Employer Insights: Essential Skills and Hiring Criteria for Entry-Level Engineering Positions

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ABSTRACT

The engineering industry in Malaysia has grown rapidly, becoming a key pillar of national economic and technological progress. However, this growth highlights a mismatch between employer expectations and graduate skills, raising concerns about employability and workforce readiness. This study identifies and ranks the skills and hiring factors most valued for entry-level engineers, shifting focus from academic performance to personality, adaptability, and willingness to meet industry needs. A quantitative survey using a validated Likert-scale questionnaire was distributed to engineering employers, and data was analysed via SPSS and the Relative Importance Index (RII). Findings show that "positive attitude", "teamwork skills", and "integrity" ranked highest among essential skills, while "willingness to work outstation", "willingness to work overtime", and "relevant salary expectations" were top hiring factors. Academic indicators such as CGPA and university reputation ranked lower, highlighting employer emphasis on workplace readiness over credentials. Lower-ranked factors, including "mutual hobbies", "gender", and "ability to communicate in Mandarin", were situational rather than universally relevant. The findings reinforce that technical proficiency alone is insufficient; employers prioritise traits that foster workplace cohesion, resilience, and adaptability. Higher education should integrate structured opportunities to build these competencies, aligning graduate capabilities with industry demands and enhancing long-term career growth in engineering.

Keywords: Engineering employability, entry-level hiring factors, employer expectations, non-technical skills, Relative Importance Index (RII)

INTRODUCTION

The Malaysian engineering industry has experienced substantial growth, positioning itself as a critical driver of the nation's economic development and technological advancement. This expansion has concurrently led to an increased demand for a highly skilled workforce, underscoring the vital role of competent engineers in sustaining this trajectory [1]. However, despite the robust demand, the industry faces a significant challenge: a persistent misalignment between the competencies expected of entry-level engineers by employers and the practical skills possessed by recent graduates [2]. This discrepancy manifests as an "employability crisis" for fresh graduates, stemming from deficiencies in areas such as English proficiency, professional competency, critical communication, interpersonal abilities, and leadership skills, ultimately hindering Malaysia's aspirations for developed nation status [3]. The rapid changes in technology and industrial landscapes in Malaysia necessitate a workforce capable of competing in a globalised era, prompting a call for vocational and training institutes to produce graduates with enhanced capabilities [4].

While universities often succeed in equipping graduates with technical knowledge, employers place equal—if not greater—importance on non-technical attributes such as problem-solving ability, communication skills, adaptability, teamwork, and professional attitude. This skills gap not only affects graduate employability but also constraints organisational productivity and, ultimately, Malaysia's competitiveness in a rapidly evolving global economy. Furthermore, much of the existing research on employability either addresses the concept in broad terms or focuses predominantly on undergraduates, offering limited insights into the specific skills and

recruitment priorities valued by employers within the engineering sector. Consequently, there is insufficient empirical evidence that captures employers' perspectives on the relative importance of different attributes when hiring entry-level engineers.

Addressing this knowledge gap requires empirical research that captures employer perspectives to better align educational outcomes with industry needs. Accordingly, this study aims to identify the essential skills that employers consider critical for success in the engineering industry and to examine, from the employers' perspective, the key factors that influence the hiring of entry-level engineers. These skills and factors are subsequently ranked to establish their relative priority, thereby providing a clear understanding of what employers most value in engineering graduates seeking to enter the workforce.

LITERATURE REVIEW

Skills required among workers in the engineering industry

In the modern workplace, certain skills and attributes are critical not only for task completion but also for overall career success and workplace harmony. These qualities are often linked to employee satisfaction and the way employers perceive value in their workforce. Prior research has repeatedly highlighted the mismatch between what higher education graduates can offer and what the workplace actually demands [5], [6]. In Malaysia, [7] note that strong English proficiency and effective communication skills are key to improving graduate marketability. This emphasis aligns with the Malaysia Education Blueprint 2015–2025 (Higher Education), which seeks to cultivate talent, creativity, and holistic qualities in graduates to produce entrepreneurial and well-rounded individuals [8]. Moreover, [7] highlight that a successful generation is one that is well-grounded in moral and religious principles, enriched in intellectual capacity, physically trained for resilience, and nurtured with noble values. These foundational qualities not only enhance employability but also contribute to personal development and societal well-being.

