# Topic Analysis and Synthesis on "Don't Just Evaluate Candidates on Skills"

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**Abstract.** This Topic Analysis and Synthesis report explores engineering management, drawing insights for the topic "Don't Just Evaluate Candidates on Skills". It introduces a novel approach to evaluating engineering candidates, emphasizing the importance of balancing technical skills with personal values and abilities. This methodology aims to create well-rounded teams where diverse skills and personalities complement each other. Traditionally, hiring practices have overly focused on technical expertise, which can lead to challenges in team dynamics and effectiveness. The report advocates for considering a broader range of attributes, including shared values and soft skills, to form stronger, more cohesive teams. Additionally, the analysis will reference and examine other studies and resources to enrich the understanding of effective team building in engineering. By blending practical advice with theoretical foundations and real-world examples, this TAS aims to provide a comprehensive view of successful engineering team management in the modern context.



**Keywords:** Candidate Evaluation · Skill Assessments · hiring smart

# 1 Introduction

## 1.1 Motivation

While skill assessment forms the cornerstone of the hiring process, it is increasingly evident that a sole focus on technical abilities is insufficient for assembling high-performing teams. The motivation for this research stems from the understanding that teamwork and productivity are significantly influenced by factors beyond mere skill proficiency. These include interpersonal dynamics, value alignment, adaptability, and emotional intelligence. In today's collaborative and agile work environments, these attributes play a pivotal role in ensuring that teams can effectively communicate, innovate, and respond to changing circumstances. This section aims to delve into why it's crucial to adopt a more holistic evaluation approach that transcends traditional skill assessments.

## 1.2 Problem Statement

The central question this research seeks to address is: "Is it important to evaluate candidates on factors other than just skills, and if so, what are these factors and how do they affect a team's productivity?" This inquiry is significant in the context of evolving workplace dynamics where team synergy and cultural fit are becoming as crucial as technical expertise. The problem statement will explore the potential risks and limitations of a narrowly focused skill-based hiring model, and investigate how other attributes like values, work ethic, and interpersonal skills contribute to the overall effectiveness and productivity of a team.

## 1.3 Objectives

- **Identifying Benefits:** To outline the advantages of a comprehensive candidate evaluation approach, emphasizing how it enhances team cohesion, innovation, and overall productivity.
- **AI in Assessment:** To explore the feasibility and effectiveness of using Artificial Intelligence (AI) tools in assessing non-technical attributes of candidates, such as values alignment and soft skills.
- **Cost Analysis:** To evaluate the additional costs involved in a more comprehensive hiring process, including potential increases in hiring time, human hours, and resources. This will assess whether the long-term benefits justify these additional costs.
- **Role of Additional Interviews:** To examine if incorporating more in-depth interviews focused on values, behavior, and soft skills can significantly improve hiring outcomes.

# 2 Background Material

## 2.1 Evolution of Hiring Practices

- **Early Hiring Models:** Traditionally, hiring models have predominantly focused on assessing candidates' technical skills and academic credentials. This approach, grounded in a straightforward assessment of quantifiable skills, often involved evaluating candidates based on their education, experience, and demonstrated expertise in specific skill areas relevant to the job. This method, while effective in identifying technically proficient candidates, often overlooks other critical aspects such as interpersonal skills, adaptability, and cultural fit.
- **Shift Towards Soft Skills and Cultural Fit:** In recent years, there has been a significant shift in hiring practices towards valuing soft skills and cultural fit. This change stems from the growing recognition that effective communication, teamwork, problem-solving, and adaptability are vital for success in most modern workplaces. As businesses increasingly value innovation and collaborative work cultures, the ability of employees to integrate into teams and contribute positively to the company culture has become crucial.
- **Impact of Technology and Globalization:** The advent of technology and the rise of globalization have further transformed hiring practices. With remote work and global teams becoming more common, there is an increased emphasis on hiring individuals who can work effectively in diverse, dispersed teams. Technology has also enabled more sophisticated assessment tools, including AI-driven analytics, to evaluate candidates' soft skills and cultural fit, broadening the scope and accuracy of the hiring process

