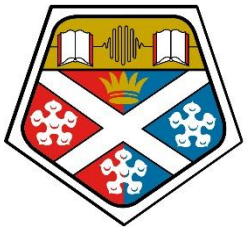

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Turnover Intentions Among Women Engineers: A Field Theory Perspective

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Submitted in Fulfilment of the Requirements for the

Degree of Doctor of Philosophy

2026

DECLARATION OF AUTHENTICITY AND AUTHOR'S RIGHT

This thesis is the result of the author's original research. It has been composed by the author and has not been previously submitted for examination which has led to the award of a degree.

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Date: 26 February 2026

ABSTRACT

The turnover phenomenon among women engineers has been consistent for many years. Women engineers have encountered various challenges in the workplace across different stages of their employment, not only from organisational factors but also from external factors that affect their work. While previous scholars have made valuable contributions, research on turnover intentions among women, particularly in engineering, remains limited, especially in the Malaysian context. The current research contributes by addressing this gap. Drawing on concepts from Lewin's Field Theory and Role Theory, which posit that women engineers occupy multiple roles in various settings, this thesis aims to shed light on the factors within and beyond the organisational context that influence turnover intentions. The study employed a convergent mixed-methods research design, integrating both quantitative and qualitative approaches. A survey of 309 engineers based in Malaysia focused on hypotheses tests about the relationships between organisational socialisation tactics, job embeddedness, and turnover intentions for both men and women. Focus group discussions with 21 women engineers were analysed to identify themes related to organisational and non-organisational forces influencing turnover intentions. The survey analysis showed that specific forms of socialisation tactics particularly content and social tactics were significantly associated with job embeddedness and turnover intentions. Job embeddedness also mediated the relationship between socialisation tactics and turnover intentions, while gender was not found to moderate this relationship. The focus groups revealed that women engineers face both organisational challenges, such as workload demands, limited support, and gender bias, and non-organisational pressures, including family responsibilities, commuting burdens, and long-term career goals. These findings highlight how a web of interrelated forces influences the turnover intentions of women engineers. The research contributes context-specific insights by examining turnover intentions among women engineers in Malaysia. The findings contribute valuable insights to organisational practices and advocate for policies that support women in sustaining and advancing their careers in engineering. Practically, this study informs organisational strategies and national policy efforts aimed at supporting and retaining women in their jobs and engineering careers.

Keywords: Women Engineers, Organisational Socialisation, Job Embeddedness, Turnover Intentions, Mixed-Methods Research

ACKNOWLEDGEMENTS

Finally, I Am Here.

Alhamdulillah. Allah the Almighty brings me here. With His blessing, everything that I thought was not possible, He made it possible for me.

I am eternally grateful for the support from my husband, Mohd Redzuan Hashim, the pillar, the one who encouraged me to take the first step in my PhD and stay away from my comfort zone, the one who saw my ups and downs, the one who saw me cried and cried with me, the one who prays for me day and night and the one who never lose trust on my capability. Thank you for your *redha*, Pa.

Undoubtedly, my greatest thanks go to my supervisors, Professor Dora Scholarios and Professor Patricia Findlay. Michelle Obama once said, "Success is not about how much money you make; it is about the difference you make in people's lives." Professor Scholarios and Professor Findlay have made a huge difference in my life. I am indebted to both of them, who never lost hope in me and kept supporting me till the end. Thank you for sharing your wealth of expertise with me.

I sincerely appreciate the support and help I received at the Strathclyde Business School. Thank you, Prof. Cunningham and Prof. Baum, for your advice and feedback during my PhD reviews. Jane was the first person I met at SBS; she always helped me whenever I needed her. Thank you, the Vice Dean of SBS, who approved my application for the extension of studies. And heartfelt thanks to the examining committee, Professor Abigail Marks, Dr Pauline Anderson and Dr Brian Garvey, who chaired the viva session, for your constructive comments and suggestions.

I would not be here, and I would not even exist in this world without my parents. Mak Ayah, Hjh Rokiah Omar, and Hj Jahya Janal, thank you for your genuine love and endless doa for Kakngah. To my parents-in-law, Hashim Hamid and Pauziah Burok, my siblings, and my family-in-law, thank you for all your support and concerns.

To my son, Umar Yusuf, the gem of our small family. I strive to finish this to set a good example for him, showing that we must never give up. I pray to Allah that you will be more successful and stronger than me and that all your wishes come true. Thank you, Yusuf, for bringing light to my PhD journey.

Special thanks to my friends — Prof. Ts. Dr. Shafinar Ismail, who guided me and checked my first proposal for my PhD application, and Dr. Wahida Yaakub and family, who helped my husband and me when we arrived in Scotland. I cannot tell you how much I thank you and owe you for your kindness while we were in Scotland. Dr. Daleela (UiTM), Dr. Amaliya (UMK), Dr. Cheng (UMS), Dr. Sharinah (UMS), Prof. Shafek (UTM), Dr. Amalina (UPSI), Dr. Chandanabhumma (University of Michigan) and members of Qualitative Study Group, thank you for enlightening me whenever I had questions about research.

Thank you, Zana, Fetty, Diyana, Dr. Ezaili, Dr. Ainaa, Dr. Lyne, Arwah Ayue, E, Suraya Hamimi, and many UiTM friends who always gave me moral support. To Malaysian friends in Glasgow and GTRNB girls — Hawa, Isya, Aina, Kak Eda, Ayu — who helped me during my confinement in Glasgow, you made my life as a student and first-time mother easier. Friends in the WEO office, thank you for being great companions. I am grateful for such beautiful friendships filled with positive vibes.

This thesis would not have been possible without the support from the sponsor of my study, the Ministry of Higher Education and Universiti Teknologi MARA, Dean and the Faculty of Business and Management of UiTM, UiTM Melaka, and Dr. Zhen from the Hospital Besar Melaka. I extend my gratitude to the participants of my research, especially women engineers who voluntarily joined my focus group discussions; you are fantastic!

It is a long journey and a long list of people who constantly put me in their prayers. Sorry I cannot mention all of you, but you have a special place in my heart. I am “here” now, finally. Thank you for the support and doa. May Allah bless all of you.

Sincerely,
Arnida Jahya
University of Strathclyde, Glasgow.

To Papa, Yusuf, Mak and Ayah,

who have consistently trusted in my potential and kept me in their prayers, I dedicate this thesis with heartfelt gratitude.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Engineering is one of the industries within science, technology, engineering, and mathematics or STEM. This sector offers a wide range of disciplines, including civil engineering, electrical engineering, mechanical engineering, structural engineering, modern technology, water systems and plumbing, and energy production and supply. Today, engineering is one of the fastest-growing sectors globally. Similarly, the engineering sector in Malaysia, which is the empirical context examined in this thesis, has undergone significant transformations since the country's independence in 1957, evolving into a cornerstone of its economic development. The transformation from being a predominantly agriculture-based to industry-based economy in a rapidly changing world emphasises the increasing demand for engineers (Malaysian Investment Development Authority, 2024). One of the major driving forces behind Malaysia's industrial and engineering sector expansion was the Industry Master Plan (IMP), introduced nearly four decades ago by the Ministry of International Trade and Industry (MITI). The first IMP, launched in 1986, played a crucial role in paving the foundation for manufacturing to become the leading industry of Malaysia's economy. Now, engineering is a key driver of Malaysia's economic growth, supporting industrial development and technological advancement.

By focusing on the development of industrial zones, investment in technology, and enhancement of the local workforce, the IMP contributed significantly to the

demand for engineers, particularly in manufacturing, construction, and technology-driven sectors (Muhammad Nur Azuan, n. d.). Additionally, the rise of Industry 4.0 and ongoing expansion of Malaysia's industrial landscape, driven by government policies such as the New Industrial Master Plan (NIMP) 2030, highlights the need for a highly skilled and diverse engineering workforce.

However, in many countries, particularly in the Asia-Pacific region, this expansion has resulted in a shortage of skilled workers, with women engineers remaining notably underrepresented (UNESCO, 2021). The underrepresentation of women engineers may be attributed to fewer women entering the engineering workforce and a higher proportion leaving the profession (Helman et al., 2020), with more women exiting than entering the field. Given this context, it is crucial to examine the reasons that contribute to women's decisions to leave engineering jobs. Hence, this research aimed to explore the factors influencing the turnover intentions of women engineers and the underlying reasons for their desire to leave their jobs or even the profession entirely. This introductory chapter outlines the background of the study, including providing an overview of the profile of women engineers in Malaysia, the contribution of the research, research questions and methodological approaches. The organisation of the thesis is discussed at the end of the chapter.

1.2 Background of the Study

Over the past century, research into employee turnover has remained a topic of keen interest among academics and practitioners, given its critical importance to organisations' operation and survival (Hom et al., 2012; Rubenstein et al., 2018). With increasing participation and turnover rates among women (Habrich et al., 2021;

Beddoes, 2021), considerable research has been conducted to examine turnover among women. A typical industry with a notably small pool of female talent and a high turnover rate, which requires significant attention, is engineering (Fouad et al., 2020).

In the engineering profession, women often face unique challenges that can influence their decision to stay or leave a job. These challenges, to name a few, isolation, discrimination, and bias, are particularly pronounced in engineering workplaces. Researchers have identified these factors as the barriers to longer retention and significant contributors to women engineers' turnover (Schismenos et al., 2024). As women enter these environments, they must navigate the socialisation process to adapt to the organisational and engineering work culture and establish themselves professionally. Women engineers who are able to handle challenging situations in the engineering field tend to remain longer, whereas those who struggle to adapt to the engineering culture may consider leaving their jobs (Scott et al., 2021; Buse et al., 2013; Fouad et al., 2016; 2017; Singh et al., 2018).

Furthermore, responsibilities outside of the organisation, such as managing family and personal activities, also contribute to women engineers' decisions to quit their jobs (Ghaleb et al., 2025). They often face the challenge of balancing these responsibilities while simultaneously adapting to the demands of engineering work, which is typically characterised by long hours, high-pressure tasks, and a male-dominated environment (Fouad et al., 2011; Watts, 2009; Stewart & Shamdasani, 2017). Navigating these work demands requires not only technical competence but also a strong ability to adjust to workplace norms and expectations. This process of adjustment can be understood through the lens of organisational socialisation. Van

Maanen and Schein (1979, p. 211) introduced organisational socialisation, which refers to 'the process by which an individual acquires the social knowledge and skills necessary to assume an organisational role.'

The socialisation process plays a pivotal role in helping women engineers adjust to the engineering work environment and gain confidence in their job roles by helping them internalise the organisation's values, norms, and behaviours. During this process, women engineers are expected to quickly adapt to various tactics initiated by employers to acclimate to the engineering work environment. However, these tactics are often not designed considering how different genders respond to the process. Past research has indicated that the intensity of socialisation results, including adjustment, role clarity, and retention, can vary between the sexes. This variation is attributed to differences in value orientations and learning preferences (Kowtha, 2013).

Given that both women and men are frequently expected to conform to certain behaviours and social norms associated with their assigned gender roles (Beddoes, 2021), the socialisation experiences of employees can provide unique insights into how they engage with social and cultural norms in the workplace. Such socialisation experiences are pivotal in shaping individual’s self-efficacy and self-concept (Bauer et al., 2025), particularly for engineers, and significantly influencing their performance outcomes within the engineering profession. Consequently, the ability of engineers especially women to successfully fulfil the duties of engineers not only contribute to better learning and adaptation in the engineering work system (Beddoes, 2021) but also enhances the retention (Bauer et al., 2025).

As women engineers gain experience and tenure, their socialisation experiences significantly shape their long-term adjustment and retention within the organisation. Successful adjustment can facilitate their social integration and embeddedness within the company, fostering a greater sense of connection and fit (Peltokorpi et al., 2022; Ahmad et al., 2019) and retention (Allen, 2006; Allen & Shanock, 2013). However, this process is influenced by various factors both within and outside the organisation. Mitchell et al. (2001) coined job embeddedness, which explains that employees become "embedded" in their jobs and organisations when they have strong links, fit, and sacrifices that make leaving the job or organisation difficult. These links include connections with colleagues, supervisors, and the broader community.

The cumulative impact of factors within and outside the workplace can significantly contribute to the attachment of women engineers in their organisation. Indeed, organisational and non-organisational contexts play pivotal roles in shaping women's experiences in the workforce. Theorists posit that individuals interact with their environment, emphasising that human behaviour is influenced by the forces present within the environment and their life context (Etzioni, 1968; Lewin, 1951; Burnes & Cooke, 2013). Furthermore, given that individuals may have diverse roles in other areas of their lives, each role contributes differently to various contexts (Furstenberg, 1969; Super, 1980). The various roles that women engineers hold, such as employees in the workplace, mothers at home, or leaders in social clubs, can significantly influence their attitudes toward career decision (Ghaleb et al., 2025). These dual expectations place additional pressure on women engineers, making them more susceptible to the effects of internal and external factors on their decision to stay

or leave their jobs. This struggle often leads to a diminished interest in the engineering field and, ultimately, to voluntary resignation (Fouad et al., 2020).

Reflecting on the above discussion, there is growing concerned about how organisational and non-organisational factors influence the attitude towards turnover of women engineers. Although studies have recognised women engineers' turnover, research has yet to extensively investigate the interrelated factors of turnover beyond the organisational context (Fouad et al., 2017; Peltokorpi et al., 2015; Meiksins et al., 2020). Furthermore, past research has acknowledged the participation of women in the engineering profession, however, Meiksins et al. (2020) reported that most of this research has been focused on the perspectives of undergraduate women aspiring to join the engineering industry (e.g., Sabapathy Pillay & Thang, 2023; Seron et al., 2016; 2018; Riney & Froeschle, 2012) and on engineering faculty members, instead of women engineers who are in the industry (Brown & Godwin, 2019). In the Malaysian context, numerous studies on engineering careers have been conducted, primarily linking them to engineering education. However, research focusing on engineering employment and turnover among women engineers remains limited (Salleh et al., 2023).

Therefore, further exploration of the factors contributing to turnover among women engineers in Malaysia, both within the organisational (work context) and non-organisational (non-work context) domains, is crucial. Such exploration would help identify all potential forces of turnover that may influence women engineers' intentions to leave and provide a deeper understanding of their career decisions. This approach enables a thorough explanation of the factors influencing women's decisions to leave

an organisation, thus contributing to the advancement of knowledge in women's engineering careers literature.

1.3 Overview of Women Engineers in Malaysia

This thesis focuses specifically on turnover amongst women engineers in Malaysia, exploring the factors that influence their intentions to leave their jobs and organisations. The engineering context presents a useful setting for studying the factors contributing to women engineers' turnover intentions, primarily due to various challenges such as a demanding work environment, and structural challenges that impact career progression (Nur Izzaty Shahirah et al., 2024; Hunt, 2016; Kahn & Ginther, 2015). Furthermore, the engineering sector has historically been male dominated, leading to several consequences that impact career trajectories, and retention of women engineers.

Similar to many other countries, the engineering sector in Malaysia remains predominantly male-dominated (Schismenos et al., 2024; Sham et al., 2024). However, the Malaysian government's open education policy, which ensures access to education for all citizens, has contributed to an increasing number of women enrolling in higher education, including technical disciplines such as engineering. As a result, more women are entering the engineering profession and pursuing long-term careers in the field (Idris et al., 2024). Women's participation in the STEM labour market, particularly in engineering, has been steadily increasing (Dalia Abdulkareem et al., 2024). The proportion of women engineers in the country grew significantly, from 4.45% in 1990 to 27% in 2018 (Women Engineers Section: JURUTERA Magazine, 2020). More recently, the Board of Engineers Malaysia (BEM) in its 2022 Annual

Report reported that women constitute approximately 29% of graduate engineers who are registered with BEM to practice engineering in Malaysia. This upward trend aligns with the overall improvement in women's participation in the labour force, which rose from 37.2% in 1970 to 56.2% in 2023 (Megat Muzafar & Abdul Hamid, 2024).

Over the years, there has been significant progress in integrating more women into the engineering profession. As Malaysia moves towards becoming a high-tech and industrialised nation, the demand for skilled engineers continues to grow, particularly women engineers. The increasing participation of women in engineering professions is not limited to Malaysia or the Asian region but can also be observed in other parts of the world, such as the United States (Martinez & Christnacht, 2021), Australia (Office of the Chief Scientist, 2020), and various European countries (Eurostat, 2022).

The increasing participation of women engineers in the workforce is viewed as a significant step towards a more inclusive and dynamic economy that can better adapt to changing global challenges and opportunities. Ostry et al. (2018) reported that the inclusion of women in the workforce especially in engineering can enhance the production process by introducing new skills, thus creating a team with a more diverse skill set and expertise between men and women. A team with diverse gender representation is likely to generate more innovative ideas (Liang et al., 2015) and possess collective intelligence, which is beneficial for performing a variety of cognitive tasks more effectively than a homogenous team (Woolley et al., 2010). In addition to enhancing economic diversification and reducing income inequality (Nalini et al., 2025), increased workforce participation among women especially in engineering also promotes economic resilience. For Malaysia to become a high tech

and industrialised nation by 2030, more women engineers are needed to contribute to more inclusive and sustainable industrial growth. This is aligned with the 2030 Agenda for Sustainable Development whereby the greater participation of women in engineering supports several United Nations Sustainable Development Goals (SDGs) such as gender equality (SDG 5), economic growth (SDG 8), and innovation (SDG 9), which are essential for national progress (United Nations, 2023; Lopez, 2020).

Although women's involvement in engineering in Malaysia particularly has increased over the years, and their participation in the workforce has yielded positive outcomes, their underrepresentation in the engineering sector fields remains a pressing concern (Chang, 2022; Gong, 2023). While women consistently make up a greater proportion of STEM graduates compared to men (MOHE Graduate Tracer Study, 2015–2021), their participation in engineering remains significantly lower than that of men in Malaysia (DOSM Labour Force Survey Report, 2022). This disparity is reflected in the overall labour force participation rate, where in 2023, men participated at a significantly higher rate (82.3%) compared to women (56.2%). Additionally, men continue to dominate professional and technical roles, with 2.28 million men in these positions compared to 1.57 million women—approximately 1.5 times higher (Megat Muzafar & Abdul Hamid, 2024). The lower participation of women engineers in employment not only perpetuates a lack of diversity and inclusion but also gives rise to challenges such as gender bias, limited career advancement opportunities, a scarcity of role models from the same gender, and a less supportive work environment (Dabić et al., 2023). Furthermore, the persistently low global representation of women in engineering, coupled with high turnover rates, reflects ongoing barriers to their retention and career advancement (Schmader, 2023). These challenges have drawn the

attention of researchers seeking to explore and understand the underlying causes of this issue.

The turnover issue among women engineers in Malaysia sets the backdrop for this research, which aims to explore the various internal and external organisational factors influencing their intentions to quit. The examination of the engineering sector in Malaysia presents a compelling and challenging area of study due to the diverse cultures and influenced by various ethnicities, religions, and historical backgrounds. While it is essential to avoid generalisations, particularly by assuming that perspectives from other contexts (e.g., Western context) directly apply to Malaysia, certain cultural and societal factors may still influence views on women and employment in Malaysia, especially in engineering (Miller, 2011). In many societies, including Malaysia, traditional gender roles have historically influenced societal expectations, often linking women's roles predominantly to family and domestic responsibilities. This expectation places additional pressure on women engineers, who must navigate the demands of both their professional and personal lives. Furthermore, highly educated and working women in Malaysia often encounter the statements such as, "As great as women are, they end up in the kitchen too" (Shahul Hamid et al., 2023, p. 2), which reflect persistent societal expectations about gender roles. Social and religious norms create barriers that discourage women from seeking employment outside their homes, thereby limiting their participation in the labour market (Asadullah & Wahhaj, 2019). Additionally, past research indicate that traditional gender perceptions play a significant role in limiting women's participation in the labour force (Heintz et al., 2018) particularly in patriarchal countries such as the South Asian region including Malaysia (Ning & Karubi, 2018). The "breadwinner father, housewife mother"

ideology remains deeply ingrained, reinforcing expectations that men should be the primary earners while women focus on household and caregiving responsibilities. This situation is not unique to Malaysia only but is consistent across many other regions in Asia, where traditional gender roles continue to shape societal expectations and significantly impact the career trajectories of women professionals, including engineering (Sumaco et al., 2014).

Research on women in the engineering profession in the Malaysian context is highly necessary due to the paucity of studies on women engineers' turnover (Salleh et al., 2023), as well as the limited research on the work and life challenges faced by women engineers (Chen et al., 2024). Moreover, the engagement of an individual in engineering career is significantly influenced by gender, providing an interesting area to study gender (i.e., women) and turnover. Therefore, this research aims to deepen the understanding of the various internal and external organisational factors affecting women engineers' experiences, particularly in relation to their intentions to quit. Additionally, it seeks to identify strategies for creating more supportive and inclusive work environments that can reduce turnover and enhance career sustainability for women in engineering.

1.4 Contribution of the Research

This thesis contributes to the understanding of turnover intentions among women engineers by addressing key gaps in the existing literature. Specifically, this study makes contextual and theoretical contributions.

1.4.1 Contextual Contribution: Women Engineers in Malaysia

This research makes a significant contextual contribution by examining the factors influencing women engineers' turnover intentions, particularly the driving and restraining forces within the broader work environment in the Malaysian context. Based on the bibliometric analysis conducted by Chen et al. (2024), there remains a notable lack of research addressing the specific challenges encountered by women engineers in Malaysia, highlighting the need for more focused investigations in this area. Due to its multicultural and religious background, Malaysia holds unique perspectives on work and life, which may limit the applicability of concepts originating from Western contexts (Haron et al., 2020) especially in STEM field (Varma et al., 2023). While previous research in Malaysia has acknowledged women's participation in engineering, much of the focus has been on the context of engineering education (Sabapathy Pillay & Thang, 2023). In addition, past literature has also concentrated more on undergraduate women aspiring to enter the profession (e.g., Seron et al., 2016; 2018; Riney & Froeschle, 2012) and the reasons for women engineers' retention in the field (Salleh et al., 2023).

However, there remains a critical gap in understanding the experiences of women engineers actively working in the industry that contribute to job turnover. Therefore, this study contributes by shifting the focus to women engineers in professional settings, examining their experiences with organisational socialisation and how it influences their attachment to or departure from engineering roles in a particular organisation. Furthermore, this research provides a context-specific contribution by examining these issues within the Malaysian engineering profession,

an area that has received limited empirical attention (Hasan et al., 2021; Hamid & Ahmad, 2017; Wong et al., 2016). The majority of studies on turnover have been conducted in Western contexts (e.g., Lyons & Bandura, 2020; Bolt et al., 2022; Kowtha, 2008; Korte, 2009; Holtom et al., 2008; Chen, 2010), particularly in the United States (Allen et al., 2014). In contrast, research on these topics within the Malaysian context remains scarce, with only a few studies addressing employee turnover (e.g., Thurasamy et al., 2011; Johari et al., 2013; Hamid & Ahmad, 2017). This study bridges this gap by exploring the turnover intentions of women engineers in the Malaysian context, focusing on factors beyond the organisational environment. Given Malaysia's unique socio-cultural context, elements such cultural norms and societal attitudes play a crucial role in shaping women engineers' career experiences and may significantly impact their intentions to quit their jobs. The Malaysian socio-cultural context presents distinct challenges and opportunities for women engineers, shaped by factors such as traditional gender roles and family expectations, cultural attitudes towards women in male-dominated profession such as engineering, workplace norms and organisational structures, which may differ from those in Western settings and require locally relevant retention strategies.

By examining these contextual influences, this research contributes to a more comprehensive and culturally grounded understanding of women engineers' career trajectories in Malaysia. The findings provide valuable insights for policymakers, industry leaders, and organisations seeking to develop targeted interventions to support and retain women engineers in the Malaysian workforce.

1.4.2 Theoretical Contribution

This research contributes to the existing body of knowledge on turnover intentions among women engineers by addressing several critical gaps in the literature. Previous studies have predominantly focused on organisational and occupational factors as the primary reasons for turnover (e.g., Singh et al., 2013; Fouad et al., 2011; 2016; 2017; 2020; Scott et al., 2021, Shiang & Ngo, 2020), often overlooking broader life issues that extend beyond organisational influences (Peltokorpi et al., 2015). Hence, this study explores both work-related and non-work-related factors in explaining turnover decisions, offering a more comprehensive understanding of the career trajectories of women engineers.

This research also advances theoretical knowledge by examining the mechanisms through which organisational socialisation tactics influence turnover. While prior research has identified job satisfaction, organisational commitment, and met expectations as common mediators of this relationship (e.g., Bauer et al., 2025; Moreira et al., 2024; Ashforth & Saks, 1996; Bauer et al., 1998; Bilyalov, 2018), limited attention has been given to job embeddedness as a mediating factor (with few exceptions, e.g., Allen, 2006; Allen & Shanock, 2013; Ahmad et al., 2019; Peltokorpi et al., 2022). Job embeddedness is a relatively novel concept in South-East Asian academia, with limited studies utilising it in explaining turnover intentions (Setthakorn et al., 2024). By investigating job embeddedness, this study enriches the theoretical discourse on retention, linking the ongoing process of socialisation to long-term attachment and turnover outcomes (Peltokorpi et al., 2022) especially in Malaysian context.