Engineering graduates often enter the workforce with a strong grasp of technical knowledge and core competencies [9]. However, employers increasingly expect them to complement this expertise with employability skills such as problem-solving, adaptability, and teamwork that enable them to apply knowledge in practical, real-world settings. Globally, employers have expressed concern that many graduates lack these "generic" skills and have urged higher education institutions to prioritise their development [9]–[11]. The [12] study of 1,176 British graduates found that qualities like teamwork, motivation, problem-solving ability, oral communication, and prior work experience significantly influence employers' perceptions of employability. Additional evidence suggests that the ability to integrate technical expertise with interpersonal and cognitive skills is what distinguishes high-performing graduates in competitive labour markets [13]. In the context of engineering, particularly in the construction industry, this integration is crucial, as the profession demands not only technical competence but also the ability to manage complex projects, collaborate across disciplines, and adapt to evolving site conditions.

Positive Attitude

A positive attitude encompasses frequent experiences of joy, hope, gratitude, calmness, and inspiration, which contribute to overall workplace satisfaction. Research shows that positivity in the workplace enhances engagement, job performance, and organisational citizenship behaviour while reducing burnout and counterproductive actions [14], [15]. Organisations benefit from positivity through better decision-making, higher motivation, greater creativity, and stronger collaboration. Employees, in turn, enjoy enhanced well-being, resilience, and career growth [16]. Positive attitudes also contribute to stronger coping mechanisms during workplace challenges, fostering a healthier organisational culture [17]. Research has demonstrated that the autonomy, challenge, and variety of work significantly impact job satisfaction and retention [18], [19]. Historical studies like the Hawthorne experiments reaffirm the connection between employee attitudes and productivity [20].

Communication Skills

Effective communication, which includes written, verbal, and listening abilities, is consistently ranked among the most important predictors of employability [21]. Beyond exchanging information, communication skills

include active listening, persuasion, conflict resolution, and the ability to tailor messages to different audiences. Strong communication facilitates collaboration, supports leadership roles, and enhances client relations. Employers often view these skills as equally important as technical expertise because they enable smoother workflows and stronger organisational networks. Furthermore, poor communication is a common cause of workplace misunderstandings, inefficiencies, and project delays [22].

Creativity

Creativity involves the ability to generate original and valuable ideas that can be applied to solve problems or create opportunities [23], [24]. In today's competitive economy, creativity is considered a core driver of innovation that enables organisations to adapt, grow, and remain relevant [25], [26]. Creative employees contribute to process improvements, product innovations, and novel solutions to operational challenges. Research also links creativity to higher intrinsic motivation, greater learning orientation, and stronger resilience in problem-solving [27], [28]. A workplace that fosters creativity through supportive leadership, a safe environment for idea-sharing, and recognition of innovative contributions tends to experience higher employee engagement and organisational agility [29].

Integrity

Integrity refers to the alignment between one's words, actions, and ethical standards. Alongside conscientiousness, cognitive ability, and job knowledge, integrity is among the most reliable predictors of workplace success [30]. Employees with strong behavioural integrity are more likely to earn trust, build stronger professional relationships, and demonstrate consistent ethical conduct. This, in turn, is linked to greater job satisfaction, reduced stress, and lower absenteeism [31]. A lack of integrity can lead to moral disengagement, unethical behaviour, and reputational damage for both individuals and organisations [32].

Personality

While technical expertise is important, personality traits such as adaptability, emotional intelligence, and self-management are equally influential in determining career success [33]. Self-management includes the ability to regulate emotions, maintain focus, and take initiative without constant supervision. Such traits are particularly valuable in dynamic work environments where employees must often handle multiple tasks, collaborate with diverse teams, and respond constructively to feedback. Research also suggests that self-awareness and empathy contribute significantly to leadership potential and team cohesion [34].