### 2.2 Importance of Team Dynamics in Productivity

- **Team Synergy:** It refers to the way individual team members' skills and attributes complement each other, leading to enhanced collective performance. When team members have a mix of technical skills and soft skills, they tend to collaborate more effectively, leading to increased creativity, problem-solving, and productivity. Effective team synergy relies not just on the individual competencies of team members but also on their ability to communicate, adapt, and work together towards common goals.
- **Challenges of Diverse Teams:** While diverse teams can bring a range of perspectives and skills, they also present unique challenges. Differences in cultural backgrounds, communication styles, and work ethics can lead to misunderstandings and conflicts. Therefore, it's crucial for hiring processes to focus on finding candidates who not only bring diversity in skills and perspectives but are also adept at working in diverse environments. This includes the ability to respect differences, communicate effectively across cultural barriers, and adapt to various working styles.

## 3 Methods and Methodology

### 3.1 Case study-1: Assessments of Organisational Fit

The paper, "Matching Candidates to Culture: How Assessments of Organisational Fit Shape the Hiring Process," delves into how employers and recruitment consultants define and apply the concept of organizational fit in professional labor markets like engineering, marketing, and finance. It explores how this focus on fit can lead to social bias, affecting the inclusivity of the hiring process.[10]

**3.1.1 How study was approached?** The research approaches the problem by examining the role of organizational fit in hiring processes and its potential to create and justify social biases. This exploration is contextualized within professional labor markets, where organizational fit is often a critical, yet vaguely defined, criterion. The study specifically aims to understand how organizational fit is perceived and implemented by external recruitment consultants, revealing the underlying mechanisms that may lead to the exclusion of certain groups or individuals.[10]

- **Semi-Structured Interviews:** The study utilizes semi-structured interviews with 47 external recruitment consultants who assist employers in sectors like engineering, marketing, and finance. This approach offers direct insights into the practices and perceptions of those who play a key role in shaping hiring processes.[10]
- **Theoretical Framework:** The study employs Relational Inequality Theory (RIT) to analyze how organizational fit assessments contribute to inequalities in the hiring process. This framework helps in understanding how exclusionary practices are rationalized and legitimized.[10]

**3.1.2 Techniques used for surveys and analyzing results** The methodology primarily involves qualitative analysis techniques to interpret and synthesize the data obtained from the interviews.

- **Thematic Coding:** The data from the interviews are thematically coded using NVivo 12 software. This involves both inductive and deductive coding to identify key themes related to organizational fit and its role in potential biases and exclusionary practices.[10]
- **Inductive and Deductive Analysis:** The analysis is carried out in two rounds – the first establishes a priori codes related to organizational fit, while the second involves hand-coding to analyze exclusion mechanisms and categorization processes.[10]
- **Claims-Making Analysis:** A critical part of the analysis involves examining claims-making as a process through which exclusion occurs. This aspect focuses on how recruitment consultants and employers use the concept of organizational fit to justify hiring decisions that may be biased.[10]

### 3.2 Case study-2: Adoption of AI in human resource management

The paper primarily investigates the determinants of AI adoption in HRM. It focuses on various factors such as competitive pressure, top management support, performance expectancy, and HR roles within organizations. The study's findings indicate that performance expectancy is a strong predictor of the intention to adopt AI in HRM. It also highlights the positive influence of the 'Change Agent' HR role and the negative association of the 'Employee Champion' role with the intention to adopt AI. The results offer significant insights into the role of AI in transforming HRM practices, emphasizing the strategic importance of AI adoption in enhancing HRM efficiency and quality. This study contributes to the understanding of AI diffusion in HRM, providing valuable information for HR leaders and policymakers to stay informed about the impact of AI on HRM and organizational effectiveness.[2]

**3.2.1 How study was approached?** The study adopted a survey methodology, reaching out to senior HR practitioners who have a significant influence on their organization's decision-making, particularly in the context of technological adoption. The survey aimed to gather empirical data on the hypothesized relationships concerning AI adoption within HRM. A total of 192 members were initially contacted, and after validation for completion and accuracy, 186 responses were considered for final analysis. The survey, conducted in English, ensured anonymity and confidentiality, thus encouraging genuine and unbiased responses from the participants. The below image 1 illustrates the conceptual framework to study constructs and their hypothesised relationships. [2]

