



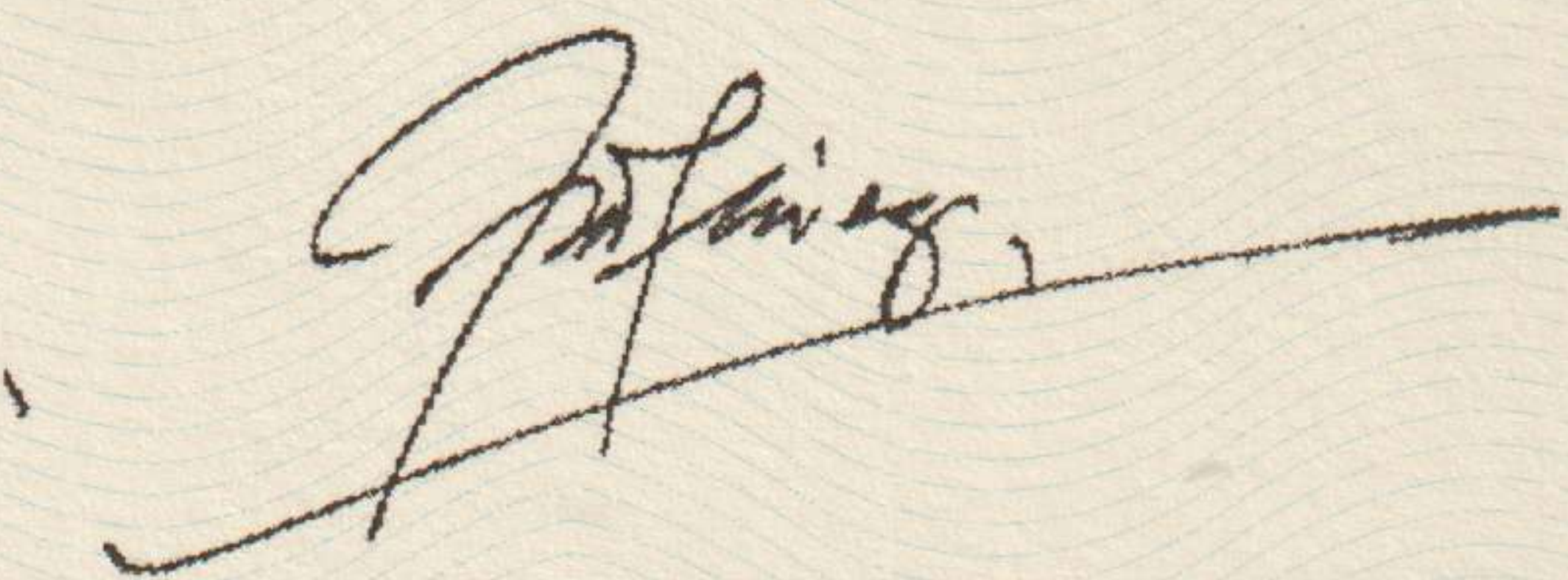
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RESEARCH ARTICLE

Contributing Factors to Job Preparedness among Undergraduate Students: A Rapid Review

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ARTICLE INFO	ABSTRACT
Received: Jul 24, 2024	Undergraduate students, who are responsible for equipping themselves with the university's guidance, possess a mutual vision in getting well for job preparedness. However, the endeavours are not promising for obtaining employment. This study seeks to develop a solid body of information regarding the elements that contribute to work preparation among undergraduate students through a comprehensive and efficient evaluation of existing literature. A rapid literature review method was employed in selecting the ten relevant articles. The process involved searching articles from two databases using specific keywords. The screening process involved the exclusion criteria, which encompassed studies that focused solely on evaluating the effectiveness of a particular job-related training and samples that were not undergraduate students. The results revealed that the papers were authored by researchers from the United States, China, Australia, Canada, and the United Kingdom. The relevant factors discovered were categorised as either environmental, personal, or a combination of both. However, personal factors have received greater emphasis. The findings revealed that it is crucial to encourage individuals' ideas and motives, which are essential for ensuring mental well-being. In addition, the environmental aspects were portrayed as resources, providing opportunities for students to adequately prepare for their profession. However, the degree to which students are job-prepared heavily relies on their awareness of the knowledge they have acquired, enabling them to be self-assured and accountable to both themselves and society. Therefore, it is recommended that universities provide additional programmes that not only prioritise education but also aim to raise awareness of their capabilities.
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INTRODUCTION

In the current job market, the skills and abilities necessary to excel in a specific occupation are increasingly crucial (Kaplan, 2023; Mainga et al., 2022; Siddiky & Akter, 2021). Various industries use advertising to recruit individuals with specific skills. The revolution has also increased work requirements (Quaratul Aini et al., 2020). As a result, universities have made significant efforts to meet these expectations by offering high-quality degrees. The purpose of this action is to guarantee that graduates are able to obtain a wide range of skills and abilities. Nevertheless, various companies persist in facing a shortage of proficient individuals. Furthermore, Quaratul Aini et al. (2020) discovered that the graduates exhibit a deficiency in self-confidence regarding their job-related abilities. This deficiency in confidence may have an impact on how prepared they are for

employment, as described by the Social Cognitive Theory (SCT) and Holland's theory (Batisfta & Gondim, 2022), emphasising the rationale of equipping individual confidence with various competencies. This highlights the importance of identifying contributing factors to job preparedness, which can be completed through academic programmes. In response to this issue, it was proposed that the university should address it by engaging in partnerships with industries (David, 2024). Besides cognition and skills, tackling psychological factors within the social networking environment is also crucial (Bottaro & Faraci, 2022; Ricciardi et al., 2022; Vespa et al., 2022; Greenhill, 2010).

Recently, there has been a focus on career competency and the need for self-reliant preparedness for the 21st century workforce environment among undergraduate students, aiming to enhance individuals' independence and self-management (Chaiyama & Kaewpila, 2021; Harper-Young, 2018; Hirschi & Koen, 2021). However, they placed less emphasis on their preparedness for the latest job conditions in the future, given the increasing challenges of competing to remain resilient in the digital world (Chen et al., 2020). Following this, it informs the need to develop more relevant instruments for assessing job preparedness for reflecting on personal attributes, networking, self-profiling, exploring different work opportunities, and taking charge of one's career (Akkermans et al., 2013). Hence, this study aims to explore more factors contributing to job preparedness via a rapid literature review as described in the methodology. The primary goal of the literature review was to investigate job preparation among undergraduates and identify the important components contributing to it, thereby facilitating further exploration of the present circumstances.

METHODOLOGY

The search keywords utilised in the present study were derived from the analogous keywords of four pivotal terms: "factor," "job," "preparedness," and "undergraduate." The relevant articles were identified during the initial search by utilising the Scopus and Web of Science (WoS) databases. Subsequently, the articles were chosen according to specific criteria for inclusion and exclusion. The chosen publications meet the necessary methodological criteria to support the findings.

The Preferred Reporting Items for the rapid literature review (RLR) was employed in selecting articles for the review. This process was conducted within a limited time frame. Like a systematic literature review, RLR also starts with the steps of determine research questions, searching articles with keywords with inclusion and exclusion criteria even though RLR has a limited scope if compared to systematic literature review (Maureen Dobbins, 2023). In RLR, the search of articles was guided with the research objective of identifying factors that influence undergraduate students' job preparedness. The significance of using RLR is supported by current studies which also employed RLR for identifying challenges to applying role playing (Hidalgo et al., 2024). This study relied on two types of digital database (Web of Science and Scopus) to collect data. This way of retrieving articles was used in previous study (Hidalgo et al., 2024) too. Figure 1 shows the RLP flow diagram. The search keywords yielded two results in the WoS database and thirteen results in the Scopus database. Two articles were removed from the list before the screening due to the duplicate. The screening approach entailed a manual evaluation, utilising certain criteria, to identify research studies that focused on undergraduate students currently enrolled in or just graduating from university. The exclusion criteria encompassed studies that focused solely on evaluating the effectiveness of a particular job-related training, namely robotics, and the article that focused on excessively specialised abilities in surgical skills.

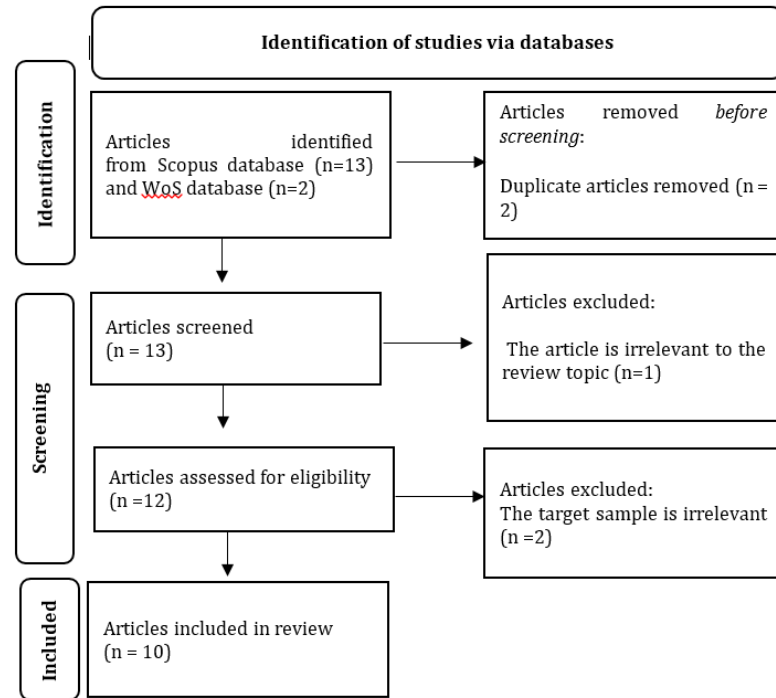


Figure 1 A modified PRISMA flow diagram for the rapid literature review

The data obtained from Mendeley was exported in the RIS format and subsequently processed using NVIVO software to get analytical results. The NVIVO software was used to systematically arrange the data by employing functions such as coding, categorization, and memos.

The aim of this study is to determine the factors that are examined in determining the job preparedness of undergraduate students. The discovery examines the extent to which previous research emphasised factors that contribute to the development of job opportunities for undergraduate students. Therefore, this study classifies the pertinent elements using the coding technique. In addition, the factors were classified based on years and target samples using the categorization feature in NVIVO.

FINDINGS

The 10 articles underwent a review process and were classified into categories depending on the factors discussed in their content. The coverage of factors (Figure 2) was divided into three percentages: 10% for personal factors, 10% for environmental factors, and 80% for combined personal and environmental elements. Career studies typically analyse these elements separately, as outlined in a recent study (McKissick et al., 2023; Bhuiyan et al., 2024) that emphasises the substantial influence of both personal and environmental factors on the development of job preparedness. Among the personal factors, self-efficacy is a distinct illustration of the individual elements involved in professional development, in addition to external variables. Self-efficacy in managing one's beliefs while seeking a job, along with understanding of career development techniques in a particular environment, may guide an individual towards success (Hirschi & Koen, 2021; Siddiky & Akter, 2021). On the other hand, environmental factors such as well-guided study environments and enrichment programmes were expected to provide strategies for equipping themselves with relevant knowledge (Siddiky & Akter, 2021; Lan et al., 2024).

