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Corresponding author:
*Md. Admir Hossin
[1]Department of Computer Science & Engineering (CSE), Shanto-Mariam University of Creative Technology
Dhaka, Bangladesh.
E-Mail: admirhosain00@gmail.com

[2]Department of Business Administration,
Shanto-Mariam University of Creative Technology
Dhaka, Bangladesh

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Understanding Workplace Readiness Among CSE Graduates: A Grounded Theory Approach

Md. Admir Hossin[1*]; Mashrafi Ahmed[1]; Kazi Abdul Mannan[2]

Abstract: The growing demand for skilled professionals in the technology sector has intensified concerns regarding the workplace readiness of Computer Science and Engineering (CSE) graduates. This study aims to develop a grounded theoretical understanding of workplace readiness by employing a qualitative research design based on secondary data sources, including academic literature, industry reports, and policy documents. Using constructivist grounded theory methods, open, axial, and selective coding, the study identifies five core dimensions shaping workplace readiness: technical proficiency, soft skills integration, experiential learning exposure, industry-academia alignment, and self-regulated learning. The findings reveal that workplace readiness is a dynamic and evolving construct, emerging from the interaction between individual competencies and institutional contexts rather than being a fixed outcome of formal education. The study proposes an integrative model that highlights the interdependence of these dimensions in shaping employability. The research contributes to the literature by extending traditional human capital perspectives and emphasising the role of experiential and contextual factors. Practical implications underscore the need for curriculum reform, enhanced industry collaboration, and the promotion of lifelong learning to better prepare graduates for the complexities of the modern workforce.

Keywords: workplace readiness, CSE graduates, grounded theory, employability, experiential learning, soft skills, industry-academia gap

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1. Introduction

The rapid advancement of digital technologies and the expansion of the global knowledge economy have significantly reshaped labour market demands, particularly in the field of Computer Science and Engineering (CSE). As industries increasingly rely on software systems, artificial intelligence, cloud computing, and data-driven decision-making, the demand for competent and adaptable CSE graduates has intensified. However, despite the proliferation of higher education programs in computing disciplines, a persistent concern remains regarding the workplace readiness of graduates entering the professional domain.

Workplace readiness refers to the extent to which graduates possess the requisite knowledge, technical competencies, and professional attributes necessary to perform effectively in organisational settings (Caballero et al., 2011). It encompasses not only domain-specific expertise but also a broad range of transferable skills, including communication, teamwork, critical thinking, and adaptability. In the context of CSE graduates, workplace readiness is particularly complex due to the dynamic and rapidly evolving nature of the technology sector.

A growing body of literature highlights a significant gap between the competencies acquired through academic programs and those required by employers. This discrepancy is often referred to as the "skills gap" or "employability gap" (Jackson, 2016; Radermacher & Walia, 2013). While universities tend to emphasise theoretical knowledge and foundational concepts, industry stakeholders prioritise practical skills, real-world problem-solving abilities, and workplace behaviours. Consequently, many graduates experience difficulties in transitioning from academic environments to professional roles.

The issue of workplace readiness is further compounded by structural and institutional challenges. In many developing countries, including Bangladesh, higher education institutions face constraints such as outdated curricula, limited access to modern technologies, and insufficient collaboration with industry partners (World Bank, 2019). These limitations hinder the development of relevant competencies and reduce graduates' competitiveness in both local and global labour markets. Employers frequently report that graduates lack hands-on experience, familiarity with industry tools, and the ability to work effectively in team-based environments.

Moreover, the nature of work itself is transforming due to globalisation, automation, and the rise of remote and flexible work arrangements. These changes demand not only technical expertise but also adaptability, lifelong learning, and cross-cultural communication skills (Andrews & Higson, 2008). As a result, the concept of workplace readiness must be understood as a multidimensional and evolving construct rather than a fixed set of competencies.

Despite the recognition of these challenges, there remains a lack of comprehensive theoretical frameworks that adequately explain how workplace readiness is developed among CSE graduates. Much of

the existing research adopts a descriptive or evaluative approach, focusing on identifying skill gaps rather than explaining the underlying processes and interactions that shape readiness. This gap in the literature underscores the need for theory-building research that can provide deeper insights into the phenomenon.