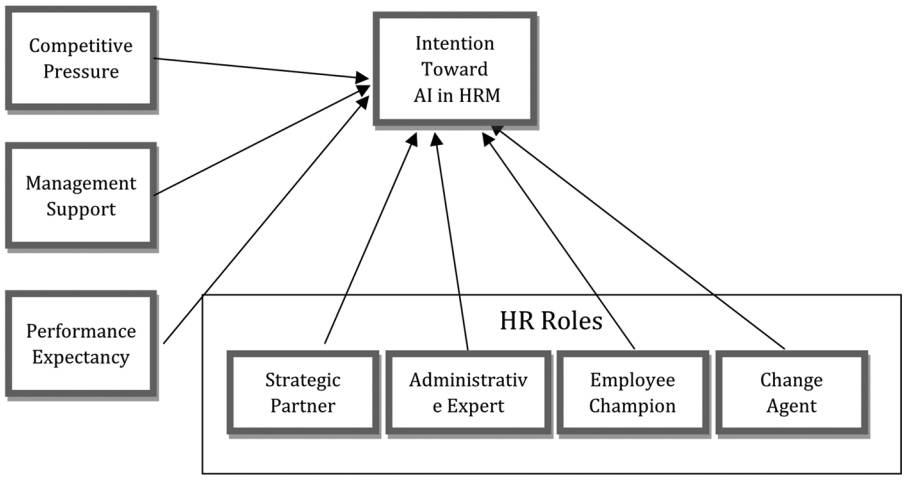


**Fig. 1.** Framework for studying AI adoption in HRM [2]

**3.2.2 Techniques used for surveys and analyzing results** The research paper employs a methodical and rigorous approach to examining the adoption of AI in HRM, using advanced statistical techniques to ensure the validity and reliability of its findings. The paper's comprehensive methodology underscores the importance of a multifaceted analytical approach in understanding the complexities of technological adoption in the field of human resources.

- **Claims-Making Analysis:** The research utilized CB-SEM, a robust statistical technique that is particularly effective for path-analytic modeling and evaluating complex relationships between multiple constructs. This technique is advantageous in its capacity to handle multidimensional constructs while concurrently minimizing errors and eliminating weaker measurements. CB-SEM's effectiveness lies in its holistic approach to understanding the interplay between various factors, making it an ideal choice for this study's complex and multifaceted nature.[2]

- **Confirmatory Factor Analysis (CFA):** The first level of statistical analysis involved CFA to test the validity and reliability of the measurement scale used in the survey. CFA is critical in understanding the underlying structure of the data and ensuring that the observed variables accurately reflect the constructs they are intended to measure. By examining factor loadings of each indicator, the study ensured that each measurement adhered to established thresholds for validity. This step was vital in confirming the internal consistency and reliability of the data, ensuring the study's findings were based on a solid empirical foundation.[2]
- **Evaluation of SEM and Hypothesized Relationships:** The second level of statistical analysis focused on evaluating the SEM and testing the hypothesized relationships between the study constructs. This involved a comprehensive assessment of the relationships posited in the study, ensuring that they were not only statistically significant but also meaningful in the context of AI adoption in HRM. The researchers meticulously evaluated the measurement scale's reliability and convergent validity by examining Cronbach's $\alpha$, Average Variance Extracted (AVE), and Composite Reliability (CR) Coefficient for the constructs. This thorough examination of the data solidified the study's foundation, providing a robust platform for the ensuing analysis and conclusions.[2]

Moreover, the methodology also encompasses the role of AI in evaluating non-technical aspects of candidates. AI can enhance the hiring process by assessing candidates' values, abilities, and alignment with organizational culture, beyond just technical skills. The study's methodology underscores the potential of AI in providing a more holistic view of candidates, aiding in creating well-rounded teams that align with the organization's values and goals.