Furthermore, much of the prior research has focused on newly graduated engineers (e.g., Kowtha, 2018) or has lacked empirical validation (e.g., Ellis & Bauer, 2017), thereby limiting the understanding of socialisation beyond the early career stage. This research therefore extends the limited exploration of organisational socialisation tactics as a determinant of turnover intentions (Lee et al., 2014; 2017; Gilmore & Harding, 2022), particularly among women engineers (Beddoes, 2021) who are already in employment. This study also contributes by conceptualising organisational socialisation as a continuous process rather than one confined to the early stages of employment (Yang, 2010; Spagnoli, 2020; Arras-Djabi & Lacaze, 2021). While socialisation research traditionally focuses on newcomers, this study extends the analysis to employees at any stage of their tenure, recognising that socialisation influences long-term organisational attachment, commitment, and turnover decisions (Bauer et al., 2007; Mitchell et al., 2001). Through this broader perspective, organisations can develop more effective strategies to address retention issues. By understanding how socialisation continues to shape employees' experiences beyond the entry stage, employers are better positioned to design ongoing support and engagement initiatives that strengthen commitment and reduce turnover among women engineers.

In addition, this research makes an important theoretical contribution by extending existing frameworks and offering new insights into organisational socialisation, attachment, and turnover among women engineers. Although previous studies have predominantly applied theories such as Social Cognitive Career Theory (SCCT), the Theory of Work Adjustment (TWA), and the Conservation of Resources

Theory to explain turnover, this study advances the field by broadening the theoretical perspective in several ways.

While various work-related theories have provided a foundation for studying turnover among women engineers, the theoretical framework employed in this research extends beyond these conventional approaches. This study incorporates Lewin's Field Theory (1951) and Role Theory (Kahn et al., 1964) to examine how multiple roles and the diverse life spaces of women engineers influence their career trajectories. By doing so, it offers a more dynamic understanding of how individuals negotiate the pressures of professional and personal life over the entire employment lifecycle, rather than focusing solely on the early stages of organisational socialisation.

1.5 Research Questions and Methodological Approach

The engineering field, typically male-dominated, poses distinct challenges for women, impacting their interaction, socialisation, and integration into the work environment. While past research has shown a notable gap in the literature regarding a comprehensive model that links turnover and its predictors among women engineers (Buse & Bilimoria, 2014; Fouad et al., 2017), this research aims to gain insight from women engineers regarding their turnover intentions by considering the factors beyond organisational context. The findings of this research have generated new significant empirical evidence, especially pertinent to the field of engineering. This thesis explored this critical issue with the following research questions:

1. What factors influence women engineers' intentions to leave their organisation?

2. What are the driving and restraining forces, derived from the broader work environment, that impact women engineers' turnover intentions?
3. How do these driving and restraining forces influence turnover decisions?

This research aims to expand the existing body of knowledge in turnover research and the understanding of women in the engineering profession through the application of Lewin's Field Theory and Role Theory. As proposed by Kahn et al. (1964) and focusing on the interpersonal level, Role Theory was employed to explain the variety of roles that women engineers occupy daily (for further reading, please see Section 2.7). These roles, such as being a mother at home and an employee at the workplace, significantly influence their attitude and behaviour at work.

Meanwhile, Field Theory provides a holistic explanation of the driving and restraining forces behind turnover intentions, given the different fields (i.e., life spaces) in which women engineers operate (for further reading, please see Section 2.4). The concept of life space in Field Theory reveals women engineers' complex dynamics, influenced by both organisational and non-organisational fields where they assume various roles. Marrow (1969) in his critical evaluation of Kurt Lewin emphasised the importance of comprehending both the field and the forces operating within it to understand the behaviours of specific individuals (in this case, women engineers). This understanding is crucial for identifying what forces have significant influence on women engineers attitude and behaviour of turnover.

Furthermore, Field Theory provides a robust framework for person-environment analysis, instrumental in quantitative and qualitative research domains. Quantitatively, it aids in determining the influence of various factors on an employee's

attitude and behaviour (e.g., Memon et al., 2018; Islam et al., 2019). Qualitatively, it supports research that employs in-depth and flexible methods, allowing for a thorough exploration of individuals' subjective experiences and the dynamic nature of their interactions within the work environment (Kaiser & Schulze, 2018). Understanding the person-environment interaction enables policy makers, researchers, and practitioners to identify all possible influencing forces, gain a deeper understanding of turnover among women engineers, and develop effective interventions to support positive employee outcomes.

On a methodological note, this thesis adopts a convergent mixed-methods design based on the guidelines provided by Plano Clark and Ivankova (2016). The aim of this research design is to achieve convergence, corroboration, and correspondence between the results from the different methods. This combination is instrumental in establishing a holistic understanding of women engineers' socialisation and career decisions and the various forces influencing their life domains. Creswell (2014) noted that such an approach is particularly practical in providing a complete picture, thus justifying its selection as the most suitable method to address the research questions of this study. Furthermore, integrating both quantitative and qualitative methods facilitates triangulation, allowing the findings from one method to be complemented and corroborated by the other (Plano Clark & Ivankova, 2016; Greene et al., 1989). This process significantly enhances the credibility and reliability of the overall study, providing a more robust and comprehensive understanding of the research topic.

The research commenced by formulating hypotheses to test specific relationships among variables, that are organisational socialisation tactics, job

embeddedness, gender, and turnover, in quantitative research (henceforth Study 1). Data were collected through online survey and then analysed statistically. However, it is essential to note that quantitative data alone may not provide a comprehensive understanding of the factors derived from the wider life roles of women engineers because the data focuses on measurable variables and not enough to capture the broader context in which these factors operate. Thus, to enhance the understanding of women engineers' intentions to leave their jobs, qualitative research (henceforth Study 2) through focus group discussions was conducted. This qualitative approach allowed for a more comprehensive exploration of data, addressing complex research problems that a quantitative approach alone might not fully capture (Fetters & Freshwater, 2015; Bryman, 2005). The combination of these two approaches enables the researcher to build a more comprehensive understanding of why women engineers may choose to leave their job and organisations. Consequently, it provides a solid foundation for drawing conclusions about the research problems and addressing the underlying issues influencing their career decisions. In line with global research trends, this study adopts a mixed-methods approach, combining surveys and focus groups. This approach is widely recognised and regarded as effective by researchers worldwide, particularly in employee turnover studies, as it allows for both quantitative analysis and in-depth qualitative insights (Lyons & Bandura, 2020). Further discussion on the methodology can be found in Chapter 5 (Research Methodology) of this thesis.

1.6 Structure of the Thesis

This thesis consists of nine chapters. The current chapter, Chapter 1, provides a comprehensive overview of the motivations driving this research. This initial chapter focuses on the underlying reasons for selecting the research topic, that is, turnover

intentions among women engineers. The study's specific objectives and the research's potential contributions to the existing body of knowledge are also clearly outlined. The chosen research methodology is explained, detailing the approaches and techniques employed to gather and analyse data.

Chapters 2 and 3 include a literature review related to the topic of this thesis. Chapter 2 discusses the issue of turnover among women engineers particularly in Malaysia context. It highlights the various challenges faced by women in the engineering profession that may influence turnover, including both work-related and non-work-related factors. The last sections of Chapter 2 explain the Field Theory as the organising framework of the research and the Role Theory. These theories are employed to elucidate the factors influencing turnover intentions among women engineers, which serve as the theoretical foundations for understanding the factors influencing their turnover decisions.

Chapter 3 focuses on organisational turnover and its predictors. It comprises three main sections, providing a comprehensive literature review on employee turnover, organisational socialisation, and job embeddedness. This serves to develop the theoretical framework underpinning this thesis. The chapter discusses the evolution of turnover theories and various factors, enhancing the understanding of previously studied reasons for leaving. It then explores organisational socialisation and job embeddedness, offering conceptual definitions and reviewing the literature on these concepts.

Chapter 4 presents the conceptual framework of the study. First, it develops hypotheses relating to key variables in the prediction of turnover intentions. Secondly,

it locates these hypotheses within a broader force-field conceptualisation of women's decisions. Based on the literature reviews in Chapters 2 and 3, this chapter develops an integrative framework that supports the mixed-method design of this research. Field theory is selected as the theoretical foundation of the study, based on the premise that behaviour is influenced by the interaction between an individual and their life spaces (i.e., environments). Therefore, this chapter explores the forces influencing turnover intentions, examining factors from the work and non-work environments. The framework integrates key concepts, including organisational socialisation tactics (Van Maanen & Schein, 1979), job embeddedness (Mitchell et al., 2001), gender, non-work-related factors, and turnover intentions.

Chapter 5 discusses the methodology adopted for this study. It begins with an in-depth discussion of the research designs for Study 1 and Study 2, that is convergent mixed-method research design. The Study 1 employed survey questionnaires, while the Study 2 utilised focus group discussions. Based on the selected research design, data were collected and analysed separately, with the integration of findings taking place during the interpretation and discussion. Notably, the findings from the quantitative data analyses are presented in Chapter 6. Chapter 7 presents the findings of the thematic analysis, which led to a deeper exploration of the driving and restraining forces impacting turnover intentions and decisions among women engineers, extending beyond the organisational context.

The quantitative and qualitative data were analysed separately, with their interpretations integrated into Chapter 8 (Discussion). Important findings in Study 1 include that most of the hypotheses are supported, and context tactics have no

significant relationship with turnover intentions or off-job embeddedness. There is no mediation effect of job embeddedness in the relationship between context tactics and turnover intentions. Gender does not moderate the relationship between job embeddedness and turnover intentions for male and women engineers. Job embeddedness in the study has been measured based on the extent to which the engineers are attached to their environment (i.e., organisation and community) and connected with the people in that environment. A notable contribution of this research is the identification of turnover factors specific to the context of women engineers in Malaysia, using the force field model as a foundation to examine the driving and restraining forces influencing their turnover decisions. The findings from Study 2 expand on this understanding, suggesting that the off-job factors critical to women engineers may extend beyond the immediate community where the women engineers reside.

Moreover, the findings showed that work-related support received by women engineers in their organisations plays a pivotal role in facilitating their learning and development. These supports also strengthened their fit within the team, contributing valuable insights to the literature on organisational socialisation and human resource management. Most importantly, this research contributed significantly to the literature on women in the engineering profession. It delved into the influential factors shaping the career decisions of women engineers, mainly focusing on their choices to leave the job and organisation.

Lastly, Chapter 9 considers the conclusions and implications of the research, including contributions, limitations, and suggestions for future research. This chapter discusses the impact of this research in greater detail.

CHAPTER 2

WOMEN IN ENGINEERING PROFESSIONS

2.1 Introduction

This chapter reviews the relevant literature concerning women in engineering professions, with a particular focus on the Malaysian context. It begins by outlining the participation of women engineers in Malaysia, including workforce trends and the employment landscape. This is followed by a discussion of the engineering labour market and occupational categories, along with the career opportunities and challenges faced by women engineers. Next, this chapter explores the issue of turnover among women engineers, including factors influencing their decisions to leave the job and an overview of turnover theories relevant to this context. The chapter then discusses Field Theory as an organising framework for understanding the interaction between work and non-work influences on turnover intentions and Role Theory, which provides further insights into how women navigate multiple roles within and beyond the workplace.

2.2 Women Engineers in Malaysia: Workforce Participation and Employment Landscape

2.2.1 Engineering Labour Market and Occupations in Malaysia

An engineer is a person who creates, develops, and tests solutions to technological and physical issues for the benefits of humankind. Meanwhile, engineering is a branch of science and technology focused on the design, construction,

and use of engines, machines, and structures, encompassing various disciplines and specialties (Kamaruddin, n. d.). The engineering profession refers to the formal, regulated career path for engineers, who are expected to meet specific qualifications, adhere to professional standards, and, in many cases, obtain certification from regulatory bodies. According to the Registration of Engineers Act 1967, it is compulsory for an engineer in Malaysia to register with the Board of Engineers Malaysia (BEM) in order to practice engineering. The registered engineers include Graduate Engineers, Professional Engineers, Professional Engineers with Practising Certificates, and Accredited Checkers.

In Malaysia, there are around 71 engineering disciplines where civil, mechanical, electrical, electronic, and chemical engineering are the major engineering disciplines (Institution of Engineers Malaysia, 2024). The field of engineering encompasses a variety of settings, both indoors and outdoors. These include offices, studios, laboratories, and even underground locations, reflecting the diverse and often demanding environments in which engineers operate. Generally, engineers engage in various work activities that require multiple skills, including managing people or projects, conducting research, designing and developing products, computer programming, production, and quality management (National Survey of College Graduates, 2013).

The field of engineering in Malaysia has advanced rapidly to support the country's modernisation through innovation and sustainable practices. Engineering plays a crucial role in driving Malaysia's economic growth by supporting key industries such as palm oil, manufacturing, services (including engineering

consultation and professional services), and oil & gas (O&G). These sectors rely heavily on engineering expertise to enhance productivity, and technological advancements, contributing significantly to the nation's GDP. For instance, the manufacturing sector, which contributes RM1.2 trillion (approximately GBP 210 billion) to Malaysia's GDP, is one of the largest drivers of the economy. It includes the chemical, automotive, and electrical and electronics (E&E) sub-sectors, where most engineers are employed (Malaysian Investment Development Authority, 2024).

Given the sector's reliance on engineering talent, it is important to understand the composition of Malaysia's engineering workforce. According to the BEM's Annual Report 2022, there were around 177,000 engineers registered with BEM at the end of 2022, of which 70.92% were male engineers and 29.08% were female. The highest registered engineers were in the following fields: Mechanical (53,116), Civil (50,891), Electrical (50,060), Chemical (23,200), and Others (67). With better support from the government in engineering education, the number of graduate engineers continues to rise, creating an increasing demand for more graduates with industry-relevant skills to sustain and enhance economic growth. In the engineering sector, labour supply (which depends on the production of engineering graduates) and labour demand are based on the changes in salaries/wages and employment. Economists refer this dynamic as the "cobweb effect" or "cobweb model" (Freeman, 1976; also see National Academy of Engineering, 2018). According to this model, an increase in demand for engineers (due to a labour shortage) leads to a rise in salaries above the equilibrium wage. This, in turn, results in a subsequent increase in enrolment in engineering bachelor's degree programmes, as more individuals are drawn to the profession by the prospect of higher earnings. It has been reported that the enrollment

of upper-secondary students in STEM fields in Malaysia has increased to 50.8% in 2024, up from 45.7% in 2023. Although the participation rate remains significantly below the target of the Malaysia Higher Education Planning Committee in 1967 that is 60% student enrollment in engineering education (Azahar, 2024), this still represents progress.

Notably, individuals in the science and technology sector, including engineering, typically earn higher wages and job security (Idris & Bacotang, 2023) rather than non-STEM field (Penang Institute, 2022). The higher earning potential in STEM fields is one of the key factors attracting top talents to pursue careers in these areas (Funk & Parker, 2018). However, due to the apparent gender segregation in the male-dominated profession such as engineer, women are typically paid less than men, which leads to the gender pay gap (Megat Muzafar & Abdul Hamid, 2024). This wage disparity is not just a statistical observation but is also reflected in women engineers' perceptions. As found in a focus group discussion conducted by Fan et al. (2024), women in architecture, engineering and construction (AEC) industry have expressed concerns about not being compensated equally with their male colleagues despite having similar levels of skill and expertise. This perception of unfair treatment can lead to job dissatisfaction and, in worse cases, may increase their propensity to leave an organisation (Moorthy et al., 2022; Fouad et al., 2020). As a result, the work climate in engineering is often less favourable for women, affecting their professional experience and career trajectories. The following section explores the career opportunities and challenges that shape the experiences of women engineers in the engineering profession.

2.2.2 Career Opportunities and Challenges for Women Engineers

The presence of women in this traditionally male-dominated field has been gradually increasing. The end of Second World War in 1945 marked a turning point, as there was a surge in demand for women engineers due to a shortage of male engineers. For instance, General Electric and Curtiss-Wright Corporation started to train women and offer them more opportunities to learn about science and technology (Kurutz, 2015; Bix, 2004). This period they were served as a crucial steppingstone, enhancing global prospects for women in the engineering profession. As a result, there was a significant increase in interest in engineering education among young women, and more women gained the confidence to enter this traditionally male-dominated profession (Domenico & Jones, 2006).

In 1961, Maimunah Sulaiman made history as the first woman engineer in Malaysia (Mohd Rus & Mohd Rosli, 2022). She was awarded an engineering scholarship to pursue a one-year diploma course, followed by three years of degree-level studies at Brighton Technical College. Upon completing her education, Maimunah joined the National Electricity Board (NEB) as a trainee engineer, later rising to the position of Senior Engineer at Headquarters, where she played a crucial role in managing electricity supply to rural areas. Maimunah Sulaiman's groundbreaking journey not only marked a significant milestone for women in Malaysia but also served as an inspiration for many others to follow in her footsteps. Her success in what was traditionally considered a male-dominated field helped challenge societal norms and break down barriers for women pursuing careers in engineering in Malaysia.

Following this, there have been many more opportunities for women to gain higher qualifications and employment, especially in technical fields. Women began enrolling in technical courses in the 1970s, although the numbers were relatively small at the time. By the 1980s, as more universities offered technical programs and equal access to education, enrollment in engineering courses in Malaysia grew (Tapsir & Mohd. Noor, 2005). It has been recorded that in 1981, only 1,626 male students and 86 female students enrolled in engineering education (Jabatan Perangkaan Malaysia, 1987, as cited in Tapsir and Mohd. Noor, 2005). Currently, STEM education and employment are thriving, with many higher institutions offering programs to produce more technical talents, including a growing number of women students. With the advancement of technology, more women are participating in engineering professions. It has been reported that the percentage of women engineers registered with the BEM increased from 25% in 2016 to 29% in 2022 (BEM, 2019; 2022). Currently, the inclusion of more women in organisations especially engineering sector is increasingly being recognised as a strategic solution supporting business sustainability and economic development (Idris et al., 2024; Singh & Peers, 2019; Joanna & Yee, 2011). It has been argued that Malaysia could boost its Gross Domestic Product (GDP) by 10 - 39% if participation of women in the workforce can be increased ("Investing in Women", 2024).

The increasing participation of women in employment, particularly in engineering, has contributed significantly to the economy by enhancing productivity, innovation, and overall economic growth. This involvement has challenged the old stigma that working women were often seen as unfeminine in society, demonstrating that women's contributions are crucial to the development and advancement of key

industries like engineering. Engineering jobs are often stereotypically viewed as masculine and associated with ideologies of meritocracy and individualism (Seron et al., 2018). Societal perceptions often view women as warm and caring, but not as competent in professional roles, especially when they prioritize caregiving (Crosby et al., 2004). Women are often perceived as soft individuals and are known for emotionally intimate relationships (Booth, 1972), agreeableness (Furnham & Cheng, 2015), and a value for social consciousness (Cech, 2015). This perception aligns with the communal attributes typically associated with women, as opposed to the agentic attributes more commonly linked to men (Bakan, 1966). Men are more commonly employed in skilled craft jobs, such as technical engineering tasks (Blau et al., 2002), which typically require physical strength, technical skills, engagement with objects, analytical and mathematical skills, and being competitive.

In terms of communal personality attributes, a woman is often viewed as feminine, expressive, and warm (Hentschel et al., 2019), inclined to establish connections with others (Eagly & Steffen, 1999), and considered to be more emotional and to have a stronger orientation towards interpersonal relationships (Conway et al., 1996). Accordingly, when women join paid employment, many find themselves in female-dominated occupations, such as clerical and service jobs, which often require social skills and a solid ability to connect with people (Gemelli, 2014; Cortes & Pan, 2018). These communal traits facilitate women's socialisation and ability to form organisational connections.

Women are more likely to pursue careers that align with their ambitions, desires, and life goals. They often emphasise their relationships and sense of fulfilment

when making career decisions (Sullivan & Carraher, 2022; Mainiero & Sullivan, 2005). Clerkin (2017) conducted an online survey with 745 leaders and found three key demands by women in the workplace: firstly, women desire to be part of organisations that offer enjoyable and socially valuable job opportunities; secondly, they seek flexibility in how they perform their work; and lastly, women are in pursuit of opportunities for career advancement, which include leadership roles, access to resources, and supportive work environments. These findings align with those of the APA (2012), which suggests that women are more likely to stay in a job when there is a good person-job fit, and the work is enjoyable. Participants in Clerkin's survey defined enjoyable work as having personally meaningful employment that aligns with their values, serves a purpose, and fits well with their work-life balance. This initiates a meaningful exploration of the core values that women hold in the workplace and the specific needs and preferences that define their professional experiences. Reflecting on the unique attributes, needs, and values of women provides insight into the impact of work and non-work environments on their attitudes and behaviours toward their careers.

Due to perceived differences in the characteristics and values of men and women, these perceptions can influence how individuals make decisions about their careers, as well as how they are compensated, assigned work-related tasks, promoted, and evaluated in the workplace (Haines & Stroessner, 2019). Edirisnghe and Cheok (2019) conducted focus group discussions with women engineers in Malaysia and found that woman tend to choose engineering fields with fewer male participants, such as biomedical engineering. This preference is driven by the perception that such fields offer a better opportunity for success and a more comfortable working environment,

as they are less dominated by men. Some women engineers believe certain engineering fields, like civil or mechanical engineering, are more challenging or unsuitable for women (Baguant, 2021). This belief stems from traditional gender roles and expectations, where women are not typically seen as fitting into these types of jobs.

Over time, these gender-based preconceptions have remained largely unchanged (Haines et al., 2016). Based on these stereotypical gender norms, male employees are often viewed as embodying qualities conducive to workplace success, while women employees are perceived conversely (Prentice & Carranza, 2002). These stereotypical characteristics can pose challenges for women fitting into the engineering environment, which is traditionally not aligned with these traits (Fouad et al., 2017). The demanding nature of engineering work, which often requires physical energy and high-order cognitive skills, presents additional challenges for women striving to perform tasks on par with men (Dimkpa, 2011). Furthermore, the engineering field's lack of family-friendly policies, outside work requirements, and long working hours compound the difficulties for women engineers in fulfiling work demands (Fouad et al., 2011).

When women join the engineering sector, their feminine traits seem to contradict the nature of engineering work. Women engineers often encounter difficulties adapting to their male colleagues' socialisation styles, which can include differences in conversation topics, lifestyles (Fouad, 2014), and types of humour (Seymour, 1995). A typical example of male engineers' interaction is the use of greetings such as “Hey, man!” or “Alright, mate!” which signals a common bond among male engineers (Faulker, 2009). Such modes of communication and interaction

among male engineers can make women engineers feel uncomfortable and unwelcome in the masculine-dominated work culture, further highlighting the challenges they face in integrating into the engineering environment.

In a study conducted by Fouad et al. (2017, p. 5), one of the women engineers described her work environment as an "old boys club" that was "dirty, smelly, and hazardous." This sentiment reflects the challenges women face in adapting to the male-dominated engineering culture. Further emphasising this point, a longitudinal study by Seron et al. (2018) found that women engineering students were often assigned managerial and administrative duties instead of "real" engineering tasks such as design, development, and problem-solving. This assignment of roles led women students to perceive themselves as less competent, reinforcing the notion that a male identity characterises engineering (Patrick et al., 2018). In addition, Su et al. (2009) found that women typically exhibit more vital artistic and social interests (communal traits), which contradicts Holland's occupational codes for engineers that are more realistic and investigative (agentic traits). The hegemonic masculine culture and "hostile climate" of engineering (Merkins et al., 2019) have shaped the perception and attitude that the engineering profession is not designed for individuals with feminine qualities.

Furthermore, the prevailing culture in engineering workplaces often challenges women to achieve a good fit (Ayre et al., 2013). Fouad highlighted this issue briefly in a presentation at the 2014 American Psychological Association (APA) convention, where she stated, "It's the climate, stupid!" This comment was about the hostile work culture prevalent in engineering, which has been identified as a significant factor

contributing to the higher turnover rates among women engineers. The demanding nature of engineering, characterised by long working hours, exacerbates the conflict faced by women in balancing work with leisure, family responsibilities, and community interests (Watts, 2009). Research conducted by Subramaniam and Abu Bakar (2021) revealed that construction professionals in Malaysia often face long working hours, which contribute to mental health issues, elevated stress levels, and limited family time. Consistent with Cortes and Pan (2018), women were less likely to choose occupations that demanded high work hours. Therefore, women engineers often face a dilemma: either reject the prevailing work culture and potentially jeopardise their job security or conform to it to avoid being perceived as an “outsider” or “foreign” to the team (Bastalich et al., 2007). Due to the multiple roles held by women (e.g., at work, at home, and in the community), they might experience role overload, role conflict, and anxiety (Barnett & Baruch, 1985) and thus contribute to withdrawal behaviour (Kahn et al., 1964).

