Component Analysis on Soft Skills of Prospective Employees

Project ID: TMP-2023-24-128

Individual Project Proposal Report

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DECLARATION OF THE CANDIDATE & SUPERVISOR

To the best of my knowledge and belief, this proposal does not contain any previously published or written by another person material, except where the acknowledgment is made in the text. I hereby declare that this is my own work, and that this proposal does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any other university or Institute of higher learning.

Name	**Student ID**	**Signature**
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The supervisor/s should certify the proposal report with the following declaration.

The above candidate is carrying out research for the undergraduate dissertation under my supervision.

Signature of the supervisor: Date:

……. ……..

Signature of the Co-supervisor: Date:

……. ……..

Signature of the External-supervisor: Date:

……. ……..

ABSTRACT

This research sheds light on the pivotal role of soft skills in the context of employee selection. Historically, the hiring process has often undervalued soft skills, prioritizing technical and common skills. However, in a rapidly evolving job market, the significance of soft skills, including concentration, cannot be overstated. This study proposes a novel approach to assess and value soft skills, specifically focusing on the component of "Concentrate Analysis."

In this research, the author explores the importance of concentration as a vital soft skill for prospective employees. To measure concentration abilities, a custom-designed game, "Memory Game," was developed, allowing candidates to demonstrate their capacity to focus on similar tasks within a limited time frame. Additionally, advanced technologies such as deep learning and artificial intelligence were leveraged for facial detection, providing deeper insights into candidates' emotional responses during the concentration task.

The findings of this research underscore the significance of incorporating soft skills assessment, including concentration, into the hiring process. Recognizing the value of soft skills alongside technical competencies and common skills can lead to more effective talent acquisition and employee development strategies. By emphasizing concentration and using innovative assessment tools, employers can identify individuals better suited for roles that require sustained focus and attention, ultimately contributing to enhanced workplace productivity and success.

Keywords: soft skills, concentration, hiring process, Memory Game, deep learning, artificial intelligence, facial detection, talent acquisition, employee development.

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1. INTRODUCTION

1.1 Background & Literature survey

This research aims to bridge the gap between the Recruiter Selection process and advanced technologies in Artificial Intelligence. Normally any kind of organization or company has been taking their recruiters based on their technical and general abilities. They are not taking soft skills of the recruiters. As same as the soft skills also help the organization to get an idea about the candidate for the best selection.

In talent acquisition, the traditional methods of evaluating recruiter soft skills often fall short in capturing the intricacies of the modern job market. With the advent of artificial intelligence (AI) and machine learning, there is an opportunity to revolutionize the way recruiter soft skills are assessed. This section provides a comprehensive background and literature survey on the utilization of AI for analyzing the performance skills of recruiters through Concentrated Component Analysis (CCA).

Traditionally, recruiter soft skills assessment has heavily relied on qualitative measures such as the number of placements made, time-to-fill positions, and subjective feedback from candidates and hiring managers [1]. However, these measures offer a limited perspective on the diverse skill set required for successful recruitment, neglecting nuances like candidate engagement, strategic sourcing, and diversity and inclusion efforts.

Integrating AI techniques in human resources has gained traction due to its potential to provide data-driven insights into employee performance. AI-enabled systems have demonstrated their capability to analyze vast amounts of data efficiently, identifying patterns and correlations that human evaluators might overlook [2]. CCA, a dimensionality reduction technique, holds promise in this context as it can reveal latent factors contributing to recruiter success [3].

Incorporating AI and CCA into recruiter soft skills analysis can offer several benefits. AI-driven systems can process a wide range of data sources, including communication logs, candidate profiles, interview feedback, and historical placement data [4]. This holistic approach can uncover previously hidden relationships between recruiter behaviors and successful outcomes. By applying CCA, the research aims to identify concentrated components that play a pivotal role in driving recruitment success. These components might encompass attributes like effective candidate communication, strategic sourcing decisions, and adaptability to industry trends.