To address this need, the present study adopts a grounded theory approach to explore and conceptualise workplace readiness among CSE graduates. Grounded theory, originally developed by Glaser and Strauss (1967), is particularly suitable for investigating complex social phenomena where existing theories are insufficient or fragmented. By systematically analysing qualitative data, grounded theory enables the emergence of new conceptual frameworks grounded in empirical evidence.

This study utilises secondary qualitative data sources, including academic literature, industry reports, and policy documents, to construct a comprehensive understanding of workplace readiness. While primary data collection methods such as interviews and surveys are commonly used in grounded theory research, the use of secondary data allows for the integration of diverse perspectives and contexts, thereby enhancing the robustness of the analysis (Johnston, 2017).

The primary objective of this research is to develop a grounded theoretical model that explains the key factors influencing workplace readiness among CSE graduates and the relationships among these factors. Specifically, the study seeks to answer the following research questions:

- What are the core components of workplace readiness among CSE graduates?
- How do individual, institutional, and contextual factors interact to shape readiness?
- What theoretical model can best explain the development of workplace readiness in the context of CSE education?

By addressing these questions, the study aims to contribute to both academic scholarship and practical policy development. For educators, the findings provide insights into curriculum design and pedagogical strategies that can enhance graduate employability. For policymakers, the study offers evidence-based recommendations for strengthening higher education systems and industry collaboration. For students, it highlights the importance of proactive skill development and lifelong learning.

In conclusion, workplace readiness among CSE graduates is a critical issue with far-reaching implications for individuals, institutions, and economies. As the demand for skilled technology professionals continues to grow, understanding and addressing the factors that influence readiness becomes increasingly important. This study represents a step toward developing a comprehensive and theoretically grounded understanding of this complex phenomenon.

2. Literature Review

Workplace readiness is a multidimensional construct that integrates knowledge, skills,

attitudes, and behaviours required for effective job performance. Caballero et al. (2011) conceptualise workplace readiness as a combination of personal characteristics, organisational acumen, work competence, and social intelligence. This perspective highlights the importance of both technical and non-technical competencies in shaping employability outcomes.

Closely related to workplace readiness is the concept of employability, which Yorke (2006) defines as a set of achievements, skills, understandings, and personal attributes that make graduates more likely to gain employment and succeed in their chosen careers. Employability extends beyond initial job acquisition to include career progression and adaptability in changing labour markets.

In the context of CSE education, workplace readiness involves not only mastery of programming languages and computational thinking but also the ability to apply these skills in real-world scenarios. This requires a holistic approach that integrates cognitive, behavioural, and experiential dimensions.

2.1 The Skills Gap in CSE Education

One of the most widely discussed issues in the literature is the mismatch between academic preparation and industry expectations. Radermacher and Walia (2013) identify significant gaps in areas such as software development practices, testing, debugging, and system design. Employers often report that graduates lack practical experience and struggle to apply theoretical knowledge to complex problems.

Finch et al. (2013) emphasise that non-technical skills, including communication, teamwork, and leadership, are critical determinants of employability. Their study found that employers prioritise these attributes even over academic performance in hiring decisions. Similarly, Andrews and Higson (2008) argue that soft skills are essential for navigating workplace dynamics and building professional relationships.

Jackson (2016) further highlights the importance of career management skills, such as self-awareness, goal setting, and networking, in enhancing employability. These skills enable graduates to adapt to changing job requirements and pursue continuous professional development.

2.2 Soft Skills and Professional Competencies

Soft skills, often referred to as transferable or generic skills, play a crucial role in workplace readiness. These include communication, teamwork, problem-solving, adaptability, and emotional intelligence. Unlike discipline-specific technical skills, soft skills are applicable across various contexts and professions.

Research indicates that soft skills are often underdeveloped in traditional academic programs, particularly in technical fields such as CSE (Robles, 2012). This is partly due to the emphasis on technical content and the lack of opportunities for collaborative and experiential learning.

The integration of soft skills into the curriculum requires innovative pedagogical approaches, such as project-based learning, group assignments, and reflective practices.