### 3.3 Case study-3: Employability based on grit, the big five, and other factors

The paper by Butz et al. (2019) explores how employers weigh various factors when making hiring decisions. The primary focus is on the concept of 'grit,' which includes a job seeker's passion and perseverance for long-term goals, and how it is valued in comparison to other attributes. [3]

**3.3.1 How study was approached?** The study engaged a specific group of central Wisconsin employers, all members of the Portage Wood and Marathon County Business Councils. A total of 983 businesses were invited via email to participate in an online survey, which lasted 14 weeks from February to May 2018. The survey included 54 items and took an average of 17 minutes to complete. Out of 115 employers who started the survey, 100 completed it. The respondents represented a diverse range of job titles and organizational sizes, with the oldest organization founded in 1817 and the newest in 2017. The median size of the surveyed organizations was 150 employees, with a range from 1 to 500,000 employees. The respondents were classified into various industries and sectors based on their self-identified NAICS classification. [3]

**3.3.2 Techniques used for surveys and analyzing results** The study employed several techniques for preparing and analyzing results,

- **Measuring Grit:** The study measured how much hiring managers valued grit in job seekers using a 12-item scale adapted from Duckworth et al. (2007). This scale was divided into two subscales: grit interest and grit effort, which were then combined into a composite index.[3]
- **Assessing the Big Five Personality Traits:** The Big Five personality traits were measured using a 10-item measure (BFI-10). Participants evaluated key phrases related to well-qualified applicants for each personality trait. The phrases varied for each subscale, measuring traits like openness, neuroticism, conscientiousness, agreeableness (reverse coded), and extraversion (reverse coded). The reliability of this measure was confirmed using the expanded form of the Spearman-Brown formula.[3]
- **University-Provided Skills and Experiences:** The survey asked employers about the importance of various university-provided skills and experiences for job applicants. These included GPA, written and oral communication skills, problem-solving, technology skills, teamwork, leadership, volunteer experience, internship experience, and previous work experience. Employers rated these on a 5-point scale from 'not at all important' to 'extremely important' as shown in below table 1.[3]

**Table 1.** Adapted grit scale - A well-qualified applicant for an entry-level position at your organisation.[3]

| Item content | Sub-scale | Item number |
|---|---|---|
| ...has overcome setbacks to conquer an important challenge. | Effort | 1 |
| ...is not discouraged by setbacks. | Effort | 4 |
| ...is a hard worker. | Effort | 6 |
| ...finishes whatever he/she begins. | Effort | 9 |
| ...has achieved a goal that took years of work. | Effort | 10 |
| ...is diligent. | Effort | 12 |
| ...have new ideas and projects that sometimes distract him/her from previous ones. R | Interest | 2 |
| ...have interests change from year to year. R | Interest | 3 |
| ...has been obsessed with a certain idea or project for a short time but later lost interest. R | Interest | 5 |
| ...often sets a goal but later chooses to pursue a different one. R | Interest | 7 |
| ...has difficulty maintaining focus on projects that take more than a few months to complete. R | Interest | 8 |
| ...becomes interested in new pursuits every few months. R | Interest | 11 |

Notes: Response options were:

1. not like a qualified job candidate
2. not much like a qualified job candidate
3. somewhat like a qualified job candidate
4. mostly like a qualified job candidate
5. very much like a qualified job candidate

Statements ending in an italic 'R' signify negatively worded items, that were reverse coded before creating the composite scales.

### 3.4 Other Case studies

- In the research paper on the value of non-technical skills in cybersecurity, the methodology employed was a phenomenological approach with structured and semi-structured data collection methods. Over a period of three months, the investigator conducted interviews with cybersecurity professionals to understand the importance they place on various KSAs. Participants were selected through social media outreach, and interviews were recorded and transcribed using automated tools. The transcripts were then qualitatively coded without personal identifiers using NVIVO software. This method allowed for a rich, detailed exploration of the non-technical attributes critical for roles in cybersecurity, aiming for a comprehensive understanding of the phenomena at hand.[9]
- The research paper titled "Behavior Marker tool for measurement of the Non- Technical Skills of Software Professionals: An Empirical Investigation" details the development of a Behavioral Marker System for assessing non-technical (NT) skills among software developers. The method involved three main steps. Initially, a systematic literature review was conducted to compile an inventory of NT skills required for effective performance in software development, leading to an initial list of 35 skills. This list was refined through online surveys and focus groups involving industry and academic experts, which helped prioritize and provide observable examples of good and poor behaviors related to these skills. The final set included skills such as teamwork, motivation, listening, and critical thinking. The second step involved further refining these skills and behaviors into a taxonomy. The third step involved constructing a Behavioral Marker (BM) audit tool, informed by similar tools used in aviation, healthcare, and other sectors. This tool, called the Non-Technical Skill Assessment for Software Developers (NTSA), is designed for observers such as managers or team leaders to use during team interactions, allowing them to mark observed behaviors and assess them against defined standards and examples.[8]
- The research methodology of the study on university graduate recruitment strategy followed a structured approach. It started with the formulation of a research problem related to the challenges faced by businesses in Kosovo in selecting and recruiting the right graduates with the appropriate skills. A comprehensive review of related literature was conducted to set the stage for the research method and data collection tools. This study utilized a qualitative research method with primary data collected through