Moving to the engineering career path, this field offers multiple opportunities for varied work experience and professional development. A survey conducted by Cardador and Hill (2018) among employed engineers identified three primary career paths: managerial, technical, and hybrid (a combination of managerial and technical). Engineers on the managerial path typically take on roles with increasing managerial responsibilities. In contrast, those on the technical path become more specialised in their technical expertise and progress up the technical career ladder. Previous research has established a connection between these distinct career paths and the perceived "best fit" for various professional tasks. This perception is often influenced by gender stereotypic distinctions between men and women, affecting how individuals are

assigned and perceived within these career paths. In engineering, tasks are often categorised as either “technically focused”—involving design, science, and math-related work—or “socially focused,” which requires communication and managerial-related activities. This dichotomy influences how tasks are assigned to men and women engineers. For instance, most women engineers are frequently assigned to managerial positions and hybrid paths, which require more interaction with people and fewer technically specific tasks. As a result, such a change in career paths can significantly influence their attitudes towards their job. Attrition rates tend to be higher (Cardador & Hill, 2018), particularly among women engineers (Fouad et al., 2011), who may have expected to utilise their technical engineering skills more extensively.

This practice is prevalent not only in professional engineering employment but also extends to educational settings. Women engineering students often receive non-technical job assignments during an internship, such as clerical work, coordination tasks, and tool collection, which do not promote the development of engineering skills (Silbey, 2016). This lack of opportunities to apply technical and analytical skills has reduced these students' perceived value and interest in the profession (Nogueira et al., 2021). Accordingly, they face difficulties establishing a fit with the job due to inconsistencies between their work values and their responsibilities.

Even though the stereotype of engineering has primarily driven the longstanding assumption that engineering is unsuitable for women as a masculine profession, many women engineers have successfully developed careers, adapted to the workplace culture, and become effective team members. Fouad (2014) reported that women engineers are more likely to be content and remain in their careers when

they are satisfied with their jobs, receive adequate support from their superiors, and when organisations actively endeavour to “make it right” for women. This includes recognising women’s contributions, caring for their well-being, investing in their training and professional development, maintaining transparency in career progression, supporting work-life balance policies, and cultivating a work culture that values work-life balance.

Further research has shown that women can successfully adapt to the engineering work culture by “doing gender” at work, which entails adopting or engaging in certain masculine behaviours typically associated with the engineering workplace (DeBoer et al., 2019; Faulker, 2009). Consistent with findings by Rudman and Glick (2001), women are often perceived as more competent and likely to succeed in their careers when they exhibit agentic traits. Women engineers who attempt to fit into the engineering work culture have employed various strategies, such as mimicking male behaviours, tolerating gender discrimination, building a solid professional reputation, and sometimes adopting an "anti-woman" stance (Schmitt, 2021).

It can be seen that engineering is considered a male-dominated profession that is closely associated with a masculine work culture. Women engineers, who remain a minority in this industry, often face the repercussions of gender stereotypes (Shiang & Ngo, 2020; Kanter, 1977). These women face various challenges not only from within their professional environment, such as prevailing gender stereotypes, a masculine workplace culture, and a lack of supportive systems specifically for women, but also from external pressures related to their roles in the family (e.g., responsibilities towards dependents).

Previous research has shown that women, especially mothers, often face more challenges balancing their personal and career lives than their male counterparts (Meeussen & Van Laar, 2018). A recent study examining gender differences in household responsibilities during the coronavirus pandemic found that women employees spent more time on caregiving tasks than office work during the lockdown. In contrast, caregiving duties did not significantly predict career outcomes for men (Stefanova et al., 2023). While altering these traditional roles of women as communal carers and men as agentic breadwinners may seem challenging, flexibility in their work arrangements is crucial for women grappling with work-life challenges. This includes flexibility in how, when, and where they work (Clerkin, 2017). Women engineers also face unique challenges in balancing their personal and professional lives, particularly in the engineering field, which is often characterized by long working hours and demanding project deadlines (Subramaniam and Abu Bakar, 2021).

Besides that, women place significant importance on the support provided by their superiors and employers. Atzori et al. (2008) found that, compared to their male counterparts, women appeared to place a higher value on learning about organisational matters and appreciated the guidance from experienced colleagues. This finding suggests that women are eager to contribute effectively within an organisation, especially when they receive adequate employer support. Furthermore, support from bosses is particularly crucial for women employees, as it facilitates their ability to perform better in their roles (Shanock & Eisenberger, 2006). In addition, Clerkin (2017) found that women respondents exhibited a preference for women leaders. Women working under women bosses reported feeling more supported in their work-related tasks, experiencing less job burnout, and having better opportunities for career

development. However, past research has revealed that women often receive fewer resources and less assistance in undertaking challenging tasks. Interestingly, the level of support provided to women can vary based on the gender of their leader (Stamarski & Son Hing, 2015). Given these dynamics, women often face a more challenging process in terms of learning and growth, especially in specialised technical fields such as engineering, where male dominance is prevalent, and women's voices are often marginalised (Pandey & Karki, 2016).

Despite the persistent visibility of gender segregation in engineering, including in Malaysia (Zaimi et al., 2023), the active participation of women in engineering is increasingly being sought to address gender inequalities. Support from colleagues, superiors, and employers plays a crucial role in ensuring that women engineers feel valued and integrated within the organisation. Such support is essential for them to work happily and comfortably. Failing to foster an inclusive environment for women in engineering can result in lower satisfaction, diminished interest, a lack of fit with the organisation, and, lastly, their decision to leave the field (Juntunen & Even, 2012; Fouad et al., 2020).

2.3 Women Engineers and Turnover

The previous sections have explored the nature of engineering jobs, as well as the challenges and opportunities women face in this field. These challenges, particularly those related to workplace dynamics and gender, can significantly affect women's career decisions. In the current section, the key influencing factors of turnover among women engineers are discussed, followed by a review of the theories that have been used to study these factors. The rationale behind the selection of the

theories for this study is elaborated, demonstrating how they align with the research aims and provide a solid foundation for exploring turnover among women engineers.

2.3.1 Influencing Factors of Turnover Among Women Engineers

Research has shown that the alignment between an individual and their environment plays a crucial role in shaping career outcomes (Fouad et al., 2017). Thus, a mismatch between the individual and the environment, including work and non-work, can lead to various consequences, such as turnover. Past research reveals that women face more significant challenges working in male-dominated industries and occupations. Such challenges include sociocultural attitudes and biases regarding women's potential in the workplace, a lack of support from organisation (Campuzano, 2019), and, even worse, experiences of sexual harassment (Daley et al., 2018). Research has shown that these challenges have resulted in various employee outcomes, including turnover, which has prompted increased scholarly attention on this issue. Despite the increased attention on turnover among women engineers from international researchers, the impact of work and non-work factors on women engineers' turnover is still limited in the Malaysian context (Hamid & Ahmad, 2017; Salleh et al., 2023). Furthermore, past research on the turnover intentions and turnover behaviour of women engineers has focused more on the organisational context, rather than exploring both work and non-work factors. Recent studies conducted in Malaysia have identified various factors influencing career decisions, including turnover, such as lack of motivation, gender and racial discrimination, work-life imbalance, unmanageable workloads, and a mismatch between personality and the nature of the work (Mazlan et al., 2023).

In a qualitative study exploring why women engineers leave the profession, Fouad et al. (2017) categorised participants' reasons for departure into six value-based categories derived from the Theory of Work Adjustment (TWA): achievement, comfort, status, autonomy, altruism, and safety. Based on the comments from 1,464 women engineers, Fouad et al. found inequitable compensation, poor working conditions, inflexible work environments, unmet achievement needs, and a lack of recognition and career advancement as primary factors for leaving the profession. Supporting these findings, Scott et al. (2021) conducted in-depth interviews with six former women engineers and concluded that two primary reasons for quitting a job or organisation were inconsistencies between their self-conceptions and the engineering culture, which they perceived as exclusive, unsupportive, and male-dominated. It can be seen that how the various aspects of work environment including positive and supportive work environment play a significant role in women's decisions to leave the job organisation.

In a proposed framework, Salleh et al. (2023) suggested that the extent to which women engineers in the oil and gas sector in Malaysia feel their contributions are valued by their employer and their well-being is prioritised significantly influences their intentions to either remain in their job for a longer period or resign. For women in engineering, who often face challenges such as gender biases and a male-dominated work environment (Schismenos et al., 2024), feeling supported by their employer can significantly enhance their job satisfaction and sense of belonging which crucial for longer retention (Wilson & VanAntwerp, 2021).

Organisational support facilitates the retention of women in engineering. Fernando et al. (2018) conducted interviews with 34 women engineers at various stages of their careers (i.e., early, mid, and late) and examined how support contribute to greater retention of women engineers. Based on the concept of habitus as proposed by Bourdieu (1984, 1990), they identified four key types of support crucial for women's career development: (1) care and support from superiors and peers; (2) constructive feedback on job performance; (3) involvement in significant tasks and assignment of high-level responsibilities; and (4) the presence of role models who successfully balance work and family life. In addition, Singh et al. (2018) suggest that women engineers remain in an organisation when they receive sufficient employer support in terms of acknowledgment and recognition of their work and emotional support, which contributes to their feeling valued and needed within the organisation (Buse & Bilimoria, 2014). According to the Work Adjustment Theory, Dawis and Lofquist (1984) propose that an individual's decision to stay in or leave an organisation depends on whether the environment's reinforcers (e.g., work culture) match the individual's needs. This alignment, or lack thereof, is known as person-environment correspondence, where a match between a person's values and abilities and the work environment is crucial. The degree of this correspondence significantly affects a women engineers' job satisfaction and tenure.

Shiang and Ngo (2020), through in-depth interviews with women engineers in Malaysia, reported that there are internal barriers within the field that hinder the professional growth of women engineers. The biased stereotypes in the engineering work environment have resulted in self-doubt, with women often being perceived as less capable or not sufficiently skilled to be involved in the engineering field. The

findings are consistent with those of Fouad et al. (2016), who conducted a study on turnover in the engineering field based on Social Cognitive Career Theory (Lent et al., 1994) and the integrated career change model (Rhodes & Doering, 1983). Based on the survey, they compared the turnover intentions of women engineers who had left the profession with those who had stayed. Following hypotheses similar to those of previous scholars (e.g., Buse et al., 2013), they posited that those who left (leavers) would exhibit weaker self-efficacy and outcome expectations in performing engineering duties, handling multiple roles, and managing the corporate culture compared to those who stayed (stayers). Contrary to typical findings, however, their results revealed no significant difference in confidence levels between the leavers and stayers, challenging common assumptions about the factors influencing turnover intentions among women engineers.

While some cases suggest that women engineers leave the job due to difficulties keeping up with their duties (Fouad et al., 2011; Scott et al., 2021), the perception of lack of technical capability is not always the primary reason for quitting. Fouad et al. (2016) discovered that women who leave engineering still possess significant confidence in their abilities to perform their duties. However, as a minority in a predominantly masculine workplace, they are often perceived as technically incapable (Faulkner, 2009) by the male counterparts and are excluded from core engineering activities (Bridges et al., 2023), despite their high self-belief and efficacy as engineers (Ayre et al., 2013; Hughes, 2011). Furthermore, in their research based on Social Cognitive Career Theory, Buse et al. (2013) found in their interviews with women engineers that among the 31 participants, the 21 women who remained in engineering exhibited higher self-efficacy, an ability to tackle challenging situations,

and the ability to solve complex engineering problems. In contrast, those who left the profession reported insecurity, ambiguity, and self-doubt. The study also highlighted that woman who chose to stay in engineering often had strong connections with coworkers, where collaboration and support played a significant role in their decision to persist in the organisation. This underscores that women's professional identity and success in engineering are influenced not only by their own abilities but also by the work culture and external perceptions they face in a male-dominated field.

Fouad et al. (2016) found that workplace support, such as advice from superiors, opportunities for development, and managerial empathy towards balancing work-family roles, makes a difference between those who stay and those who leave. In a male-dominated profession such as engineering, it is crucial for women to understand their job roles and to integrate effectively into workgroups. Support from colleagues and mentors, such as detailed performance feedback, can significantly reduce the anxiety and uncertainty for women engineers in their job roles (Fernando et al., 2018; Fouad et al., 2016; Bauer et al., 2007). This is further substantiated by evidence from a Malaysian study, where women engineers are more likely to achieve career success in engineering when they receive support, particularly in terms of opportunities to participate in work assignments and decision-making (Johari et al., 2013). Buse et al. (2013) also noted that women engineers tend to stay in the profession if they have a stronger connection with their colleagues, through support and advice.

The ability of women engineers to effectively perform their tasks and balance work-life roles is significantly challenged when they lack organisational support, particularly from supervisors and peers. According to Kossek et al. (2011), support in

the workplace can be divided into two major categories. The first type is “content-specific” support, where the supervisors take an active interest in employees’ well-being and provide them with the necessary resources to excel in their jobs. This can include organisational initiatives such as training and development programmes, recognition of employee contributions, and promotion opportunities. The second type, “content-general” support, revolves around socio-emotional aspects and reflects the supervisor's general expression of care. For instance, the organisation provides work-family support (e.g., policies) that enable the employees to fulfil their work and family demands. Salleh et al. (2023) suggested that social support, as well as human resource initiatives such as rewards, work assignments, and flexibility, would have a positive impact on women engineers, including retention.

The findings of the above studies highlight the crucial role of workplace support and self-efficacy in the career success and retention of women in engineering. In line with this, Hamzah et al. (2022) in their survey among Malaysian women managers found that individuals with higher career aspirations or greater organisational support were more likely to experience higher self-efficacy, which in turn positively affected their career success. The influence of self – efficacy on employee’s outcomes has been explained in a proposed model of employee adjustment whereby self-efficacy, task mastery, and connection with team members can be developed through various socialisation tactics initiated by the organisation, along with the individual's efforts to seek information (Bauer et al., 2007). As a result, successful adjustment in the workplace can positively influence an employee’s commitment, job performance, satisfaction, intentions to stay, and potentially reduce turnover.

It is essential to recognise that the fit (or misfit) between women engineers and their job or organisational environment is not just a result of conflict between women's identity and the engineering culture. Women, like men, possess unique identities and belief systems and seek work environments that align with their values. Furthermore, support mechanisms, such as organisational socialisation tactics, are effective in reducing uncertainty and doubts, particularly for newcomers in engineering (Wingerter & Ahn, 2020). This underscores the importance of tailoring these tactics to meet women engineers' specific needs and expectations in the workplace.

Fouad et al. (2011) explored why recent engineering graduates choose not to continue their careers in the engineering sector. Notably, one-third of the respondents cited the inflexibility of the engineering profession in meeting their needs and the non-supportive work culture for women as key factors. In addition, diminished interest in engineering and the intentions to apply engineering knowledge and skills in other fields were identified as primary reasons for not pursuing a career in engineering. These findings implicitly suggest that the nature of engineering may not fulfil the needs and expectations of women engineers, or there may be a fundamental misfit between them. This highlights the potential for different outcomes if the demands of the engineering profession were more closely aligned with the needs of women engineers.

Another factor contributing to women in engineering quitting a job or organisation, which might be a step toward quitting the profession, is the 'leaky pipeline' phenomenon (Lohgheswary & Leelavathi, 2025). Research has found that both men and women engineers are likely to quit the organisation or even the

engineering profession when faced with career paths that do not align with their professional goals or expectations, even if the job is meaningful. While women engineers are often passionate about contributing to society and solving problems using the analytic and technical skills (Ramachandran et al., 2020), the varying career paths within engineering can influence their likelihood of staying in or leaving the field such as managerial, technical, and hybrid (Cardador & Hill, 2018). A notable observation from this research is that a significant number of women engineers are often placed in managerial roles or on hybrid paths. This placement in managerial positions can be attributed to organisational encouragement (Cardador, 2017), or it may be a self-motivated choice by women themselves (Cech et al., 2011). One reason for this trend is the desire to counteract the stereotype of being less technically skilled and competent, a common bias against women in the field (Logel et al., 2009).

In countries like Turkey, where the engineering sector is predominantly male-dominated, women engineers tend to be assigned lighter duties and office-based roles rather than site-based ones (Chew et al., 2020). Similarly, in Malaysia, although there is a growing presence of women in engineering, they may also face similar challenges, with many being assigned roles that are less technical and more office-focused, reflecting broader gender dynamics within the engineering profession. A neighbouring country to Malaysia, Vietnam faces a similar situation, where women in the construction industry are predominantly assigned to office-based roles, including design, tender preparation, and documentation (Thuy et al., 2024). It can be inferred that, women engineers face challenges in accessing fieldwork or site-based roles, possibly due to gender biases and the traditional perception of engineering work as being more suited to men.

These gendered differences in work assignments and placements for women engineers may be influenced by vocational interests that align with traditional gender roles. Su et al. (2009), in their meta-analysis on sex differences in interests towards STEM careers, discovered notable variations between male and women respondents. They found that male respondents generally have stronger 'realistic' interests, characterised by a preference for working with objects like machines, and 'investigative' interests, involving problem-solving through mathematics and science. These interests align closely with Holland's occupational codes for engineers. Conversely, women respondents tend to exhibit stronger 'artistic' interests, favouring creative activities, and 'social' interests, characterised by a desire for social interaction and helping people. According to Holland (1997), these interests drive employees to seek work environments where they can apply their knowledge and skills, express their feelings, and engage in challenges that align with their personal interests.

Furthermore, engineering is marked by the concept of 'technical/social dualism'—an ideology discussed by Faulkner (2000) that influences the stereotypical perceptions of masculine and feminine roles within the profession. Cech (2013) noted that these stereotypes significantly impact perceptions of who is 'best suited' for specific professional tasks in engineering. As a result of this dualistic view, women are often channelled into managerial roles, which generally involve fewer purely technical duties that are traditionally assigned to male engineers. This segregation based on perceived gender roles further reinforces the stereotype and influences the career trajectories of women in engineering and thrive in their career (Thuy et al., 2024).

Not only does this gendered assignment of roles occur in professional engineering environments, but it is also prevalent in educational settings for young women pursuing engineering. Silbey (2016) notes that women engineering students often receive non-technical jobs during internships, such as clerical work or coordination tasks, which do not enhance their engineering skills. In a longitudinal study, Seron et al. (2018) observed that women engineering students are typically assigned managerial and administrative duties rather than engaging in 'real' engineering tasks that involve design, development, and problem-solving. This leads to a perception among female students that they are less competent, reinforcing the view of engineering as a field characterised by a male identity (Patrick et al., 2018). Moreover, these experiences shape their perception that the culture within engineering academia mirrors the male-dominated work culture of the actual engineering profession (Seron et al., 2016). The pervasive hegemonic masculine culture and 'hostile climate' in engineering (Merkins et al., 2019) have significantly shaped female students' perceptions and attitudes, leading them to believe that the profession is not designed for individuals with feminine qualities. This sentiment is echoed by a participant in Fouad et al.'s (2017) study, who described her work environment in engineering as resembling an 'old boys club' that was 'dirty, smelly, and hazardous' (p. 5). The scarcity of female role models who can endure the demanding nature of engineering careers, combined with 'chilly' workplace interactions, contributes to a loss of interest among engineering students in entering the engineering sectors and prompts women employees to leave the profession (Blickenstaff, 2005). Furthermore, experiences during undergraduate engineering studies reinforce the belief among

women that engineering is a field 'designed by men, for men,' which is constituted by a variety of masculine elements and is less suitable for women (Wood, 2022).

It cannot be denied that the engineering environment has posed challenges for women engineers. Past research has frequently reported that women engineers encounter difficult situations at work. However, women engineers also face pressures from outside the organisation, which contribute to the conflict in balancing work and non-work demands, such as family responsibilities (Mazlan et al., 2023; Fouad et al., 2011; 2017) leading them to consider whether quitting their job is a better decision. Shiang and Ngo (2020), in their in-depth interviews with women engineers from various engineering companies in Malaysia, found that work challenges were not as apparent because they received sufficient support, and discrimination and gender bias were not significant issues. However, women engineers in the study commented that they face unconscious barriers, such as societal expectations regarding their responsibilities at home.

Social expectations play a significant role in shaping who women are and what they are supposed to do. In Malaysia, traditional gender roles continue to assign women the primary responsibility for childcare and household management, reflecting enduring assumptions about their domestic obligations (Au, 2021). Social expectations regarding family obligations and housework are predominantly placed on women in Malaysian culture, including among the Malay, Chinese, and Indian communities (Chelliah et al., 2023; Boo, 2024). With these responsibilities primarily falling on women, married women who continue to work often face significant challenges in

balancing their professional and family obligations, leading to work-family conflict, which can negatively impact their employment stability.

These societal expectations are further compounded by workplace demands. Professional women such as women engineers in Malaysia face additional pressures in managing work–life balance due to engineering work culture that commonly involves long hours and job commitment over family responsibilities. Consequently, many experience stress, burnout, and reduced personal time (Chen et al., 2024; Au, 2021). This combination of societal and organisational pressures contributes to ongoing challenges in sustaining long-term careers in engineering. The construction industry in Malaysia for example often requires employees to work longer hours than anticipated, and the highly demanding nature of the industry can negatively impact employees' work-life balance. This is particularly challenging for women engineers in construction industry, who may already face additional pressures related to family responsibilities, further contributing to higher turnover rates within the sector (Mohd Kasmuri et al., 2021).

Past research shows that family responsibilities and work commitments are associated with women engineers considering leaving their jobs. Singh et al. (2018) for instance employed a survey technique to investigate the roles of work-family conflict, occupational commitment, and perceived organisational support in predicting turnover intentions among 245 women engineers in the United States. Based on the Conservation of Resources Theory (COR), turnover theory, and Rhodes and Doering's (1983) career change model, their study revealed that family interference with work and occupational commitment significantly influenced the women engineers'

intentions to leave their jobs. The COR theory explains that individuals aim to acquire, invest in, and protect their valuable resources, such as time and energy. Working in the engineering industry, commonly associated with longer working hours (Subramaniam & Abu Bakar, 2021), often leads to conflicts between professional and personal life for women engineers. This conflict, in turn, can influence their intentions to leave the job (Ghaleb et al., 2025). Hobfoll (2011, p. 118) insightfully remarks that 'work and family are both jealous demanders of individuals' resources,' suggesting that resources may be jeopardised, lost, or depleted as employees strive to fulfil both job and family obligations simultaneously. Interestingly, work-family conflict does not necessarily lead to women engineers departing their organisations (Hamid & Ahmad, 2017; Karatepe & Karadas, 2014). This could be attributed to women engineers being often said to possess a 'survivor mindset' and develop defensive techniques to cope with work-life conflicts (de Sousa & Ney Matos, 2017).

Fouad et al. (2011), in their survey of over 3,700 women engineering alumni, found that women engineers experienced diverse work challenges that influenced their decision to remain with a particular company. A significant concern for many women engineers is the desire to spend more time with their families. This issue is often related to engineering work, which can involve extensive travel (Fouad et al., 2011) and long working hours (Subramaniam & Abu Bakar, 2021), leading to limited family time. Work and family duties are closely intertwined in most people's lives and significantly impact career choices. In an engineering work environment, women struggle to establish a professional identity, cope with workplace inequities, and manage work-life barriers. Despite shifts in societal norms over recent decades, the responsibility for domestic duties remains strongly gendered (Sabharwal, 2015). Women bear the brunt

of family responsibilities more than men (Ciciolla et al., 2017), posing a more significant challenge in balancing the dual demands of family and work. Consequently, challenges such as sociocultural attitudes and biases about women potential (Campuzano, 2019) in the workplace, pervasive stereotypes such as the perception of women primarily as homemakers (Sarathchandra et al., 2018), collectively contribute to higher levels of job stress and anxiety among women in these fields compared to those in more gender-balanced professions (Qian & Fan, 2019).

2.3.2 Theories of Turnover in the Context of Women Engineers

This literature review has identified several theories relating to employee turnover research (see Section 3.2) with some applied to women engineers, including the work adjustment theory (Dawis and Lofquist, 1984), social cognitive career theory (Lent et al., 1994) and an integrated model of career change (Rhodes & Doering, 1983).

The Theory of Work Adjustment (TWA) proposes that employees (person) and organisation (environment) actively interact to maintain or adjust behaviours in achieving a continuous fit (Dawis & Lofquist, 1984). The theory asserts that a person has certain values and abilities, and the work environment consists of certain reinforcers that will allow the work adjustment of an employee. Dawis and Lofquist (1984) identify six fundamental values that individuals strive to fulfill. These include achievement, which refers to conditions that foster progress and success, comfort, which relates to environments that minimise stress, status, which involves receiving recognition and respect, altruism, which emphasises harmony and service to others,

safety, which ensures stability and predictability, and autonomy, which enhances personal control and initiatives.