These methods encourage active engagement and help students develop interpersonal and intrapersonal competencies.

2.3 Experiential Learning and Work-Integrated Learning

Experiential learning is widely recognised as a key mechanism for enhancing workplace readiness. Kolb's (1984) experiential learning theory posits that learning occurs through a cyclical process involving concrete experience, reflective observation, abstract conceptualisation, and active experimentation.

Work-integrated learning (WIL), which includes internships, co-op programs, and industry projects, provides students with opportunities to apply theoretical knowledge in real-world settings. Studies have shown that participation in WIL significantly improves employability outcomes by enhancing practical skills, professional networks, and confidence (Jackson, 2016).

In the context of CSE education, experiential learning is particularly important due to the applied nature of the discipline. Exposure to real-world projects, coding challenges, and collaborative development environments helps students develop industry-relevant competencies.

2.4 Industry-Academia Collaboration

The alignment between academic institutions and industry is a critical factor influencing workplace readiness. Effective collaboration can take various forms, including curriculum development, guest lectures, mentorship programs, and joint research initiatives.

However, many studies highlight a lack of effective collaboration, particularly in developing countries. The World Bank (2019) reports that weak linkages between education systems and labour markets contribute to skill mismatches and unemployment. Institutions often struggle to keep pace with rapidly changing industry demands, resulting in outdated curricula and inadequate training.

Strengthening industry-academia partnerships requires institutional commitment, policy support, and active engagement from both stakeholders. Collaborative efforts can help ensure that educational programs remain relevant and responsive to labour market needs.

2.5 Self-Regulated Learning and Lifelong Learning

In the rapidly evolving field of technology, continuous learning is essential for maintaining relevance and competitiveness. Self-regulated learning refers to the ability of individuals to take control of their own learning processes, including setting goals, monitoring progress, and reflecting on outcomes (Zimmerman, 2002).

CSE graduates who engage in self-directed learning, such as online courses, coding bootcamps, and personal projects, are better equipped to adapt to new technologies and industry trends. Lifelong learning is increasingly recognised as a key component of employability in the digital age.

2.6 Grounded Theory in Employability Research

Grounded theory provides a systematic methodology for developing theory from data. Unlike traditional approaches that test existing theories, grounded theory allows for the emergence of new conceptual frameworks (Glaser & Strauss, 1967).

Charmaz (2014) introduced a constructivist approach to grounded theory, emphasising the co-construction of meaning between researchers and data. This perspective is particularly relevant for studying complex social phenomena such as workplace readiness, where multiple factors interact dynamically.

Previous studies have used grounded theory to explore employability and career development, but there remains a need for more comprehensive models that integrate individual, institutional, and contextual factors.

3. Theoretical Framework

Understanding workplace readiness among CSE graduates requires a multidimensional theoretical lens that captures both individual competencies and systemic influences. This study integrates Human Capital Theory, Experiential Learning Theory, and Constructivist Grounded Theory to provide a comprehensive framework for analysing how workplace readiness is developed and manifested.

3.1 Human Capital Theory

Human Capital Theory, as articulated by Becker (1993), posits that education and training enhance individuals' productivity, thereby increasing their value in the labour market. Within this framework, higher education institutions serve as primary sites for the accumulation of knowledge and skills that are directly transferable to employment contexts.

In the context of CSE graduates, human capital is typically associated with technical competencies such as programming, algorithmic thinking, and systems design. These competencies are often measured through academic performance, certifications, and technical assessments. However, the theory assumes a relatively linear relationship between education and employability, implying that increased educational attainment leads to better job outcomes.

This assumption has been increasingly challenged in contemporary labour markets. Studies indicate that despite possessing formal qualifications, many graduates face difficulties securing employment due to a mismatch between acquired skills and industry expectations (Jackson, 2016). This suggests that human capital, in its traditional form, may be insufficient to explain workplace readiness fully.

Furthermore, Human Capital Theory has been critiqued for its limited consideration of contextual and relational factors, such as institutional quality, labour market dynamics, and social capital (Brown et al., 2011). In developing countries, where educational systems may not be fully aligned with industry needs, the predictive power of human capital is further weakened (World Bank, 2019).