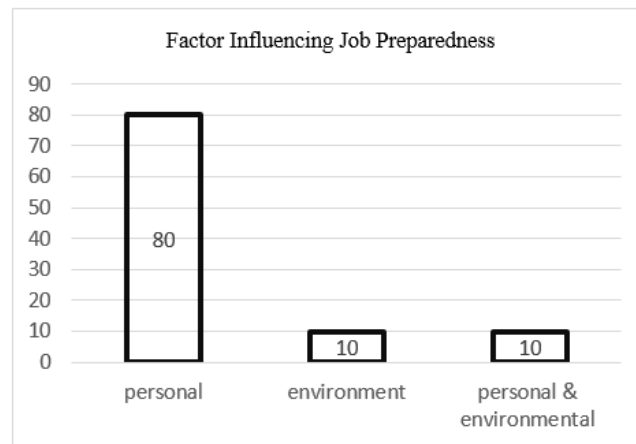


Figure 2. Percentage of factors of job preparedness (Total papers, n = 10)

Table 1 displays the methodological reporting of the research. Several countries primarily registered the research outputs, including the USA, China, Australia, Canada, and the UK. The samples involved were from the USA (30%), Australia (30%), Canada (20%), the UK (10%), and China and Malaysia (10%). Therefore, the concerns of researchers regarding job preparedness were not exclusive to any particular country. Universities around the world are taking many more steps to improve the process of preparing undergraduate students to get jobs.

Table 1 summarises the articles' content. All the articles were identified for their factors and related aspects. The topics align with the discussion's content. The coding pertains to the ongoing research, which specifically examines environmental (E), personal (P), and both environmental and personal (EP) aspects. These components were distributed as follows: 10% for environmental factors, 10% for personal factors, and 80% for both environmental and personal factors. The primary emphasis on environmental factors was reported based on the creation of chances to enhance employability and the retention of skills (Goodwin et al., 2019). On the other hand, the emphasis on personal factors involves students' satisfaction with their academic and personal development, as well as their sense of job preparedness (James & Yun, 2018). The primary areas of interest in both environmental and personal aspects involve examining an individual's confidence in performance and the necessity of offering resources (McKissick et al., 2023), as well as providing direction to enhance resources specifically for improving practical skills (Salazar-Gómez et al., 2023). Particularly, other than focusing on environmental resources and support, key factors were identified, involving self-determination (Naylor, 2022), individuals' level of preparedness in terms of soft skills (Teng et al., 2019); life skills, accountability, and self-assurance in dealing with future employment (Coates et al., 2012); mental health support for future growth (Happell, 2009); and the incorporation of attitudes and experiences gained during an individual's educational journey (Happell, 2008).

Table 1 Summary of the articles

	Year	Reference	Key research focus	Factor E: environmental P: personal EP: environmental & personal	Sample (country)
1	2023	McKissick, B. R., Wrenn, M., & Vach, S. (2023). Exploring Preparedness to Enter the Field: A Q Method Approach to Understanding a Beginning Rural	This study investigated the impact of job preparedness on beginning special	EP	USA

		Special Education Educator Preparation Program. <i>Rural Special Education Quarterly</i> , 42(3), 162–175. https://doi.org/10.1177/87568705231182439 McKissick et al. (2023)	educators' confidence in their job responsibilities. Two main aspects were observed: personal factors, such as self-efficacy, and environmental factors, which include support for engaging in professional practice and being a collaborative leader.		
2	2023	Salazar-Gómez, A. F., Bagiati, A., Álvarez, J. M., Beshimov, E., & Breazeal, C. (2023). The Global Apprenticeship Program (GAP): Bridging the Gap Between Talent and Opportunities. <i>2023 IEEE Frontiers in Education Conference (FIE)</i> , 1–9. https://doi.org/10.1109/FIE58773.2023.10343009	This study designed a program for job preparedness, focusing on two main aspects: personal factors, such as self-efficacy in preparing to bridge the gap between academic training and workplace requirements, and environmental factors, which include supporting necessary workplace skills and fostering a positive work environment.	EP	USA
3	2022	Tomlinson, M., McCafferty, H., Port, A., Maguire, N., Zabelski, A. E., Butnaru, A., Charles, M., & Kirby, S. (2022). Developing graduate employability for a challenging labour market: the validation of the graduate capital scale. <i>Journal of Applied Research in Higher Education</i> , 14(3), 1193–1209. https://doi.org/10.1108/JARHE-04-2021-0151	This study provides knowledge pertaining to the validity of a job preparedness instrument, the 'Graduate Capital Scale'. The instrument's content focuses on two aspects: personal factors, involving personal factors, such as self-confidence in entering the job market with social skills and job-related skills from education, and environmental factors, including training activities.	EP	UK
4	2022	Naylor, R. (2022). Key factors influencing psychological distress in university students: the effects of tertiary entrance scores. <i>Studies in Higher Education</i> , 47(3), 630–642. https://doi.org/10.1080/03075079.2020.1776245	This study investigated key factors that influence students' study and future life demands, including job preparedness. The two aspects are: personal factors, including self-determination in mitigating depression	EP	Australia

			and stress, and environmental factors, including supports and resources in managing stress for coping with study and life demands.		
5	2019	Teng, W., Ma, C., Pahlevansharif, S., & Turner, J. J. (2019). Graduate readiness for the employment market of the 4th industrial revolution. <i>Education + Training</i> , 61(5), 590–604. https://doi.org/10.1108/ET-07-2018-0154	This study examines students' perceptions of universities' experiences pertaining to job preparedness in two aspects: personal factors, including soft skills, and environmental factors, involving the university's role in developing curricula.	EP	China and Malaysia
6	2019	Goodwin, J.T, Goh, J., Verkoeyen, S., & Lithgow, K. (2019). Can students be taught to articulate employability skills? <i>Education + Training</i> , 61(4), 445–460. https://doi.org/10.1108/ET-08-2018-0186	This study investigates the possibility of undergraduate students articulating their employability skills via a course-level teaching intervention. This study suggests that environmental factors have an impact on resource provision, highlighting the importance of the university's role in job preparedness.	E	Canada
7	2018	James, M., & Yun, D. (2018). Exploring student satisfaction and future employment intentions. <i>Higher Education, Skills and Work-Based Learning</i> , 8(2), 117–133. https://doi.org/10.1108/HESWBL-03-2017-0019	This study investigated students' satisfaction with their academic and personal development, as well as their sense of job preparedness. This study advocates for universities to prioritize academic development as it fosters students' progress through positive personal factors.	P	Canada
8	2012	Coates, W. C., Spector, T. S., & Uijtdehaage, S. (2012). Transition to Life—A Sendoff to the Real World for Graduating Medical Students. <i>Teaching and Learning in Medicine</i> , 24(1), 36–41. https://doi.org/10.1080/10401334.2012.641485	This study underlines that students' experience in universities has some impact on their attitudes. The study specifically highlights two aspects: personal factors, such as cultivating positive attitudes to maintain mental health, and environmental factors, such as gaining	EP	USA

			clinical experience.	workplace		
9	2008	Happell, B. (2008). The importance of clinical experience for mental health nursing – Part 1: Undergraduate nursing students' attitudes, preparedness and satisfaction. <i>International Journal of Mental Health Nursing</i> , 17(5), 326–332. https://doi.org/10.1111/j.1447-0349.2008.00555.x	This study underlines the influence of university experiences on students' attitudes and shows that students' experience in universities has some impact on their attitudes. The study specifically highlights two aspects: The study specifically focuses on two aspects: personal factors, such as cultivating positive attitudes and their perceptions towards mental health practice, and environmental factors, such as gaining clinical workplace experience.	EP		Australia
10	2008	Happell, B. (2009). The importance of clinical experience for mental health nursing – Part 2: Relationships between undergraduate nursing students' attitudes, preparedness, and satisfaction. <i>International Journal of Mental Health Nursing</i> , 17(5), 333–340. https://doi.org/10.1111/j.1447-0349.2008.00556.x	This study underlines the impact of university experiences on nursing students' attitudes towards mental health nursing. The study specifically highlights two aspects: personal factors, such as cultivating positive attitudes and perceived preparedness for mental health practice, and environmental factors, such as gaining clinical workplace experience	EP		Australia

The overall summary of the articles (in Table 1) revealed that both personal and environmental factors contribute significantly to the development of job preparedness. This result supports current findings (McKissick et al., 2023).

The results specifically revealed the importance of soft skills in ensuring job preparedness (Teng et al., 2019). James & Yun (2018) always focused on the success of fostering soft skills and knowledge to prepare undergraduate students for future job development. Coates et al. (2012) viewed the soft skills as life skills that enhance students' confidence and responsibility for job readiness. They observed all these skills during their time at university. As a result, the experiences gained during an individual's educational experience at the university have a significant impact on their preparedness for employment (Coates et al., 2012; Happell, 2008). Nevertheless, prioritising students' mental health is crucial for the continued advancement of individual aspects (Happell, 2009). Hence, it is evident that self-efficacy and other psychological factors are relevant to job preparedness. While universities focus on strengthening the psychological factor to increase students' confidence and sense of responsibility, they also focus on extra guidance for job preparedness, including courses for real-life skills, community building, and others (Salazar-Gómez et al., 2023). Researchers created instruments for skill and knowledge assessment (Tomlinson et al., 2022). The review revealed that the university educational experiences were highly focused on soft skills and life skills development. However, a lack of awareness among students may lead to the retention of these skills. Following this, there have been recent studies focusing on the creation of awareness using employability skill articulation (Goodwin et al., 2019).

Hence, universities play a large role in equipping relevant knowledge and skills, focusing on environmental and personal factors. Nevertheless, to what extent the students possess job

preparedness depends much on the students' awareness of their gained knowledge for them to be confident and responsible to themselves and society.

DISCUSSION

This study showed that different environmental and social supports have an impact on job preparedness, aligning with SCT theory. The environmental factors are various. This study focused on the efforts made by universities to provide relevant resources and support. Universities, which focus on producing knowledgeable and skilled workers, are responsible for talent development and subsequently prepare talent pools for industries and economic activities. Given this, higher institutions strive to establish a comprehensive environment that fosters the development of competent skills and instills confidence in students to secure a career (Chigbu & Nekhwevha, 2022). Nevertheless, even though the classroom environment fosters the development of more structured knowledge, students should seek out multiple sources of knowledge acquisition, demonstrating more effort and increasing awareness of what they have learned and how it contributes to their jobs. On this matter, the university should create a developmental environment that allows students to benefit from multiple environments (Bandy, 2023; Vermeulen & Schmidt, 2008), which involve all parties or stakeholders such as students and their parents, instructors, university management, government, industries, and societies. This transpires in the classroom, unlocking the extraordinary potential of communication and career-related skills within the surrounding communities (Haleem et al., 2022; Cummings, 2000). It is more encouraging if more parties are involved, such as the local team of researchers, community partnerships, and more. This implies that the classroom environment provides students with opportunities to enhance their understanding of their acquired knowledge and strengthen their confidence in their ability to apply practical skills effectively. Given the context, it is crucial to acknowledge the significance of social, community, and family support, as they can offer more comprehensive guidance as compared to relying just on the institution (Ahmad et al., 2019). Current studies have emphasised the importance of industries acting as communities to collaborate with colleges (David, 2024). This, in turn, has supported the previous practice of improving and enhancing interactions between individuals in many aspects and environments (Demetriou et al., 2017).

On the other hand, personal factors were discovered as one of the factors in this study. Personal factors include self-efficacy as the main factor contributing to job preparedness. The role is becoming more important as students are facing challenges in creating a valuable experience by exploring advanced technology and materials in a competitive environment. They need to persist through challenges in university and in their future lives. Their persistence is observed in self-efficacy (de Terte et al., 2009; Luthans et al., 2006; Masten, 2001). Assessing self-efficacy is essential to increasing belief in their ability to successfully overcome problems and achieve specific goals (Bandura, 1997). It is worth observing their self-efficacy because it enables identifying individuals who focus on processes for achieving various outcomes in affective, cognitive, and psychomotor domains (Bloom et al., 1956).