an online questionnaire. The questionnaire, which ran for six months, comprised 20 questions, including both structured general questions and an open question designed to gather businesses' opinions and suggestions for graduates seeking employment. The research hypotheses raised in the study were informed by an analysis of different international articles, and the subsequent empirical results led to hypothesis testing and the study's conclusions.[6]

- The research conducted aimed to explore the perceptions of students and graduates from the Academy of Economic Studies, particularly from the Faculty of Business and Tourism, about the labor market and their desire to engage in it. To achieve this, the study employed a quantitative questionnaire approach. This instrument was designed to gather demographic data such as gender, age, level of education, occupation, and income, as well as to probe the participants' views on working or the reasons for not working. A sample of 112 students and graduates of varying ages was chosen to provide responses. The research was driven by objectives to assess the influence of recruitment and selection processes on these individuals, identify the appropriate contexts for these processes, understand the perceived benefits of working in the labor market, determine the desire to work within this framework, and explore the reasons behind choosing not to engage in the labor market. The underlying assumptions of the study included that some participants had previously undergone a recruitment process, most aimed to work in a particular field, many saw labor market work as advantageous, and the majority had specific reasons for not currently working in the labor market. [4]

- The research paper employed a convergent parallel (concurrent) mixed-methods approach to identify the constraining factors (CFs) that contractors face during the recruitment and selection of skilled laborers in the building construction sector. The methodology was structured in several steps: a literature review to ground the study, a pilot survey for preliminary insights, a questionnaire survey that employed a cross-sectional design with descriptive characteristics for broad data collection, followed by interviews for in-depth qualitative insights. Statistical and content analyses were then conducted to quantitatively and qualitatively analyze the collected data, respectively. This approach allowed for simultaneous data collection and analysis of both qualitative and quantitative data, providing a comprehensive understanding of the CFs in the recruitment and selection processes within the construction industry.[5]

- The research paper employed a mixed-methodology approach, which is valued for its capacity to triangulate findings, yield richer data, and foster new thought processes. The study combined structured surveys with key informant interviews to gather comprehensive data from human resource managers and representatives of labor from the private sector and government agencies in Lagos. These key informants were chosen for their influential roles as thought leaders in the human resources field. The primary survey, which used a five-point Likert scale, was distributed to 200 individuals, factoring in the potential for non-responses to achieve an adequate sample size. Using the Yamane formula, a sample size of 150 was targeted, ensuring a margin of error of 0.05 for robust and in-depth analysis. The survey reached across various sectors, employing simple random sampling to ensure fair representation. Google Survey was the platform used for administration, and out of 200 distributed questionnaires, 150 valid responses were received and analyzed using descriptive statistics to draw inferences from the qualitative Likert-scale data.[1]

- The methodology used in the research paper on the importance of communication during the hiring process involved conducting a questionnaire survey within an enterprise. The survey consisted of 20 questions divided into two parts: the first part gathered basic identification data of the respondents, such as gender, age, education, and number of months of work in the enterprise, while the second part focused on the hiring process. The survey, which achieved a 96.82% return rate from the 122 respondents, aimed to evaluate a predetermined hypothesis. The study employed the Pearson chi-square test to examine the relationship between two qualitative variables, preceded by arranging the data in a contingency table. This methodological approach included assessing the strength of the relationship between variables using the Cramer's V contingency coefficient, which ranges from 0 to 1, indicating the level of dependence (weak, moderately strong, or strong). The research steps also involved verifying the statistical significance of the relationships identified. [7]

## 4 Results obtained

The above case study that we analyzed delve into the critical question of whether non-technical factors such as values, work ethic, and interpersonal skills should be considered alongside technical skills during the hiring process, and how these factors influence team productivity.