Teamwork Skills

Teamwork involves more than working alongside others and requires a commitment to shared goals, mutual respect, and collaborative problem-solving. Organisations that prioritise teamwork often enjoy better decision-making, greater flexibility, and stronger employee morale [35]. Effective teamwork relies on open communication, trust, and the willingness to share information. Studies indicate that withholding information within teams can lead to misunderstandings, reduced productivity, and interpersonal conflict [36], [37]. Furthermore, teamwork helps employees develop interpersonal skills, build networks, and learn from diverse perspectives, all of which contribute to both individual and organisational growth.

Adaptability

Adaptability refers to the ability to adjust effectively to new conditions, challenges, or technologies. In today's fast-paced business landscape shaped by market fluctuations, technological advancements, and global competition, adaptability is essential [38]. It is now recognised as a distinct dimension of job performance that complements both tasks and contextual skills [39]. Adaptable employees tend to respond positively to change, remain composed under pressure, and quickly acquire new skills. These traits not only enhance individual performance but also help organisations remain resilient and competitive.

Goal Orientation

Goal orientation describes an individual's tendency to approach, interpret, and respond to achievement situations. Those with a proving goal orientation strive to demonstrate their competence and achieve high

performance outcomes [40]. Such individuals often show greater persistence, innovation, and resilience in the face of challenges [41], [42]. They are also more likely to engage in continuous learning, adapt their strategies, and make the most of their skills to reach organisational objectives [43], [44]. Organisations benefit from employees with strong goal orientations because these individuals actively seek improvement, contribute innovative solutions, and inspire their peers to aim higher.

Factors To Be Considered In Hiring Employees At Entry Levels

Research has demonstrated that the autonomy, challenge, and variety of work significantly impact job satisfaction and retention. [45], for instance, found that positive work attitude, teamwork, learning ability, and self-confidence were the most valued attributes among 26 surveyed employers. [46] conducted a more extensive study involving interviews with 30 hiring managers and a follow-up survey of 115 employers, identifying 17 employability factors that were later grouped into five overarching categories: soft skills, problem-solving skills, functional skills, pre-graduate experience, and academic reputation. While these categories provide a broad framework, research in Malaysia and other Asian contexts reveals that employers consider a wider range of determinants, including academic credentials, technical competencies, communication abilities, demographic factors, workplace adaptability, and professional presentation.

Gender

Despite decades of policy initiatives and academic discourse surrounding workplace equality, gender remains a factor that can influence hiring decisions. [47] observed that women often face persistent barriers to job recognition and career advancement, despite formal commitments to equality. The [48] and [49] clarify that gender equality in the workplace entails equal rights, responsibilities, and opportunities for men and women, rather than identical treatment in all circumstances. Equality should be considered in relation to the job scope and its requirements, acknowledging that certain positions may demand role-specific capabilities over demographic considerations. [50] add that, in practice, employers often prioritise candidates who can fulfil the job scope effectively, regardless of gender, suggesting that while equality is an important principle, operational demands often dictate hiring priorities.

Good CGPA

A strong cumulative grade point average (CGPA) is traditionally viewed as a gateway to securing competitive employment opportunities [51]. High CGPAs signal academic diligence and subject mastery, which can be attractive to employers seeking capable candidates. However, this emphasis on academic performance can discourage student participation in co-curricular activities that develop soft skills, such as teamwork, leadership, and adaptability. This imbalance can result in graduates possessing technical knowledge but lacking the interpersonal and personal qualities necessary for workplace success. Therefore, scholars increasingly recommend a balanced approach that combines academic achievement with the acquisition of complementary skills, creating a holistic graduate profile that enhances employability prospects across industries.

Good University Reputation

Institutional prestige plays a significant role in shaping employer perceptions of graduate quality. Researchers have linked elements such as institutional image, branding, ranking, and programme structure to employer preferences [52]. Degrees from highly reputed universities, such as those in the Ivy League, are often perceived as conferring greater employability advantages, even when the actual skills of graduates may not differ significantly from those of peers from less prominent institutions [52], [53]. This perception is influenced not only by the quality of education provided but also by the networks, resources, and prestige associated with the institution, which can facilitate access to desirable employment opportunities.