This study indicated that universities play a major role in facilitating knowledge and skill transfer. The university's environmental resources provide not only resources but also social and psychological support, such as increasing self-efficacy and, consequently, improving students' perceived learning outcomes. This is further suggested: the university's environment should provide various aspects of environmental support and motivation to develop self-efficacy, both directly and indirectly (Vermeulen & Schmidt, 2008).

The Social Cognitive Career Theory (SCCT) (Lent et al., 1994) suggests that individuals' academic knowledge influences their skills as well as their selection of jobs. It specifically guides individuals' behaviour choices based on personal and environmental factors, such as their university experiences. Aside from that, an individual's self-efficacy, outcome expectations, and personal goals significantly

shape and reshape their interests (Holland, 1997). It highlights the significance of both environmental and personal factors in determining career success (Vermeulen & Schmidt, 2008). Observing the development of students' personalities in university is crucial, as these factors shape them throughout their lives. More importantly, each individual demonstrates their abilities through their knowledge and behaviour (Marciniak et al., 2022). SCCT specifically guides individuals' behaviour choices based on personal and environmental factors, such as their university experiences. Figure 3 illustrates how the two factors complement each other. The conceptual framework demonstrates how the theory of SCCT for job preparedness integrates environmental and personal factors. In particular, the environment influences students' awareness of their own learning, and vice versa; their interest encourages them to further engage and utilise resources.

When searching for job opportunities among undergraduate students, it is advised that students focus on developing their talents (Mohd Salleh et al., 2019) and personal abilities (Mohd Salleh et al., 2017), rather than relying solely on the instruction provided by the institution. Nevertheless, current technological advancements and challenges have made getting a job more difficult because the demand for skills is increasing (Ra et al., 2019). Therefore, undergraduate students should grab any opportunities for growth beyond the knowledge and skills taught in university programmes.

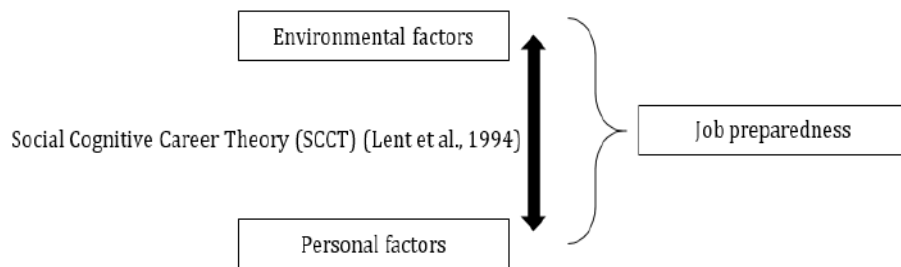


Figure 3. An understanding of job preparedness

This study illustrated the importance of closely monitoring observation or assessment for skill and knowledge development, in addition to providing environmental resources, to enhance students' awareness of their skills and knowledge growth. This finding is consistent with earlier research emphasising the importance of perceived learning outcomes; however, it's equally important to constantly enhance their skills and knowledge (Lent et al., 2016). According to the SCCT, individuals with high levels of self-efficacy and perceived learning outcomes are more likely to be resilient in the face of challenges, setbacks, and career transitions (Pintrich, 2000).

Advanced materials and collaboration with industry for up-to-date advancements are two environmental resources that can increase job preparedness and resilience. Advanced materials in teaching can improve the quality of education and equip individuals with the necessary skills and knowledge to succeed in their careers (Greenhill, 2010). Similarly, collaboration with industry can provide individuals with access to the latest advancements and technologies in their field, thereby increasing their competitiveness and employability (Vetter et al., 2022). By improving career preparedness and resilience, these environmental resources can contribute to achieving Sustainable Development Goal 3 (good health and well-being) and Sustainable Development Goal 4 (quality education) (OECD, 2019).

More importantly, the SCCT shows how important environmental resources, social supports, self-efficacy, and perceived learning outcomes are for building resilience and job readiness. By providing access to advanced materials in teaching and promoting collaboration with industry, individuals can develop the necessary skills and knowledge to succeed in their careers and contribute to achieving Sustainable Development Goals 3 and 4.

CONCLUSION

This study offers a conceptual understanding of how individuals in universities gain opportunities to equip themselves for job preparedness. Environmental factors are appreciated in developing engagement and cognition. With cognition, individuals have a chance to go further for job preparedness grounded in 21st century skills and competencies. On the other hand, personal factors and caring for students' mental health need more focus. While universities are ready to welcome advancements like AI skill development, they should prioritize mental health treatment more heavily. Therefore, it is recommended that future research prioritise the enhancement of abilities and cognition to meet present demands while also ensuring the proper nurturing of mental development. This study offers valuable insights to universities and state officials regarding the need to involve students in skill development to enhance their individual cognitive development in line with current demands and concerns.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHORSHIP CONTRIBUTION

Conception: TSH and NR conceptualised and developed the research question.

Research design: TSH and NR drafted the research design and initialled the research methodology based on the rapid literature review method. Performed a literature search strategy, screened the articles, extracted the data, and presented the results.

Refining the results: MHMY and KAC went through the reported results and did some refinement.

Drafting the paper: TSH and NR drafted the manuscript.

Presenting the abstract: LS led the writing of the abstract.

Revising the manuscript: MHMY, KAC, and LS were actively involved in the revision of the manuscript.

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The Influence of Environmental Factors on Career Preparedness among Malaysian Undergraduates: A Correlational Study

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Abstract. Undergraduate students' career prospects are not guaranteed. Securing jobs is not an easy task. Hence, multiple efforts need to be made within their environment. Nevertheless, environmental factors vary from time to time; there is no fixed strategy for monitoring them. Hence, it is crucial to observe the current situation of the environment together with the current needs among undergraduate students, who are future developmental entities. This study aims to investigate how environmental factors influence Malaysian undergraduate students' career preparedness. This study involved 66 undergraduate students. The instruments were constructed by adapting questionnaire items from previous studies. A correlational research design was employed to meet the aim of the study which requires quantitative data collection and analysis. This study revealed that environmental factors significantly influenced undergraduate students' career preparedness. The findings inform educators about the importance of integrating valuable and available resources into students' learning environment to foster undergraduate students' career preparation.

Keywords: Career Prospects, Undergraduate Students, Environmental Factors, Career Preparedness.

1 Introduction

Modern and reflective students, who always respond to current learning, are expected to be brave and develop strong abilities to face challenges due to current lifestyle changes [9]. Awareness of the challenges has made them realise they need to adapt to the current environment and aware of helpful avenues and possibilities in career preparation. Increased confidence and motivation are necessary for their progression [19]. The addition of information and skills may be their initial endeavour to prepare a viable product for career advancement. Consequently, they view environmental influences as crucial for providing opportunities to develop knowledge and skills. For instance, AI

that offers novel exposure has been a primary focus in building confidence. Further studies are necessary for future development, given the rapid changes surrounding students mentioned above [13]. This study aims to investigate the impact of environmental factors on career preparedness among Malaysian students.

2 Literature Review

Career preparedness has become a societal concern, prompting schools and universities to emphasize future aspirations and host workshops. Career readiness is crucial for two main reasons: it motivates students to understand job requirements and enhances their ability to gather information, explore opportunities, and develop skills [24]. According to Social Cognitive Career Theory (SCCT), individuals improve their preparedness by actively seeking self-improvement and recognizing their learning [7], which helps them seize growth opportunities.

SCCT explains career advancement through cognitive and social development [7]. Early personal development, influenced by societal and environmental factors, impacts career growth [7]. The factors also provide different motivation and external influences that cultivate strong character. These observations involve students' efforts to engage in social activities and acquire new skills from various sources that build confidence and career preparedness [17].

Career preparedness can be linked to self-resilience. This is because individuals with high self-resilience have positive skills and a mindset to deal with challenges in the workplace [12]. Self-resilience can also help to raise the spirit of perseverance in a job despite many obstacles and challenges, while being prepared in a work pressure ensures the competencies needed to succeed in a field [16]. Universities play an important role by providing a good, conducive place and environment to help expose undergraduate students to diverse cultures and resources, as well as help their career preparedness [3]. Individual demographics influence career decisions; the university environment is essential for fostering career preparedness [8].

Here are some descriptions of the environmental factors that influence career preparedness.

- a. **Academic Support from Lecturers:** Undergraduate students appreciate professors who share their professional challenges and expertise, as it motivates those students [2]. Constructive feedback from lecturers enhances students' learning outcomes and self-efficacy, developing critical thinking and problem-solving skills essential for career preparedness. Lecturers' involvement in career discussions positively impacts students' job market preparedness.
- b. **Digital Platforms and Technological Support:** University digital platforms facilitate learning and interaction, enhancing students' technology skills and career preparedness [23]. These platforms help students integrate technology into their courses, preparing them for technology-based career skills.

- c. Family Support and Career Aspirations: Family support is crucial in career decisions, with parents sharing experiences and resources to build students' confidence and motivation [14].
- d. Institutional Guidance and Career Development Opportunities: Universities offer guidance and career development through workshops, skill development, and improved courses, aiming to produce high-quality workers [6]. Facilities like laboratories and digital libraries create a conducive academic atmosphere for skill acquisition [25].

3 Methodology

This study collected quantitative data using a correlational research design aiming to find the relationship between career preparedness and environmental factors.

3.1 Population and Sample

The target population was a university in Malaysia, where the samples of the study were recruited through a dissemination of message with the link of survey in the university. In total, 66 samples responded to the survey. The inclusion criteria were students from final year programs. Those who were not willing to participate in the study were excluded.

3.2 Instrument

An instrument consisting of 11 items on career preparedness and 11 items on environmental factors was adapted from [5] and [11]. [5] pointed out for all systems there is an environmental layer called microsystem. Microsystem was used to describe the direct contact that occurred between an individual and other close parties, such as family members and the university. Instrument for career preparedness was adapted from [15].

3.3 Data Collection Procedures

The questionnaire was distributed online through the university's platform. Students were required to complete the questionnaire within the given period. The collection of data strictly followed research ethics. The approval of research ethics was obtained from the university's ethics committee as stated in the document with the reference number REC/03/2024 (ST/MR/53).

3.4 Instrumentation

The data collected was analyzed using SmartPLS software to conduct Structural Equation Modeling (SEM) analysis. This analysis included an assessment of the reliability and validity of the instrument using indicators. The items presented a high level of internal consistency as reflected in the Composite Reliability (CR), Rho A, and Cronbach Alpha for the reliability indicators (Table 1 and Table 2); Variance Inflation Factor (VIF), loading, average variance extracted (AVE), and Heterotrait-Monotrait Ratio (HTMT) for validity indicators (Table 1 and Table 2).

Table 1 presents results for reliability and validity, as well as mean and standard deviation for assessing career preparedness items. The Variance Inflation Factor (VIF) showed a stable value in multicollinearity between latent variables in the model. The values found in VIF <5 indicated that there were no multicollinearity problems that affected the stability of the model. In the loadings section, there were only 2 items that showed a low value of <0.7. In the sections of Average Variance Extracted (AVE), Composite Reliability (CR), Rho_A (Dijkstra-Henseler's Rho), Cronbach's Alpha, and Heterotrait-Monotrait Ratio (HTMT) all demonstrated acceptable validity values.