Nevertheless, Human Capital Theory remains a foundational component of this study, providing a baseline understanding of the role of education in skill development. It underscores the importance of technical knowledge while highlighting the need to extend beyond purely cognitive competencies.

3.2 Experiential Learning Theory

To address the limitations of Human Capital Theory, this study incorporates Experiential Learning Theory (ELT), developed by Kolb (1984). ELT posits that learning is a continuous process grounded in experience, involving four stages: concrete experience, reflective observation, abstract conceptualisation, and active experimentation.

In the context of workplace readiness, experiential learning emphasises the importance of applying theoretical knowledge in real-world settings. For CSE students, this includes internships, project-based learning, hackathons, and collaborative software development. These experiences enable students to develop practical skills, problem-solving abilities, and professional behaviours that cannot be fully acquired through classroom instruction alone.

Research consistently demonstrates that experiential learning enhances employability by bridging the gap between theory and practice (Jackson, 2016). It also fosters critical soft skills such as teamwork, communication, and adaptability, which are essential in dynamic work environments.

Moreover, experiential learning aligns with the demands of the modern technology industry, where continuous learning and adaptation are necessary due to rapid technological advancements. By engaging in iterative cycles of learning and reflection, students develop the capacity for lifelong learning, which is a key component of workplace readiness.

However, access to experiential learning opportunities is often uneven, particularly in developing countries. Limited industry partnerships, resource constraints, and institutional barriers can restrict students' exposure to practical experiences (World Bank, 2019). This highlights the need for systemic interventions to integrate experiential learning into CSE curricula.

3.3 Constructivist Grounded Theory

The third theoretical pillar of this study is Constructivist Grounded Theory, as proposed by Charmaz (2014). Unlike objectivist approaches, constructivist grounded theory emphasises that knowledge is co-constructed through interactions between individuals and their social contexts. It recognises that phenomena such as workplace readiness are not fixed or universal but are shaped by subjective experiences and contextual factors.

This perspective is particularly relevant for understanding workplace readiness as a dynamic and socially constructed process. CSE graduates do not develop readiness in isolation; rather, it emerges through interactions with educational institutions, peers, instructors, and industry environments. Factors such as institutional culture, pedagogical practices, and labour market

conditions all contribute to shaping graduates' perceptions and experiences of readiness.

Constructivist grounded theory also provides the methodological foundation for this study, guiding the processes of data collection, coding, and analysis. It allows for the emergence of categories and relationships directly from the data, rather than imposing predefined theoretical constructs.

By integrating constructivist principles, the study acknowledges the diversity of experiences among CSE graduates and the contextual variability of workplace readiness. This approach enables the development of a nuanced and flexible theoretical model that reflects real-world complexities.

3.4 Integrated Theoretical Perspective

The integration of these three theoretical perspectives provides a comprehensive framework for analysing workplace readiness:

- **Human Capital Theory** explains the role of formal education and technical skill acquisition.
- **Experiential Learning Theory** highlights the importance of practical experience and skill application.
- **Constructivist Grounded Theory** captures the dynamic, contextual, and socially constructed nature of readiness.

Together, these theories suggest that workplace readiness is not merely the outcome of education but a complex process involving the interaction of individual capabilities, experiential opportunities, and institutional contexts. This integrated framework guides the analysis and interpretation of data in this study, enabling the development of a grounded theoretical model.

4. Methodology

This study adopts a qualitative research design grounded in the principles of grounded theory. Grounded theory is particularly suitable for exploring complex and under-theorised phenomena, as it allows for the generation of theory directly from data rather than testing pre-existing hypotheses (Glaser & Strauss, 1967).

The study follows a constructivist grounded theory approach (Charmaz, 2014), which emphasises the co-construction of meaning between the researcher and the data. This approach is appropriate for examining workplace readiness, as it acknowledges the subjective and context-dependent nature of the phenomenon.

Unlike traditional grounded theory studies that rely on primary data collection, this research utilises secondary qualitative data. This approach enables the integration of diverse perspectives from multiple sources, enhancing the depth and breadth of the analysis (Johnston, 2017).