Good Resume Presentation:

A curriculum vitae (CV) is often the first point of contact between a job applicant and a prospective employer, serving as an essential filter in the recruitment process. An effective CV should be tailored to the targeted role,

clearly presenting achievements and qualifications in a manner that aligns with job requirements [54]. Beyond listing credentials, a CV should communicate professional readiness and suitability for the position. In academic and professional contexts, it also functions as a comprehensive record of experiences and accomplishments, which can help applicants reflect on their career progress and combat challenges such as imposter syndrome [55]. As such, CV presentation is not merely an administrative requirement but a strategic tool in shaping first impressions.

Appearance

Appearance continues to influence recruitment outcomes, particularly in face-to-face interviews. [56] and [57] highlight that physical presentation, including grooming, attire, and body language, can affect perceptions of competence and leadership potential. [58] found that attractive candidates may have an advantage when application quality is low, though this effect diminishes significantly when qualifications are strong. [59] further argue that appearance can influence salary negotiations and daily workplace interactions. These findings suggest that while technical and interpersonal competencies are paramount, physical presentation can act as an amplifying—or diminishing—factor during initial candidate assessments.

Mutual Hobbies

Shared hobbies or interests between candidates and recruiters can foster rapport and signal a potential cultural fit within an organisation. Although less frequently studied in formal employability research, hobbies can convey transferable skills such as teamwork, dedication, and discipline [60]. They may also provide a more holistic picture of the candidate beyond formal qualifications, showing that the individual is well-rounded and engaged in activities outside of work. In some cases, such shared interests can become conversational entry points during interviews, easing communication and building interpersonal connection.

Technical Skills

Particularly in industries that use proprietary systems, specialised tools, or specific software, technical expertise serves as the foundation for role-specific performance. Employers typically anticipate graduates to possess pertinent knowledge and be ready to adjust to job-specific procedures [21]. Despite this, [61] emphasise that soft skills account for up to 85% of the attributes employers seek, indicating that while technical skills are essential for eligibility, interpersonal and cognitive skills often determine long-term employability. This balance underscores the need for educational programmes to integrate technical training and personal development.

Proficiency in English

English proficiency is widely recognised as a core employability skill in Malaysia and abroad. [62] found that both graduates and employers agree on the importance of strong English language skills for workplace communication and career advancement. [63] add that professionals are now expected to demonstrate competence in all language domains—reading, writing, speaking, and listening—in order to succeed in diverse work environments. Such competence is particularly important in global industries where English serves as the primary medium of communication.

Able to Write/Communicate in Mandarin

In multilingual labour markets, proficiency in languages other than English can significantly improve employability. [64] found that Mandarin-speaking candidates often enjoy a competitive advantage in Malaysian job markets, particularly in Chinese-controlled or foreign-owned companies. This is supported by [65] analysis of job advertisements, which revealed that Mandarin proficiency is explicitly required in a notable proportion of vacancies. Companies value such linguistic skills not only for their direct communication with clients, but also for cultural compatibility within the workplace.

Participation in Co-Curricular Activities

Participation in co-curricular activities provides a platform for students to develop industry-relevant soft skills, including leadership, communication, teamwork, and problem-solving [66]. Such activities also promote self-

confidence and character development, preparing graduates to engage effectively in professional settings. Employers often view these experiences as indicators of a candidate's ability to collaborate and adapt, complementing their academic achievements with practical interpersonal competencies.

Communication Skills during Interview

Communication is one of the most frequently used skills in professional life, with engineers and other professionals spending more than half their working hours on various forms of communication, including meetings, presentations, and informal discussions [67], [68]. Effective communication during interviews—through clarity, active listening, and persuasive expressions—can demonstrate both technical competence and interpersonal ability, signalling a candidate's readiness to work collaboratively within organisational structures.

Able to Answer Questions during Interview

The ability to respond effectively to interview questions provides reveals a candidate's motivation, adaptability, and professional fit. Interviews are not only assessments conducted by employers but also opportunities for candidates to evaluate organisational cultures and expectations. Clear, concise, and confident responses can strengthen a candidate's position, particularly when combined with strong supporting evidence of skills and experiences.

Experience from Previous Internship

Internship experience serves as a bridge between academic preparation and professional practice, providing candidates with first-hand exposure to workplace norms, challenges, and expectations. [69] and [70] note that employers value internships for their role in cultivating adaptability, problem-solving, and industry-specific competencies. While technical skills can often be developed on the job, prior exposure to professional environments can accelerate integration and performance in entry-level roles.