Table 1. Reliability, validity, mean and standard deviation for Career Preparedness

Dimension	Career preparedness AVE=0.636, CR=0.950, Rho_A=0.949, Cronbach's Alpha=0.942, HT MT Heterotrait-Monotrait Ratio=0.750	VIF	Mean (based on a 10-lik- ert scale)	Standard Deviation
Attitudes: Career Clarity	I know which career field I am intending to pursue (loading=0.677)	2.767	8.12	1.763
Attitudes: Career Confidence	I am confident that I will achieve my career goals (loading=0.817)	3.912	8.45	1.407
	I believe that I can successfully overcome challenges in my future career (loading=0.857)	4.538	8.24	1.518
Knowledge and Skills: Labor Market Knowledge	I am well-informed about the current labor market trends and developments (loading=0.872)	4.714	8.09	1.401
	I have a good knowledge of the job market (loading=0.734)	4.418	7.88	1.701
	I have a lot of knowledge about the current labour market (loading=0.828)	3.578	7.91	1.583
Knowledge and Skills: Career Expertise	I have thought a lot about which occupations are suitable for me (loading=0.809)	3.024	8.27	1.298
	I have the necessary knowledge and skills to successfully enter into my desired career (loading=0.684)	3.682	7.99	1.619
Knowledge and Skills: Soft Skills	I can do many things that are useful in many occupations (loading=0.825)	3.250	8.07	1.540
Behaviour: Career Involvement	It is important for me to get training to have an occupation (loading=0.833)	4.228	8.40	1.360
	Work has a very important meaning for me (loading=0.810)	3.639	8.46	1.329

Table 2 presents result for reliability and validity for assessing environmental factors items. The Variance Inflation Factor (VIF) shows a stable value in multicollinearity between latent variables in the model. The values found in VIF <5 indicate that there are no multicollinearity problems that affect the stability of the model. In the loadings section, there are only 2 items that show a low value of <0.7. In the sections of Average Variance Extracted (AVE), Composite Reliability (CR), Rho_A (Dijkstra-Henseler's Rho), Cronbach's Alpha, and Heterotrait-Monotrait Ratio (HTMT) all demonstrated acceptable validity values.

Table 2. Reliability, validity, mean and standard deviation for the environmental factors

Dimension	Microsystem AVE=0.619, CR=0.947, Rho_A= 0.944, Cronbach's Alpha=0.938, HT_MT= 0.750	VIF	Mean (based on a 10-lik- ert scale)	Standard Devia- tion
Institutional Provi- sion (University)	My university provides adequate guidance (exam- ple: providing information regarding career, aca- demic development, training, and other resources) platform to support life at university. (loading = 0.761).	3.118	8.07	1.735
	My university provides adequate physical facilities (example: lecture hall and laboratory) to support learning environment (loading = 0.761).	4.238	8.55	1.500
	My university provides adequate virtual facilities (example: online library, digital learning platform and software) to support teaching and learning pro- cesses (loading = 0.730)	3.527	8.43	1.588
Curriculum	My university provides adequate opportunities (ex- ample: professional development) to academic de- velopment (loading = 0.811)	2.884	8.39	1.527
Academic Support from Lectures (Lecturer)	My lecturers provide adequate guidance (example: getting good resources) to support life at university (loading = 0.870).	4.510	8.36	1.583
	I receive constructive feedback from my lecturers that helps me improve academically (loading = 0.843).	4.698	8.43	1.559
	My lecturers show interest in my career development (loading = 0.827).	3.725	8.42	1.616
Family Encourage- ment (Family)	My family encourages and supports my career aspi- rations. (loading = 0.837).	3.239	8.81	1.540
	My family members provide adequate guidance (ex- ample: sharing their experience, reminding im- portant information) to support life at university (loading = 0.686).	2.415	8.42	1.671
Technological In- frastructure (Tech- nology)	I use the digital platform provided by the university to communicate with lecturers and peers (loading = 0.715).	2.371	8.33	1.727
	The use of technology in my courses helped improve my understanding of academic content (loading = 0.837).	3.622	8.42	1.587

The preparedness items are linked to the development of individuals in ensuring the career they will choose after completing their bachelor's degree. Students' self-development is very important in determining their career direction after completing their studies at university. Students can be sure of the career they will choose and have clear information and their willingness to face the world of work. In addition, the skills in the field they are involved in increase their confidence and resilience in facing their future challenges.

The items for environmental factors are associated with institutional effort in providing resources and support together with lecturers' efforts. The development of students' future skills is greatly supported by lecturers who possess strong proficiency in digital

literacy, economics, and pedagogical aspects of teaching and learning. Besides, family members' support for their development is a crucial factor too. All these environmental criteria are presence within technological frameworks.

4 Findings

Research Question: Is there any relationship between the environmental factors and career preparedness?

Figure 1 shows the structural path model for the variables Environmental Factor and Career Preparedness. The path coefficient is 0.723, indicated a strongly positive relationship between environmental factors and career preparedness was established strongly positive. Particularly, the Environmental Factors highly affect Career Preparedness as the coefficient 0.723 illustrates that aspects of environmental factors are very important in shaping an individual's career preparation.

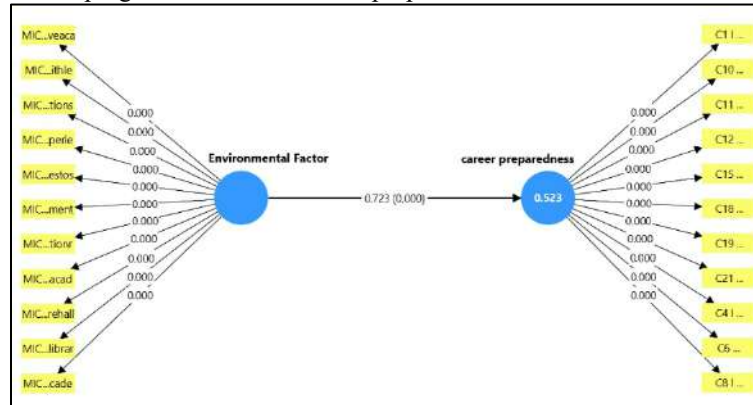


Fig. 1. Structural Path Model after Bootstrapping with T statistics

The report from the analysis in Table 5 presents the structural path model after bootstrapping with t-statistic 12.101 and p-value < 0.05, indicating significant result of the relationship. This implies that as the perceived towards Environmental Factor increase, their level of Career Preparedness tends to increase significantly. are unlikely to have occurred by chance.

Table 5. Structural Model

	Path Co-efficient (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
Environmental Factor -> career preparedness	0.723	0.736	0.060	12.101	0.000

The result of the analysis describes the impact of environmental factors in a period of students' life in university. The high mean values as above in Table 1 for career preparedness indicated that respondents generally felt prepared for their careers. For example, high mean values for items such as 'I knew the career field I wanted to pursue'

(8.12) and 'Work had a very important meaning to me' (8.46) indicated that most respondents had a clear idea of the career field they wanted to pursue and considered work to be very important. This reflected a good level of preparation among respondents, with most of them feeling confident in achieving their career goals and being able to overcome challenges in future careers. However, relatively large deviations in standards in some items indicated that there were variations in the level of confidence and knowledge among respondents. For example, while most respondents were knowledgeable about the labor market, there were some who might have needed more information or guidance. This variation suggested that not all respondents were at the same level of preparation, and this emphasized the need for more tailored career guidance programs. These programs could help individuals who were less confident or less knowledgeable to achieve a higher level of preparation, ensuring that all individuals had an equal opportunity to succeed in their careers. The high mean values as above in Table 2 for environmental factors indicated that respondents generally felt their environmental factors supported their academic and career lives. For example, high mean values for items such as 'My family encouraged and supported my career aspirations' (8.81) and 'My university provided adequate physical facilities' (8.55) indicated that family support and university facilities were considered very helpful by most respondents. This reflected a good level of support from various aspects of the environment, including families, lecturers, and universities. However, relatively large standard deviations in some items indicated there was variation in levels of support and experience among respondents. For example, the use of university digital platforms for communication (standard deviation of 1.727) showed that not all respondents used or felt comfortable with this technology to the same extent. These variations might have reflected differences in access to resources, level of technological skills, or individual experience. Therefore, planning on improving some aspects of advancement is highly anticipated for confirming adequate and consistent support among the students.

5 Discussion

The findings of this study revealed that the environmental factors showed significant influences on students' level of career preparedness. All the dimensions of the environmental factor, namely institutional provision, academic support from lecturers, technological infrastructure, and family encouragement, impact students' career preparedness.

This study indicated that although changes in various environmental factors may occur due to universities cutting costs on support facilities or failing to improve these factors sufficiently, these elements remain essential for enhancing students' preparedness, as noted in a previous study. The indications in these findings have increased people's trust in the universities' endeavours. Particularly, universities are seriously looking into their roles to uplift academic support and provide more career development opportunities. Among these efforts, universities frequently provide adequate facilities for students to learn and engage in extracurricular activities that enhance their skills and experience [13]. While the efforts ultimately lead to comprehensive career development programs, closely accessing the latest technological tools and resources is essential since it can

enhance students' learning experiences and equip them with the skills needed in today's digital economy [10]. In the digital world, environmental factors have a significantly greater influence because the digital platforms provided by universities offer various ways for students, lecturers, and peers to learn about communication and career development [1]. This innovative arrangement creates a different environment that facilitates the development of skills and knowledge.

Furthermore, the easy communicative environment encourages lecturers to interact with students, allowing for the strengthening of rapport [26]. As a result of this relationship, students greatly value the lecturers' expertise for their insights and guidance [4]. The continuous connection between lecturers and students provides opportunities to build self-confidence and develop the skills necessary for their future careers. Therefore, universities should prioritise academic development and emphasise the importance of various support systems, such as coaching programs, career counselling, and skill development workshops that highly integrate digital tools [20]. Additionally, support and encouragement from family are also important in shaping students' career aspirations. Families who are actively involved in their children's education and career planning significantly influence children's development with the full support and guidance that is needed for students to pursue their dreams [22]. This support can take the form of financial aid, emotional encouragement, and assistance in helping students explore various career options and make decisions about their career paths [21]. Therefore, parents should provide advice and resources in terms of knowledge or finances, as well as valuable encouragement that is in line with their children's interests and strengths.

6 Conclusion

This study highlights the important role of environmental factors in influencing career preparedness among undergraduate students in Malaysia. Key elements such as technological infrastructure, academic support from lecturers, family encouragement, and institutional facilities contribute to a student's career preparation. Universities are encouraged to increase academic support and provide comprehensive career development programs to better prepare students for a competitive job market. In addition, lecturers should be actively involved as academic advisors to improve students' academic achievement and self-confidence. Investment in the state-of-the-art technological infrastructure is essential to enhance students' learning experience and equip students with the necessary digital skills. Family support also plays an important role in shaping career aspirations by offering motivation and guidance. Overall, optimizing these environmental factors can help universities better prepare students for job market challenges and achieve long-term professional success.

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Exploring the Factors in Career Preparedness Among Undergraduate Students: A Systematic Literature Review

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Abstract: This paper addresses the critical nexus between career preparedness among undergraduates and its factors, including personal, social, academic, environmental, and resilience factors. It aims to identify the factors with the research question “To what extent do personal, social, resilience, academic, and environmental factors influence career preparedness among undergraduate students?”. A systematic review method called PRISMA was employed to select the relevant articles between 5 years (2020 – 2024). The articles were selected based on keywords ("career" OR "job") AND ("Preparedness" OR "readiness") AND ("Undergraduate"). A total of 22 articles were analysed after going through the screening process. In conclusion, the results of this study indicate that personal, social, academic, environmental factors, and resilience play a crucial role in shaping career preparedness among undergraduate students. Findings from 22 analyzed articles emphasize that the interaction between social support, authentic learning experiences (environmental factors), and students' ability to adapt to change (resilience) is key to the effective development of career preparedness. This study provides important implications for higher education institutions in formulating more comprehensive support strategies and interventions to enhance students' career preparedness.