The relationship between a person and their environment is assessed across several domains. *Satisfaction* refers to the individual's contentment with how well the work environment meets their needs. *Satisfactoriness* refers to an individual with whom the work environment is satisfied. *Maintenance behaviour* involves actions by the individual to preserve the person-environment interaction, whereas *adjustment behaviour* refers to changes in the individual's actions to alter the interaction. *Tenure* is the duration the person remains in the work environment. According to the TWA, the degrees of satisfaction, satisfactoriness, and tenure are key indicators of work adjustment (Dawis & Lofquist, 1984).

Based on these premises, several turnover researchers have applied the TWA to understand the link between the work context and individual work outcomes, such as turnover. For instance, Fouad et al. (2017) conducted a qualitative study to explore why women engineers leave the profession. They used the TWA as the theoretical framework to categorise participants' reasons for departure into six value-based categories derived from the theory. They suggest that the alignment between individuals and their environments can help explain decisions regarding occupational turnover among women engineers. The findings of the study reveal that inequitable compensation, poor working conditions, inflexible work environments, unmet achievement needs, and a lack of recognition and career advancement are the primary reasons for leaving the occupation. In 2020, Fouad et al. revisited the issue of why individuals depart from engineering professions and explored gender-based

differences in these departure reasons, based on the perspective of the TWA. Their survey revealed that gender differences exist in the reasons for leaving, suggesting that engineering environments may reinforce the needs of men and women in distinct ways. Although the TWA emphasises the fit between individuals and their work environment, suggesting that a poor fit can lead to dissatisfaction and ultimately turnover, the theory lacks attention to the external factors that women engineers may face. The TWA focuses on aligning employees with employers, offering a framework that enables organisations to cultivate a more productive and engaged workforce (Tyler, 2024).

The second theory that commonly being applied in career decision research including turnover among women engineers is Social Cognitive Career Theory (SCCT) proposed by Lent et al. (1994). SCCT explores how career decisions are influenced by both individual factors and the dynamic environment in which they exist. The theory emphasises the role of self-efficacy, outcome expectations, and personal goals as key determinants in career development. SCCT recognises that people are capable of change, and this ability to adapt is central to understanding how career choices are made. SCCT takes into account both cognitive factors, such as self-efficacy and goals, and external factors, including social supports (e.g., family), barriers, and cultural influences which are thought to be important to the career decision of women in the engineering profession. The theory suggests that career interests and aspirations are shaped by the interaction between these personal and contextual factors.

SCCT has become a foundational theory in many career research studies, particularly in the context of women engineers (e.g., Buse et al., 2013; Fouad et al., 2011; 2016; Fouad & Singh, 2011; Singh et al., 2013; Houston, 2022). The theory focuses on individual and environmental factors, making it useful for understanding the complex reasons behind career decisions. Furthermore, SCCT takes gender into account as an important contextual factor influencing career choices, making it suitable for gender-based research such as studies on women engineers (Lent et al., 2018). However, SCCT initially focused on career development and decision-making processes rather than on factors influencing behaviour and intentions, such as job quitting. Moreover, SCCT primarily considers the interaction between personal and environmental factors and may not fully address organisational-related factors that could have a crucial impact on the intentions to quit.

The third theory that commonly being used on studying women engineer's turnover is and Integrated Career Change Model (IMCC) proposed by Rhodes & Doering (1983). IMCC is based on turnover-related theories, especially Mobley's et al. (1978) turnover model whereby there are 17 stages that led an employee to take a decision to quit their job and change the career path. The stages are as follows: (1) organisational factors; (2) perceived alignment between person and organisation; (3) personal factors; (4) job performance; (5) the performance-reward relationship; (6) other motivating factors for change; (7) evaluation of current job outcomes versus potential alternative opportunities; (8) perceived availability of alternative opportunities; (9) personal and environmental factors influencing the perceived availability of alternative opportunities, such as age, financial status, and labour market conditions; (10) job satisfaction; (11) career satisfaction; (12) thoughts of changing

jobs or careers; (13) intentions to search for new job or career opportunities; (14) actual search for job or career opportunities; (15) intentions to change careers; (16) preparation for change; and (17) actual change (Rhodes & Doering, 1983, p. 633).

In general, IMCC suggests that if determinants of job satisfaction are present, and an employee is dissatisfied with their current job, it leads the individual to consider changing jobs or careers (Carless & Bernath, 2007). Several quantitative and narrative reviews have thus far provided support for the use of IMCC in the prediction of turnover such as Singh et al. (2018), Fouad et al. (2016), and Smith et al. (2023). While the IMCC offers a comprehensive stage-based view of the decision-making process involved in career change, it may be less suitable for the present study. Although the IMCC includes both personal and organisational factors, it tends to place greater emphasis on cognitive evaluations and career satisfaction within the context of changing one's career trajectory. In contrast, the current research aims to explore influences both within and outside the organisation, particularly how organisational socialisation tactics and job embeddedness interact to shape turnover intentions. These dimensions are not explicitly incorporated into the IMCC model.

It is evident that past research has extensively examined turnover among women engineers (Fernando et al., 2018), often employing theories like Social Cognitive Career Theory (SCCT), the Theory of Work Adjustment (TWA) and the Integrated Model of Career Change (IMCC). However, much of the focus has been on organisational and occupational factors contributing to turnover among women engineers (e.g., Fouad et al., 2017; 2020; Scott et al., 2021, Shiang & Ngo, 2020), with limited exploration of reasons beyond the organisational context (Peltokorpi et al.,

2015). Furthermore, research on women engineers and engineering careers has placed significant attention on why women engineers leave the profession altogether, without exploring deeply the factors that drive women to leave a specific job or organisation. Past research typically employs common theories, such as Social Cognitive Career Theory (SCCT) and the Integrated Model of Career Change (IMCC), to investigate why women engineers may leave the profession entirely. Even though researchers postulate that women engineers may eventually leave the profession due to various factors (Fernando et al., 2018), it is important to recognise that leaving a job does not necessarily mean leaving the profession or career entirely (Fouad & Singh, 2011).

Therefore, in an effort to extend the knowledge on the factors influencing turnover intentions among women engineers, the current research proposes using Field Theory in conjunction with Role Theory to explore the turnover factors of women engineers beyond the traditional organisational-related factors. Field Theory, as a broad theoretical framework, enables a comprehensive understanding of the diverse factors influencing turnover by examining the dynamic interactions between individuals (i.e., women engineers) and their environment, extending beyond the organisational context. This approach provides a more holistic perspective on turnover, considering both internal and external influences on women engineers' intentions to leave a job or organisation.

2.4 Field Theory as an Organising Framework

Kurt Lewin (1951) developed a theoretical framework known as Force Field Analysis, which posits that any change is influenced by both driving forces (factors that promote the change) and restraining forces (factors that hinder the change).

Although Lewin's field theory has been widely applied to understand changes within organisations, such as in organisational culture, systems, and structures (Burnes, 2004), however, it can also be used to examine and modify an individual's work behaviour and attitudes (Branch, 2002). It is proposed that Lewin's field theory provides both a theoretical foundation and a practical approach for understanding the driving and restraining forces that impact women engineers' decisions to leave their jobs and organisations in the current research.

Field Theory offers a set of organising principles for understanding many aspects of one's behaviour and attitudes. Because the theory is broad and comprehensive, it has served as a guiding framework for researchers across diverse areas of study, including human resource management, organisational behaviour, organisational psychology, and sociology. The application of Field Theory in this research aims to explore the factors influencing turnover intentions among women engineers in the context of Malaysia. The rationale behind Field Theory is its comprehensive approach to considering individual and environmental factors, which is particularly relevant in the engineering sector, where both personal circumstances and the work as well as non-work environment play a crucial role in shaping career success and retention. This theory provides a holistic perspective essential for understanding the complex interplay of personal and situational elements contributing to why women engineers might choose to leave their job.

In their roles within the workplace, women engineers are often expected to balance technical responsibilities with social expectations tied to gender norms, which can create pressure and influence turnover intentions. In their personal lives, women

typically occupy multiple roles, such as caregiver, mother, and homemaker, which may intersect with their professional responsibilities, impacting their career decisions. These roles are influenced by both personal circumstances and societal expectations, which vary across different environments, such as family, community, and the workplace.

The core tenet of Lewin's Field Theory is that the surrounding environment influences an individual's behaviour. According to Lewin (1951), a person exhibits certain behaviours as a response to the interconnected forces emanating from various aspects of their life, such as work, family, and community. These forces collectively constitute the individual's life space or psychological field. Field Theory delves into the patterns of interaction between an individual and their environment, highlighting the roles of perception, experience, and behaviour in this dynamic (Hergenhahn & Henly, 2014). Behaviour is a function of the person and the environment ($B = f(p, e)$). Lewin posited that an individual and their environment must be viewed as a single constellation of interdependent factors. The fundamental principles of Field Theory include life space, environment, person, and behaviour, each contributing to a comprehensive understanding of the factors influencing an individual's actions.

According to Lewin (1951), each individual possesses a unique field of perception and is subject to various field forces. These forces create a web within an individual's environment, establishing a reciprocal relationship where either the field influences the person or vice versa (Burnes & Cooke, 2013). In Field Theory, the 'person' is conceptualised regarding actions or personal attributes. A comprehensive understanding of an individual's perception of their environment necessitates

considering all aspects of their personality. Lewin's theory articulates this through the constructs of needs and abilities. He posits that individuals possess distinct skills (the motor perceptual stratum) and needs (the inner personal stratum) that drive them toward achieving specific goals. Generally, needs are typically defined as 'the measurable discrepancy existing between a present state of affairs and a desired state of affairs as asserted either by an owner of need or an authority on need' (Beatty, 1981, p. 40). In other words, needs represent the gaps between current conditions and desired outcomes. To bridge this gap, individuals exert effort to achieve balance. Needs play a crucial role in influencing people's behaviour toward achieving specific goals (Deci & Ryan, 2000). Therefore, understanding an individual's needs involves comprehending what motivates them to pursue and attain specific goals.

According to Etzioni's theory of active society, a person's needs are influenced not only by their inherent characteristics but also by their various environments (Etzioni, 1968). As individuals often maintain multiple interrelated roles representing different aspects of their life spaces (such as work, family, and community), they are required to fulfil work-related and non-work-related needs or demands based on these roles. Additionally, individuals possess specific abilities to satisfy these needs and achieve particular life goals. The concept of 'life space' is integral to this framework, suggesting a structure for developing and fulfiling individual needs.

The concept of 'life space' in Lewin's Field Theory refers to the psychological representation of an individual's physical or social environment, which essentially encompasses the person's perceived environment. This suggests an individual can have multiple life spaces corresponding to different areas, such as work and non-work

domains like workplace, home, and community (Marrow, 1969). Cartwright (1951) in his studies of organisational behaviour and industrial psychology suggests that a life space can encompass any system involving people, such as a community, an organisation, or a broader society.

Life space emerges from the interaction between a person and their environment. It includes the individual and every aspect of their environment that might influence their decisions or behaviours. This encompasses various zones linked to their activities, affiliations with groups and classes, their roles, events they experience, and their emotions related to people and places. Marrow emphasises that since individuals inhabit multiple life spaces, researchers aiming to understand an individual's actions need to identify, map, and assess the potential forces within a person's life space. This understanding is crucial to identifying which forces might need to be reduced or enhanced to bring about a change in behaviour.

In Lewin's Field Theory, the 'life space' concept includes various 'objects,' which may or may not be consciously recognised by the individual. If an individual is aware of an object and it influences them, it becomes a factor in their life space. Conversely, if an individual is aware of an object but has no influence on them, it is not considered a factor in their life space. Interestingly, even objects that do not exist but are perceived to exist and influence the individual are also considered factors in their life space. Essentially, these 'objects' can encompass physical elements of the environment as well as feelings, beliefs, motives, and drives. Therefore, the boundaries of an individual's life space can differ vastly from another's, even when they share the same environment (Lewin, 1951) or similar roles within that environment (Barnett,

2004), like being an employee and a mother. This variation arises because different individuals may perceive and experience the forces within a particular life space differently, leading to differing 'role qualities' as Barnett suggests.

Field Theory utilises the physical concept of a 'field of forces' to elucidate how environmental influences impact human behaviour. According to Lewin, two primary types of forces within this field exist: driving forces and hindering (or restraining) forces. These are typically depicted with arrows in diagrams to illustrate the direction they exert influence towards or away from the intended goal. *Driving forces*, such as supportive superiors, propel an individual towards achieving a goal, such as career success. These forces push a situation towards change or help sustain it in a particular direction.

Conversely, *restraining forces*, such as discrimination, act as barriers that oppose driving forces, pulling a person away from their intended direction and maintaining the status quo. These forces, whether driving or restraining, are triggered by external stimuli and experienced by the agent or actor (e.g., an employee). Field Theory illustrates that changes in an individual's life space are contingent on how they internalise these external stimuli. The theory posits that behaviour is derived from a totality of coexisting facts within a dynamic field. Consequently, the state of any part of this field is interdependent on every other part, highlighting the complex interplay of various factors in shaping behaviour.

Lewin posited that a comprehensive understanding of human behaviour necessitates considering the entire environment, with its web of interrelated forces, when analysing an individual or a situation. This approach dictates that all factors

influencing human behaviour must be taken into account to achieve a complete understanding. Moreover, Lewin emphasised that these factors should be examined collectively rather than in isolation. He advocated for a holistic analysis where a person and their environment are studied together, not separately. This approach facilitates understanding the real-time interaction between a person and their environment. Thus, Lewin's theory supports the totality concept, encapsulating a dynamic and interdependent relationship among all subjective elements within a given field.

Field Theory has extensively applied across various research, especially in management and organisational studies. In the Malaysian context, the application of Field Theory has been found in various studies, such as decision-making in online learning (Shamsher et al., 2021), the interrelationship between personality and the perception of the environment and its influence on teachers' engagement (Ariffin et al., 2010), determinants of voting behaviour (Baqutayan et al., 2024), and international students' adjustment processes in a host country (Shafaei & Razak, 2015). In the realm of human resource management research, Field Theory is frequently employed to elucidate the relationships between organisational variables and employee outcomes in terms of attitudes and behaviours. Notable examples include studies on turnover intentions (e.g., Memon et al., 2018; Islam et al., 2019), turnover behaviour (e.g., Allen, 2006), job satisfaction (Mgaiwa, 2021), perceived behavioural control (Elie-Dit-Cosaque et al., 2011), career progression (Sealy & Singh, 2010), and employee proactivity (Li et al., 2022).

Lewin theorised that an individual's interactions with others and their positions within a specific field are crucial in determining their behaviour. In essence, a person's

behaviours and attitudes are shaped by their current circumstances and the prevailing conditions in their environment (Lewin, 1951). As explored in Section 2.3 of this thesis, a woman with a particular demographic background and set of qualities interacts with various forces, such as the work environment and personal life. These interactions influence how she perceives the forces in these fields, affecting her thought processes and behaviour.

The application of Field Theory in the current research is able to improve knowledge and understanding of turnover intentions among women engineers. Past research on turnover intentions and behaviour for women engineers has focused more on the organisational context, rather than exploring both work and non-work factors simultaneously (see Section 1.4.3 and 4.1). Previous studies on turnover among women engineers have also utilised theories such as Social Cognitive Career Theory (SCCT), the Theory of Work Adjustment (TWA), and the Conservation of Resources (COR) theory to explain turnover. However, these theories often address individual and organisational factors separately and not fully integrating the broader dynamics within both the work and non-work environments, and the roles that women occupy within these environments.

Field Theory has been effectively applied in turnover research to illustrate how various aspects of employees' lives interconnect and are represented. For instance, Mitchel et al.'s (2001) job embeddedness model, inspired by Field Theory, posits that individuals are anchored in a field of forces comprising numerous links that fit with different aspects of their life spaces. They proposed that employee retention is

influenced by three primary forces—fit, link, and perceived sacrifice—which are derived from both organisational and external (i.e., community) environments.

Allen (2006) also utilised Field Theory in his research to elucidate how newcomers adjust to the workplace and how this influences their embeddedness and turnover behaviour. According to Allen, when employees join a new job or organisation (the field), they may encounter various forces, such as role ambiguity, reality shock, and disorientation. These forces can potentially hinder the employee's workplace adjustment. If an employee fails to adjust to a new work environment, this may lead to their departure from the company. Memon et al. (2018) in their cross-sectional online survey oil and gas (O&G) professionals in Malaysia hypothesised that a positive perception of the work environment contributes to better person-organisation fit, subsequently enhancing work engagement and reducing the likelihood of leaving the organisation.

Another study that applies Lewin's Field Theory to turnover research was conducted by Islam et al. (2019) among police employees in Pakistan. They propose that an employee's ability to comprehend the work environment effectively, such as by achieving perceived job fit and minimising inter-role conflict, can significantly influence their attitude and behaviour towards leaving. According to their perspective, understanding and adapting to the workplace environment are critical determinants in shaping an individual's decision to stay or go.

In this research, Field Theory, or the force field model, serves as the organising framework to analyse the various forces that may impact turnover intentions. As previously discussed in this chapter, an individual's behaviour is determined by a

combination of a person and their environment (the immediate surroundings exerting the most significant influence on their behaviour). In the context of this study, the 'person' refers to the woman engineer, the 'environment' or 'life space' encompasses both the work and non-work environments such as the organisation, personal life, and community, and the behavioural response of interest is the turnover intentions. In this context, the 'psychological environment' signifies the unique mental landscape of woman engineers, encompassing their perceptions, attitudes, beliefs, motivations, and emotional responses to stimuli and situations in their surroundings. It represents the environment as subjectively experienced and interpreted by the woman engineers. Therefore, the application of Lewin's Field Theory in this context is particularly relevant because it emphasises the relationship between the woman engineer and her environment. As discussed in Sections 2.2 and 2.3 of this theses, turnover intentions are shaped not only by work-related conditions but also by non-work factors, such as personal life and community influences. Thus, Field Theory offers a compelling lens through which to understand the factors influencing turnover intentions. Figure 2.1 visually represents the interactions within the life space of women engineers, adopting the concept of driving and restraining forces in Lewin’s Force Field Model to explain their intentions to leave a job organisation.

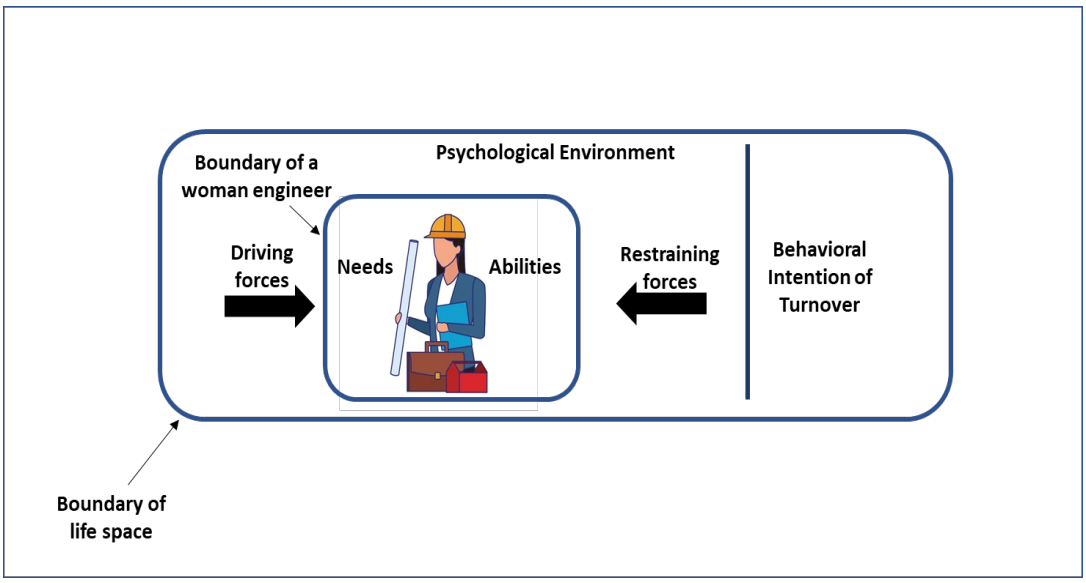

Figure 2.1: Life-Space of Women in Engineering

Field Theory aids researchers in identifying a wider range of potential factors influencing turnover, particularly those related to a woman engineer's personal attributes and environmental context. Lewin (1997, p. 201) describes Field Theory as a 'technique or method of analysing causal relationships and constructing scientific variables,' which is particularly relevant in examining career decisions among women engineers. In this study, the theory provided a robust theoretical framework for exploring how various work-related and non-work-related factors may either promote or impede socialisation, attachment, and turnover intentions in the context of women engineers in Malaysia. Specifically, when women engineers join an organisation, they encounter various socialisation tactics initiated by the employer, which are crucial for facilitating their adjustment process (read Section 3.3 for further explanation). Throughout their employment, women engineers encounter various driving and restraining forces that significantly impact their assimilation and adjustment in the workplace. When women engineers are exposed to driving forces that encourage the

intentions to leave, stemming from both their work and non-work environments, it amplifies their desire to exit the organisation or the engineering field altogether. Conversely, they may also face restraining forces that impede their departure.

Notably, the needs of women engineers are shaped by a combination of internal factors and external environmental influences. Their needs and development are contingent upon their inherent personal characteristics and influenced by the diverse settings in which they find themselves. Given the complex dynamic of juggling multiple roles across different life spaces, such as work, family, and community, women engineers are required to navigate and fulfil various work-related and non-work-related needs corresponding to their respective roles. A woman engineer utilises her unique abilities to meet these needs and achieve specific goals in her life. Crucially, the interrelated nature of these elements—spanning across different life spaces—collectively influences career decisions, particularly in terms of turnover, among women engineers.

2.5 Role Theory

Individuals hold various roles in their lives (Furstenberg, 1969 as cited in Martin, 2003), a concept emphasised by Super (1980), who postulated that adults simultaneously play a variety of roles in different life domains, such as those of a spouse, parent, housewife, and worker. Kahn et al. (1964) theorised that role theory focuses on the interpersonal level to explain how women engineers, like all individuals, occupy a variety of roles (e.g., mother, employee) on a daily basis. These roles significantly influence their behaviour and attitudes at work. The theory posits that role conflict may arise when role expectations conflict across different life spaces

(such as work and non-work environments). This conflict can lead to the individual quitting one of these conflicting roles. Kahn et al. (1964) further suggest that Role Theory provides a rationale for why women, especially in male-dominated workplaces, might be more inclined to leave their jobs. Therefore, in the current research, Role Theory provides a foundation for why women engineers are more likely to leave a job, especially a masculine-gendered job such as engineering.

Role theory, as described by Lynch (2007), defines a role as a set of expectations that society places on an individual. The interactions within these role domains, whether in work or family life, are governed by expectations associated with those roles (Kahn et al., 1964). These role expectations include both the rights and privileges, as well as the duties and obligations, of any individual occupying a particular social position in relation to others within the social structure (Ashforth, 2001; Barnett, 2004). In addition, Katz and Kahn (1978, p. 219) contribute a vital insight into Role Theory, positing that roles serve as the 'building blocks of social systems.' They emphasise that gender plays a significant role in influencing both occupational and non-occupational situations. For instance, in the case of working women, the concept of dual-role occupancy is often perceived as a unique challenge. This refers to adding a paid work role (i.e., from the work-life space) to the conventional roles traditionally associated with women, such as being a wife and a mother (i.e., from a non-work life space).

Social expectations have a considerable influence on shaping women's identities and defining their roles. In Malaysia, traditional gender roles have long imposed significant expectations on women to manage childcare and family

responsibilities, with the assumption that they should bear the majority of household and childcare duties (Au, 2021). As these responsibilities predominantly fall to women, married women who remain in the workforce often encounter substantial challenges in balancing their professional and family commitments. This imbalance can lead to work-family conflict, which may have a detrimental effect on their employment and career stability (Salleh & Mansor, 2022).

The career decisions of women, especially in engineering sectors, are greatly influenced by societal norms, gender roles, and cultural values (Idris et al., 2024). According to Social Role Theory (Eagly & Wood, 1999; Wood & Eagly, 2012), these role expectations result from a gendered division of labour in society. Traditionally, men have been assigned roles related to paid work and breadwinning, while women have been predominantly associated with domestic duties and caregiving. For women who are single and without children, the work and leisure interface may also contribute to inter-role conflicts. Research on childcare in Malaysian families has consistently shown that mothers devote considerably more time to childcare than fathers (Hossain et al., 2022; Boo, 2018), as to the cultural and societal norms continue to dictate their roles both in the workplace and at home (Moorthy et al., 2022). A 2017 survey by *Lembaga Penduduk dan Pembangunan Keluarga Negara* (LPPKN) found that 95% of Malaysian women were engaged in housework, childcare, and eldercare, while only 44%, 57%, and 69% of men participated in these activities, respectively. A qualitative study by Boo (2021) indicates that Malay women bear an unequal share of housework and childcare responsibilities, driven by cultural and religious gender norms that reinforce traditional roles, where men are seen as the primary breadwinners and women as the homemakers.

