progression

3. XG Boost

1.7 LIMITATIONS OF THE STUDY

✓ The time frame is only six weeks.

✓ The study was only as comprehensive as the data that the employees provided.

✓ There is a possibility of prejudice in the employees' comments, which may be casual in style.

✓ The responses to the questionnaires' questions depend on the respondents' willingness to participate.

✓ The replies were gathered from two separate businesses where the organisational culture has changed.
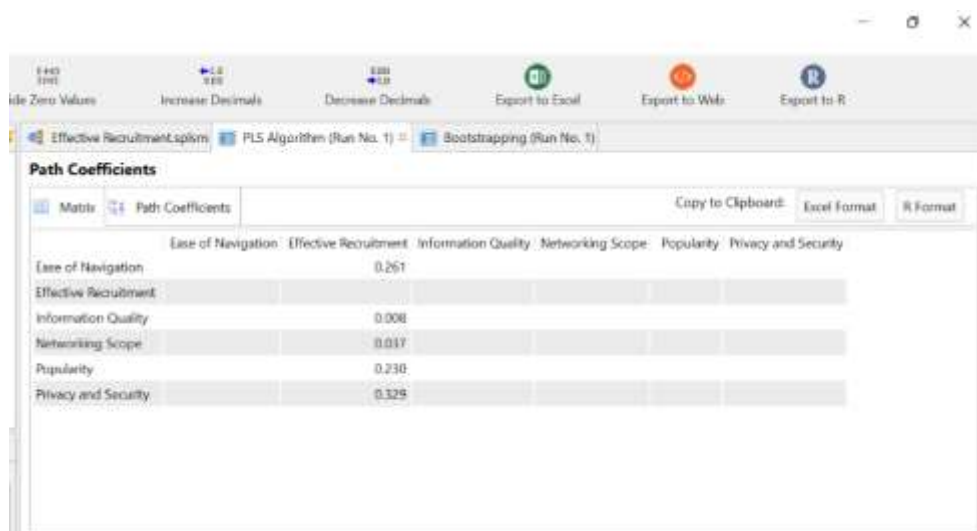
ANALYSIS & INTERPRETATION

OUTER MODEL	EXOGENOUS LATENT VARIABLE	ENDOGENOUS LATENT VARIABLE
Information Quality		
IQ 1	0.571	
IQ 2	0.782	
IQ 3	0.489	0.008
IQ 4	0.680	
IQ 5	0.710	
Popularity		
PO 1	0.785	
PO 2	0.866	0.230
PO 3	0.604	
PO 4	0.701	
Networking scope		
NS 1	0.757	
NS 2	0.816	0.034
NS 3	0.720	
NS 4	0.785	
Ease of Navigation		
EN 1	0.778	
EN 2	0.726	0.263
EN 3	0.695	
EN 4	0.749	
Privacy & Security		
PS 1	0.766	
PS 2	0.788	0.330
PS 3	0.823	
PS 4	0.784	

Table 1 Outer Model

INNER MODEL Effective Recruitment	ENDOGENOUS LATENT VARIABLE
ER 1	0.782
ER 2	0.827
ER 3	0.839
ER 4	0.724

Table 2 Inner Model

Table 3 Path Coefficient

In marketing research, an R2 of 0.75 is substantial, 0.50 is moderate, and 0.25 is weak.

RELIABILITY AND VALIDITY

Table 4 Reliability and Validity

Discriminant validity

Table 5 Discriminant Validity

BOOTSTRAPPING

Path Coefficient Significance in Bootstrapping

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Ease of Navigation -> Effective Recruitment	0.261	0.230	0.159	1.644	0.101
Information Quality -> Effective Recruitment	0.008	0.036	0.111	0.070	0.944
Networking Scope -> Effective Recruitment	0.037	0.093	0.198	0.186	0.852
Popularity -> Effective Recruitment	0.230	0.206	0.165	1.396	0.163
Privacy and Security -> Effective Recruitment	0.329	0.314	0.165	1.992	0.047

Table 6 Bootstrapping

CLASSIFICATION ALGORITHM

K-Nearest Neighbours Algorithm

Independent Variable	Accuracy	Dependent Variable	Accuracy
Information Quality	0.764		
Popularity	0.705		
Ease of Navigation	0.647	Effective Recruitment	0.823
Networking Scope	0.411		
Privacy and Security	0.352		

Table 7 KNN Algorithm

By keeping the K value accordingly, the accuracy of the independent variable like Information Quality, Popularity, Ease of Navigation, Networking Scope and Privacy and Security towards the dependent variable Effective Recruitment, it is evident that the accuracy of Effective Recruitment is 82%.

Logistic Regression

Independent Variable	Accuracy	Dependent Variable	Accuracy
Information Quality	0.625		
Popularity	0.625		
Ease of Navigation	0.5	Effective Recruitment	0.588
Networking Scope	0.687		
Privacy and Security	0.687		

Table 8 Logistic Regression Algorithm

The threshold set for logistic regression is p=0.5, from the above table it is evident that the values of the independent variables is exactly the threshold and above the set threshold value. The impact it is producing towards the dependent variable is also above the set threshold. This proves that the Social Networking Sites play an critical role in Effective Recruitment.

XG BOOST

Independent Variable	Accuracy	Dependent Variable	Accuracy
Information Quality	0.75		
Popularity	0.625		
Ease of Navigation	0.687	Effective Recruitment	0.812
Networking Scope	0.666		
Privacy and Security	0.65		

Table 9 XG BOOST Algorithm

From the above table it is evident than the independent variable like Information quality, Popularity, Ease of Navigation, Networking scope and Privacy & Security are combined together for building a strong dependent variable called "Effective Recruitment".

RESULT AND DISCUSSION

The growth of technology has improved various departments of the Organization. Recruitment is critical factor for the HR department. Choosing a right candidate for right position is much important thing which leads growth of the organization. Recruitment process can be done in both traditional methods and modern methods, modern methods include recruiting people through social media and social network sites. Now-a-days there are multiple platforms used by the recruiter to hire a right candidate, this makes the life of the recruiter as well the candidate's life easier.

As for the above research as stream of questionnaires is prepared and it is circulated to the employee of the organizations. The responses are received from them, as per responses received the analysis is made using Classification algorithm in Machine Learning.

The model consists of independent variables such as Information quality, Popularity, Ease of Navigation, Networking Scope, Privacy and Security which plays an important role for the effective recruitment process.

For the above study the Classification Algorithms such as K-Nearest Neighbor algorithm, Logistics Regression algorithm and Ensemble based XG Boost Algorithms are used for the analysis part.

From the analysis done, the results are discussed below.

K-Nearest Neighbor Algorithm helps to find the characteristics of independent variables towards the dependent variable "Effective Recruitment". it is evident that the accuracy of Effective Recruitment is 82%.

In Logistic regression algorithm, the threshold value is set as p=0.5. The values of the independent variables is exactly the threshold and above the set threshold value. The impact it is producing towards the dependent variable is also above the set threshold. This proves that the Social Networking Sites play an critical role in Effective Recruitment.

XGBOOST Algorithm helps to find a stronger model and capitalize on the misclassification error of the previous model and try to reduce it, from the result it is it is evident than the independent variable like Information quality, Popularity, Ease of Navigation, Networking scope and Privacy & Security are combined together for building a strong dependent variable called "Effective Recruitment".

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