Keywords: Career Preparedness, Undergraduate Students, Systematic Literature Review, Personal Factor

1. Introduction

Career preparedness is becoming a focus among universities, as institutions strive to produce graduates equipped with the mindset, skills, responsibility, and adaptability required to navigate today's competitive job market (Ashwin, 2025; Tight, 2023). The expectation among these universities is mutual. They aim to foster individuals who are not only technically competent but also psychologically prepared to transition smoothly into employment. Although the university offers well-structured academic programs, there are still questions about how much of that knowledge is truly translated into career preparedness (Ashwin, 2025).

The latest data from the Department of Statistics Malaysia shows that the unemployment rate for youths aged 15–24 years is approximately 10.2% (May 2025), while for those aged 15–30 years it is 6.2%. (Department of Statistics Malaysia [DOSM], 2025). This indicates the gap between academic achievement and the actual career readiness of graduates in the job market. Moreover, a growing concern has emerged as many graduates as possible report dissatisfaction with their current career paths, often experiencing reduced motivation, job disengagement, or considering career switching (Azuar & Mardhiah, 2024; Masdonati et al., 2017).

This trend highlights potential gaps in how universities prepare students—not only for initial job placement but also for long-term career satisfaction and resilience in the workforce. As such, understanding the complex interplay between environmental factors, personal attributes such as

resilience and self-efficacy, and career preparedness becomes increasingly vital for higher education stakeholders.

2. Problem Statement

The level of career preparedness among undergraduate students has become an increasingly important issue due to higher educational plans among universities and a more dynamic job market. Although many studies have examined the influence of academic performance, social support, and self-efficacy on career preparedness, environmental factors such as institutional policies, labor market imbalances, and global disruptions like the COVID-19 pandemic have received less attention in existing literature.

This shortcoming is particularly evident considering Malaysia faces challenges in the employability of university graduates. According to a report by Khazanah Research Institute, the graduate employability rate increased from about 73.1% in 2010 to 84.8% in 2021 (Khazanah Research Institute [KRI], 2023). However, about 59.3% of graduates work immediately after graduation, while the rest choose to continue their studies, join any training or skills programs, and are still waiting for job placement (KRI, 2023). This statistic shows the continuous mismatch between academic achievement and the actual preparedness level of graduates entering the workforce. The absence of a comprehensive understanding of how external factors influence career preparedness limits the capacity of educational institutions and policymakers to design effective interventions, even though environmental factors often shape students' access to opportunities, perceptions of career stability, and adaptability to change.

In this regard, this systematic literature review aims to synthesize the findings of existing studies related to the role of environmental factors in shaping the career preparedness of undergraduate students, with the goal of identifying key mechanisms, student strengths, and implications for future educational strategies.

3. Literature Review

Awareness of factors contributing to a secure and reliable career is susceptible to encouraging university students to discover improvements, as empirical proofs (Jiang et al., 2024) has proved that aware of what a STEM career offers could increase confidence to improve career preparedness. Hence, understanding the potential factors, such as environmental and personal ones, can help clarify the underlying pathway for them to adventure. Nevertheless, the interrelationship between human aspects, environmental influence, and career preparedness awareness determinants led to various paths for success. Therefore, examining these factors yields strategies that address current practices for using digital tools and engaging with other modern technologies. Exploiting this relationship can help future researchers better understand the underlying mechanism and hence focus on the strategies for the enhancement.

Gaining experience using resources is a crucial step in preparing them for the transition from study life to working life. This process stems from the understanding that the learning environment with various resources significantly contributes to the development of quality graduates. It allows them to pursue self-development opportunities and builds the readiness and confidence necessary for their future career pathways (Bronfenbrenner, 1994). An effective learning environment is marked by the availability of resources that enable students to expand their perspectives. This phenomenon has led to universities making efforts to enrich the existing environment.

According to Bronfenbrenner's ecological systems theory (Bronfenbrenner, 1994), individuals are influenced by multiple layers of environmental factors, and meaningful interactions within these systems can enhance their developmental outcomes. These layers (Figure 1) include various stakeholders. They contribute to enhancing the factors that influence the learning environment. Among them, parents and peers serve as key social agents who can shape students' attitudes, motivations, and readiness through support, encouragement, and shared experiences. Their involvement significantly enhances students' confidence and preparedness for future academic and career pursuits. Their attitudes toward education and career choices can profoundly shape students' aspirations and decision-making processes. Similarly, peers serve as influential role models and

sources of social interaction, feedback, and motivation. Positive peer influence can enhance students' self-confidence, engagement, and willingness to explore new opportunities.

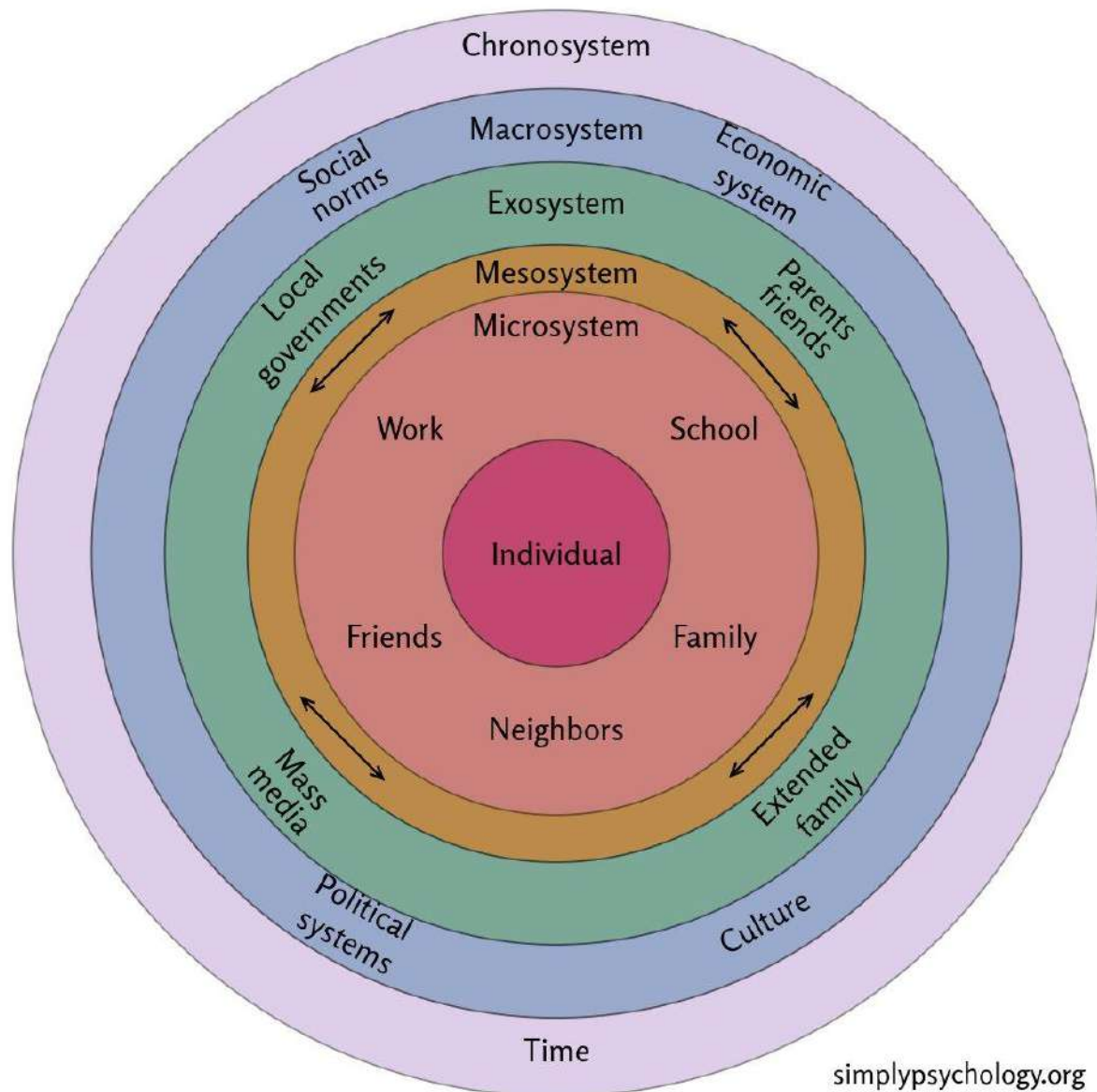


Fig. 1 Adaptation of Bronfenbrenner's Ecological Model in the Context of Students' Career Preparedness

As such, exposing students to real-world scenarios and aligning their experiences with prospective future situations is essential for fostering resilience and readiness. A person with strong self-resilience can adapt and succeed despite negative experiences, managing their emotions to face challenges (self-efficacy) and understanding their own strengths with self-control and a sense of purpose (coping strategies) (Yin et al., 2022). Hence, self-resilience has two main aspects, namely (a) attitudes of coping with challenges and difficulties and (b) strategies of addressing the problems.

This perspective aligns with the principles of the Social Cognitive Career Theory (SCCT), which emphasizes the role of personal agency, contextual factors, and experiential learning in career development (Lent et al., 1994). SCCT highlights the importance of providing learners with authentic and resource-rich learning experiences that allow them to apply their current knowledge to future-oriented tasks. Engaging students in experiential learning where they can interact with materials, tools, and environments similar to those in their intended careers enhances self-efficacy, career decision-making skills, and adaptability (Lent et al., 2000). Therefore, equipping students with access

to relevant resources and opportunities to apply their knowledge within the social support system is essential for them to develop academic and career preparedness.

According to the Social Cognitive Career Theory (Lent et al., 1994), such social support systems function as contextual factors that either facilitate or hinder students' self-efficacy, outcome expectations, and goal setting. The contextual factors offer opportunities for students to engage themselves in training, explore the availability of resources, meet with mentors, receive peer support, and access internships. Nevertheless, the extent to which the resources benefit an individual greatly depends on how well the student aligns with the student's personal and outcome expectations.

4. Methodology

This study employed a Systematic Literature Review (SLR) guided by the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework, as illustrated in Figure 2, which involves identifying, screening, and synthesizing relevant literature on factors influencing career preparedness among undergraduate students

4.1 Identifying: Search Strategy & Inclusion and Exclusion Criteria

The literature search was conducted using two major academic databases: Scopus and Web of Science (WOS). The following Boolean search string was used to retrieve relevant articles: (*"career" OR "job"*) AND (*"preparedness" OR "readiness"*) AND (*"undergraduate"*). This search strategy was designed to capture a broad range of studies related to undergraduate students' career preparedness across various disciplines and contexts.

To ensure relevance and quality, the following criteria were applied:

1. Inclusion Criteria:
 - a. Articles published between 2020 and 2025
 - b. Peer-reviewed journal articles
 - c. Studies focusing on undergraduate students
 - d. Articles discussing at least one of the five factors: personal, social, academic, environmental, or self-resilience
 - e. Articles written in English
2. Exclusion Criteria:
 - a. Articles published before 2020
 - b. Non-peer-reviewed sources (e.g., editorials, opinion pieces)
 - c. Studies focusing on postgraduate or secondary school student

4.2 Identifying: Search Strategy & Inclusion and Exclusion Criteria

A total of 882 articles were identified at the initial stage through database search. After applying the inclusion and exclusion criteria and removing duplicates, 22 articles were shortlisted for review. These articles were published between the years 2020 and 2025. For each year, four articles were selected for analysis to assess the extent to which the identified factors affect the career preparedness levels among undergraduate students. However, two articles, one from 2020 and one from 2023, could not be retrieved in full text form due to inaccessible sources. Therefore, both articles were excluded from the final analysis. The remaining articles underwent a full-text review and thematic analysis. This screening process was conducted according to the PRISMA 2020 guidelines, as illustrated in the PRISMA flow diagram (Figure 2).