In a separate study on housework time, Boo (2024) found that Chinese women, rather than men, were responsible for the majority of housework, spending about 5 hours and 13 minutes more per week than men in Chinese households. In addition, Chelliah et al. (2023) reported that Malay, Chinese, and Indian men believed that childcare responsibilities should fall to their spouses (i.e., women). For working women, it often feels like working extra hours—spending their days at the office and their nights at home, balancing both professional and domestic responsibilities.

This imbalance is further reinforced by the patriarchal social system in Malaysia, which has a huge impact on the career progression of women. Patriarchy is defined as a society where men hold dominance, often maintaining this control through physical and psychological violence, as well as various forms of exclusion of women from decision-making roles (Hooks, 2004). Today, patriarchy is commonly understood as a system of male dominance and power dynamics that keep women in subordinate positions in multiple ways (Dixit, 2020). The patriarchy system in Malaysia, with traditional values like personalism, trust, loyalty, and male dominance, can limit women's career opportunities by prioritising male-dominated networks, hindering their career progression and access to higher-level positions (Chan et al., 2021). Consequently, in patriarchal societies, family responsibilities such as childcare and housekeeping create obstacles to women's career advancement, with these duties primarily placed upon them (Subramaniam & Arumugam, 2013), often leading to lower workforce participation rate among women (Salleh, 2021).

According to a study by Elaine and Karubi (2018) in Malaysia, a patriarchal environment, particularly the traditional 'breadwinner father, housewife mother'

model, leads to women shouldering a heavier share of household responsibilities. Men were expected to provide for the family financially and they perceived themselves as natural leaders, not women. In addition, patriarchal societies serve as a barrier to women's progress in decision-making roles and their earning potential (Dahal, 2013), where the husband has more authority to make decisions, including those regarding the wife's career (Boo, 2021). In the context of the Malay family structure, for example, such gender norms are strongly emphasised within Malay culture and are also rooted in Islamic teachings, which position men as the primary providers, protectors, and heads of the family, while women are expected to take responsibility for their husbands, children, and household chores (Sukri & Shasrini, 2020). According to LPPKN (2014), *Laporan Penemuan Utama Kajian Penduduk Dan Keluarga Malaysia Kelima (KPKM-5) 2014* [The Fifth Malaysian Population and Family Study Key Findings Report] reported that while the husbands and wive make decisions together regarding family matters such as family expenditure, buying property, children's education, and family vacations, the husbands perceive that they have greater power to make decisions when it comes to the wives' career. Consequently, employed women are expected to prioritise family over work, even if they contribute financially to the household (Abdullah et al., 2008). This shows that cultural norms and traditional gender roles continue to influence career decisions within the household. As a result, women may face limitations or challenges in asserting control over their professional paths and career advancement, primarily due to societal expectations and gendered power dynamics within the family, particularly in Malaysia context.

In conclusion, due to the 'double burden' of work and family responsibilities, women may find it particularly challenging to maintain the equilibrium and achieve satisfaction in both domains (Super, 1980). Consequently, role conflict can arise, leading to unfavourable employee outcomes among women (Kahn et al., 1964; Ahmad, 2017; Singh et al., 2018) such as opting for a combination of care solutions (Choong et al., 2018), reducing their paid working hours (Choong et al., 2019), or leaving their jobs (Yoong, 2020). Unmet role expectations can also lead to role overload, guilt, anxiety, and other occupational health issues, which result in impaired well-being (Barnett, 2004). However, role integration can develop when women receive workplace support that enables them to fulfil both work and family responsibilities. As a result, this can facilitate a more balanced and manageable life (Singh et al., 2018; Biddle, 2013).

2.6 Summary

This chapter provides a comprehensive review of the literature concerning women engineers in Malaysia, their workforce participation, and the factors influencing their turnover intentions. It began by introducing the critical context of women engineers' roles and experiences in the Malaysian engineering sector, highlighting the unique challenges they face in a predominantly male-dominated industry. While there is an increasing number of women entering the engineering profession, their representation and career progression remain influenced by various structural, social, and cultural factors. The engineering labour market in Malaysia offers significant demand for skilled engineers, but barriers still exist for women. Additionally, women engineers face distinct professional challenges such as balancing

work and family responsibilities and unequal access to leadership roles, which may contribute to higher turnover intentions.

The discussion then turned to the specific factors influencing turnover among women engineers. Key drivers of turnover intentions were identified. These factors were explored within the broader context of both work and non-work environments, highlighting how personal life factors interact with workplace dynamics in shaping turnover decisions. To address this, two key theoretical frameworks were introduced: Field Theory and Role Theory. Field Theory offers a comprehensive approach by examining the driving and restraining forces within both the work and non-work environments that impact turnover intentions. It provides valuable insights into how women engineers navigate their careers in response to both organisational and personal life challenges. Role Theory, on the other hand, explains how the multiple roles women engineers occupy, both in the workplace and in their personal lives, affect their career decisions and turnover intentions.

Building upon this foundation, Chapter 3 broadens the scope of discussion on how women engineers navigate the socialisation process to adapt to organisation, highlighting the various tactics employers use to help women engineers acclimate to the work environment and the challenges they face. This chapter also explores how these socialisation experiences and factors within and outside the organisation shape their long-term adjustment, social integration, and turnover intentions.

CHAPTER 3

TURNOVER INTENTIONS: THE ROLE OF ORGANISATIONAL SOCIALISATION AND JOB EMBEDDEDNESS

3.1 Introduction

Chapter 3 builds on the basis laid in Chapter 2, where a detailed exploration of the literature concerning women engineers and turnover was conducted. Given the higher turnover rates among women engineers compared to their male colleagues, there is a significant drive among researchers and practitioners to understand the primary reasons behind their departure. This chapter not only examines the factors influencing turnover but also seeks to understand the specific challenges that women engineers face in both their professional and personal lives, which contribute to their decisions to leave their roles.

Previous research on this topic has yielded mixed results. For instance, Scott et al. (2021) identified two major reasons for women engineers leaving their jobs or organisations: a decline in self-efficacy beliefs regarding their fit within engineering identities and incongruent self-conceptions with an engineering culture perceived as excluding minorities, being unsupportive, and being male dominated. Fouad et al. (2017) identified three primary reasons prompting women engineers to leave their roles: poor working conditions, unmet work achievement needs, and a lack of recognition at work. Earlier, in 2010, Fouad et al. reported that women engineers tend to leave their jobs for reasons related to comfort (such as the need for more family time), status (such as the lack of career advancement opportunities), and achievement

(including dissatisfaction with daily tasks), in contrast to their male counterparts. Scholars have recognised that the turnover of women engineers may result from a complex interplay of personal factors, workplace dynamics, and broader cultural aspects within the industry. In the broader turnover literature, it is acknowledged that the reasons for turnover extend beyond these individual factors to include a wide range of organisational and non-organisational influences.

Chapter 3 extends the narrative to provide a review of existing research on the central variables pertinent to this study—specifically, employee turnover intentions organisational socialisation, and job embeddedness. In this chapter, the literature review broadens the scope of discussion, encompassing additional turnover factors investigated by various researchers, thereby enhancing the overall understanding of employee turnover. This chapter acts as a crucial bridge, connecting the focused discussions on turnover among women engineers in Chapter 2 with a more comprehensive examination of turnover, organisational socialisation, and job embeddedness in a wider context. The review in this chapter includes defining key terms, tracing the evolution of research in these areas, and discussing constructs specifically in relation to women in the engineering profession.

3.2 Employee Turnover

Employee turnover is defined as the process by which employees actually leave a company (Lim & Parker, 2020). This phenomenon can manifest as either voluntary turnover, where the decision to leave is initiated by the employee, or involuntary turnover, where the departure is instigated by the employer. In other words, voluntary turnover is initiated by the employee, whereas involuntary turnover is initiated by the

organisation. Past researchers have employed various terminologies to refer to voluntary turnover, but they all essentially denote the same concept. These terms include 'employee withdrawal' (Beehr & Gupta, 1978), 'voluntary employee departure' (Lee et al., 1996), and 'voluntary separation and exit' (e.g., Mobley et al., 1979). While both types of turnover impact organisations differently, excessive voluntary turnover, particularly when it is undesirable, can be detrimental to organisational health. As a result, research on employee voluntary turnover has garnered significant attention from scholars (Zhang, 2016), particularly in the area of turnover intentions (Lazzari et al., 2022). In line with this trend, the current research also focuses specifically on studying employee turnover intentions. Further explanation of turnover intentions is provided in the following section.

3.2.1 Defining Employee Turnover Intentions

In this research, the primary focus is on the individual level of turnover, particularly employees' turnover intentions. 'Intent to leave' or 'intentions to quit' refers to an individual's intentions to depart from an organisation (Bigliardi et al., 2005). In the cognitive process leading to withdrawal decision-making, turnover intentions represent the final cognitive stage before an employee makes the actual decision to leave (Khan, 2015; Dechawatanapaisal, 2018; Rubenstein et al., 2018). According to Fishbein (1967) and Fishbein and Ajzen (1975), intentions is the direct precursor to behaviour, suggesting that actual turnover can be anticipated by measuring turnover intentions (Fardid et al., 2018). Berndt (1981) further asserts that intentions are indicative of subsequent behaviour, thus providing a reliable gauge of future actions.

Therefore, understanding the factors that influence women engineers' intentions to quit an organisation is crucial, as these intentions are predictive of actual turnover.

3.2.2 The Evolution of Employee Turnover Theories

Employee turnover has been a subject of academic inquiry for over a century, with numerous key scholars significantly contributing to the development of its underlying theories. Some of these foundational theories continue to underpin contemporary turnover research. One of the earliest studies dates back to 1917, conducted by Hugo Diemer, a professor of Industrial Engineering at Pennsylvania State College. His work, published in *The Annals of the American Academy of Political and Social Science*, explored various reasons for turnover among faculty members and proposed potential retention strategies. In their comprehensive review, 'One Hundred Years of Employee Turnover Theory and Research,' Hom et al. (2017) highlighted that the first empirical study on employee turnover was carried out in 1925 by Marion Bills, with the findings published in the *Journal of Applied Psychology*. This historical context demonstrates that the issue of employee turnover has long captivated scholarly interest and remains a relevant and popular topic of research to this day.

Initially, turnover research is based on the theories of organisational equilibrium proposed by Barnard (1938) and Simon (1947). These theories contend that for employees to remain committed to an organisation, the organisation must motivate its members by rewarding their contributions. Simon et al. (1950), as cited in March and Simon (1993, p. 103–4), elaborate on the central postulates of the theory of organisational equilibrium as follows:

1. An organisation is conceptualised as a system composed of interrelated social behaviours involving a group of individuals referred to as the *participants* in the organisation.
2. Each participant and each group of participants receive *inducements from* the organisation. In exchange for these inducements, each participant or group makes *contributions* back *to* the organisation.
3. Each participant will maintain their involvement in an organisation only as long as the inducements offered to them are equal to or greater (measured in terms of their values and in terms of the alternative options available to them) than the contributions they are required to make.
4. The contributions provided by the various groups of participants serve as the foundational resources from which the organisation generates the inducements it offers to its participants.
5. Hence, an organisation is "solvent"—and will continue to exist—only as long as the contributions it receives are sufficient to provide inducements that effectively elicit these contributions.

Employees are likely to remain with an organisation if they perceive that their contributions are adequately reciprocated through various inducements from the employer. However, March and Simon (1958) argued that employee retention is contingent not only on the value employees place on these inducements but also on the availability of alternative employment options. As a result, assessing employee satisfaction can be an effective method to gauge the extent of fair distribution in the inducement-contribution exchange. The contributions of March and Simon have been pivotal in shaping turnover theory. They assert that two fundamental elements

influencing voluntary turnover are an employee's perceived ease of movement (or the availability of job alternatives) and the perceived desirability of leaving (or job satisfaction). These elements form the foundation of most current theories and research focusing on voluntary turnover.

Over the years, job satisfaction has been consistently identified as a key factor influencing turnover. In 1973, Porter and Steers addressed the critical question of *why* employees become dissatisfied and *what* strategies can be implemented to retain them. They posited that the fulfilment of employees' expectations, encompassing both work-related factors (such as organisation-wide elements, immediate work environment conditions, and job content aspects) and personal factors, plays a significant role in an employee's decision to either stay with or leave an organisation.

Meanwhile, Mobley (1977), in his literature review on the relationship between employee turnover and job satisfaction, shifted the focus of turnover research towards understanding the psychological process of withdrawal. He theorised that withdrawal behaviour begins with an employee's evaluation of their current job satisfaction level, followed by contemplation of quitting and a cost-benefit analysis. This leads to a search for new job opportunities and a subsequent comparison of the advantages and disadvantages of the new and existing jobs. The final stages involve forming an intention to either quit or stay and then actualizing that decision through turnover or continued employment. Each step in this process can be influenced by various factors; for instance, the need for a spouse's job transfer could be a primary motivator for seeking alternative employment.

Studies on employee turnover and retention continue to evolve, highlighting an increasing range of predictive factors. Recognising gaps in Porter and Steers' model, particularly in terms of turnover factors and methodological considerations, Mobley et al. (1979) introduced new dimensions to understand turnover intentions more comprehensively. They were pioneers in discussing the critical role of organisational commitment in predicting employees' turnover decisions. Mobley et al. (1979) theorised that employees are more likely to remain with an organisation when they align with its goals and values and are committed to their work. This perspective opened the door to extensive research on job satisfaction and organisational commitment, thus enhancing the understanding of how work attitudes serve as primary determinants of employee turnover and retention.

A few years later, Price and Mueller (1981) developed an extensive causal model of turnover, drawing from longitudinal data collected from 1,091 registered nurses across seven medium-sized hospitals. Grounding their research in equity theory, they identified several new distal and proximal causes that influence decisions to stay or leave, introducing distributive justice as a key determinant. Among the distal influences on retention were factors such as pay, promotional opportunities, constituent attachments, kinship relationships, and organisational commitment. They also discovered that job satisfaction and perceived job alternatives are proximate causes influencing the decision to stay.

In the same year, Steers and Mowday (1981) made a significant contribution to the withdrawal process model by integrating stages from previous turnover models into a more comprehensive and unified process model of employee voluntary turnover.

Notably, they introduced organisational commitment as a pivotal mediating factor in the relationship between job satisfaction and turnover intentions.

In 1983, Sheridan and Abelson introduced cusp catastrophe model of turnover applying it in a study among nurses. Based on the catastrophe theory, they argued that organisational commitment and job tension are key determinants in an employee's decision to withdraw from an organisation. During the 1980s, other notable researchers expanded the scope of turnover theory by introducing additional antecedents, such as the leader-member exchange relationship (Graen et al., 1982) and demographic fit (Pfeffer, 1983). The period also witnessed increased scholarly focus on the consequences of turnover, including its costs and impact on organisational performance (e.g., Mobley, 1982). The research conducted prior to 1985 significantly enriched turnover theory, laying a robust foundation that continues to inspire and guide researchers globally in exploring and validating these concepts across various contexts (Hom et al., 2017).

The next phase of turnover and retention research shifted focus towards more macro-level organisational concepts and the interplay between individuals and their contexts, along with the resultant consequences (Holtom et al., 2008). This period witnessed a surge in studies examining factors such as organisational culture (e.g., Abelson, 1993), group cohesion (e.g., O'Reilly III et al., 1989), organisational reward systems (e.g., Pfeffer & Davis-Blake, 1992), and the dynamics of the relationship between employees and their environments (e.g. O'Reilly et al., 1991).

In 1994, Lee and Mitchell made a significant contribution to turnover research with the introduction of the unfolding model of turnover, which is grounded in image

theory. They identified five key stages that precede an individual's decision to quit: shock, script activation, image violation, job satisfaction assessment, and job search behaviour. This model begins with a 'shock,' or a triggering event (which may not always be present), leading an employee to contemplate quitting. 'Script' refers to the employee's pre-existing plan or thought process about leaving. 'Image violation' occurs when an employee perceives a mismatch between their values and those of the company, affecting their job satisfaction. This leads to the 'job search' stage, where the employee actively looks for alternatives. Lastly, the model outlines four distinct exit paths, with Path 1 being chosen when an employee experiences a shock but does not consider job satisfaction or job alternatives in their decision-making process. It is activated by an organisational or personal shock, such as being asked to perform unethical tasks or experiencing a significant life event, such as marriage. This path does not necessarily involve a consideration of job satisfaction or alternatives. Path 2 involves an employee's realisation of an image violation, where they perceive a misalignment between their values and those of the company, leading to a decision to quit, even in the absence of job alternatives. Path 3 is characterised by an evaluation of image violations alongside the consideration of job alternatives, comparing them with the current job. Finally, Path 4 differs as it is not initiated by a shock event. Instead, it involves an employee's dissatisfaction stemming from a perceived lack of fit with the company, leading to the contemplation of quitting, regardless of the presence of job alternatives.

Generally, the unfolding model posits that the decision to quit is often influenced by a combination of 'market-pull' factors, such as the availability and attractiveness of job alternatives, and 'psychological-push' factors, which include job-

related perceptions and attitudes. These pull and push factors can be significantly influenced by a 'shock' event, which can unexpectedly catalyse the decision to leave an organisation, even in cases where employees are otherwise satisfied with their jobs (Griffeth et al., 2008; Kammeyer-Mueller et al., 2005). Weller et al. (2009) further reinforce this theory, noting that over 60% of turnover motivations are attributed to such shock events. (Hom & Kinicki, 2001) have identified situations where employees resign due to external pressures, such as the demands of parenting or the need to relocate with a spouse, categorising these individuals as 'reluctant leavers' (Hom et al., 2012). This concept challenges the traditional perspective that employee dissatisfaction is the primary driver of turnover, emphasising instead the role of 'shock' events as more immediate triggers for leaving. Lee and Mitchell also suggested that the complex turnover process must be revealed to understand *how* and *why* employees make a decision to leave their jobs. This approach is particularly relevant given the contextual nature of turnover (Martin, 1979), suggesting that a deeper investigation into individual experiences within specific occupational contexts can yield valuable insights into turnover decisions (Rubenstein et al., 2018).

Lee and Mitchell's unfolding model significantly reshaped turnover research, emerging as a dominant framework in contemporary studies (Holtom et al., 2008; Hom et al., 2017; Hom, 2011). Its comprehensive approach has inspired a myriad of scholars to both expand upon and validate the model across diverse contexts. This includes exploring the model's applicability to performance-turnover relationships (Becker & Cropanzano, 2011), examining how individual layoff histories influence turnover (Davis et al., 2015), investigating the impact of relational and reputational shocks on top executive turnover (Andrus et al., 2019), analysing the effects of pay systems on

turnover (Conroy et al., 2021), and assessing the role of psychological contract violations in turnover decisions (Yang et al., 2020).

More recent developments in turnover research are highlighted by the introduction of the job embeddedness theory by Mitchell et al. in 2001. Based on both the unfolding model of turnover and attachment literature, this theory offers a fresh perspective on employee retention and job departure (Ramesh, 2007). Characterised by a three-by-two matrix, the theory delineates six interconnected variables: links, fit, and sacrifice, each within organisational and community contexts. It posits that an employee's likelihood of remaining in an organisation increases with stronger connections to and better fit within both the organisation and the community. In addition, the perceived sacrifice associated with leaving these networks further reinforces their inclination to stay, making job embeddedness a pivotal construct in understanding employee retention dynamics.

Based on the above discussion, existing research on turnover and retention has significantly contributed to theoretical development, particularly in understanding the various determinants, processes, and consequences at both individual and organisational levels. There exist several meta-analyses and extensive literature review on employee turnover that examine this phenomenon from various perspectives. Steel and Ovalle (1984) conducted the first meta-analysis of the antecedents of employee turnover. Owing to the keen interest among researchers in correlating psychological constructs with turnover, Steel and Ovalle compiled 34 studies that established a link between intentions and actual turnover. It was found that employee turnover intentions are a more immediate predictor of turnover than overall job satisfaction, specific job

satisfaction components, or organisational commitment. In 1986, Cotton and Tuttle conducted a comprehensive meta-analysis on employee turnover, categorising 26 variables into three major groups of turnover predictors: external factors, work-related factors, and personal factors. They found that variables such as population, nationality, and industry significantly moderate the relationship between these predictors and turnover.

Griffeth et al.'s (2000) highly cited meta-analysis identified 45 predictors of turnover which they categorised into various groups: demographic predictors (such as education, sex, and tenure), overall job satisfaction, organisational factors, work environment factors, job content factors, external environmental factors, other behavioural predictors (including lateness, absenteeism, and performance), withdrawal cognition, and withdrawal behaviour. They also revealed that job satisfaction, organisational commitment, job search, comparison of alternatives, withdrawal cognitions, and quit intentions remain the strongest predictors of turnover. Moreover, they also found numerous moderators in the antecedent-turnover relationship, including age, organisational tenure, overall satisfaction, pay, perceived job alternatives, performance, commitment, and quit intentions. Distal determinants, such as job content, stress, work group cohesion, autonomy, leadership, distributive justice, and promotional opportunities, were also recognised as critical characteristics of the work environment influencing turnover.

Holtom et al. (2008) conducted an extensive review of turnover literature. They found that 50 antecedents of turnover have been explored by researchers. These were then classified into categories including individual differences, the nature of the job,

attitudes, organisational context, the interface between person and context, withdrawal cognitions, job alternatives, and withdrawal behaviour. Holtom et al. concluded that several major trends have emerged and gained significant attention among researchers. These trends include: (1) an increased research focus on retention rather than turnover; (2) the direct and moderate effects of individual differences, such as personality, on turnover decisions; (3) impact of stress-and change-related attitudes resulting from organisational change and dynamic environments on turnover; (4) a deeper exploration of the unfolding model of turnover, offering diverse perspectives and contexts; (5) contextual considerations at individual, unit, and organisational levels, including issues related to work-unit attitude, workforce diversity, fit, and the consequences of turnover at the organisational level; and (6) the dynamic modelling of the turnover process, elucidating its complex and evolving nature, encompassing aspects such as job-search phases, job search strategies, and implications of the turnover period.

In a literature review on employee turnover, Hom et al. (2012) discussed the concept of proximal withdrawal states, which they attributed to two main factors: 'desired employment status' and 'perceived volitional control.' These motivational states are said to give rise to four distinct mindsets in employees, leading to different outcomes: enthusiastic stayers (characterised by high commitment), reluctant stayers (those who are impeded from leaving), enthusiastic leavers (with a strong desire to leave), and reluctant leavers (who leave involuntarily).

Furthermore, in a comprehensive meta-analysis of voluntary turnover, Rubenstein et al. (2018) analysed 570 articles in 1970–2012, encompassing a wide range of theories and empirical studies on turnover. The primary objectives of these

analyses were to update existing effect sizes of turnover predictors based on the previous meta-analyses, examine new turnover predictors, test the potential moderators in the antecedent-turnover relationship, and suggest directions for future research in this field. From the meta-analysis, they found that 57 predictors of turnover that have been studied in previous research. They categorised these predictors into nine major groups: individual attributes, job factors, traditional job attitudes, organisational context, the interface between person and context, the external job market, attitudinal withdrawal, and employee behaviour. They also identified several new variables that have recently garnered increased attention among turnover researchers, including job embeddedness, socialisation, climate, organisational support, person-organisation fit, work-life conflict, coping, engagement, stress and citizenship behaviours. Besides that, individual fit, job market dynamics, and turnover contagion have been found to have a significant moderating influence on the relationship between antecedents and turnover. It can be concluded that research on employee turnover continues to attract substantial attention from scholars. This sustained interest is driven by the inconclusive nature of past research findings and the urgent need to approach turnover research from different perspectives.

3.2.3 Factors Predicting Employee Voluntary Turnover

In previous section, the evolution of turnover theories is discussed, highlighting how numerous studies have significantly expanded the understanding of turnover in various ways. This section will focus on discussing the most pertinent factors related to turnover, aiming to identify areas that have been thoroughly researched and those that have received less attention.