Research in AI-assisted recruiter assessment is an emerging field. Previous studies have highlighted the potential of AI in automating initial candidate screening, improving job matching, and predicting employee turnover [5]. However, limited literature delves into the application of advanced AI techniques like CCA in dissecting recruiter performance. This research seeks to bridge this gap by exploring the constructive collaboration between AI and talent acquisition, contributing to a deeper understanding of the multifaceted skills that contribute to effective recruitment outcomes.

In conclusion, the incorporation of AI and CCA in assessing recruiter performance offers a novel perspective that transcends traditional metrics. This research aims to harness the power of AI to unravel the intricate web of skills that define successful recruiters. By leveraging established literature on AI applications in human resources and dimensionality reduction techniques, this study strives to advance the field of talent acquisition and contribute to the development of data-driven strategies for optimizing recruitment processes.

1.2 Research Gap

Despite the increasing adoption of AI in human resources, there remains a significant research gap in the application of advanced AI techniques, specifically Concentrated Component Analysis (CCA), for evaluating the performance skills of recruiters. While AI has shown promise in automating certain aspects of recruitment, such as initial screening and job matching, the nuanced evaluation of recruiter behaviors and skills still relies heavily on subjective methods and traditional metrics.

Existing literature on recruiter performance assessment focuses on quantitative indicators such as time-to-fill positions and the number of placements made [6]. While these metrics provide valuable insights, they fail to capture the multifaceted nature of successful recruitment, neglecting aspects like candidate engagement, adaptability, and strategic decision-making. This gap becomes even more pronounced in today's dynamic job market, where soft skills, cultural fit, and diversity and inclusion efforts play pivotal roles in talent acquisition.

Furthermore, the integration of advanced AI techniques like CCA into the field of recruitment evaluation is unexplored. While AI has been leveraged for automating various HR processes, its

application in assessing complex human behaviors and interactions is limited. CCA, known for identifying latent patterns in multidimensional data, offers a unique opportunity to uncover the hidden drivers of recruiter success.

The research gap is compounded by the lack of a standardized framework for assessing recruiter performance using AI. The absence of established best practices, methodologies, and benchmarks hinders progress in this area. As AI-driven assessment methods gain traction, there is a pressing need for guidelines on data collection, model development, interpretation of CCA results, and actionable insights derived from the analysis.

Moreover, the potential ethical implications of AI-driven recruiter evaluation have not been extensively explored. Concerns related to algorithmic bias, data privacy, and fairness could arise as AI systems analyze and make decisions based on recruiter behavior data. Bridging this gap requires a comprehensive exploration of ethical considerations and the development of frameworks that ensure transparency, fairness, and compliance with regulations.

In summary, the research gap lies in the uncharted territory of using advanced AI techniques, specifically CCA, to assess the performance skills of recruiters comprehensively. The dearth of research in this area limits the understanding of how AI can revolutionize recruitment processes by providing data-driven insights into the multifaceted skills that lead to successful placements. Addressing this gap involves developing robust AI-driven assessment methodologies, exploring ethical dimensions, and establishing best practices for harnessing the power of AI in the field of talent acquisition.

Table 1. Shows a clear comparison with some former research done on Concentrate Analysis.

Table 1 Comparison of Former Research

Product	Concentrate Component Analysis (CCA)	Traditional Metrics	AI Driven Assessment	Multi-Dimensional Insights	Skill Driven Requirement
Research [1]	X	X	X	X	X
Research [2]	X	✓	X	X	X
Research [3]	X	X	X	X	X
Our Research	✓	✓	✓	✓	✓

1.3 Research Problem

What are the key soft skills and cognitive abilities that contribute to employees' enhanced concentration, attention span, and focus on the workplace, and how can HR management effectively assess and measure these soft skills during the hiring process to select candidates who demonstrate strong abilities in maintaining focus and attention to detail?

1. **Hr Manager Perspective**

2. **Recuiter Perspective**

3. **Supervisor Perspective**

2. OBJECTIVES

2.1 Main Objectives

When considering organizations or companies, it is apparent that the recruitment process primarily revolves around assessing technical skills, general knowledge, and subject matter expertise. Unfortunately, the significance of performance often goes unnoticed. Many supervisors' express dissatisfaction with the performance of recruited individuals during their tenure. This predicament gives rise to various challenges that can impede productivity and compromise the service quality of the agency to which they belong. Hence, the driving force behind the development of this application is to address and mitigate these issues, offering organizations and companies a reliable means to identify candidates who perfectly align with their requirements.