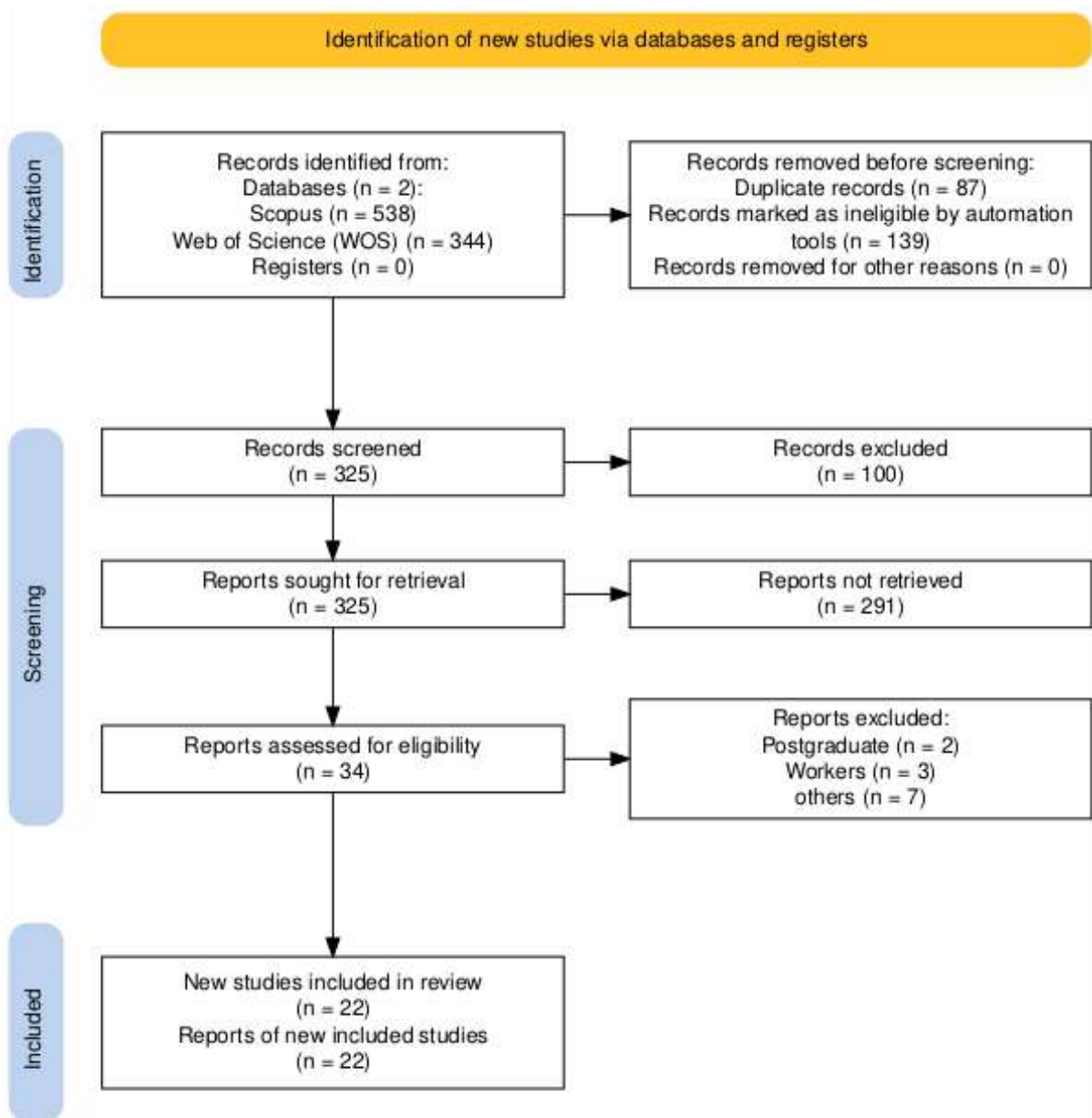


Fig. 2 PRISMA diagram

4.3 Data Extraction and Analysis

Each selected article was reviewed and coded based on year of publication, authors and title, type of factor(s) addressed (personal, social, academic, environmental, self-resilience), key findings and mechanisms, strengths and implications

A thematic analysis was subsequently conducted to identify recurring patterns, relationships, and research gaps across the selected studies. The findings were then categorized according to five primary factors influencing career preparedness among undergraduate students. Table 1 below presents a summary of the systematic literature review, listing the selected articles published between 2020 and 2025.

Table 1: Exploring the Factors in Career Preparedness Among Undergraduate Students: A Systematic Literature Review (2020–2025)

No.	Year	Author	Title	Factor and Summary		Strength	Key mechanism identified
1	2020	Onphanhdala, P; Philavong, V; Sengkhamkhoutlavong, B	Career Decision and Readiness in Undergraduate Students of Lao PDR	Enviromental Factor	This article touches on external factors such as: > government policy (limited recruitment of civil servants) > labor market imbalance (more graduates than job opportunities) > job stability and prestige as career selection factors. All of these are economic and institutional environmental factors that influence students' career decision-making.	Career Awareness & Decision-Making Confidence	Self-efficacy, adaptability, motivation
				Social Factor	> It is stated that prestige is a key factor in career choice, which can be associated with social and cultural influences. > Although not explicitly mentioned, social norms and societal expectations may play a role.	Social Awareness & Value Alignment	Social Influence & Cultural Motivation
				Self-Resilience	> Students face the risk of unemployment and high competition, and how they respond to these challenges demonstrates elements of resilience (even if not explicitly stated).	Resilience & Adaptability	Coping Strategies & Self-Efficacy
2	2020	Phang, A; Fan, WH; Arbona, C	Secure Attachment and Career Indecision: The Mediating Role of Emotional Intelligence	Social Factor	> This article examines the relationship between attachment (interpersonal emotional bonding) and difficulties in	Interpersonal Awareness & Emotional Insight	Attachment Style & Psychosocial Influence

					making career decisions. Attachment is a psychosocial concept that is closely related to early social relationships and how individuals build connections with others.		
				Self-Resilience	> Emotional intelligence as a mediating variable shows an individual's ability to manage their own emotions and the emotions of others, which is an important component of self resilience.	Emotional Regulation & Empathy	Emotional Intelligence as a Mediator
3	2020	Halpin, PA; Donahue, AE; Johnson, KMS	Undergraduate biological sciences and biotechnology students' reflective essays focus on descriptive details of experiential learning experiences	Social Factor	> The article states that students write about who they are working with, showing the element of social interaction in their learning experience.	Collaboration & Communication Skills	Social Interaction & Peer Learning
				Academic Performance	> This article emphasizes learning through experience (experiential learning experiences, ELEs) and the enhancement of student learning outcomes, which are closely related to academic performance. It also discusses the use of reflection to strengthen understanding and integration of knowledge, which is a pedagogical strategy to improve academic achievement.	Academic Engagement & Reflective Thinking	Experiential Learning & Reflection

				Self-Resilience	> Although not explicitly stated, students involved in research and academic writing, especially in a second language, require self-resilience to overcome the challenges of learning and communication.	Self-Resilience & Perseverance	Language Adaptation & Academic Persistence
4	2021	Morrice, R; Buckeldee, O; Leedham-Green, K	Perspectives of Clinical Teaching Fellows on preparedness for practice: a mixed-methods exploration of what needs to change	Social Factor	> Communication with colleagues, teaching in a clinical environment, and collaboration between students and Clinical Teaching Fellows (CTFs) demonstrate important elements of social and professional interaction in clinical learning and practice.	Collaboration & Professional Communication	Social Interaction & Workplace Learning
				Academic Performance	> The article discusses core clinical competencies such as history taking and examination, as well as curriculum requirements to support the learning of medical students. This relates to aspects of clinical learning and training, although not academic performance in the form of grades.	Clinical Competency & Practical Skills	Curriculum Support & Experiential Learning
				Self-Resilience	> The article discusses self-confidence among newly trained doctors, work-life management, and wellbeing as part of the preparation for clinical practice. It highlights	Self-Confidence & Professional Resilience	Work-Life Balance & Wellbeing Support

					resilience as an important element in the transition from student to professional.		
5	2021	McRell, AS; Wilson, BL; Levkoff, SE	Writing Skills Development for Graduate Studies and Career Readiness in Science and Aging Fields: A Case Study Approach	Academic Performance	> This article focuses on students' experiences in a specially designed academic writing class aimed at enhancing their writing skills. This is closely related to academic performance as writing is a critical component of academic success, especially in preparation for graduate studies.	Academic Writing Proficiency & Readiness for Graduate Study	Structured Academic Support & Skill Development
6	2021	Trauth, E	From Homeless to Human Again: A Teaching Case on an Undergraduate Tiny Houses and Technical Writing Course Model	Social Factor	> This article involves social issues such as homelessness, local communities, and collaboration with non-profit organizations. It emphasizes community involvement and individual stories as important elements in the teaching and outcomes of the course.	Community Engagement & Empathy	Service Learning & Social Awareness
7	2021	Leary, M; Bryner, R	An exploratory study of freshman attrition from an Appalachian physiology program	Social Factor	> This article touches on first-generation students, financial needs, and the context of underserved communities such as Appalachia, which is a social issue.	Resilience & Social Awareness	Socioeconomic Context & Equity in Education

				Academic Performance	> This article assesses the academic performance of students, including GPA, academic preparation, and difficulties in mathematics subjects.	Academic Awareness & Learning Effort	Academic Preparation & Performance Monitoring
8	2022	AlMekkawi, M; El Khalil, R	Undergraduate Nursing Students' Readiness to Practice Views of the Senior Students in the United Arab Emirates	Academic Performance	> Yes, because this article assesses the readiness of nursing students to perform clinical duties, which is part of learning outcomes and academic performance in a professional context.	Clinical Readiness & Professional Relevance	Assessment of Clinical Competence & Learning Outcomes
				Self-Resilience	> Yes, because this article touches on students' confidence in facing clinical challenges, such as managing patients, solving clinical problems, and communicating with the health team — all of which require self-resilience.	Confidence & Clinical Adaptability	Self-Resilience & Problem-Solving in Clinical Context
9	2022	Wu, JC; Tang, KP; Hsu, YHE; Yang, YT; Chu, JS; Lin, YK; Hou, WH	Medical undergraduates' self-evaluation: before and after curriculum reform	Social Factor	> The article touches on the gender differences in perceptions and career readiness and suggests further investigation into the learning environment of female students, which is a social issue in education.	Gender Awareness & Educational Equity	Learning Environment & Gender-Based Perception
				Academic Performance	> Although not directly grading, the article touches on the readiness for residency	Residency Readiness & Holistic Evaluation	Integration of Academic & Clinical Competence