4.1 Data Sources and Selection Criteria

The study draws on a wide range of secondary data sources, including:

- Peer-reviewed journal articles
- Industry reports and white papers

- Government and policy documents
- Conference proceedings
- Educational frameworks and curriculum guidelines

Data were selected based on the following criteria:

- **Relevance:** Sources must address workplace readiness, employability, or skills development in the context of CSE or related fields.
- **Credibility:** Only reputable and peer-reviewed sources or reports from recognised organisations were included.
- **Recency:** Preference was given to sources published within the last 10–15 years to ensure contemporary relevance.
- **Diversity:** Sources representing different geographical and institutional contexts were included to capture variability.

This systematic selection process ensured that the data corpus was both comprehensive and reliable.

4.2 Data Analysis Procedures

The data analysis followed the core stages of grounded theory coding: open coding, axial coding, and selective coding.

Open Coding: In the initial stage, the data were broken down into discrete units of meaning. Key concepts and recurring themes were identified and labelled. This process involved line-by-line analysis of textual data to capture nuanced insights (Charmaz, 2014). Examples of initial codes included:

- "lack of practical skills"
- "importance of internships"
- "communication challenges"
- "industry expectations mismatch"

Axial Coding: In the second stage, relationships between codes were explored, and similar codes were grouped into broader categories. This involved identifying patterns and connections among the data. For instance, codes related to internships, project-based learning, and hands-on experience were grouped under the category "Experiential Learning." Similarly, codes related to communication, teamwork, and adaptability were grouped under "Soft Skills." Axial coding enabled the development of a structured framework that organised the data into meaningful categories.

Selective Coding: The final stage involved identifying a core category that integrates all other categories into a cohesive theoretical model. Through iterative analysis and constant comparison, the study identified "Dynamic Workplace Readiness" as the central phenomenon.

Selective coding also involved refining the relationships between categories and developing a conceptual model that explains how workplace readiness is constructed.

4.3 Constant Comparative Method

Throughout the analysis, the constant comparative method was employed to ensure rigour and consistency. This involved continuously comparing data segments, codes, and categories to identify similarities and differences (Glaser & Strauss, 1967).

This iterative process allowed for the refinement of categories and the emergence of theoretical insights. It also helped ensure that the findings were grounded in the data rather than influenced by preconceived assumptions.

4.4 Ensuring Trustworthiness

To enhance the credibility and reliability of the study, several strategies were employed:

Triangulation: Multiple data sources were used to validate findings and reduce bias.

Theoretical Saturation: Data collection and analysis continued until no new themes or categories emerged, indicating saturation (Charmaz, 2014).

Reflexivity: The researcher maintained awareness of potential biases and actively reflected on the interpretation of data.

Audit Trail: A detailed record of data sources, coding decisions, and analytical processes was maintained to ensure transparency.

4.5 Ethical Considerations

As the study relies on secondary data, it does not involve direct interaction with human participants. However, ethical considerations were maintained by:

- Properly citing all sources
- Avoiding plagiarism
- Ensuring accurate representation of original findings (Mannan & Farhana, 2026)

4.6 Limitations of the Methodology

While the use of secondary data offers several advantages, it also presents limitations. The study relies on existing data, which may not fully capture the specific experiences of CSE graduates in all contexts. Additionally, the lack of primary data limits the ability to explore emerging themes in depth. Despite these limitations, the grounded theory approach and rigorous analytical procedures ensure that the findings provide valuable insights into workplace readiness.

5. Findings and Analysis

The grounded theory analysis of secondary qualitative data revealed that workplace readiness among CSE graduates is a dynamic, multidimensional, and socially constructed phenomenon. Through open, axial, and selective coding, five major categories emerged: technical proficiency, soft skills integration, experiential learning exposure, industry-academia alignment, and self-regulated learning. These categories collectively contribute to a central phenomenon identified as "Dynamic Workplace Readiness."