3.2.3.1 Individual Attributes

Previous research indicates that individual or personal attributes play a significant role in influencing attitude and behaviour of turnover. According to Sacco and Schmitt (2005), demographic "misfits" within workgroups are associated with an increased risk of turnover. Common demographic characteristics studied in turnover research include age, education, income level, work tenure, job level, and marital status (Pang et al., 2014). Furthermore, it has been observed that employees with different attributes respond differently to withdrawal attitudes. For instance, Zaniboni et al. (2013) noted that an employee's decision to quit can vary significantly based on their tenure in an organisation (Zaniboni et al., 2013). Longer tenure in an organisation may improve an individual's organisation-specific skills, thus improving job satisfaction and leading employees to stay longer (Michel et al., 2013). These findings are in line with those of Lambert et al. (2012) and Ali et al. (2018), who observed that older employees, often having longer tenures, showed lower intentions to quit, partly due to concerns about financial incentives (Schlechter et al., 2016). Conversely, younger employees, as noted are often seen as having a weaker fit with the organisation and tend to continually search for jobs that better align with their work values (DelCampo, 2006; O'Reilly et al., 1991).

Empirical studies have reported that gender significantly impacts attitudes towards leaving an organisation (Holtom et al., 2008; Walsh & Bartikowski, 2013). Men and women possess differing value systems, which in turn influence their thoughts, beliefs, attitudes, and behaviours at work (Abraham et al., 2014). Wocke and Heymann (2012) suggest that gender can be linked to the push and pull aspects of the turnover process. Specifically, males are more likely to leave due to pull factors, while

women tend to leave because of push factors. These push and pull factors are further elaborated in the unfolding model of turnover by Lee and Mitchell (1994). Pull factors, often resulting from external events, are typically initiated by the employees themselves, such as when seeking career development or a change in career path, leading them to explore job alternatives and eventually resign. Meanwhile, push factors refer to the psychological reasons that influence an employee's perception and attitude towards their job, thus contributing to their decision to quit. Lee and Mitchell's model postulates that these push factors can lead to what is known as 'decision path 2,' where the individual evaluates their fit with the organisation and their job satisfaction before deciding to leave.

The relationship between gender and turnover has yielded mixed findings (Hur & Abner, 2024). Various factors may explain the differing attitudes of men and women towards career change. Huffman and Olson (2016) suggested that the traditional roles played by men and women (e.g., women bearing greater caregiving responsibilities) significantly influence work attitudes and consequently lead to higher turnover rates, particularly among women. Singh et al. (2018) reported that since women typically shoulder a larger share of household responsibilities, they experience more work-life conflict than men, impacting their job satisfaction. In addition, the underlying value system plays a crucial role in shaping attitudes towards employment. As Rokeach (1973) pointed out in his book, *The Nature of Human Values*, values determine what is important to an individual and their beliefs. For instance, men may prioritise extrinsic rewards, while women often value interpersonal connections. Values are also closely linked to an individual's needs (Super, 1973), goals (Locke, 1976), and attitudes (Fishbein & Ajzen, 1975). As a result, values significantly influence a

person’s affective responses, behaviours, and cognition (Locke, 1976). Since men and women have different value systems, this divergence affects how they perceive their environment and the degree to which this environment aligns with their values (Mohajan, 2022). In other words, individuals, irrespective of gender, may decide to leave their job if there is a mismatch between the work environment and their abilities, interests, or values (Fouad et al., 2020). Kristof-Brown et al. (2023) explained that value congruence between an employee and an organisation occurs when both parties meet each other's needs or share similar fundamental characteristics. Given that each individual, whether a woman or a man, possesses unique value systems, characteristics, desires, and wants (Locke, 1976), these factors will later guide the individual's decisions and actions (England, 1967).

The traditional view on gender and employee turnover proposed that women are more likely than men to leave their jobs (Preston, 2006; Moynihan & Landuyt, 2008; Frehill, 2012; Ashcraft et al., 2016), which is often attributed to conflicts arising from dual roles (Hunt, 2016; Uzoigwe et al., 2019). Factors such as family obligations, marital status, and the number of children is commonly recognised as influencing employee turnover. These obligations are frequently associated with married women, reflecting societal expectations that women primarily fulfil household needs (Clancy et al., 2020), regardless of their employment status (Jolly et al., 2021). However, women's intentions to quit tends to decrease when they receive adequate support from supervisors to manage work-family obligations (Jolly et al., 2021).

With the changing pattern in women’s workforce participation and the availability of work benefits for women, reasons for leaving jobs have expanded

beyond family-related matters (Fouad et al., 2016; Singh et al., 2018). Contrary to previous assumptions, women do not necessarily have a greater intention to leave their jobs than men (Moynihan & Landuyt, 2008). Interestingly, consistent findings indicate that women working in gender-segregated workplaces are more likely to leave their jobs compared to men. This trend is observed in various industries, such as information technology (Armstrong et al., 2012), construction (Fielden et al., 2000; Amaratunga et al., 2006), aviation (Germain et al., 2012), STEM (e.g., Fouad et al., 2017) and sports (e.g., Walker & Bopp, 2011).

3.2.3.2 Personal Factors

Personal factors refer to an employee's background or condition that influences their attitude towards leaving (Rubenstein et al., 2018). Many turnover researchers also consider individual attributes as personal factors. For instance, Ghapanchi and Aurum (2011) categorised personal factors as individual attributes in predicting the intentions to leave, further dividing them into four sub-categories: demographics (such as age, gender, and marital status), human capital (organisational tenure and academic level), motivational attributes (organisational citizenship behaviour and influence orientation), and professional behaviour (job performance and relationships with others). Additional personal factors that can affect the likelihood of quitting and actual leaving behaviour include personality dimensions (Mowday & Spencer, 1981; Mayende & Musenze, 2014), personal vision (Buse & Bilimoria, 2014), employee loyalty, and job burnout (Lee & Liu, 2021).

Based on the individual factors and their impact on turnover, Rubenstein et al. (2018) identified a few categories related to the individual employee. These include

individual attributes (e.g., age, presence of children, education, internal motivation, and locus of control), the person-context interface (e.g., fit, influence of others, job embeddedness, perceptions of justice, and work-life conflict), and employee behaviours (e.g., job performance, citizenship behaviour, lateness, absenteeism, and job search behaviour). Furthermore, the ability to cope with internal and external job demands, as well as engagement and well-being related variables such as stress, are the significant factors influencing turnover.

3.2.3.3 Job Factors

The significance of job-related factors in influencing employee turnover and retention has been highlighted in numerous studies. Rubenstein et al. (2018), in their meta-analysis on predictors of employee turnover, identified various job aspects linked to employee turnover. These aspects include information about the job, job characteristics, job security, task complexity, participation in decision-making, pay, role ambiguity, role conflict, degree of job repetition, and workload. Similarly, Ghapanchi and Aurum (2011), in their systematic review of antecedents to IT personnel's intentions to leave, categorised job-related factors into four sub-categories: job characteristics (e.g., work-schedule flexibility and autonomy), job social support (e.g., colleague support), job difficulties (e.g., role conflict and perceived workload), and job attractiveness (e.g., job attraction and the utility of the current job). Earlier research has shown that work-life balance, as a job-related factor, is a key predictor of organisational commitment and attachment (Wang & Walumbwa, 2007), which in turn contributes to improved employee retention (Shankar & Jyotsna, 2010). In addition, Holtom et al. (2008) identified the nature of the job as a distal

antecedent of turnover, encompassing aspects such as the routinisation of the job, job scope, autonomy and role states.

3.2.3.4 Attitudinal Factors

Several studies have identified key attitudinal factors that predict employee turnover, including job satisfaction, organisational commitment, perceived alternatives, and job search behaviour (Ramesh & Gelfand, 2010; Rubenstein et al., 2018; Schaap & Olckers, 2020). Some scholars have also described these attitudinal factors as psychological determinants of turnover, encompassing overall job satisfaction, organisational commitment, tedium (such as fatigue), and perceived job concern (Ghapanchi & Aurum, 2011). The concept of perceived desirability of movement, initially introduced by March and Simon (1958) and commonly referred to as job satisfaction, has been the subject of extensive research (Lee et al., 2017). The traditional perspective proposed that when an individual is dissatisfied with their jobs, they will seek alternative employment, evaluate their options, and ultimately decide to quit. However, there are scenarios where employees may choose to quit irrespective of their job satisfaction, as indicated in the Path 1 quit decision of the unfolding model of turnover by Lee and Mitchell (1994). Rubenstein et al. (2018) have reported that job satisfaction, the presence of job alternatives, and job search behaviour have a more pronounced effect on employee turnover.

3.2.3.5 Organisational Factors

Organisational factors play a significant role in influencing an employee's likelihood of quitting. Ali et al. (2018) highlighted that factor such as the flexibility of work arrangements, employer support, and union presence could impact turnover

decisions. George (2015) found that, particularly among professional workers, organisational factors exert a greater influence on retention compared to job factors. She observed that employees are less inclined to quit and more likely to remain with an organisation that meets their needs through support, a conducive workplace, adequate work resources, effective teamwork, and opportunities for skill and career development. Leadership styles also significantly impact retention, a finding that aligns with previous research. For instance, when employees gain control over their work, operate in a conducive environment (Laschinger et al., 2009), receive social support from supervisors and coworkers (Pitts et al., 2011), and perceive career prospects (Tymon et al., 2011), they are more likely to remain with an organisation. Ghapanchi and Aurum (2011) further identified additional organisational factors that may predict the intentions to leave and actual turnover behaviour, such as remuneration and benefits, human resource management practices, and organisational culture and climate. Tumwesigye (2010) established a link between perceived organisational support and turnover intentions. Similarly, Allen (2006) and Allen and Shanock (2013) highlighted the impact of socialisation as an organisational strategy for supporting employee integration, which subsequently affects turnover. Supported by Ghapanchi and Aurum (2011), socialisation tactics is one of the organisational factors that influence employee turnover.

3.2.3.6 Environmental Factors

Environmental pressures external to the workplace are also crucial in influencing employees' job decisions. Ghapanchi and Aurum (2011) emphasised that environmental factors significantly shape attitudes towards leaving, such as social support from family and friends (Lee et al., 2004), perceived job alternatives

(Rubenstein et al., 2015), and skill obsolescence due to rapid technological advancements (Zhang et al., 2012). According to Jiang et al. (2012), the concept of off-the-job embeddedness takes into account factors such as friendships (Gonzalez et al., 2016) and living in a secure neighbourhood (Mitchell et al., 2001) that keep employees attached to their jobs. This concept explains how the compatibility, connections, and sacrifices associated with an individual's community can influence their decision to stay or leave (Mitchell et al., 2001). Hidalgo and Hernandez (2001) suggest that understanding the relationship between people and their community involves exploring the emotional attachment individuals have to their place of residence. Organisational researchers are increasingly recognising the role of community experiences in workplace attachment in shaping workplace attachment. Studies have found that employees who are deeply rooted in their communities are less likely to leave their organisations (Feldman et al., 2012). The systemic model of community attachment posits that close relationships with family and friends in a particular place can strengthen an employee's bond with their community. This, in turn, fosters feelings of belonging, compatibility, and connectedness to the place which subsequently influences their turnover intentions (Gonzalez et al., 2018). However, the impact of people-place interactions has been infrequently explored in turnover studies (Weng et al., 2018), resulting in limited evidence on how attachment to a community can affect an employee's intentions to leave a company.

3.3 Organisational Socialisation

In socialisation research, academics often regard socialisation more as a process than a theory (Myers & Woo, 2017). Brim (1966) defines socialisation as the process through which an individual learns social knowledge and becomes a social

being within a group or society. The term socialisation was first used in sociology studies and has received much attention in the fields of psychology and anthropology. In an organisational context, socialisation is viewed as a means of facilitating learning and interaction among group members, helping them to adapt to complex work contexts, assimilate work roles, and share common work values, norms, and beliefs. As a result, socialisation can lead to numerous favourable work outcomes, such as transforming employees into active, participating members and integrating them effectively into the organisational system (Spagnoli, 2020). Socialisation is a complex process that requires people to interact and define their roles to be accepted as members of society. Within this process, the dynamics of interaction between a person and their colleagues are crucial, as they can provide the necessary support and reinforcement for workplace adjustment and attachment (Porter & Steers, 1973). However, if this support is lacking or if there are obstacles that diminish the effectiveness of available support, it may result in workplace alienation. The following section will examine the definition and various stages of organisational socialisation. Subsequently, the evolution of research in the field of organisational socialisation will be examined.

3.3.1 Definition of Organisational Socialisation

Organisational socialisation refers to "the process by which an individual acquires the social knowledge and skills necessary to assume an organisational role" (Van Maanen & Schein, 1979, p. 211). This concept has been defined differently, reflecting the various phases that an employee will encounter throughout their employment in a workplace. Table 3.1 shows the definitions of organisational socialisation derived from past research. In general these definitions comprise similar

components, which are as follows: (1) Organisational socialisation involves a process of *learning* and *knowledge acquisition;* (2) in the socialisation process, individuals learn expected behaviours, attitudes, values, norms, and roles in the workplace, as well as social knowledge and skills; and (3) the learning process and knowledge acquisition occur through interaction with co-workers, participation in work activities, work adjustment, and social interaction. In other words, organisational socialisation can be summarised as a process of learning acquisition, expectation alignment, and interaction. This suggests that the organisational socialisation process requires a range of enablers, such as an individual's proactive behaviour, employer support during the transition, effective onboarding programmes, and support from the entire organisational system, to facilitate the occurrence of learning and knowledge acquisition.

Table 3.1: Definition of Organisational Socialisation

Source	Definition
Brim (1966) p.9	The manner in which an individual learns the behaviour appropriate to his position in a group, through interaction with others who hold normative beliefs about what his role should be and who reward or punish him for correct or incorrect actions.
Schein (1988) p.2	The process by which a new member learns the value system, the norms, and the required behaviour pattern of the society, organisation, or group which he is entering.
Van Maanen (1975) p.67	Organisational socialisation refers to the process by which a person learns the values, norms and required behaviours which permit him to participate as a member of the organisation.
Feldman (1976) p.434	…two other parts of the socialisation process that occur along with the learning of the new values, and that are heavily influenced by this learning: adjustment to the work environment and development of work skills. [socialisation-as-adjustment process]
Van Maanen and Schein (1979) p.211	Organisational socialisation is the process by which an individual acquires the social knowledge and skills necessary to assume an organisational role.

Continue…	
Louis (1980) p.229	The process by which a person comes to appreciate the values, abilities, expected behaviours, and social knowledge essential for assuming an organisational role and for participating as an organisational member.
Jones (1983) p.464	…the socialisation process is analysed from an interactionist perspective in which newcomers are accorded an active role in mediating personal and role outcomes.
Kammeyer et al. (1990) p.129	Socialisation is the process by which a person learns and generally accepts the established ways of a particular social group, or society.
Wanous (1992) p.187	Socialisation concerns the ways in which newcomers change and adapt to the organisation. The types of changes are learning new roles, norms, and values.
Morrison (1993b) p.557	The process whereby newcomers learn the behaviours and attitudes of assuming roles in an organisation.
Taormina (1997) p.29	Organisational socialisation is the process by which a person secures relevant job skills, acquires a functional level of organisational understanding, attains supportive social interactions with co-workers, and generally accepts the established ways of a particular organisation.
Chow (2002) p.720	It is the process by which an individual acquires the knowledge and skills needed to perform his or her job. Socialisation is a change process involving the transmission of important norms and values to employees.
Cooper-Thomas and Anderson (2006) p.492	Organisational socialisation reflects a learning process through which a new organisational employee adapts from outsider to integrated and effective insider.
Ardts et al. (2007) p. 159	The learning process by which newcomers develop attitudes and behaviour that are necessary to function as a fully-fledged member of the organisation.
Bauer et al. (2007) p. 707	The process by which newcomers make the transition from being organisational outsiders to being insiders.
Chao (2012) p. 579	A learning and adjustment process that enables an individual to assume an organisational role that fits both organisational and individual needs.

Source: Adapted from Chen (2010, p. 36).

3.3.2 How organisational socialisation has been studied so far?

Organisational socialisation, a distinct branch of socialisation research, gained prominence in the 1960s with a heightened focus on aspects such as self-image (Brim,

1968), occupational identification (More, 1969), and role understanding (Manning, 1970). Earlier studies in this field primarily concentrated on developing models that explained various dimensions of organisational entry. These dimensions included socialisation tactics, reactions to unexpected events upon joining a company, stages marking the period before becoming a member, the adjustment process, and eventual exit (Myers & Woo, 2017). Contemporary research in this area is deeply influenced by the foundational works of Schein (1965, 1968). Schein (1968) described organisational socialisation as a universal process experienced by individuals starting their careers in an organisation. This process often involves new employees engaging in a learning journey to become insiders, which is achieved through socialisation and interaction with the entire organisational system. In general, there are four major approaches of organisational socialisation investigation that have been studied in various perspectives and serve different objectives: (1) the organisational stage approach; (2) the organisational approach; (3) the individual approach; and (4) the content focus, which will be discussed in the next sections.

3.3.2.1 Stage Approach

The first approach commonly applied in socialisation research is the stage approach, which delineates the different phases of socialisation within an organisation. Scholars have debated the precise timing of organisational socialisation. While some argue that it predominantly occurs during the initial months of employment (e.g., Gruman et al., 2006), others view it as an ongoing process (Yang, 2010; Spagnoli, 2020) that affects employees regardless of their tenure. According to Jones (1986), the learning process, training and development phases, work processes, and assignment of role models are not only intended for new employees but also aid in the socialisation

process for all staff members. However, socialisation and the learning process in an organisational system should be ongoing rather than being emphasised solely at the early stage of employment. In fact, there may be a need for employees to re-socialise after working for a period of time in an organisation (Arras-Djabi & Lacaze, 2021). This necessity arises because, over time, employees become better integrated within the organisational system and successfully socialise with colleagues.

Nevertheless, due to subsequent changes in work processes and job demands, it becomes essential to either maintain effective socialisation continuously or to initiate re-socialisation among existing employees (Arras-Djabi & Lacaze, 2021). Furthermore, institutional socialisation efforts by employers should be consistently implemented across all stages of employment. This ongoing approach ensures that employees maintain their skills for task performance and retain strong connections with other organisational members (Saks & Ashforth, 1997), particularly in the face of job duty changes. This perspective underscores that organisational socialisation is not limited to explaining the adaptation process of newcomers alone but also encompasses insiders at all tenure levels.

Although researchers in the field of socialisation have debated the exact starting and ending points of the socialisation process (Ashforth et al., 2007), there is consensus on certain entry models that elucidate how newcomers learn and adjust in a new work environment. Figure 3.1 in the work of Ashforth et al. (2007), which reviews socialisation in organisational contexts, summarises these socialisation stages. They collated various influential and widely cited models of socialisation stages previously studied by researchers, such as Feldman (1976), Schein (1978), Wanous (1992), and

Bauer et al. (1998). Based on their synthesis, Ashforth et al. suggested that employee socialisation encompasses four main stages: anticipation, encounter, adjustment and stabilisation.

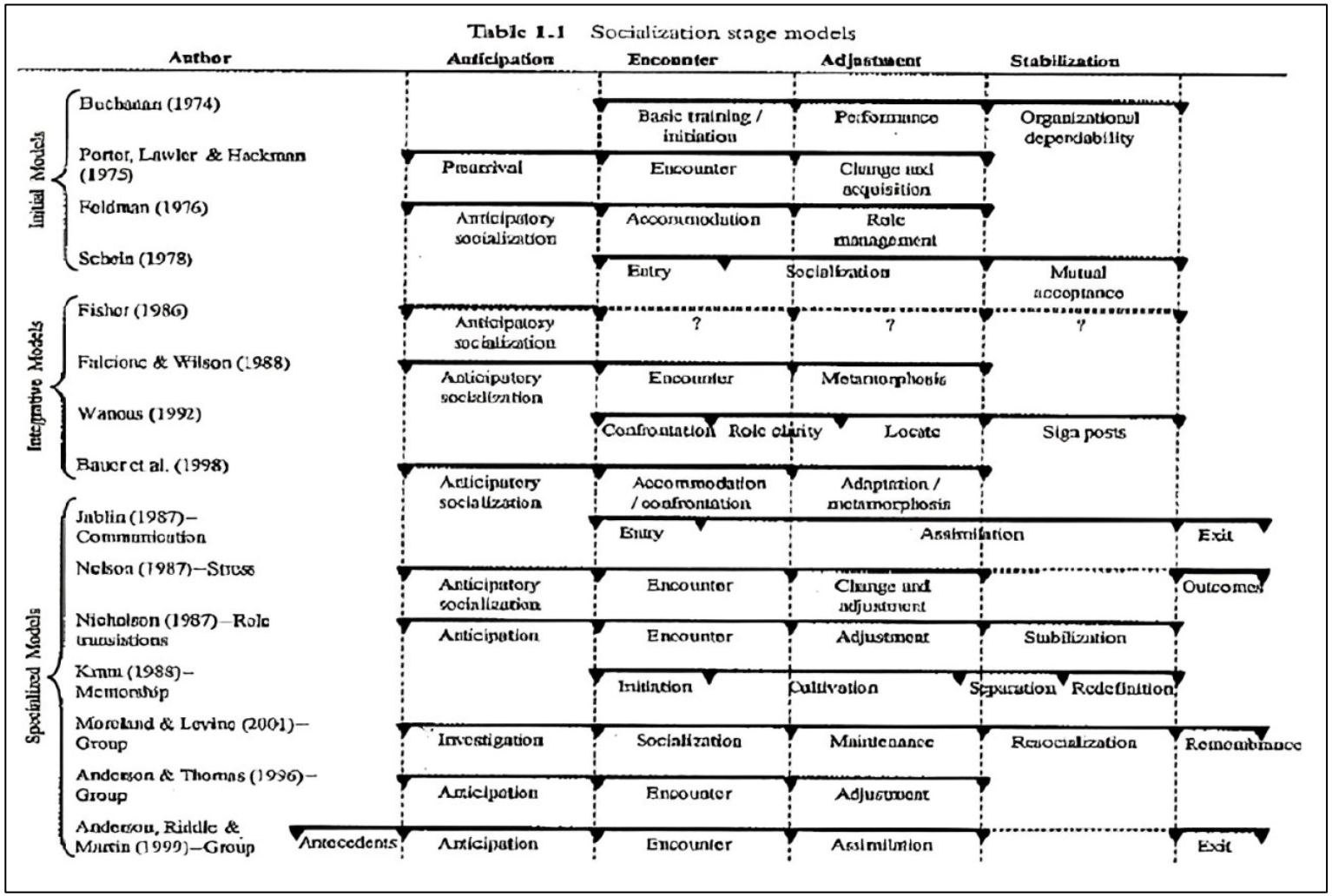

Figure 3.1: Socialisation Stages Model

The *anticipation* stage refers to the period before an employee enters an organisation. This stage involves job searching, gathering information about the new job and organisation from family and friends, conducting organisational background research, and examining organisational self-portrayals. Interestingly, the anticipation stage can also apply to existing employees, particularly those undergoing job transitions, and not only newcomers (George et al., 2022). Numerous studies have been conducted to understand individual responses during this stage. For example, Dufour et al. (2021) interviewed 102 supervisors to investigate how they assess and promote new employees' fit with the job and organisation across the four stages of socialisation, from anticipation to stabilisation. Moving beyond the common research approaches to socialisation, Gilmore and Harding (2022) introduced a novel perspective on the experience of the anticipation stage. They employed memory work and psychoanalytical theories to delve into the transition process from being an outsider to becoming an insider in an organisation. During the anticipation stage, an individual typically engages in extensive information-seeking to gain a better understanding of their future employment. This effort not only helps in establishing a fit with the organisation but may also significantly influence their attitude towards potentially leaving the company (Bauer et al., 2025).

The second stage of socialisation is *encounter,* which refers to the new employees entering the organisation and setting the mutual expectation with the organisational system. This stage is critical in the socialisation process as it encompasses learning about the realities of working life within the organisation (Woodrow & Guest, 2017). The initial experiences of a new employee upon joining can significantly shape their integration with the internal system and lead to various

employee outcomes (Bauer et al., 2007). During the encounter stage, Jones (1986) suggests that an employee may participate in either institutionalised programmes organised by the employer, which facilitate the adjustment process, or individualised programmes where the employee must independently navigate their adjustment in the company.

Bauer et al. (2007) theorised that, in the early stage of employment, newcomers are actively seek information in order to reduce uncertainty and ambiguity regarding their job roles and relationships with established members of the organisation. This information-seeking process is crucial in aiding newcomers to better understand their job and facilitate their integration. The six socialisation tactics proposed by Van Maanen and Schein (1979) are particularly vital at this entry stage. They assist newcomers in establishing relationships with both fellow newcomers and existing employees, learning about their job roles, and identifying an acceptable identity that aligns with the organisation's culture.