					training, which is an extension of academic and clinical performance.		
				Self-Resilience	> The article touches on students' readiness, perceptions of the curriculum, and gender differences in confidence, which relate to self-resilience and professional confidence.	Curriculum Insight & Gender-Sensitive Perspective	Self-Resilience & Professional Confidence Development
10	2022	Ulmen, BF; Witte, CE; Speckhard, ST; Fenske, CL	Transition to Practice: The Use of Virtual Clinical Replacement During the COVID-19 Pandemic and Its Impact on New Graduate Nurse Readiness	Enviromental Factor	> The article discusses the replacement of physical clinical training with virtual clinical experience due to the pandemic, which is a change in the learning environment.	Adaptability in Learning Environment	Virtual Clinical Experience as a Learning Strategy
				Self-Resilience	> The article touches on students' confidence, role transitions, and adjustments to changes in learning, which relate to resilience in a professional context.	Confidence & Role Adaptation	Resilience through Role Transition & Learning Adjustment
11	2022	Brouwer, EE; van Rossum, TR; Frambach, JM; Driessen, EW	Early career experiences of international medical program graduates: An international, longitudinal, mixed-methods study	Enviromental Factor	> The article discusses the migration of international medical students to various healthcare systems and countries, which involves different learning and working environments.	Global Exposure & Cross-Cultural Adaptability	Adaptation to Diverse Learning & Healthcare Systems
				Social Factor	> The article touches on	Global Career Insight & Social	Licensing, Cultural

					social issues and the structure of the international health system, including licensing processes, job applications, and cultural work adjustments, which are important social factors in the global medical career.	Awareness	Adjustment & Career Navigation
				Self-Resilience	> The article touches on the challenges faced by students in adapting to foreign health systems, as well as the need for guidance and support, which relates to resilience and professional adaptation.	Awareness of Adaptation Challenges & Support Needs	Resilience & Professional Adaptation Support
12	2023	Kang, D	Prioritizing Career Preparation: Learning Achievements and Extracurricular Activities of Undergraduate Students for Future Success	Environmental Factor	> The article touches on the impact of the COVID-19 pandemic on the job market and the challenges faced by Generation Z in a changing career environment, which is related to the global social and economic environment.	Contemporary Relevance & Generational Focus	Socioeconomic Adaptation & Career Resilience
				Social Factor	> The article discusses social networking activities in universities, the influence of generations, and societal expectations of graduates, which are social issues in the context of education and careers.	Social Engagement & Generational Awareness	Social Integration & Societal Expectation Management

				Self-Resilience	> The article touches on the need to enhance self-efficacy and the ability of students to make career decisions independently, which is closely related to self-resilience.	Empowerment & Independent Career Readiness	Self-Efficacy & Career Decision-Making Autonomy
13	2023	Coetzee, M; Ferreira, N; Potgieter, IL	Employees' career mindsets as career capital for a digital work world orientation	Environmental Factor	> The article touches on the uncertain and constantly changing work environment of the digital era, as well as remote learning, which is part of the modern learning and work environment.	Relevance to Digital Era & Flexibility	Adaptability to Digital Work & Learning Environments
				Social Factor	> The article discusses orientation towards the workforce, awareness of social changes in careers, and the role of higher education institutions in supporting career development, which is a social issue in the context of employment and education.	Career Orientation & Institutional Support	Career Development Support & Social Awareness
				Self-Resilience	> The article emphasizes the protean career mindset (pure challenge) and self-motivation, which are important aspects of resilience and the ability to adapt to the digital workplace.	Protean Mindset & Intrinsic Drive	Self-Motivation & Digital Adaptability
14	2023	McKissick, BR;	Exploring Preparedness to	Social Factor	The article touches on the	Collaborative Leadership &	Professional Engagement &

		Wrenn, M; Vach, S	Enter the Field: A Q Method Approach to Understanding a Beginning Rural Special Education Educator Preparation Program		role of teachers as collaborative leaders, student diversity, and involvement in professional practices, which are important social aspects in education.	Inclusivity	Socially Responsive Teaching
				Self-Resilience	The article assesses the self-efficacy of teacher trainees in meeting professional standards and addressing student needs, which is related to resilience and professional competence.	Professional Readiness & Self-Efficacy	Resilience & Competency in Teaching Standards
15	2024	Gustina, A; Liu, JS; Indartono, S; Endarwati, ML; Darmawati, A	Connecting the dots: How parent support shapes career readiness through psychological capital	Social Factor	This article emphasizes parental support, which is a key social factor in the development of an individual's career.	Parental Involvement & Social Support	Family Support as a Career Development Factor
				Self-Resilience	Psychological capital (which includes elements such as hope, resilience, self-efficacy, and optimism) is an essential component in self-resilience.	Psychological Capital & Inner Strength	Hope, Self-Efficacy, Optimism & Resilience as Core Drivers
16	2024	Boo, S; Kim, M; Kim, SH	Career self-management behavior among undergraduate students: A comparison of two-time points	Self-Resilience	This article touches on career adaptability, career optimism, and self-initiated developmental behavior, which are important components of self-resilience in the context of careers.	Proactive Career Development & Positive Outlook	Career Adaptability & Self-Driven Growth
17	2024	Al Hakani, MA; Grimmett, EA; Laios,	High-impact practices in cancer	Social Factor	The article touches on	Civic Engagement &	Community-Based Learning

		E; Frank, J; Srikantha, S; Wilson, K; Metcalfe, K; Hamm, C; Porter, LA; Cavallo-Medved, D	education and research: Undergraduate students' perceptions of skills and career development		social responsibility and community-based learning, which are important elements in social factors.	Social Awareness	& Social Responsibility Development
				Academic Performance	The article assesses the impact of High-Impact Practices (HIPs) on knowledge, technical skills, and transferable skills, which are closely related to academic learning outcomes.	Comprehensive Skill Development through HIPs	Integration of HIPs in Academic Learning Outcomes
18	2024	Keyes, LM; Fischer, LA	Where Do I Go from Here? Evaluating Professional Development in Undergraduate Planning Education	Social Factor	The article touches on community-based projects and professional networking, which are social elements in the context of career development.	Experiential Learning & Social Connectivity	Community Engagement & Career Networking
				Academic Performance	The article evaluates the results of studio learning and the use of individual development plans, which are closely related to performance and academic development.	Structured Learning & Personalized Growth	Studio-Based Learning & Individual Development Planning
19	2025	Lai, JW; Zhang, L; Sze, CC; Lim, FS	Learning Analytics for Bridging the Skills Gap: A Data-Driven Study of Undergraduate Aspirations and Skills Awareness for Career Preparedness	Academic Performance	The article evaluates students' perceptions of skill development and the role of higher education institutions, which are closely related to academic learning outcomes.	Awareness of Skill Development & Institutional Role	Student Perception & Institutional Support

				Self-Resilience	The article touches on students' awareness of the need for career skills and self-effort to assess career readiness, which is related to resilience and self-management.	Career Awareness & Self-Driven Readiness	Resilience & Self-Management
20	2025	Gaballah, K; Ali, K; Zahra, D; Ibrahim, E	Preparedness of Dental Undergraduates for Clinical Practice: A Comparison Between Evaluations by Students and Academic Faculty	Social Factor	The article touches on the relationship between students and clinical supervisors, as well as professional feedback, which are social elements in the context of clinical education.	Interpersonal Engagement in Clinical Learning	Social Support & Feedback Dynamics
				Academic Performance	The article evaluates the clinical, cognitive, and behavioral skills of students, which are key components in professional academic performance.	Holistic Skill Development	Integrated Skill Assessment
				Self-Resilience	The difference between students' self-assessment and supervisor assessment shows the need for self-reflection, self-awareness, and resilience in receiving feedback, which is related to the development of self-resilience.	Self-Awareness & Reflective Capacity	Self-Reflection & Resilience Building
21	2025	Wong, GS; Abdullah, NS	Job Readiness Level to Address 4.0 Skills: An Empirical Study on TVET Students in Electrical and Electronics Field	Academic Performance	The article assesses the level of work readiness of TVET students based on IR 4.0 skills, which are closely related to learning outcomes and academic performance in a technical context.	Technical Work Readiness & Future-Oriented Skills	Integration of IR 4.0 Skills with Academic Outcomes

				Self-Resilience	Skills such as lifelong learning, curiosity, and adaptability demonstrate elements of resilience and the ability to adjust to technological changes.	Lifelong Learning & Adaptive Mindset	Resilience Through Learning Agility
22	2025	Rickabaugh, J; Siegel, J	Teaching the orchestra, not just the conductor: Early undergraduate transdisciplinary education in public affairs designed for non-majors	Environmental Factor	The course topic is phosphorus sustainability, which is related to environmental issues and natural resources, making it relevant in the context of environmental factors.	Lifelong Learning & Adaptive Mindset	Resilience Through Learning Agility
				Social Factor	The article touches on the collaboration among students from various disciplines, transdisciplinary approaches, and the involvement of faculty from different fields, which are social and collaborative aspects of education.	Collaborative & Transdisciplinary Engagement	Social Learning & Transdisciplinary Integration
				Academic Performance	The article states that students retain ideas and skills from the course and apply them in higher-level courses, demonstrating an impact on academic performance.	Knowledge Retention & Skill Transfer	Long-Term Learning Impact
				Self-Resilience	Students are trained to face complex problems (wicked problems) and overcome disciplinary boundaries, demonstrating the development of intellectual resilience and self-flexibility.	Intellectual Resilience & Cognitive Flexibility	Wicked Problem-Solving & Interdisciplinary Thinking

The analysis is summarized and presented in Table 2, reporting the factors influencing career preparedness among undergraduate students. A checkmark (✓) was used to indicate the relevant contents of the articles.

Table 2: Factors influencing career preparedness among undergraduate students

No	Year	Title	Factor			
			Environment	Social	Academic Performance	Self-Resilience
1	2020	Career Decision and Readiness in Undergraduate Students of Lao PDR	✓	✓		✓
2	2020	Secure Attachment and Career Indecision: The Mediating Role of Emotional Intelligence		✓		✓
3	2020	Undergraduate biological sciences and biotechnology students' reflective essays focus on descriptive details of experiential learning experiences		✓	✓	✓
4	2021	Perspectives of Clinical Teaching Fellows on preparedness for practice: a mixed-methods exploration of what needs to change		✓	✓	✓
5	2021	Writing Skills Development for Graduate Studies and Career Readiness in Science and Aging Fields: A Case Study Approach			✓	
6	2021	From Homeless to Human Again: A Teaching Case on an Undergraduate Tiny Houses and Technical Writing Course Model		✓		
7	2021	An exploratory study of freshman attrition from an Appalachian physiology program		✓	✓	
8	2022	Undergraduate Nursing Students' Readiness to Practice Views of the Senior Students in the United Arab Emirates			✓	✓
9	2022	Medical undergraduates' self-evaluation: before and after curriculum reform		✓	✓	✓
10	2022	Transition to Practice: The Use of Virtual Clinical Replacement During the COVID-19 Pandemic and Its Impact on New Graduate Nurse Readiness	✓			✓
11	2022	Early career experiences of international medical program graduates: An international, longitudinal, mixed-methods study	✓	✓		✓
12	2023	Prioritizing Career Preparation: Learning Achievements and Extracurricular Activities of Undergraduate Students for Future Success	✓	✓		✓
13	2023	Employees' career mindsets as career capital for a digital work world orientation	✓	✓		✓
14	2023	Exploring Preparedness to Enter the Field: A Q Method Approach to Understanding a Beginning Rural Special Education Educator Preparation Program		✓		✓
15	2024	Connecting the dots: How parent support shapes career readiness through psychological capital		✓		✓
16	2024	Career self-management behavior among undergraduate students: A comparison of two-time points				✓
17	2024	High-impact practices in cancer education and research: Undergraduate students' perceptions of skills and career development		✓	✓	
18	2024	Where Do I Go from Here? Evaluating Professional Development in		✓	✓	

		Undergraduate Planning Education				
19	2025	Learning Analytics for Bridging the Skills Gap: A Data-Driven Study of Undergraduate Aspirations and Skills Awareness for Career Preparedness			✓	✓
20	2025	Preparedness of Dental Undergraduates for Clinical Practice: A Comparison Between Evaluations by Students and Academic Faculty		✓	✓	✓
21	2025	Job Readiness Level to Address 4.0 Skills: An Empirical Study on TVET Students in Electrical and Electronics Field			✓	✓
22	2025	Teaching the orchestra, not just the conductor: Early undergraduate transdisciplinary education in public affairs designed for non-majors		✓		
		Total	5/22	16/22	11/22	16/22
		Percentage	22.73%	72.73%	50%	72.73%

The research findings indicate that between the years 2020 and 2025, the factors of self-resilience (72.73 %) and social factors (72.73%) are among the most frequently discussed in the literature. This is followed by academic performance factors (50%), while environmental factors (22.73%) receive the least attention. However, in 2022 and 2023, discussions related to environmental factors showed a significant increase. This phenomenon is likely influenced by the COVID-19 pandemic situation that affected the world at that time, which also impacted students' learning environment and career development that need more attention. In this regard, comparisons of these factors can be clearly seen in Figure 3.0: Graph of factors influencing the career preparedness of undergraduate students.