5.1 Core Category: Dynamic Workplace Readiness

The central finding of this study is that workplace readiness is not a static endpoint but a continuous developmental process shaped by interactions between individual capabilities and institutional structures. This aligns with constructivist grounded theory, which posits that knowledge and competencies are co-constructed through social interaction and contextual engagement (Charmaz, 2014). Dynamic workplace readiness is characterised by:

- Adaptability to changing technological environments
- Continuous skill acquisition
- Integration of cognitive and behavioural competencies
- Responsiveness to industry demands

This conceptualisation moves beyond traditional definitions that emphasise fixed skill sets and instead highlights the evolving nature of employability in the digital age (Jackson, 2016).

5.2 Category 1: Technical Proficiency

Technical proficiency emerged as a foundational component of workplace readiness. It encompasses core competencies such as programming, software development, algorithmic thinking, data structures, and system design. These skills represent the primary form of human capital that CSE graduates bring to the labour market (Becker, 1993).

However, the analysis reveals a critical distinction between theoretical knowledge and applied technical competence. While many graduates possess strong conceptual understanding, they often struggle to apply this knowledge in practical contexts. This finding is consistent with prior research indicating that academic programs tend to prioritise theoretical instruction over hands-on application (Radermacher & Walia, 2013).

Employers increasingly demand proficiency in industry-relevant tools, frameworks, and methodologies, such as agile development, version control systems, and collaborative coding platforms. The absence of such practical exposure contributes to a perceived skills gap.

Furthermore, the rapid evolution of technology necessitates continuous updating of technical skills. Static knowledge acquired during formal education quickly becomes obsolete, reinforcing the need for ongoing learning and adaptation. Thus, technical proficiency should be understood not as a fixed attribute but as a dynamic capability that evolves.

5.3 Category 2: Soft Skills Integration

Soft skills emerged as a critical determinant of workplace readiness, often outweighing technical skills in importance. Key soft skills identified include:

- Communication (verbal and written)
- Teamwork and collaboration
- Problem-solving and critical thinking
- Time management
- Adaptability and resilience

These findings align with Finch et al. (2013), who emphasise that employers prioritise interpersonal and behavioural competencies in hiring decisions. Similarly, Robles (2012) identifies communication and teamwork as among the most essential skills in the modern workplace.

The analysis indicates that soft skills are not developed in isolation but are integrated through social and collaborative experiences. For example, group projects, presentations, and peer interactions play a significant role in fostering these competencies.

However, traditional CSE curricula often underemphasize soft skills, focusing primarily on technical content. This creates a gap between academic preparation and workplace expectations. The lack of structured opportunities for developing soft skills contributes to graduates' difficulties in adapting to professional environments.

Importantly, soft skills are context-dependent and require continuous refinement. Effective communication in a classroom setting may differ significantly from communication in a professional environment. Therefore, the development of soft skills must be situated within authentic contexts to enhance their applicability.

5.4 Category 3: Experiential Learning Exposure

Experiential learning emerged as a central mechanism for bridging the gap between theory and practice. This category includes:

- Internships
- Industry projects
- Capstone courses
- Hackathons and coding competitions

These experiences provide students with opportunities to apply theoretical knowledge in real-world settings, thereby enhancing both technical and soft skills. This finding is strongly supported by Kolb's (1984) experiential learning theory, which emphasises learning through experience and reflection.

The analysis indicates that graduates who have participated in experiential learning activities demonstrate higher levels of confidence, adaptability, and problem-solving ability. They are better equipped to handle complex tasks and navigate workplace dynamics.

Moreover, experiential learning facilitates the development of professional identity. By engaging in real-world tasks, students begin to see themselves as practitioners rather than learners. This transition is crucial for successful integration into the workforce.

However, access to experiential learning opportunities is often uneven. Students in institutions with strong industry connections benefit more from internships and practical exposure, while others face significant barriers. This disparity highlights the role of institutional support in shaping workplace readiness.

5.5 Category 4: Industry-Academia Alignment

The alignment between academic institutions and industry requirements is a critical factor influencing workplace readiness. This category encompasses:

- Curriculum relevance
- Industry partnerships
- Guest lectures and mentorship programs
- Collaborative research initiatives

The analysis reveals that misalignment between academia and industry is a major contributor to the skills gap. Many academic programs fail to keep pace with rapidly changing technological trends, resulting in outdated curricula and irrelevant training (World Bank, 2019).