The *adjustment* stage refers to the phase where an employee adapts to the organisational reality by integrating with the system and developing a fit with the organisation. This stage of socialisation has been extensively studied. Bauer et al. (2007) theorise that newcomer adjustment following organisational entry involves navigating both task and social adjustments. This process encompasses three main aspects: role clarity (understanding the tasks to be performed), self-efficacy (acquiring new task-related skills and confidence to perform them), and social acceptance (achieving a sense of acceptance and likeability among peers). In addition, Hatmaker (2015) proposed two types of employee adjustment resulting from social network

networks: (1) knowledge-based adjustment, where newcomers acquire the necessary knowledge and skills to become productive members of the organisation; and (2) social adjustment, in which newcomers develop social capital, a sense of belonging, and a good fit with the organisation. Past research has revealed various factors contributing to successful workplace adjustment. These include value congruence (Oh, 2018), motivation and commitment (Uddin & Ahmed, 2016), the proactive behaviours of employees and managers (Ellis et al., 2017), and leader-member exchange relationships (Jokisaari, 2013),

Lastly, *stabilisation* involves the stage where an employee's identity, work roles, and mutual acceptance as an organisational insider become institutionalized. This stage can require a considerable amount of time for an employee to achieve stability in the workplace. Buchanan (1974), in his three-stage early career model, suggests that after five years of employment at a particular company, an employee typically experiences various career successes and demonstrates greater commitment. Similarly, Schein (1978) concurs with his three-stage socialisation model. He identifies the third stage as mutual acceptance, during which an employee achieves greater stability, as evidenced by factors such as improved performance, salary increments, promotions, and high job satisfaction.

3.3.2.2 Organisational Approach

The second approach to studying socialisation is the *organisational approach,* which emphasises on the situation or factor related to organisation that shape an employee's work experience (Song & Chathoth, 2011). This approach involves investigating various socialisation strategies that organisations can implement to

facilitate the adjustment process within the work environment. Van Maanen and Schein (1979) proposed six dimensions of socialisation tactics: formal-informal, collective-individual, sequential-nonsequential, fixed-variable, serial-disjunctive, and investiture-divestiture. In the first empirical study of socialisation tactics, Jones (1986) categorised formal, collective, sequential, fixed, serial, and investiture tactics as institutionalised socialisation and informal, individual, nonsequential, variable, disjunctive, and divestiture tactics as individualised socialisation. These two classifications of tactics show the extent to which the tactic applied in an organisation is more structured (institutionalised) or less structured (individualised).

Institutionalised and individualised tactics serve different motives in the socialisation process and have different influences on the socialisation outcomes. For instance, Jones (1986) suggested that institutionalised tactics lead to a custodial role orientation, which allow the new employees to passively accept the roles predefined by the organisation. These organisation-initiated activities are typically more structured and formal, which will minimise the uncertainty and ambiguity during the entry process (Saks et al., 2007). They convey accurate information to the newcomers about organisational values and appropriate responses to various situations (Cable et al., 2013). In contrast, individualised tactics, or individual-initiated activities, offer less structure, allowing newcomers to independently develop their approach to their roles within the organisation. Berthel and Becker (2013) describe this approach as a 'sink-or-swim' tactic, where an employee's survival in the organisation largely depends on their personal efforts. As a result, employees need to be more proactive in understanding the company's environment (Bauer & Erdogan, 2010).

There are some ongoing debates in the literature as to whether or not socialisation tactics should be studied as an aggregate construct. Some researchers argue against this aggregated approach, as not all dimensions align well with it. Therefore, various studies have examined socialisation tactics based on Van Maanen and Schein's (1979) individual dimensions (e.g., Allen, 2006; Cohen & Veled-Hecht, 2010; Saks et al., 2007; Kowtha, 2008) or using Jones's (1986) tripartite division of the tactics (e.g., Cable & Parsons, 2001; Allen & Shanock, 2013; Bauer et al., 2007; Wingerter & Ahn, 2020). Jones categorised the tactics into three broad factors: context tactics (collective and formal), content tactics (sequential and fixed), and social tactics (serial and investiture). However, these categorisations, particularly Jones's tripartite division, have received scant attention among socialisation researchers (Bauer et al., 2007).

Past research revealed that the application of different models of tactics in organisational socialisation research produced different outcomes. For instance, Saks et al. (2007) investigated the 6-, 3-, and 1-factor models of the tactics in their meta-analysis on socialisation tactics and newcomer adjustment. They found that the 1-factor model, representing institutionalised socialisation tactics, is related to a range of socialisation outcomes, including role ambiguity, role orientation, role conflict, satisfaction, commitment, performance, perceived fit, and turnover intentions. Meanwhile, the 6-factor model produced almost identical results to the 1-factor model, with the exception that only the investiture tactic was significantly related to job performance. In the 3-factor model, the analysis yielded mixed results. Social tactics were the best predictors of all eight adjustment outcomes. Context tactics were found to be the weakest predictors for all outcomes except job performance and perceived

fit. Conversely, content tactics were the weakest predictors of job performance and perceived fit.

Allen (2006) explored the impact of socialisation tactics on embeddedness and turnover by conducting a confirmatory factor analysis (CFA). This analysis compared a one-factor, a three-factor, and a six-factor model of tactics. Allen opted to retain the original six dimensions of tactics in his study, as this model demonstrated a significantly better fit than both the three-factor and one-factor models. The results indicated that only serial and investiture tactics were found to be significantly related to employee turnover. Table 3.2 provides descriptions of each of the organisational socialisation tactics.

Different models employed in socialisation research yield varied effects on adjustment outcomes. Institutionalised tactics, which are strategies organised by the employer, provide newcomers with a structured learning design and standardised information. This approach reduces ambiguity during the early phases of employment and facilitates learning about the organisation, job responsibilities, and co-workers (Saks et al., 2007). In contrast, individualised tactics involve learning that occurs naturally and by default through daily work activities. With a minimally structured learning programme, employees independently and innovatively learn their job roles and adapt to the work environment adapt with the work environment (Jones, 1986).

Table 3.2: Organisational Socialisation Tactics

Institutionalized	vs	Individualized	Jones (1986)
Collective The socialization process involves a group of newcomers that go through a common set of working experience.	vs	Individual Newcomer is isolated from one another.	CONTEXT TACTICS The context in which newcomers are socialized
The degree to which newcomers go through common learning experiences			
Formal A strategy that separates the newcomers from the existing organizational members during the socialization process.	vs	Informal No clear separation between newcomers and existing organizational members and learning occurs through on-the-job training, which involve a trial-and-error learning process.	
The degree to which newcomers are learning the responsibilities of their roles on the side-lines of the normal work context			
Sequential A socialization process that involves a structured learning stages as a prerequisite to achieve a defined role in the organization.	vs	Nonsequential No specific order in leading to the targeted role in the organization. The socialization and learning stages are continually changing depends on the preferences of the employee and nature of work.	CONTENT TACTICS Content of the information provided through socialization
The extent to which newcomers are provided with explicit information regarding the activities they will go through			
Fixed The newcomers will be provided a standardized timetable to complete a given step.	vs	Variable Standardized time is not provided to the newcomers to assume the new roles. This tactic is suitable for upwardly mobile career that expose to unforeseen factors such as states of economy or turnover rate, which will affect the assumption of higher role in the organization.	
The degree to which newcomers are given precise knowledge of the timetables associated with completing each stage of the socialization process			
Serial Assigning the existing member to groom the new recruit and serve as a role model.	vs	Disjunctive Role model is not provided to inform about the duties and therefore no guidelines from the predecessors.	SOCIAL TACTICS Social aspects of socialization
The degree to which organizational insiders act as role models for newcomers			
Investiture A socialization process of accepting the incoming identity and personal characteristic of the newcomer.	vs	Divestiture A process that the organization reject the identity and personal characteristic of the newcomer. Some organizations prefer if recruited employee sever the old habit from previous company and create new self-image to base upon the new role's requirement.	
The degree to which newcomers receive social support from organizational insiders.			

Burbock et al. (2016) argued that institutionalised socialisation strategies lead to better adjustment among newcomers compared to individualized socialisation strategies. Supporting this view, Korte and Li (2015), in a qualitative study conducted in Taiwan, interviewed thirteen engineers. They concluded that in terms of technical learning, participants expressed greater satisfaction with the adjustment process when they received support (such as mentoring and work-related instructions) from more experienced employees. This type of support, as described by Van Maanen (1979) and Jones (1986), is referred to as serial tactics or institutionalized tactics. These tactics offer a structured strategy for adjustment by assigning a role model to newcomers.

Employers play an important role in facilitating employees' development of beliefs, feelings, intentions, and behaviours through various strategies. Organisational socialisation tactics are instrumental in helping newcomers integrate into a new working environment. These tactics aid in establishing contact with existing employees, forming a personality that aligns with the company's climate, accepting new job roles, developing job capabilities, and adapting to new norms, organisational values, cultures, and practices (Wanous, 1992; Van Maanen & Schein, 1979). Research in this domain, known as the situationist approach, focuses on organisational factors that shape employees' work experiences (Song & Chathoth, 2011). Studying socialisation with a focus on these tactics is crucial for contemporary organisations, as past empirical evidence suggests that organisational socialisation tactics are critical antecedents of both behavioural outcomes (e.g., turnover) and attitudinal outcome (e.g., turnover intentions) (Bauer et al., 2007; Bauer & Erdogan, 2012; Allen & Shanock, 2013, Rubenstein et al., 2018).

3.3.2.3 Individual Approach

The third approach in organisational socialisation research is the *individual approach*, which concentrates on the proactive behaviour of employees as they adjust to a new working environment. Proactive behaviour involves an individual taking initiative to alter their status quo for the betterment of current conditions or to create new situations (Crant, 2000). Bauer et al. (2007) employed meta-analytic and path modelling techniques to test a model of the antecedents and outcomes of newcomer adjustment. They discovered that newcomer adjustment, characterised by role clarity, self-efficacy, and social acceptance, mediates the relationship between organisational socialisation tactics (context, content, and social tactics) and information-seeking efforts (referent, appraisal, and relational information). This mediation influences various socialisation outcomes, including job satisfaction, organisational commitment, job performance, intentions to remain, and turnover.

Research focusing on proactive behaviour in organisational socialisation has attracted wide attention from scholars (e.g., Ashford & Nurmohamed, 2012; Saks & Ashforth, 1997; Bauer et al., 2007; Batistič & Kaše, 2015; Saks & Gruman, 2018). This approach highlights the importance of an employee's proactive behaviour in reducing uncertainty and ambiguity regarding job roles and relationships with existing staff, based on the uncertainty reduction theory. This theory argued that newcomers actively seek information as a means to reduce uncertainty. Bauer et al. (2019) identified four types of proactive behaviours that facilitate employee adjustment: information seeking, feedback seeking, general socialising, and relationship building. Additional proactive behaviours identified by researchers include creating networking opportunities (Ashford & Black, 1996) and engaging in job change negotiations

(Ashford & Black, 1996). Gruman et al. (2006), in their survey of 140 students at a cooperative education university, found that the students' proactive behaviours mediated the relationship between socialisation tactics and their outcomes, such as successful adjustment. Several researchers concur that an employee's proactive behaviour should be examined in conjunction with the socialisation tactics initiated by the employer to optimise adjustment (e.g., Bauer et al., 2007; Gruman et al., 2006).

3.3.2.4 Content Approach

The fourth and final approach to investigating organisational socialisation emphasises the content of the process. Cooper-Thomas and Anderson (2006) describe this approach as focusing on the learning process. Effective socialisation entails new employees learning and acquiring knowledge about their work roles and the organisational system, including the culture, norms, beliefs, expected work behaviours, and attitudes. While organisational socialisation tactics address 'how employees learn about socialisation,' Chao et al. (1994, p. 730) define the domains of socialisation content as 'what is actually learnt during socialisation.' For new employees, the content of organisational socialisation becomes a central focus (Cooper-Thomas & Anderson, 2005; Chao et al., 1994; Saks & Ashforth, 1997), aiding them in learning about the organisation.

The organisational socialisation contents have been studied in numerous studies, often quantitatively, using Chao et al.'s (1994) measurement tool (Ashforth et al., 2007; Bauer et al., 2007). Chao et al. proposed six dimensions of socialisation content: performance proficiency, politics, language, people, organisational goals/values, and history. 'Performance proficiency' concerns the extent to which new

employees learn and perform their job roles effectively. The 'politics' dimension measures how well new employees understand and navigate the relationships and structures within the company. 'Language' refers to the individual's knowledge of the common languages used in the organisation, including specific jargon, acronyms, and slang unique to the group. Several individuals explain the extent to which new employees understand and integrate into work relationships within the organisation. The 'organisational goals and values' dimension measures an employee's knowledge and comprehension of the goals, values, rules, principles, and norms in the work environment. Lastly, the 'history' dimension pertains to the degree to which new employees learn about and understand the history of the organisational system. This includes knowledge about the background of specific organisational members and the company's traditions.

3.3.3 Women Engineers and Organisational Socialisation

Socialisation involves the learning process where individuals integrate themselves into an organisation. Given the variability in organisational operations, structures, jobs, management practices, climate, identity, and strategies, employees may experience the socialisation process differently. As Sonnetag et al. (2004, p. 261) asserted, 'learning cannot be separated from the social and physical context within which it occurs.' Therefore, socialisation research should focus specifically on the context, such as women working in male-dominated workplaces, to understand how employees react to socialisation tactics initiated by employers in particular workplace conditions. For instance, cultural studies in engineering workplaces demonstrate that such work environments require a unique socialisation process. As the workforce

becomes more diverse, with an increasing number of women entering traditionally male-dominated fields such as engineering (Roos & Steven, 2018), this shift presents unique challenges in the onboarding process, particularly for women. A gender-specific approach to socialisation is necessary in the engineering industry, given the differing socialisation experiences of women and men. Many women encounter difficulties in adapting to a male-dominated workplace (Fouad et al., 2011). Therefore, it is necessary to provide targeted support in terms of socialisation for women engineers. Such support is key to helping them establish a good fit with both their job roles and the organisation as a whole.

3.3.3.1 Socialisation Practices as the Support for Women Engineers

In the socialisation process, several aspects play a crucial role in supporting employees' integration into the workplace. These include the involvement of colleagues and leaders, organisational practices, and individual proactive behaviours. Employers, employees, and leaders each contribute to ensuring a successful socialisation process. According to Kossek et al. (2011), workplace support can be categorised into two main types. The first, 'content-specific' support, involves supervisors taking care of employees' well-being and providing resources necessary for job performance. Examples of this include the organisation offering training and development programmes, recognising employee contributions, and facilitating promotions. The second type, 'content-general' support, encompasses the social support provided by supervisors in the form of socio-emotional care and general expressions of concern. For instance, the organisation provides work-family support (e.g., policies) that enable the employees to fulfil their work-family demands.

Given that working women often juggle crucial roles in both their work and personal lives (McMunn et al., 2020; Craig & Mullan, 2011) and face stereotypes of being less competent than men (Crosby et al., 2004), they require additional support in the workplace. This support can include assistance in managing work and family responsibilities, recognition for contributions and accomplishments, opportunities for career advancement, and skill development through training programmes (Fouad et al., 2016). When a supportive work environment aligns with the incumbents' needs, a person-environment fit can be established (Fouad et al., 2017). Support provides employees with emotional reassurance (Lee et al., 2004), reduces uncertainty, particularly during the early stages of employment (Bauer et al., 2007), and fosters the development of confidence, organisational commitment, and identification (Myers & Woo, 2017). Furthermore, Singh et al. (2013) found that organisational supports, such as training and professional development programmes, significantly influence engineers' career choices.

Rubel et al. (2023) suggested that a supportive work environment can reduce the occurrence of workplace deviance. Moreover, a supportive employer can significantly influence an employee's attitude towards leaving. For instance, employees are generally more satisfied with their jobs and have a lower intention to quit when they receive social support from both organisational members and their families (Lee et al., 2004; Ali et al., 2018). Conversely, a decrease in support is associated with lower job satisfaction, slower income growth over time, and reduced role clarity (Jokisaari & Nurmi, 2009). Fouad et al. (2016) and Moors et al. (2014) identified an unsupportive work environment as a primary reason for women engineers to leave their jobs. In addition, Fouad et al. (2017) found that a lack of mentoring

support and discrimination by supervisors were key factors in women leaving the engineering field.

In the engineering profession, work support is critical because engineering is a technical field that requires diligence, agility and sharp thinking in hands-on tasks. Carberry and Baker (2018) observed that engineering is often perceived as a domain where employees handle complex machinery, solve intricate problems, and possess high technical skills (refer to Section 2.4.2 for further details). A thorough understanding and readiness for engineering tasks are vital for the preparation and development of professionals in this field. As a result, engineers must fully grasp the organisation's expectations to deliver high-quality work. Initiatives such as training and development, orientation, or onboarding programmes play a significant role in enhancing the learning process of engineers for long-term success.

One effective strategy for facilitating employee socialisation and adjustment in the workplace is the application of organisational socialisation tactics. Employer-initiated training from the first day of employment proves particularly beneficial for highly skilled jobs, such as in engineering. Past research underscores the importance of support in the form of socialisation tactics for engineers. This support is crucial in helping them adjust to the engineering work environment. It is especially vital for recently graduated engineers who are in the process of defining their work responsibilities, career objectives, and professional identities (Lichtenstein et al., 2009; Matusovich et al., 2009). When engineers participate in a structured learning programme organised by the employer, they are more likely to adapt effectively and confidently to new work roles. Organisational socialisation tactics have proven to be

an effective tool in mitigating uncertainty and ambiguity in the workplace, especially for new engineers (Kowtha, 2008). When engineers are new to a particular workplace, it is crucial for them to understand their new work roles within the organisation's unique culture, norms, and specific jargon. Therefore, organisational socialisation tactics can be a strategic approach to expedite the process of adjustment and integration into the organisation. Engineers who place high value on development programmes are likely to be more satisfied with their job, show greater organisational commitment, perform better, and have a lower propensity to quit (Bauer et al., 2007). However, there is limited research focusing on organisational socialisation tactics as a form of support specifically aiding women engineers in adjusting and finding their fit within the work environment (Rogers, 2020; Beddoes, 2021).

Korte et al. (2019), in their qualitative study among newly hired engineers, found that experiences during the first few months of employment had affected the engineers' views and expectations at work. Organisational socialisation is particularly important for women engineer, as it plays a crucial role in enhancing their self-efficacy and shaping their expectations for future careers (Fouad et al., 2011). Korte et al. further observed that these experiences are largely shaped by interactions and relationships within their workgroups. Given that women often place a high value on social connections (Cech, 2015), experiences during organisational socialisation programmes become vital in facilitating their adjustment process.

3.3.3.2 Socialisation Tactics for Women Engineers

In the organisational socialisation process, organisation plays an important role in helping employees to adapt to their new working environment. Organisations may

apply various tactics to facilitate the socialisation process such as providing supports in the learning experiences, enrolment in training programmes, provision of structured learning processes, and assignment of role models (Van Maanen & Schein, 1979; Jones, 1986). Jones (1986) identifies three strategies of organisational socialisation tactics initiated by employers to support newcomers in adjusting to a new work environment: content tactics, context tactics, and social tactics. As discussed in Section 3.3.2.2, research in organisational socialisation tactics focuses on the organisational approach to understanding how employees socialise and adjust within a workplace. These three tactics are particularly vital for women engineers, aiding them in comprehending their tasks more effectively, gaining confidence in task performance, and adjusting to workgroups typically dominated by men. Each tactic offers a distinct focus and stage for assisting engineers with their adjustment to the organisational system. Importantly, these tactics are designed not only for newly hired employees but also for existing members of the organisation. This approach helps in preventing skill obsolescence and maintaining relationships among organisational members.

Engineering, being a crucial and complex field, requires its professionals to be highly skilled and knowledgeable in their tasks. Kowtha's survey of 135 engineers revealed that organisational socialisation tactics significantly impact engineers' role clarity, social integration, and task mastery. In addition, gender can moderate the relationship between certain socialisation tactics and their proximal outcomes. When women engineers engage in socialisation activities initiated by the employer, these experiences can significantly contribute to their work happiness, career aspirations, and retention in the engineering workforce. This observation aligns with the findings of past research who noted that women engineers tend to leave the field at a higher

rate than their male counterparts when they receive inadequate social support (Frehill, 2010; Fouad et al., 2017). Examples of such support include a lack of recognition as organisational leaders and exclusion from work-group social gatherings.

As explained in Section 3.3.2.2, *content tactics* refers to the information provided to newcomers, particularly regarding whether they follow a fixed timetable (fixed tactics) and whether they undergo structured learning stages (sequential tactics). These tactics are associated with improved role clarity (Wingerter & Ahn 2020; Bauer et al., 2007; Van Maanen & Schein, 1979) due to the clear structure of the learning process they provide. Hart and Miller (2005) discovered that sequential tactics, by offering clear and incremental steps towards full workplace membership, reduce role ambiguity among newly hired managers. This is equally relevant for engineers, who require a variety of social and technical skills for their technical jobs. Content tactics are essential in clearly defining job responsibilities for engineers. While there is limited evidence indicating gender effects on content tactics (Kowtha, 2008), some research suggests that women engineers may leave the field due to a lack of confidence in performing their job roles (Fouad et al., 2011; Hughes, 2011), which could be linked to receiving lesser social inputs (AWE, 2005). Women engineers themselves do not necessarily are having greater or lesser self-efficacy than men, but because of the forces from social environment, it influences their confidence level in performing the jobs (AWE, 2005). As reported by Bray and Brawley (2002), individuals with greater role clarity tend to demonstrate higher efficacy in job performance. Therefore, content tactics are likely to be particularly beneficial for women engineers. These tactics can aid them in comprehending the specifics of their job and in clearly understanding what they need to learn to be accepted as insiders in workplaces where men predominate.

This understanding is crucial in environments where the predominant gender may influence work dynamics and expectations.

The second tactic is *context tactics,* which refers to how newcomers are socialised and being provided with information. These tactics include whether newcomers are grouped together in the same cohort during the learning process (collective tactics) and whether they experience the learning process off-the-job (formal tactics). Research indicates that women engineers value interaction and social learning (Cech, 2015), aligning with their communal traits. Cross and Madson (1997) suggest that women often place a greater emphasis on group participation and care about interpersonal relationships, aspects that are fostered through collective tactics (Van Maanen & Schein, 1979). Experiencing the learning process with other newcomers not only enables the company to convey a consistent message about the job and organisation, thus reducing uncertainty (Cable & Parsons, 2001), but also facilitates the formation of bonds among women engineers. This can enhance their comfort in new work environments (Kowtha, 2008) and decrease workplace frustration (Huang & Jia, 2010). Formal tactics have been found to be related with increased self-efficacy (Bauer et al., 2007), as structured learning experiences, such as formal education, provide well-organised content. This is especially crucial for employees in technically demanding fields like engineering (Chen, 2010; De Grip & Smits, 2012). Furthermore, occupations with high risks, such as engineering (Mishra & Aithal, 2021), necessitate structured and extensive periods of formal learning to ensure mastery of complex tasks (Van Maanen & Schein, 1979) and to instill the accepted methods of job performance within an organisation (Salisbury, 2006). Considering that self-efficacy in job performance influences engineering identity fit

and career exit decisions (Scott et al., 2021) among women engineers, context tactics likely serve as a crucial tool in facilitating their socialisation.

The third tactic is *social tactics,* which refers to the social aspect of the socialisation process, including whether the socialisation process acknowledges and accepts the incoming identity or personal characteristics of the newcomer (investiture tactics) and whether a role model is provided (serial tactics). For women integrating into workgroups, especially in male-dominated fields like engineering, identity formation and the availability of a role model are likely crucial elements. According to Kowtha (2008) and Hetty and Emmerik (2002), women may benefit more from accommodations and support than their male counterparts in professions where men predominate. A significant challenge for women engineers lies in the effectiveness of investiture tactics. This involves assessing whether the predominantly male existing employees demonstrate positive social acceptance and value women engineers for their unique contributions and identities. In professions that possess distinct identities and cultures (Ashforth et al., 2007), socialisation plays a crucial role, especially for women engineers, in aligning their individual identities with their professional identities (Van Maanen & Schein, 1979; Kowtha, 2018; Kramer, 2010). The prevailing occupational cultures significantly influence the manner in which a woman engineer socialises upon entering an organisation (Korte et al., 2015; Kowtha, 2008), subsequently shaping her individual identity (Villard & Whipple, 1976). However, the process of identity acceptance or rejection for women engineers can be complicated by constraints and difficulties associated with gender stereotypes prevalent in the engineering field.

Having a successful role model in their field is crucial for women engineers, in clarifying their roles (Kowtha, 2008), sustaining their careers (Cheryan et al., 2011; Scott et al., 2021) and balancing the family demand (Blickenstaff, 2005). To confidently perform complex tasks, a woman engineer may benefit from vicarious experiences (i.e., learning by observing others) and social persuasion (i.e., receiving opinions, feedback, and support from others), as these provide valuable sources of information and reference (Bandura, 1997). Therefore, pairing a woman engineer with an existing member who can guide her in meeting work-role expectations (serial tactics) can be instrumental in her work adjustment. The role model can offer work-related advice and provide a practical example of competent job performance. In addition, organisations can implement mentoring or coaching programmes as mechanisms to support employees' learning processes and facilitate knowledge sharing. This is useful to build the social atmosphere necessary for women engineers to feel included and integrated into the company and reduce the propensity to leave the career (Scott et al., 2021).