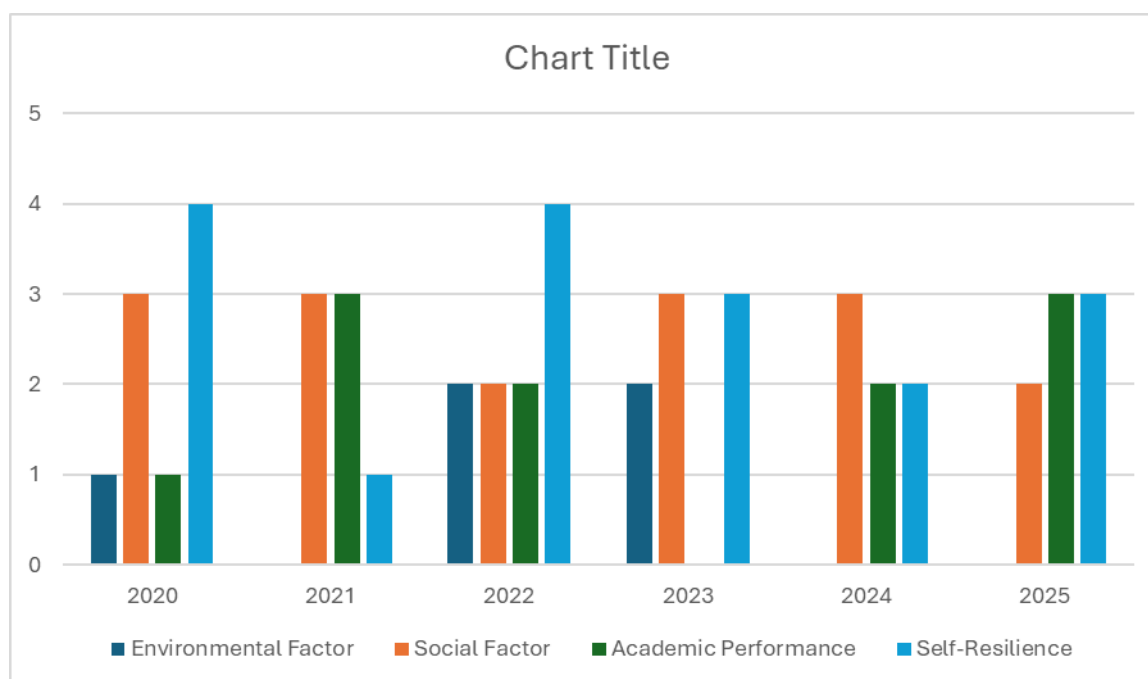


Fig. 3 Graph of factors influencing the career preparedness of undergraduate students

Figure 4.0 below shows the overall percentage of data for the factors influencing the career preparedness of undergraduate students, as discussed in the study between the years 2020 to 2025.

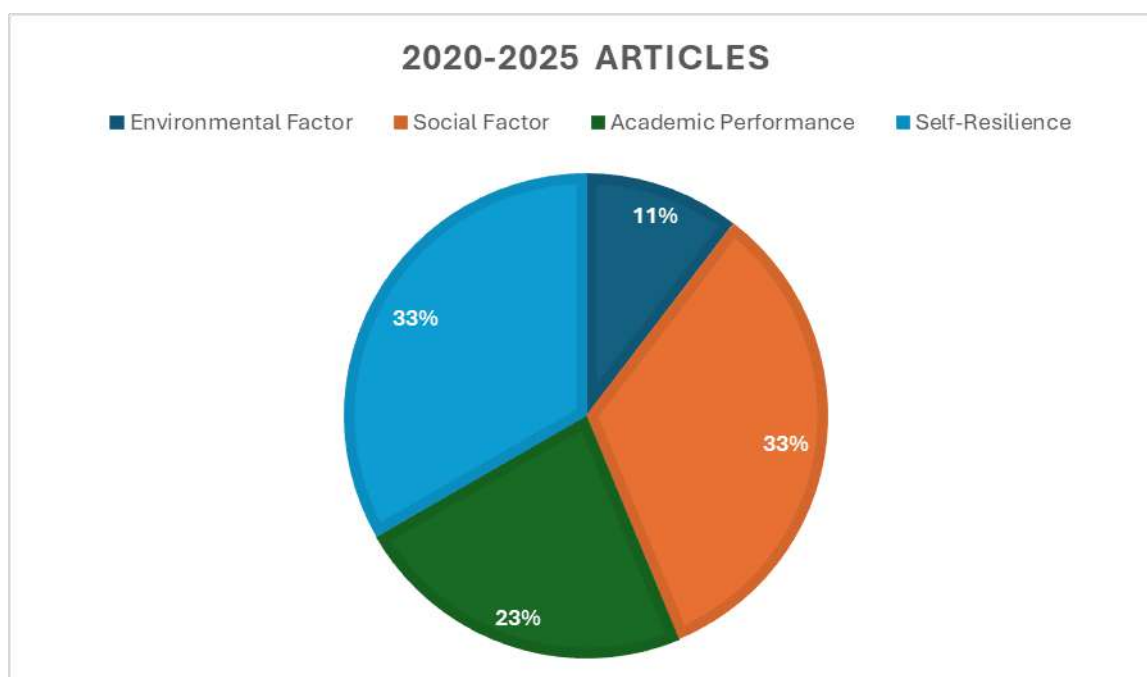


Fig. 4 Overall percentage of data for factors influencing the career preparedness of undergraduate students

Based on the pie chart shown, it was found that social factors and self-resilience recorded the highest percentage, at 33%. This is followed by academic performance factors at 23%, while environmental factors recorded the lowest percentage at 11%. These findings indicate that environmental factors have been given less emphasis in previous studies, consistent with the information in Table 1 which only records five articles discussing that factor.

5. Discussion

This study revealed that factors influencing career preparedness have been widely investigated over the years, particularly as universities continue to produce graduates for the workforce. Among these factors, social and self-resilience have received increasing attention in the past five years. The findings indicate that social factors and self-resilience are the most frequently studied aspects from 2020 to 2025. This may be due to the increased awareness of the importance of social support and students' ability to adapt in an uncertain career environment, especially post-COVID-19 pandemic.

Even though the environmental factors did not show serious significant coverage of the studies compared to the other factors, recent environmental changes not only due to COVID-19 but also the rapid development of digital technology alongside the expansion of online teaching and learning have significantly shaped both the learning environment and students' mindsets (Crick, 2021). Although environmental factors such as institutional policies, labor market imbalances, and global changes have a significant impact on career readiness, they have been underrepresented in previous studies. This indicates a research gap that warrants further exploration.

The findings of this study have important implications for higher education institutions in designing more comprehensive career development programs, including strengthening social support, introducing resilience training, and aligning the curriculum with current job market demands.

The findings from this study show that social factors and self-resilience are the most dominant influences on the career preparedness of undergraduate students between the years 2020 and 2025. This is consistent with local studies that found social support from parents and peers plays an important role in enhancing resilience and life satisfaction among university students in Malaysia. Md

Khalid, (2021) explains that social factors serve as a link between self-resilience and life satisfaction among university students in Malaysia.

However, environmental factors are found to receive less attention in the literature reviewed. Although some studies show that global disruptions such as COVID-19 and changes in learning modalities like online learning have created new challenges, research analyzing how institutional structures, higher education policies, or the job market affect career preparedness is still limited. For example, studies on digital resilience in school education demonstrate how students need to face online threats, the ability to recover, and learn digital skills as part of their resilience (Sun et al., 2022). In Malaysia, the importance of digital competence, confidence in using digital tools, and how students can maintain academic performance during online learning. (Yusrisham et al., 2024).

In addition, the current career is increasingly influenced by the wave of digitization. The emergence of remote work, the use of digital technology, and the influence of artificial intelligence (AI) have changed the definition of career preparedness. According to studies, digital resilience is defined as a student's capacity to understand digital threats, identify solutions, learn skills, and bounce back or recover when facing challenges or pressure in a digital context. (Sun et al., 2022). Therefore, the concept of self-resilience should be expanded from emotional adaptation to digital resilience, including technological skills, online collaboration, and lifelong learning. Future research, especially with remote approaches and mixed methods, is essential to examine how students' career preparedness changes from the first year until graduation, as well as how the interaction between structural, social, and personal factors shapes their career outcomes (Low, 2023).

6. Limitation of the study and Recommendations

This study does not involve the collection of primary data or field studies. Therefore, the findings are solely based on existing studies and cannot directly confirm the effectiveness of those factors in the current context.

Future studies are recommended to focus on underexplored environmental factors, as well as to use a longitudinal approach to assess changes in students' career preparedness from their first year until graduation

7. Conclusion

This study emphasizes that the level of career preparedness among undergraduate students is influenced by various factors, namely social, academic, environmental factors, and self-resilience. Based on 22 articles analyzed from 2020-2025, it was found that social factors and self-resilience are the dominant and consistent factors, followed by academic factors, while environmental factors receive less attention. Social support from family, peers, and lecturers plays an important role in enhancing students' confidence, career decision-making ability, and readiness to face labor market challenges. At the same time, self-resilience proves to be an adaptive mechanism that helps students cope with stress and the changing career landscape.

However, environmental factors such as institutional policies, labor market imbalances, globalization, and digital transformation are still underexplored in depth, even though they have been proven to have a significant impact on graduates' career opportunities. Therefore, future research needs to give a more balanced focus by considering structural factors and external contexts that also shape career readiness.

In conclusion, the findings of this study provide important implications for universities, policymakers, and higher education practitioners to design more comprehensive interventions, not only emphasizing academic achievement but also strengthening social support, expanding experiential learning opportunities, and developing emotional and digital resilience among students. With this holistic approach, graduates will be better prepared not only to navigate the current job market but also to adapt to the increasingly challenging dynamics of future careers.

8. Suggestions

Focusing on environmental factors such as government policies, economic changes, the Fourth Industrial Revolution, as well as the role of digital technology and artificial intelligence (AI) in influencing career readiness. In addition, expanding the concept of resilience to digital resilience, which encompasses technological literacy, lifelong learning, and the ability to adapt in virtual or hybrid work contexts. Finally, evaluating the impact of digital social capital on students' motivation, aspirations, and career confidence.

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