Upon closer examination, it becomes evident that comprehensively gauging a candidate's suitability based solely on their curriculum vitae is a complex endeavor. The prevailing practice across sectors involves applicants utilizing the same template when applying to various organizations or companies. Regrettably, this practice falls short in portraying the true essence of an individual. Consequently, we recognized the imperative to create an application that extends beyond the confines of conventional technical and subject-specific interviews. By incorporating a feature to assess soft skills, our application aims to ascertain the degree of alignment between candidates and their desired roles in terms of performance capabilities.

In my role, I'm dedicated to the Concentrate Analysis component of the application. Stress is a potent factor that can disrupt lives. Considering the multitude of projects candidates are often engaged in, maintaining an optimal state of mind is paramount, ideally surpassing satisfactory levels. Therefore, candidates must possess the ability to concentrate and channel their focus towards delivering their utmost in their respective job roles.

To encapsulate, the endeavor to refine the recruitment process stems from recognizing the multifaceted nature of candidate evaluation. By integrating comprehensive assessment tools, we intend to facilitate a more accurate match between candidates and roles. Furthermore, we acknowledge the impact of stress on performance and the importance of mental acuity in managing intricate projects. Through these insights, our application strives to enhance the overall quality and efficacy of the recruitment and job performance landscape.

Existing Solutions Found So Far:

2.2 Specific Objectives

- Review existing literature to define relevant soft skills and cognitive abilities for concentration.
- Establish a framework for categorizing and evaluating these skills.
- Develop a standardized assessment tool for measuring concentration-related soft skills.
- Validate the tool through pilot testing and feedback analysis.
- Collect data from evaluations and performance reviews to analyze correlations.

3. METHODOLOGY

- Job Analysis: Identify key roles requiring high concentration.
- Concentrate Assessment Criteria: Develop standardized criteria for concentration-related soft skills.
- Recruitment: Screen candidates based on concentration-related experiences and skills.
- Behavioral Interviews: Assess candidates' ability to maintain focus in work scenarios.
- Concentrate Analysis Tools: Use concentration tests and cognitive assessments.
- Simulated Work Tasks: Evaluate candidates' concentration in controlled conditions.
- Reference Checks: Validate concentration skills with previous supervisors.
- Panel Assessments: Involve multiple assessors for comprehensive evaluation.
- Data Analysis and Ranking: Rank candidates based on concentration abilities.
- Decision Making: Integrate concentrate analysis into the final selection process.

3.1 System Architecture

The system architecture is shown in Figure 1

3.1.2 Software Solution

The software development life cycle is considered when using the agile methodology. Scrum is the way that agile methodology employs. Scrum is a simple, agile project management method that has a wide range of management and control applications. The solution to be used by the authors is based on the hypothesis of the literature survey and the survey, continual modifications are being made, as scrum can check and adapt to changes in demands (Figure 2).