Willingness to Work Overtime

Organisational culture, managerial expectations, and individual motivation often shape the willingness to work beyond standard hours. [71] and [72] found that in some contexts, consistent overtime is considered a normal and expected aspect of work life. While excessive overtime can lead to burnout, employers may view flexibility in working hours as a sign of commitment and resilience, particularly in fast-paced or project-driven industries.

Willingness to Work Outstation

In project-based industries, flexibility in work location can be critical to career advancement. [73] highlight that commuting time and location assignments influence work–life balance, with extended periods away from home potentially impacting personal well-being. Nevertheless, willingness to work outstation can significantly expand career opportunities, particularly for roles requiring on-site presence across multiple locations.

Relevant Salary Expectations

Realistic salary expectations are an important consideration in the hiring process. [74] note that in high-stress sectors with persistent skills shortages, such as construction, unrealistic salary demands can reduce hiring prospects. Candidates who align their expectations with market standards are more likely to secure positions, as this indicates an understanding of industry norms and organisational constraints.

MATERIALS AND METHODS

This study employed a two-stage method, which was the data collection, while the subsequent phase encompassed the analysis of the collected data. The data collection method involving conducting a survey. A questionnaire is designed using the Likert scale and has been validated by an expert. A pilot test also has been

conducted before the questionnaire is distributed to the respondent. The results were organised in a structured manner and analysed in accordance with a specific statistical methodology that was compatible with the research objective.

Data Collection Method

Questionnaire Design

A set of questionnaires was designed as an instrument to collect data directly from the respondents. The questionnaires consist of 28 questions, which have been developed in English. These questions have been divided into three sections. Section A is aimed at collecting the demographic information of the respondents. Section B collects data on the skills employers look for when hiring employees. Section C, the final part, aims to identify the crucial factors employers should take into account when hiring employees at entry-level positions.

The items formulated in this study have been addressed by doing a content analysis of the literature review. The seven-point Likert Scale, ranging from 1, which represents 'strongly disagree', to 7, which represents 'strongly agree', was used to measure each variable in Sections B and C.

Validity and Reliability of Instrument

The questionnaire's content was validated by a panel of experts, including an associate professor from the School of Engineering, Faculty of Civil Engineering, Universiti Teknologi MARA Shah Alam, Malaysia. Feedback on the final items is provided to evaluate the questionnaire's validity and reliability. Revisions were made to the wording and structure based on feedback to improve clarity and streamline the question sequence. Prior to conducting the pilot test, thirty students were randomly selected to assess clarity, importance, and acceptance. The Cronbach's alpha coefficient was calculated to assess the project instrument's dependability.

Questionnaire Survey:

The questionnaire forms were administered manually among potential respondents to obtain responses from the respondents. The respondents were asked to respond to the question based on individual insight. After respondents completed answering the questionnaire, the responses were submitted on the survey form to the researcher.

Data Analysis Method

The obtained data was inputted into Microsoft Excel and thoroughly examined for any errors or redundancies to ensure its accuracy. Subsequently, the data was inputted into the data analysis software, Statistical Package for the Social Sciences (SPSS) version 22. This program is used to systematically arrange and scrutinise all the accessible data that is collected from the questionnaires. The acceptable range for skewness is -2 to +2. [75]. In this study, the skewness results fall in the range of -2 to +2 which complies with the accepted range suggested by the previous researchers.

RESULTS AND DISCUSSION

Cronbach's Reliability Test

The reliability coefficients for all variables utilised in this study are presented in Table I. Reliability testing evaluates the consistency and stability of measurements, which is essential for ensuring accuracy, drawing valid conclusions, and maintaining the quality and rigour of research findings [76]. As stated by [77], Cronbach's alpha values below 0.6 are regarded as poor, 0.70 as good, and greater than 0.8 as very good. Instruments with values of 0.9 or higher are considered to have an excellent standard. The reliability test results indicate that the Cronbach's alpha value for the construct under investigation ranges from 0.863 to 0.927, following the completion of pilot testing. This suggests that all variables possess a reliability value exceeding 0.80. The internal consistency and dependability of the questionnaires can be deemed satisfactory and acceptable. As a result, no item removal was necessary from the design instruments.