**4.0.1 Case study-1: Assessments of Organisational Fit** It is evident that hiring managers are shifting their focus from traditional criteria such as work experience and education to intrinsic traits like grit and the Big Five personality traits. The study involved 100 employers from the Midwest USA and showed that both service organizations and goods-focused organizations value grit in their hiring criteria. Moreover, conscientiousness was prioritized more by service companies than goods-focused organizations. The regression analysis indicated that 27% of the variability in grit was explained by other hiring criteria. This aligns with the topic's objectives by offering empirical evidence that hiring managers consider a broader range of attributes in job seekers, which could potentially enhance team cohesion and overall productivity.[10]

**Table 2.** Regressions between university-provided skills and experiences and the Big Five [10]

| **Independent variables** | **Grit** | **Extraversion** | **Agreeableness** | **Conscientious** | **Neuroticism** | **Openness** |
|---|---|---|---|---|---|---|
| Written comm. | 0.25* | 0.06** | -0.03 | 0.13*** | -0.12*** | -0.17* |
| Oral comm. | 0.09* | 0.37*** | 0.15 | 0.24 | -0.34* | 0.01 |
| Prob. solving | 0.08 | -0.09 | 0.07 | -0.06 | -0.03 | 0.15 |
| Tech skills | 0.22 | -0.12 | 0.21 | 0.32* | -0.28 | -0.06 |
| Team work | -0.07 | 0.10 | -0.12 | -0.11 | 0.17* | -0.14 |
| Leadership | -0.28* | -0.10 | 0.22 | 0.00 | -0.06 | 0.01 |
| Volunteer | -0.48 | 0.10 | -0.09 | -0.17 | 0.23* | -0.19 |
| Internship | 0.12 | 0.01 | 0.14 | -0.19 | 0.28* | 0.05 |
| VIF | | | | | | |
| Written comm. | 1.85 | 1.87 | 1.84 | 1.87 | 1.87 | 1.87 |
| Oral comm. | 2.41 | 2.47 | 2.44 | 2.47 | 2.47 | 2.47 |
| Prob. solving | 2.01 | 2.03 | 2.01 | 2.03 | 2.03 | 2.03 |
| Tech skills | 1.73 | 1.67 | 1.67 | 1.67 | 1.67 | 1.67 |
| Team work | 1.61 | 1.60 | 1.59 | 1.60 | 1.60 | 1.60 |
| Leadership | 1.83 | 1.80 | 1.78 | 1.86 | 1.81 | 1.80 |
| Volunteer | 1.70 | 1.75 | 1.70 | 1.75 | 1.75 | 1.75 |
| Internship | 1.91 | 2.00 | 1.89 | 1.90 | 1.90 | 1.90 |
| Average VIF | 1.88 | 1.90 | 1.87 | 1.90 | 1.90 | 1.90 |
| Minimum VIF | 1.61 | 1.60 | 1.59 | 1.60 | 1.60 | 1.60 |
| Maximum VIF | 2.41 | 2.47 | 2.44 | 2.47 | 2.47 | 2.47 |
| Intercept | 3.64*** | 2.23*** | 4.23*** | 4.16*** | 2.76*** | 3.61*** |
| R2 | 0.27*** | 0.07* | 0.10 | 0.08* | 0.17*** | 0.08 |
| RMSE | 0.32 | 0.51 | 0.47 | 0.40 | 0.51 | 0.47 |
| F-statistic | 5.15*** | 1.76* | 0.99 | 1.93* | 3.12** | 0.78 |

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ (two-tailed).

**4.0.2 Case study-3: Employability based on grit, the big five, and other factors** The table 2 shows that certain skills had a consistent impact on how employers view candidates' personalities. For example, written communication skills were positively linked to extraversion and conscientiousness, and negatively to neuroticism. Oral communication was positively associated with grit and extraversion. Other skills had some impact, but not as consistently across the traits.