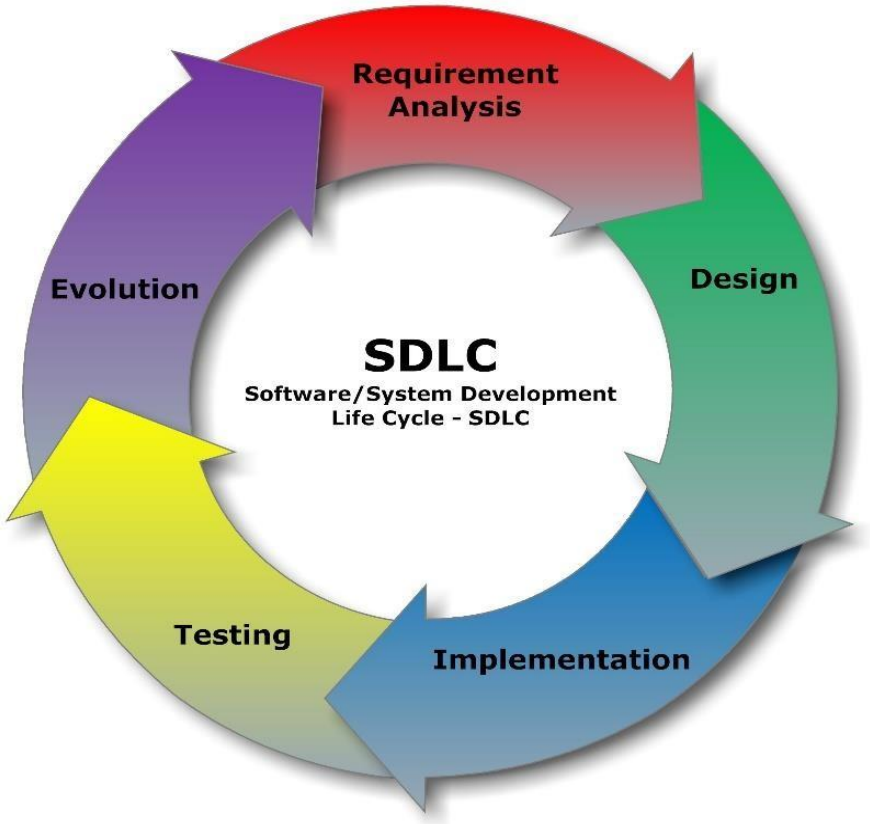

Figure 1 Agile Methodology

1. **Implementation**

a) **Web Application Development**

A web-based application for analysis of the output details is included in the final product. React is a platform for building a web application on a single page. React combines declarative templates, dependency injection, end-to-end tools, and integrated best practices to solve development problems. To build software creators, web application creation (React) and visual studio technology should be well documented.

b) **Database Handling**

The device produces thousands of server data. Therefore, it is best to use the MySql database to store such sensor data.

4. PROJECT REQUIREMENTS

4.1 Functional Requirements

- Conduct Concentration Assessments: Evaluate candidates' attention and focus using standardized tests and simulations.
- Collect Data: Gather historical and real-time concentration performance data.
- Analyze and Score: Rank candidates based on their concentration skills.
- Integration: Integrate concentration analysis into the HR selection process.
- Customization: Customize assessment criteria for various job roles.
- Reporting: Generate comprehensive concentration ability reports for candidates.

4.1.1 Work Breakdown Structure (WBS)

Level 1	Level 2	Level 3
1. Component Analysis of Performance Skills based on the Recruiters – Concentrate Analysis	1.1 Initiation	1.1.1 Evaluation & Recommendations 1.1.2 Develop Project Charter 1.1.3 Deliverable: Submit Project Charter 1.1.4 Project Sponsor Reviews Project Charter 1.1.5 Project Charter Signed/Approved
	1.2 Planning	1.2.1 Create Preliminary Scope Statement 1.2.2 Develop Project Plan 1.2.3 Submit Project Plan 1.2.4 Milestone: Project Plan Approval

	1.3 Execution	1.3.1 Verify & Validate User Requirements 1.3.2 Design System 1.3.3 Procure Software 1.3.4 Install Development System 1.3.5 Testing Phase 1.3.6 Install Live System 1.3.7 User Training 1.3.8 Go Live
	1.4 Control	1.4.1 Project Management 1.4.2 Risk Management

1.2 Non - Functional Requirements

- Accuracy: Ensure high precision in assessing candidates' concentration skills.
- Security: Maintain data privacy and security for candidate information.
- User-Friendly Interface: Intuitive interface for HR managers and candidates.
- Scalability: Handle a large number of candidates during peak periods.
- Accessibility: Accessible from various devices and platforms.
- Performance: Efficient handling of concurrent users.

6. BUDGET AND BUDGET JUSTIFICATION

As shown in Table 3, the costs incurred in the software development process.

Table 2 BUDGET

Component	**Amount (USD)**	**Amount (LKR)**
Fixed Cost (annual)		
Domain Name Registration	16.00	5182.00
Hosting	50.00	16000.00
Total	**66.00**	**21182.00**

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