Table I RELIABILITY TESTING

Construct Variables	Nos. of items	Cronbach's Alpha Coefficient	Strength of Association
Important employee skills	8	0.927	Excellent
Factors in hiring employees for entry-level	16	0.863	Very good
Total	24	0.902	Excellent

Respondents' Demographics

Table II presents the reliability coefficients for all variables used in this study. The gender distribution among the respondents is skewed towards females, with 60% of the respondents being female and 40% being male. A significant majority of the respondents (86.7%) are from the private sector, while a smaller portion (13.3%) are from the public sector. The respondents hold various designations, with the majority being supervisors (65.7%). Managers make up 16.7% of the respondents, while Vice Managers constitute 34.3%. A small percentage of respondents are Heads of Departments (3.3%), and a single respondent falls under 'Others'. The respondents have varied industry working experiences. The largest group has 1 to 5 years of experience (31.4%), closely followed by those with 6 to 10 years (27.1%) and 11 to 15 years (25.7%) of experience. Respondents with over 15 years of experience make up 15.7%, and those with less than a year of experience constitute a small percentage.

Table II DEMOGRAPHIC INFORMATION ABOUT THE RESPONDENTS

Demographic aspect	Items	Frequency	(%)
Gender	Male	42	60
	Female	28	40
Sector	Public	24	34.3
	Private	46	65.7
Designation	Manager	11	15.7
	Vice Manager	2	2.9
	Head Of Department	17	24.3
	Supervisor	24	34.3
	Others	16	22.9
Industry working experience	1 to 5 years	22	31.4
	6 to 10 years	19	27.1
	11 to 15 years	18	25.7
	15 years and above	11	15.7

This data provides valuable insights into the demographic composition of the study's participants, which can be useful for understanding the context of the study and interpreting its results. It's important to note that the data represents the specific group of individuals who participated in this study and may not be representative of the broader population.

Relative Importance Index Analysis

This study utilised the Relative relevance Index's (RII) approach, which assigns a value to indicate the degree of relevance in a sorted order. As stated by [78], the Relative Importance Index (RII) method is employed to assess the relative significance of specific causes and effects in terms of their likelihood of occurrence and impact on the project. This is done using a Likert scale consisting of seven levels. Equation 1 is being implemented in Microsoft Excel 2016 to compute the Relative Importance Index (RII) for each group of items. This study uses the RII (Relative Importance Index) to identify the skills required among the employees from the perspective of the employer. A higher value of the RII indicates the presence of a crucial cause or impact component.

$$\text{Relative Importance Index} = \frac{\Sigma w}{AN} = \frac{7n_7 + 6n_6 + 5n_5 + 4n_4 + 3n_3 + 2n_2 + 1n_1}{7N}$$

…Equation 1

where w is the respondent's weighting of each factor, which can range from 1 to 7; for instance, n_1 represents the number of respondents for Strongly Disagree, n_2 represents the number of respondents for Disagree, n_3 represents the number of respondents for Somewhat Disagree, n_4 represents the number of respondents for Neither Agree or Disagree, n_5 represents the number of respondents for Somewhat Agree, n_6 represents the number of respondents for Agree, and n_7 represents the number of respondents for Strongly Agree. Thus, the highest weight (in this case, 7) is A, and the total number of people is labelled N. The RII ranges from 0 to 1.

Relative Importance Index (RII) Analysis on Skills Required among Workers

The Relative Importance Index (RII) analysis provided a ranked perspective on the skills considered most important by employers in the construction industry, which is a key segment of the engineering sector. Table III revealed that 'Positive Attitude' (RII = 0.959) and 'Teamwork Skills' (RII = 0.951) were the top-ranked attributes, which suggests that these are criteria or skills that are being looking for by the organisation in hiring a worker, followed closely by 'Integrity', 'Communication Skills', and 'Adaptability to Change'. The remaining skills—'Goal Orientation', 'Creativity', and 'Personality'—also received high RII scores, with only slight differences in values. The narrow range between the highest and lowest RII scores (0.959–0.902) indicates that all these skills are valued by employers, with personal and interpersonal competencies being particularly prioritised.