Collectively, the skills and experiences provided by universities explained a substantial amount of variation in grit (27%), extraversion (7%), conscientiousness (8%), and neuroticism (17%). Some of these findings were marginal, which means that they are close to being significant and might become so with a larger group of people in the study.

In simpler terms, the study suggests that employers do consider skills learned at university when evaluating candidates for certain personality traits, but traditional indicators like GPA and work experience might not be as influential as believed. Communication skills, both written and oral, seem particularly valuable in predicting how an employer might perceive a candidate's personality. Mainly it emphasizes that hiring should consider a broader spectrum of candidate attributes beyond technical skills. [3]

- **Complementing Technical Skills:** Attributes such as grit, conscientiousness, and the Big Five personality traits complement technical skills and are increasingly recognized as critical to job performance. These traits are linked to an employee's ability to persevere through challenges, adapt to change, work well in team settings, and contribute to a positive workplace environment.[3]
- **Predicting Long-Term Success:** Intrinsic traits like grit and conscientiousness are predictors of long-term success and retention within a company. They indicate an employee's potential for growth, commitment to long-term goals, and their likelihood to remain with an organization, thus reducing turnover rates.[3]
- **Improving Team Dynamics:** A team's productivity is not solely dependent on the individual skills of its members but also on how well the team works together. Attributes such as agreeableness and the ability to collaborate are crucial for creating synergistic team dynamics.[3]
- **Cultural Fit:** Alignment with company values and culture is critical for new hires to integrate effectively into their workplace. This cultural fit can lead to higher job satisfaction and better performance.[3]
- **Holistic Candidate Assessment**: A well-rounded evaluation process that includes non-technical skills can provide a more complete picture of a candidate's capabilities and potential. This holistic approach can lead to better hiring decisions.[3]

The test results from the survey study suggested that the importance of a degree-granting institution in hiring decisions is not uniform across respondents. This implies that while some employers may emphasize the reputation of educational institutions, others do not consider it a significant factor.

**4.0.3 Case study-2: Adoption of AI in human resource management** Furthermore, this study found strong positive correlations between the desired education level of candidates and the importance placed on their communication skills, problem-solving skills, and experiences such as volunteering and internships. Interestingly, grit was not significantly correlated with university-provided skills and experiences, except for leadership and volunteer experience, hinting at grit's unique predictive power in hiring decisions. This supports the objective of the topic to assess the role of non-technical attributes in hiring and the potential use of AI in evaluating such traits.[2]

### 4.1 Conditions and constraints

The surveys's findings were contextualized within the diverse spectrum of employers ranging from small to large organizations, across various industries. Employers were involved in both goods provision and service-oriented sectors, which allowed the study to assess whether industry type influenced the valuation of non-technical attributes like grit and the Big Five personality traits. This diversity provided a comprehensive overview of hiring tendencies across different economic sectors, enabling the study to ascertain under what conditions non-technical attributes are prioritized during the hiring process. The study identified that organizational fit, an implicit criterion, is often based on recruiters' interpretations, which depend heavily on emotional intelligence to assess potential cultural synergy within the workforce.

The study faced constraints in its ability to generalize the findings due to the potential for inherent biases associated with the criterion of organizational fit. Despite the comprehensive range of the sample, the subjective nature of evaluating organizational fit may allow for discretion that could lead to discriminatory hiring practices. Additionally, the reliance on self-reported data could introduce bias, as participants may respond in ways they perceive to be socially desirable or reflective of their organizations' ideal practices rather than their actual behavior.

### 4.2 Quality of the result

The quality of the results is considered adequate based on the robustness of the statistical analyses and the diversity of the sample. Descriptive statistics confirmed the normal distribution of variables, while chi-square

tests, Pearson product-moment correlations, independent samples t-tests, and simultaneous multiple regressions provided a multidimensional analysis of the data. These analyses highlighted significant relationships among organizational demographics, grit, the Big Five, and university-provided skills and experiences, offering insights into the evaluative patterns of employers. The study also revealed that service organizations prioritize conscientiousness significantly more than goods-focused organizations, and that university-provided skills and experiences have a predictive effect on employers' preferences for certain non-technical attributes in well-qualified applicants.