Effective industry-academia collaboration can address this issue by ensuring that educational programs are aligned with labour market needs. For example, industry input in curriculum design can help identify emerging skills and technologies. Similarly, guest lectures and mentorship programs provide students with insights into real-world practices.

However, such collaborations are often limited, particularly in developing countries. Institutional constraints, lack of incentives, and bureaucratic barriers hinder the establishment of strong partnerships. As a result, graduates are often ill-prepared for industry expectations.

5.6 Category 5: Self-Regulated Learning

Self-regulated learning emerged as a key factor in enhancing workplace readiness. It refers to the ability of individuals to take control of their own learning processes, including setting goals, monitoring progress, and reflecting on outcomes (Zimmerman, 2002).

In the context of CSE, self-regulated learning includes:

- Engaging in online courses and tutorials
- Working on personal coding projects
- Participating in open-source communities
- Staying updated with emerging technologies

The analysis indicates that graduates who actively engage in self-directed learning are more adaptable and better prepared for the workforce. They are able to acquire new skills independently and respond to changing industry demands.

This finding underscores the importance of lifelong learning in the digital age. Given the rapid pace of technological change, formal education alone is insufficient to ensure sustained employability. Graduates must continuously update their skills and knowledge to remain competitive.

5.7 Integrative Model of Workplace Readiness

The grounded theory analysis culminates in an integrative model in which workplace readiness is conceptualised as the outcome of interactions among the five categories. These categories are not independent but interconnected and mutually reinforcing.

For example:

- Experiential learning enhances both technical and soft skills
- Industry alignment influences the relevance of technical training
- Self-regulated learning supports continuous skill development

Thus, workplace readiness can be expressed as:

Workplace Readiness = f (Technical Proficiency + Soft Skills + Experiential Learning + Industry Alignment + Self-Regulated Learning)

This model reflects the complexity and dynamic nature of readiness, emphasising the need for a holistic approach to education and skill development.

6. Discussion

The findings of this study provide a comprehensive understanding of workplace readiness among CSE graduates, highlighting its multidimensional and dynamic nature. This section interprets the findings in relation to existing literature and theoretical frameworks, offering deeper insights into the implications for education, policy, and practice.

6.1 Reconceptualising Workplace Readiness

One of the key contributions of this study is the reconceptualisation of workplace readiness as a dynamic and evolving process rather than a static outcome. This perspective aligns with constructivist grounded theory, which emphasises the fluid and context-dependent nature of social phenomena (Charmaz, 2014).

Traditional models of employability often focus on discrete skill sets, assuming that the acquisition of certain competencies is sufficient for workplace success. However, the findings suggest that readiness is continuously shaped by interactions between individuals and their environments. This dynamic view is particularly relevant in the context of the technology sector, where rapid innovation requires constant adaptation.

6.2 The Limitations of Human Capital Theory

While Human Capital Theory provides a useful framework for understanding the role of education in skill development, the findings highlight its limitations in explaining workplace readiness. The assumption that formal education directly translates into employability is challenged by the observed skills gap (Jackson, 2016).

The study demonstrates that technical knowledge alone is insufficient for workplace success. Instead, employability depends on a combination of technical, behavioural, and experiential factors. This suggests the need to expand the concept of human capital to include soft skills and experiential learning.

6.3 Central Role of Experiential Learning

Experiential learning emerges as a critical bridge between academic knowledge and professional practice. Consistent with Kolb's (1984) theory, the findings show that learning through experience enhances both technical and soft skills.

The importance of internships and project-based learning is particularly evident. These experiences provide students with opportunities to apply theoretical knowledge, develop professional competencies, and build confidence. They also facilitate the transition from student identity to professional identity.

However, the unequal distribution of experiential learning opportunities raises concerns about equity. Students from well-resourced institutions or urban areas are more likely to access internships and industry exposure, while others may be disadvantaged. Addressing this disparity is essential for promoting inclusive employability.