These findings align closely with the broader literature on employability in the engineering industry. As discussed previously, the modern workplace places a premium on attributes that extend beyond technical proficiency, such as collaboration, adaptability, and effective communication, which are essential for career success and workplace harmony. For instance, [7] emphasise that qualities such as strong communication skills and moral grounding enhance graduate marketability, while the Malaysia Education Blueprint 2015–2025 underscores the need for holistic, entrepreneurial, and well-rounded individuals. The high RII rankings for 'Positive Attitude' and 'Teamwork Skills' in this study reinforce these national policy objectives and confirm that interpersonal and behavioural qualities remain decisive factors in hiring decisions.

Table III ON SKILLS REQUIRED AMONG THE WORKERS

Skills required amongst workers	Frequency							Mean	RII	Rank
	1	2	3	4	5	6	7			
Positive attitude	0	0	0	0	0	20	50	6.714	0.959	1
Teamwork skills	0	0	0	0	2	20	48	6.657	0.951	2
Integrity	0	0	0	0	2	27	41	6.557	0.937	3
Communication skills	0	0	0	0	1	32	37	6.514	0.931	4
Adaptable to change	0	0	0	0	3	28	39	6.514	0.931	5
Goal-oriented	0	0	0	0	6	29	35	6.414	0.916	6
Creativity	0	0	0	0	9	24	37	6.400	0.914	7
Personality	0	0	0	0	7	34	29	6.314	0.902	8

The ranking of 'Communication Skills' in fourth place, despite its strong support in literature (e.g., [21]; [22], may reflect the fact that, within construction contexts, effective teamwork and a cooperative attitude are perceived as more immediately impactful on day-to-day operations than individual communication prowess. Nevertheless, the RII value for communication is only marginally lower than the top-ranked attributes, suggesting that it remains an essential competency for project coordination, client relations, and conflict resolution. The prominence of 'Integrity' in the top three further validates the literature linking ethical conduct with long-term organisational trust and performance [30][31]. In industries like construction, where safety, compliance, and contractual obligations are paramount, integrity is not merely a desirable trait but a professional necessity. Similarly, 'Adaptability to Change' ranks fifth, aligning with research that positions adaptability as a core dimension of job performance in dynamic environments [38].

Interestingly, while 'Creativity' and 'Personality' received slightly lower rankings, their relatively high RII scores indicate they are still valued, albeit less than attributes linked to reliability, cooperation, and ethical behaviour. This may be due to the industry's operational focus on standardised procedures and safety protocols, where creativity is often important but secondary to compliance and teamwork.

Relative Importance Index (RII) Analysis on Factors to be considered in Hiring Employees at Entry Levels

This section provided a ranked perspective on the factors considered most important by employers when hiring entry-level employees in the construction sector, which is a key segment of the engineering industry. Table IV shows that 'Willingness to Work Outstation' (RII = 0.882) and 'Willingness to Work Overtime' (RII = 0.876) were the top-ranked attributes, indicating that employers place strong emphasis on adaptability to work location and time demands. This finding reflects the operational realities of the construction industry, where projects are often site-based, and deadlines may necessitate extended working hours. Such adaptability is directly linked to project success, echoing [38], who identified adaptability as a core component of job performance.

Table IV RII On Factors To Be Considered In Hiring Employees At Entry Levels

Skills required amongst workers	Frequency							Mean	RII	Rank
	1	2	3	4	5	6	7			
Willingness to work outstation	0	0	1	2	9	30	28	6.171	0.882	1
Willingness to work overtime	0	0	1	1	12	30	26	6.129	0.876	2
Relevant salary expectations	0	0	1	3	5	40	21	6.100	0.871	3
Communication skills during interview	0	0	2	0	8	42	18	6.057	0.865	4
Able to answer questions during interview	0	0	1	0	10	42	17	6.057	0.865	5
Technical skills	0	0	1	2	11	41	15	5.957	0.851	6
Experience from previous internship	0	0	0	7	18	34	11	5.700	0.814	7
Appearance	0	1	2	7	16	30	14	5.629	0.804	8
Good resume presentation	0	1	1	8	21	29	10	5.514	0.788	9
Proficiency in English	1	0	2	6	21	35	5	5.443	0.778	10
Participation in co-curricular activities	1	1	5	13	10	32	8	5.257	0.751	11
Good CGPA	0	1	3	13	22	24	7	5.229	0.747	12
Good university reputation	0	3	3	15	19	25	5	5.071	0.724	13
Mutual hobbies	0	9	10	15	14	16	6	4.514	0.645	14
Gender	5	5	2	22	15	18	3	4.471	0.639	15
Able to write/ communicate in Mandarin	10	9	11	22	7	9	2	3.600	0.514	16