Regarding the objectives of the Topic Analysis and Synthesis, the results obtained contribute to a deeper understanding of the multifaceted nature of the hiring process. They highlight the importance of evaluating candidates on a broader spectrum of attributes beyond technical skills, supporting the need for a more comprehensive candidate evaluation approach that includes assessments of grit and personality traits. These findings underscore the potential for AI tools to provide objective measures for non-technical attributes, which could mitigate bias and improve hiring outcomes. The study also touches upon the cost implications of such comprehensive hiring practices, alluding to the long-term benefits of investing in a more nuanced recruitment process.

## 5 Conclusion and future works

### 5.1 Suggested improvements

Future research could improve on the methodologies by incorporating a broader range of non-technical skills and personal attributes. It may also be beneficial to expand the scope of the study to include a more diverse geographical sample or a larger sample size to increase the statistical power of the findings. Additionally, future studies could explore the impact of new AI-driven assessment tools in identifying non-technical skills and their correlation with job performance.

### 5.2 Limitations to solution

The current solution has limitations, particularly in the generalization of findings across different industries and regions. The reliance on self-reported data from hiring managers might also introduce bias. Furthermore, the exclusion of GPA and previous work experience in the regression models may overlook their potential nuanced contributions to candidate evaluation in certain contexts.

### 5.3 Applications in real world

The insights from this research can be applied in the real world by encouraging companies to adopt more holistic hiring practices. By recognizing the value of non-technical skills such as grit and communication, organizations can build more cohesive and adaptable teams. In practice, this might involve the development of new interview techniques or the use of AI tools to assess candidates' broader capabilities beyond their resumes. Many companies already started using AI for assessing candidates using AI during the hiring process. As can be seen here. HireVue and Pymetrics are prime examples that introduced AI for prescreening and assessing non-technical skills of candidates during the hiring process.

### 5.4 Conclusion

In conclusion, the research underscores the importance of considering a wide array of candidate qualities during the hiring process. While technical skills are essential, non-technical attributes like grit, communication, and personality traits play a crucial role in the long-term success and integration of employees within a team and organization. The findings prompt a reevaluation of traditional hiring metrics and suggest that a more comprehensive approach could lead to improved hiring outcomes and organizational performance. Future work in this area can further refine these methods and explore new technologies to assist hiring managers in making more informed decisions.

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## Acknowledgements


1. **ChatGPT-3.5**
   (a) **Prompt Given:-** Provided topic name and full text to summerize it in 2 paragraphs.
      i. **Model's output:-** The excerpt from "97 Things Every Engineering Manager Should Know" emphasizes the importance of a comprehensive approach in the hiring process, beyond just assessing candidates' technical skills. It stresses the significance of evaluating candidates on their values, abilities, and skills, in that order. This approach helps in building a cohesive team that shares common values and complements each other's strengths and weaknesses. **Key points from the excerpt include:** Risks of Focusing Solely on Skills: Solely evaluating candidates based on technical skills can lead to hiring individuals who may be technically competent but are challenging to work with or don't align with the team's values. Such hires can create more problems, requiring additional managerial effort to resolve interpersonal issues. **Importance of Values and Abilities:** Values represent a person's principles or behavior standards, and abilities are inherent talents. Aligning these with the organization's values and needs is crucial. For instance, a candidate's ability to learn new technologies quickly or being detail-oriented should match the team's requirements. Misalignment in these areas can lead to inefficiencies and managerial challenges. **Creating Effective Evaluation Processes:** Direct questioning about values and abilities can be ineffective as candidates are likely to give socially desirable responses. Instead, managers should devise tests and questions that indirectly assess these aspects, such as inquiring about past examples where candidates demonstrated their values or abilities.
   (b) **Prompt Given:-** Give me idea about what I can write in conclusion and future works based on the below text. (Text was having main sections of the report.)
      i. **Model's output:-** It gave 2 page of ideas about what can be included.
2. **Perplexity.ai**
   (a) **Prompt Given:-** Gave above summary to get related cited resources.
      i. **Model's output:-** These five reources cites as [7], [2], [10], [9], [3].
      ii. Which I futher used to get more resources by exploring the sources that are either cited by or cite these papers.