6.4 Integration of Soft Skills

The findings reinforce the growing consensus that soft skills are critical for workplace success. Communication, teamwork, and adaptability are essential for navigating complex work environments and collaborating with diverse teams (Finch et al., 2013).

The study highlights the need to integrate soft skills into technical education. This requires a shift from traditional lecture-based teaching to more interactive and collaborative pedagogies. For example, group projects, presentations, and peer assessments can help students develop interpersonal competencies.

Moreover, soft skills development should be contextualised within professional settings to enhance their relevance and applicability.

6.5 Importance of Industry-Academia Collaboration

The findings underscore the importance of aligning educational programs with industry needs. Effective collaboration between academia and industry can help ensure that curricula remain relevant and responsive to technological advancements.

However, the study also reveals significant challenges in establishing such collaborations, particularly in developing countries. Institutional barriers, lack of resources, and limited incentives hinder partnership development (World Bank, 2019).

Policymakers and educational institutions must prioritise industry engagement by creating frameworks for collaboration, providing incentives, and fostering partnerships.

6.6 Lifelong Learning and Self-Regulation

The emphasis on self-regulated learning reflects the changing nature of work in the digital age. As technologies evolve, graduates must continuously update their skills to remain competitive. This requires a proactive approach to learning, characterised by autonomy, motivation, and adaptability (Zimmerman, 2002).

The study suggests that educational institutions should not only impart knowledge but also cultivate the capacity for lifelong learning. This includes teaching students how to learn, rather than what to learn.

6.7 Implications for Developing Countries

The findings have significant implications for developing countries, where structural challenges exacerbate employability issues. Limited resources, outdated curricula, and weak industry linkages hinder the development of workplace readiness.

Addressing these challenges requires systemic reforms, including:

- Curriculum modernisation
- Investment in infrastructure
- Strengthening industry partnerships
- Promoting experiential learning opportunities

These interventions can help bridge the gap between education and employment,

enhancing the competitiveness of graduates in global labour markets.

6.8 Theoretical and Practical Contributions

This study contributes to the literature by developing a grounded theoretical model that integrates multiple dimensions of workplace readiness. It extends existing theories by incorporating experiential and contextual factors, providing a more comprehensive understanding of employability.

Practically, the findings offer actionable insights for educators, policymakers, and students. By adopting a holistic approach to skill development, stakeholders can better prepare graduates for the demands of the modern workplace.

7. Conclusion

This study set out to explore and theorise workplace readiness among Computer Science and Engineering (CSE) graduates using a grounded theory approach based on secondary qualitative data. The findings demonstrate that workplace readiness is a multidimensional and dynamic construct that cannot be fully explained by traditional models focusing solely on technical competence or academic achievement. Instead, readiness emerges from the interaction of several interrelated dimensions, including technical proficiency, soft skills, experiential learning, industry-academia alignment, and self-regulated learning.

A key contribution of this research is the development of an integrative theoretical model that conceptualises workplace readiness as a continuous developmental process rather than a fixed endpoint. This model highlights that technical skills, while essential, must be complemented by interpersonal competencies, practical experience, and the ability to engage in lifelong learning. The findings reinforce the limitations of conventional human capital theory by demonstrating that formal education alone is insufficient to ensure employability in rapidly evolving technological environments.

The study also underscores the critical role of experiential learning in bridging the gap between academic knowledge and professional practice. Internships, project-based learning, and real-world problem-solving opportunities significantly enhance graduates' readiness by fostering both technical and soft skills. However, unequal access to such opportunities presents a challenge, particularly in developing contexts where institutional resources and industry linkages may be limited.

Furthermore, the importance of industry-academia collaboration is evident in ensuring curriculum relevance and alignment with labour market needs. Strengthening partnerships between educational institutions and industry stakeholders can facilitate the development of job-ready graduates. Equally important is the role of self-regulated learning, which enables graduates to continuously update their skills in response to technological advancements.

In conclusion, this study provides a comprehensive and theoretically grounded understanding of workplace readiness among

CSE graduates. It offers valuable insights for educators, policymakers, and students, emphasising the need for a holistic and adaptive approach to skill development. Future research should build on this framework by incorporating primary data and exploring context-specific variations to further refine and validate the proposed model.

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