The third-ranked factor, 'Relevant Salary Expectations' (RII = 0.871), suggests that employers value candidates who demonstrate market awareness and realistic remuneration demands, which can signal maturity and a practical understanding of industry standards. Close behind, 'Communication Skills during Interview' and 'Ability to Answer Questions' (both RII = 0.865) highlight the importance of effective interpersonal

communication in creating a strong first impression during recruitment. This aligns with [79], who emphasised that communication is a key employability skill that signals professionalism, confidence, and the ability to collaborate.

'Technical Skills' (RII = 0.851) and 'Internship Experience' (RII = 0.814) were also considered important, though they ranked below adaptability and communication-focused attributes. This reflects [46], who found that employers often prioritise interpersonal and workplace adaptability over purely technical competencies, particularly at the entry level. While technical skills remain essential for job performance, the results indicate they are evaluated alongside, rather than above, workplace readiness. Academic indicators such as 'Good CGPA' (RII = 0.747) and 'Good University Reputation' (RII = 0.724) ranked noticeably lower, supporting [46] who concluded that academic reputation is among the least critical factors in employer decision-making. Similarly, [66] and [52] advocate for a holistic evaluation of graduate potential that goes beyond academic performance.

Lower-ranked factors—'Mutual Hobbies' (RII = 0.645), 'Gender' (RII = 0.639), and 'Ability to Communicate in Mandarin' (RII = 0.514)—mirror findings by [47] and [64], which suggest that while such attributes may offer advantages in specific contexts, they rarely outweigh core job readiness factors. This further reinforces the conclusion that employers in the construction industry place the highest value on adaptability, realistic expectations, and communication skills, with technical abilities and academic achievements playing secondary roles in hiring decisions. By discovering these aspects, it offers valuable insights that help fresh graduate job seekers recognise which attributes to emphasise when preparing their applications.

CONCLUSIONS

The RII analyses provide empirical evidence on the competencies and factors most valued by employers in the engineering and construction sectors, particularly for entry-level recruitment. Findings indicate that interpersonal and behavioural attributes—such as positive attitude, teamwork skills, and integrity—are consistently prioritised over purely academic credentials. Technical competencies, adaptability, and communication skills also rank highly, reflecting the demands of dynamic and collaborative work environments. For entry-level hiring specifically, operational readiness factors, including willingness to work outstation, willingness to work overtime, and realistic salary expectations, are strongly emphasised, signalling employer preference for candidates who demonstrate flexibility and commitment to organisational needs.

Lower-ranked factors, such as mutual hobbies, gender, and ability to communicate in Mandarin, while contextually advantageous, have limited influence compared to core employability attributes. This hierarchy aligns with existing literature that underscores the need for a holistic evaluation of graduates, integrating behavioural, practical, and technical dimensions. The outcomes of this study offer actionable insights for both stakeholders: employers can refine selection criteria to target qualities that enhance productivity and retention, while fresh graduates can strategically develop and highlight these attributes to improve employability prospects.

This study has several limitations that should be noted. The survey was limited to selected employers in Malaysia, which may not fully reflect the diversity of the engineering industry, and the findings did not account for variations across different engineering disciplines. As a cross-sectional study, it only captures employer expectations at a single point, while responses were based on perceptions that may not always align with actual hiring practices. In addition, the use of a purely quantitative approach provided rankings of skills and hiring factors but did not explain the underlying reasons for employer preferences. Future research should therefore include larger and more diverse samples across engineering sectors, adopt longitudinal designs to track evolving expectations, and incorporate qualitative methods such as interviews or focus groups to provide more profound insights. Exploring broader influences such as workplace culture, global industry trends, and sector-specific needs would also help build a more comprehensive understanding of engineering employability.

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