Past research revealed that the gender of a role model can significantly affect the career satisfaction of women in STEM fields (Drury et al., 2011). Due to stereotype threats, such as perceptions of women engineers being less competent or underperforming (Crosby et al., 2004), assigning a female role model can help mitigate these negative stereotypes and enhance job performance among women in this male-dominated industry (Stout et al., 2011). Furthermore, the perceived similarity to a same-sex role model is an important factor that can contribute to retaining women in this field (Cheryan et al., 2011). An interview participant in Scott et al.'s (2021) study reported that having a same-sex role model inspired her to achieve her career goals in

engineering and bolstered her self-view as a valuable and competent member of the organisation.

Social tactics also focus on whether existing members of an organisation accept the incoming identity of newcomers. Self-categorisation and social identity theory, as proposed by Tajfel and Turner (1986) and Turner et al. (1987), suggest that an individual's identity comprises both personal and social components. Personal identity involves characteristics that distinguish the individual from the group, while social identity relates to the categorisation of oneself into one or more social groups. The identity is particularly crucial for women engineers who may bring a feminine personality into a masculine environment or carry an existing identity from a previous organisation. Women engineers may have a preexisting professional identity shaped by their experiences in prior organisations, which can either help or impede them as they adjust to a new workplace. The acceptance and affirmation of these identities by existing members plays a significant role in the successful socialisation of newcomers, impacting on their sense of belonging, job satisfaction, and eventually, retention within the organisation. Therefore, social tactics are not just about fitting into the existing culture but also about the organisation's flexibility in accommodating diverse identities, which is crucial for creating a welcoming and supportive work environment.

Furthermore, identities can be reinforced when new engineers, who have a foundational understanding of work practices and expectations, are supported by institutionalised social tactics and formal training through content and context tactics, enabling them to adapt more effectively (Kowtha, 2018). While inexperienced newcomers, such as recent graduates, may benefit from these tactics, their impact may

be less pronounced due to their unfamiliarity with the field. Moreover, Buse et al. (2013) found that conflicts between personal identity and the prevailing engineering identity were a significant reason why women engineers chose to leave their careers. Therefore, social tactics, particularly serial and investiture tactics, could be significantly linked to workplace adjustment (Jones, 1986; Bauer et al., 2007; Saks et al., 2007; 2011; Kowtha, 2018) among women engineers.

Scott et al. (2021) emphasised that aligning with their engineering identity is significantly influenced by self-efficacy for women engineers. One method to enhance self-efficacy is through organisational support, such as assigning experienced members or role models to guide employees in their job duties (Singh et al., 2013; Bauer et al., 2007). However, existing research often overlooks the crucial role of role models in aiding women engineers to adjust and establish fit with their job and organisation. Van Maanen and Schein (1979) described the 'role model' within the serial tactic as an existing member assigned to mentor the newcomer about a similar position in the company. Fernando et al. (2018) identified the availability of a role model as a factor in employee retention. However, in this context, the role model's function extends beyond only mastering tasks and duties and provides guidance on balancing work and family demands. The distinct professional values, practices, and language inherent in engineering work culture require a deep understanding by engineers (Kowtha, 2008). In this context, assigning role models (a form of social tactics) can be particularly beneficial for women engineers to learn and acclimatise to the work environment. Van Maanen and Schein (1979) and Jones (1986) suggest that assigning a role model from among existing members can significantly assist other employees in better understanding their organisational roles. This support, in turn, can

enhance self-efficacy, improve task comprehension, and strengthen peer relationships (Bauer et al., 2007). Furthermore, the supportive superior or colleagues will help the women engineers mitigate fear and mistakes in performing their job roles (Bigliardi et al., 2005).

3.3.4 Summary on Organisational Socialisation in the Women Engineers Context

Organisational factors play an important role in shaping the perception, attitude and behaviour of employees at work. For instance, support from employer and organisational members is particularly important in helping employees to learn their job roles and influence the perception of employees that the organisation cares about their wellbeing and development (Hom et al., 2017, Rubenstein et al., 2018). Employees may encounter work pressures due to the nature of job, its complexity, involvement in decision making, role ambiguity, conflict, and workload (Rubenstein et al., 2018). However, organisational support can reduce these pressures, enabling the employees feel less burdened when learning their job roles and adapting to the work environment (Ellis et al., 2015; Saks & Gruman, 2018).

Therefore, organisational socialisation tactics are particularly important for women engineers as they provide essential support to cope with the challenges of working in a male-dominated profession. Several strategies can be implemented to facilitate socialisation and adjustment, such as providing comprehensive information, determining effective ways to share this information, and offering social support. While institutionalised socialisation has been found to produce favourable socialisation outcomes (Bauer et al., 2007; Saks et al., 2007), (based on the premise

that organisations use uniform socialisation strategies and that newcomers have uniform socialisation experiences; Gruman & Saks, 2011), recent research has clarified that employer-initiated socialisation strategies do not necessarily ensure equitable socialisation. These strategies may not adequately consider the unique circumstances of all individuals during onboarding activities (Klein et al., 2015). Therefore, studying the organisational socialisation experiences of women engineers is crucial, as it can yield valuable insights into the factors that either facilitate or hinder their socialisation in the workplace. Further investigation into the socialisation experiences of women engineers can assist organisations in developing socialisation tactics that effectively meet the learning and socialisation needs of women, particularly in male-dominated professions. Past research has indicated that ineffective socialisation can lead to negative outcomes, such as resignation (Qureshi & Evans, 2015; Rogers, 2020), while successful socialisation can result in various proximal effects, including improved person-organisation fit, enhanced feelings of insider acceptability, and reduced role conflict and uncertainty (Spagnoli, 2020; Allen, 2006; Bauer et al., 2007; Kowtha, 2018). It can also lead to distal outcomes, such as retention or turnover (Bauer et al., 2007; Peltokorpi et al., 2022). Therefore, in the next section, this thesis will explore how the relationship between organisational socialisation and turnover intentions can be further understood by examining potential mediating variables. Specifically, this thesis will consider job embeddedness as a crucial factor that may bridge the impact of organisational socialisation tactics on turnover intentions (Lee et al., 2014; Gilmore & Harding, 2022) of women engineers.

3.4 Job Embeddedness

The earlier work on turnover and the streams of literature reviewed has contributed to the formulation of one recent theory of retention and turnover, job embeddedness. The concept of job embeddedness, introduced by Mitchell et al. in 2001, represents a key advancement in the study of turnover and retention. Initially tested among grocery store and hospital respondents, job embeddedness offered a new perspective on voluntary turnover by focusing on the factors that encourage individuals to remain in their current jobs. According to this theory, an individual's separation from their work environment becomes challenging when they have developed a strong attachment to it. The job embeddedness model is comprised of two key dimensions: on-the-job embeddedness and off-the-job embeddedness. The former refers to organisational factors that influence the retention among employees (e.g., value congruence and relationships with colleagues). Conversely, the latter encompasses forces originating from the community in which the employee resides. For instance, an employee with strong attachments to their community, such as having a supportive neighbourhood or living near a reputable school, is likely to be less inclined to pursue job alternatives that would require relocation or transfer of work (Mitchell et al., 2001). This model emphasises the interconnectedness of employees with their work and non-work environments, highlighting the complexity of the factors that influence retention decisions. Job embeddedness was initially established to provide a different perspective on the factors that contribute to voluntary turnover by addressing "what prompted individuals to stay in their current jobs". According to this theory, it would be difficult for an individual to separate from a life space when attachment with the environment is well developed. The following sections will delve

into the attributes of both on-the-job and off-the-job embeddedness. This will be followed by a discussion of past studies on job embeddedness, specifically focusing on its application in the context of women engineers.

3.4.1 Job Embeddedness Model and its Constructs

Job embeddedness consists of six dimensions namely links, fit, and sacrifice associated with an organisation and community.

Links. Links refers to the relationship among people in an organisation. These links are developed through both formal and informal interactions between an individual and their environment. Mitchell et al. (2001) theorised that employee with stronger links to their surroundings, such as within an organisation or in the community where they live, feel more anchored to these environments. In essence, employees with robust ties to their employers become more enmeshed in their roles and are consequently less likely to leave. The greater the number of links an employee has, the stronger their intentions to stay tends to be (Xue et al., 2023). However, the value placed on these links can vary based on an employee's background. For example, Mitchell et al.'s (2001) study observed that older employees, particularly those who are married (with or without children) and have longer tenure in the organisation, are more inclined to remain rather than quit. Similarly, in a study conducted by Ng and Feldman (2009), older employees have a better bond with their co-workers and feel like leaving would have a severe impact personally and financially (e.g., seniority-based benefits).

Other researchers pointed out that links may differ depending on individual traits, such as gender. Men and women may develop different types of organisational relationship based on the formal and informal interaction in the company, the work environment, organisational culture, and the availability of supports, such as mentor (Ryan & Harden, 2014). It has been suggested that organisational climates excluding women from social networks can impede their ability to develop work-related skills and weaken their connections with colleagues. For instance, Trauth et al. (2009), in their qualitative study of women in the information technology sector, reported that one participant often found herself excluded from lunch invitations with male colleagues, making it challenging for her to integrate into the 'old boys' network.' This exclusion can significantly influence women's attitudes and perceptions towards their work. In a quantitative study of private banks, ElDin (2018) found that women are more embedded than men. This finding aligns with research suggesting that employees' attachment to their jobs can be influenced by familial and co-worker pressure (Dechawatanapaisal, 2025).

Fit. Fit refers to an employee's perceived level of compatibility or comfort with their company and its environment. One way to succeed in attracting and retaining employees is by having the fit or value congruence between employees and organisations. This fit involves aligning an employee's personal values, professional goals, and long-term career aspirations with the broader corporate values and the demands of their specific job role. Values can be defined as “what a person consciously or subconsciously desires, wants, or seeks to attain” (Locke, 1976, p. 1304) These values later guide the individual's decisions and actions (England, 1967). Value congruence in the workplace, often interpreted as compatibility between an employee's

work values and those of the organisation, is a key aspect of person-organisation fit. However, due to diverse conceptualisations and operationalisations, the notion of value congruence within person-organisation fit has been defined in various ways. Muchinsky and Monahan (1987), in their comprehensive study on person-environment congruence, distinguish between two types of fit: supplementary fit and complementary fit. Supplementary fit refers to the similarity in characteristics possessed by individuals within an environment. In contrast, complementary fit arises when an individual's characteristics fill a deficiency in an environment, contributing something that the environment lacks.

These fit paradigms differ with the second view of fit discussed by Caplan (1987), which include the needs-supplies and demands-abilities perspectives. The needs-supplies perspective occurs when one party meets or satisfies the needs of the other. In the context of person-organisation fit, this can manifest when an organisation fulfils an employee's needs (e.g., monetary benefits) and, conversely, when employees satisfy the needs of the organisation (e.g., work commitment). The demands-abilities fit, on the other hand, occurs when an employee possesses the necessary abilities to meet the work demands and expectations set by the organisation. According to these perspectives, when both parties understand and meet each other's needs and demands, value congruence can be achieved, leading to greater organisational harmonisation. This mutual satisfaction and understanding fosters a more cohesive and aligned working environment.

While various definitions exist, Kristof (1996) succinctly defines value congruence, or person-organisation fit, as 'compatibility between people and

organisations that occurs when at least one entity provides what the other needs, or they share similar fundamental characteristics, or both' (Kristof, 1996, p. 4). This definition continues to be widely used today (Kristof-Brown et al., 2023). In the framework of job embeddedness, which encompasses both organisational and community aspects, 'fit' refers to the alignment of an individual's values with their surroundings. Mitchell et al. (2001) propose that a stronger person-organisation fit, encompassing aspects such as values, career aspirations, knowledge, skills, and abilities, as well as person-environment fit, including factors such as climate, weather conditions, religious beliefs, and entertainment activities, enhances the sense of attachment an employee feels towards their environment. This heightened sense of attachment can lead to improved job satisfaction, commitment, and retention (Xue et al., 2023).

The process of fulfiling one's needs and demands requires a deep understanding of the extent to which an individual values certain aspects. Previous research found that gender differences in work values do exist. For instance, men have been found to prioritise opportunities for increased earnings and show greater concern for monetary rewards and working conditions (Wiswall & Zafar, 2021). They also tend to value earnings, leadership opportunities, job promotion, power, and influence more highly (Konrad et al., 2000). In contrast, women, in studies similar to those mentioned, have been shown to place higher importance on roles related to family life, relationships, and a desire to help others. This indicates that person-organisation (P-O) fit is achieved when there is compatibility between an employee's preferences, needs, and work values and those of the organisation. Therefore, an employee is less likely to sever ties with a company if they perceive that they have more to lose, aligning

with the third dimension of job embeddedness: sacrifice (Mitchell et al., 2001). This dimension reflects the cost associated with leaving the job, which is higher when the employee's values are deeply aligned with those of the organisation (Mitchell et al., 2001).

Sacrifice. Sacrifice refers to the perceived value associated with the physical or psychological benefits that an employee stands to lose upon leaving their job (Xue et al., 2023). For instance, an employee contemplating relocation might consider the drawbacks of leaving behind good colleagues and a safe community. This awareness often leads to a preference to stay rather than sacrifice the established links and fit within their current organisation or community. The greater the perceived cost of ending employment with a company, the more an employee must forfeit upon their departure (Kiazad et al., 2015). Furthermore, it might be difficult to leave a neighbourhood that is appealing, secure, and where one is well-liked or respected.

3.4.2 How job embeddedness has been studied so far?

Job embeddedness has been found to have a relationship with innovation-related behaviours (Ng & Feldman, 2010), job performance (Sun et al., 2012), decisions to retire upon eligibility (Bamberger & Bacharach, 2014), sales performance (Cheng, 2014), and organisational citizenship behaviours (Andresen, 2015). Job embeddedness does not only influence individual attitudes and behaviours but also plays a crucial role at the group and organisational levels. For instance, a study conducted by (Chen et al., 2010) among 144 enterprises from the Taiwanese Information Service Industry found that on-the-job embeddedness is predicted by factors such as organisational open-mindedness and organisational commitment.

Furthermore, organisational embeddedness has a strong relationship with the knowledge work team effectiveness and overall organisational performance. Employees with deeper embeddedness in their jobs and social networks typically have greater access to resources, information, and opportunities. This enhanced access not only facilitates individual performance but also contributes to the effectiveness of the team as a whole.

Numerous studies have examined job embeddedness from different perspectives and contexts. Mitchell et al. (2001) and Holtom and O'Neill (2004), for instance, demonstrated that job embeddedness is a predictor of turnover intentions and voluntary turnover, even when factors such as gender, job satisfaction, organisational commitment, job search, and perceived alternatives are controlled. Ghosh and Gurunathan (2015), in their systematic literature review of 37 job embeddedness papers, established a model outlining the antecedents and outcomes of job embeddedness, as well as its moderating and mediating effects. They found that the outcomes of job embeddedness extend beyond retention and turnover to encompass a range of other attitudinal and behavioural outcomes, including job performance, organisational citizenship behaviour, and affective commitment.

Ng and Feldman (2010) in their longitudinal study among diverse samples, found that job embeddedness has a positive and significant relationship with innovation-related behaviours. They found that when employees have strong feelings of attachment to their organisation, they are more inclined to develop creative ideas for its benefit. Karatepe and Karadas (2012) examined how management commitment to service quality affected job embeddedness and performance outcomes among full-

time frontline hotel workers in Romania. They found that training, empowerment, and rewards—three key indicators of management quality—were significantly and positively linked with job embeddedness.

To date, job embeddedness has not only been studied as a predictor in a direct relationship among factors, but it also has been found to be a key mediator between various on-the-job factors and job outcomes (Holtom & Inderrieden, 2006; Reitz & Anderson, 2011). For instance, past researchers revealed that job embeddedness mediates the relationship between task characteristics and turnover intentions (Ferreira et al., 2017), organisational justice and in-role performance (Ghosh et al., 2017), supervisory support and propensity for lateness (Karatepe & Avci, 2019), work-life balance and intentions to leave (Thakur & Bhatnagar, 2017), and perceived job security and flexibility with job performance (Rahimnia et al., 2019).

In socialisation literature, job embeddedness has been found to be a key mechanism mediating the relationship between organisational socialisation tactics and employee outcomes. Allen (2006) pioneered the study of job embeddedness in this context, exploring its role as a mediator between organisational socialisation tactics, turnover intentions, and actual turnover. The initial phase of Allen's research involved a quantitative survey administered to 259 employees with a tenure of 12 months in a large financial services organisation, aiming to measure their turnover intentions. A year after the survey, Allen gathered actual turnover data from the company's records. The findings revealed that among the same sample from the first phase of the research, 24.8% of the employees had left the company after one year of service. Allen reported that, among the various socialisation tactics, collective, fixed, and investiture tactics

have a positive relationship with on-the-job embeddedness. Furthermore, on-the-job embeddedness was found to have a negative relationship with turnover and to mediate the relationships between certain socialisation tactics and turnover. Notably, the study observed that on-the-job embeddedness did not completely mediate the relationship between investiture tactics and turnover. In addition, on-the-job embeddedness was not identified as a mediator in the relationship between serial tactics and turnover. In contrast, off-the-job embeddedness did not show a significant relationship with turnover.

Hom et al. (2009) conducted a quantitative study across organisations in China to examine the mediating roles of social exchange and job embeddedness in the long-term relationship between employees and employers. This research comprised two studies. In the first, they gathered responses from 953 managers enrolled in part-time Master of Business Administration (MBA) programmes in China. The second study involved both cross-sectional and longitudinal elements, collecting survey responses from 526 middle managers in 41 firms across China. Hom et al. found that job embeddedness was a more enduring mediator than social exchange. This was attributed to factors such as the collectivist culture prevalent in China, which led respondents to place greater value on their links and commitment to team members rather than to the organisation as a whole.

Allen and Shanock (2013) conducted a longitudinal study to examine the mediating role of perceived organisational support and on-the-job embeddedness in the relationship between socialisation tactics and commitment and turnover. The study employed a mail survey administered at four different times: Survey 1 approximately

two weeks after employees joined the company, followed by Survey 2 at around six weeks, Survey 3 at three months, and Survey 4 at six months of employment. Out of 645 new employees who responded to Survey 1, 310 completed Surveys 1 and 2, 231 completed the first three surveys, and ultimately, 145 respondents completed all four surveys. The research revealed that job embeddedness only mediated the relationship between social and content tactics and commitment, suggesting a specific pathway through which these socialisation tactics influence employee commitment.

The study by Ahmad et al. (2019) investigated the mediating role of job embeddedness in the relationship between organisational socialisation tactics and task characteristics and their impact on turnover intentions among employees in the knowledge-intensive sector. Approximately 400 survey questionnaires were distributed, with 153 yielding usable data for analysis. Using the structural equation modelling (SEM) as the analytical technique, the study found that the link between socialisation tactics, task characteristics, and turnover intentions was strongly and partially mediated by job embeddedness. The research highlighted that the support received by employees during their initial stage of employment plays a significant role in enhancing their attachment to the company, thus reducing their likelihood of quitting.

Since its introduction in 2001, job embeddedness has been the subject of extensive research, contributing significantly to the turnover literature. Various antecedents of job embeddedness have been identified over the years. Ghosh and Gurunathan (2015), in their review of both quantitative and qualitative papers on job embeddedness, developed a comprehensive conceptual model of job embeddedness

and its related constructs. They highlighted the potential contributions of research on human resource (HR) practices to the job embeddedness literature, suggesting that such research could aid top management in identifying HR components that meet organisational needs. Consistent with the idea by Thakur and Bhatnagar (2017), they proposed examining the effects of HR practices like socialisation tactics on job embeddedness among seasoned employees. Although job embeddedness was initially introduced and quantitatively tested by Mitchell et al. (2001) and subsequent research predominantly followed a quantitative approach (see Ghosh & Gurunathan, 2015), this has led to a scarcity of qualitative empirical evidence.

3.4.3 Women Engineers and Job Embeddedness

Research on job embeddedness level in predicting turnover among men and women has yielded mixed findings. In the past decade, most research on gender differences has revealed their impacts on turnover attitudes and behaviours. As a result, it is reasonable to expect that job embeddedness may differentially impact turnover outcomes for women and male employees. Specifically pertaining to the current study, the focus is on women engineers working in a highly gendered work environment. For these women engineers, establishing fit and links within a male-dominated environment can be particularly challenging. This difficulty arises due to differences in values, characteristics, and identities compared to their male counterparts.

According to gender role theory, women and males assume different social roles, leading to a different attitude and social behaviour at work (Jiang et al., 2012). Men are believed to be more independent, assertive, and aggressive, while women are seen as exhibiting higher levels of social concern, being friendly, helpful, and showing

affiliative interests (Eagly & Wood, 1999). As a result, women tend to form stronger connections with their organisations and communities and may experience greater emotional costs upon leaving their employment. Given their propensity for social bonding within groups, women particularly value the links within an organisation or community. These links are crucial, as the more connected an individual feels to their work and organisation, the less likely they are to quit (Karatepe, 2016). Consequently, women often become deeply embedded in an organisation due to their close connections with other organisational members.

Meanwhile, Peltokorpi (2013) reported that women workers are less embedded in their companies compared to their male counterparts, who often exhibit a greater intentions to quit. He observed that men and women form different types of connections within an organisational system. This disparity may arise because women often experience fewer opportunities for career development and lower pay than their male counterparts (Hunt et al., 2012) and may have ambitious professional aspirations (Peltokorpi, 2013). In addition, an employee's level of embeddedness in an organisation can be influenced by their fit with the environment. According to person-organisation fit theory, employees evaluate the consistency between their personal values and those of the organisation. The manner in which employees interpret and make sense of the organisational environment plays a crucial role in their ability to learn and adapt to corporate values (Kim et al., 2005). Seong et al. (2012) proposed significant differences in person-organisation fit between men and women in an organisation. This perception of fit is shaped by how employees respond to their environment and the value they place on relevant work outcomes (Kristof-Brown et al., 2023). In other words, when an employee's work environment provides a high

quantity of desired outcomes, their likelihood of experiencing a sense of fit increases. Given that women tend to prioritise interpersonal relationships (Cross & Madson, 1997) and considering that socialisation is a fundamental mechanism for building connections and value congruence with the organisation (Cable & Parson, 2001), women are likely to exhibit greater job embeddedness. Therefore, embedded employees, who benefit from strong connections and a good fit with their company, are less inclined to quit. This reluctance is due to the potential costs and personal risks associated with leaving an environment where they have established robust ties (Steel et al., 2002).

Mitchell et al. (2001, p. 1102) stated that "people stay if they are satisfied with their jobs and committed to their organisations, and leave if they are not." Based on this statement, women who remain in gender-atypical contexts, such as STEM fields, might face challenges due to unfavourable gender norms at work. Despite extensive research on job embeddedness, there is a notable scarcity of studies focusing specifically on women, particularly in STEM related areas (Wijayawardena et al., 2016). Although job embeddedness has not been previously utilised to explore women's attachment in gender-atypical work contexts like engineering, the fundamental principles of this theory can offer insights into how women in such environments become integrated into their jobs or choose to leave. For instance, women may find it difficult to connect with male coworkers and conform to workplace standards in engineering, a field often dominated by masculine values. As a result, women may opt to leave their current positions, perceiving the costs of such a decision to be minimal.

3.5 Summary

This chapter provided a review of the literature relevant to the issue of employee turnover. It began with a discussion on the evolution of turnover research, followed by an examination of various factors identified as related to turnover. Since March and Simon (1958) introduce employee turnover models, a lot more scholars have developed employee turnover theories from various perspectives. Some other names that have contributed greatly to earlier research turnover research such as Porter and Steers (1973), Mobley et al. (1979), Price and Mueller (1981), Sheridan and Abelson (1983), Pfeffer (1983), Lee and Mitchell (1994), Mitchell et al. (2001).

Recent scholarly works have identified an array of additional predictors of employee turnover, as evidenced by several comprehensive meta-analyses and systematic literature reviews (e.g., Griffeth et al., 2000; Holtom et al., 2008; Rubenstein et al., 2018). This literature review revealed that, despite the abundance of research on this topic, predicting turnover, particularly in the context of women engineers, remains a challenge. Rubenstein et al. (2018), in their comprehensive meta-analysis on turnover, highlighted the need for more studies in specific cultures (e.g., Asian contexts) and occupations to understand variations in norms and construct meanings. Furthermore, despite extensive research on predictors of turnover, there is a notable lack of evidence regarding the impact of organisational socialisation on employees' organisational attachment and career decisions (Lee et al., 2014; Lee et al., 2017; Beddoes, 2021; Gilmore & Harding, 2022). In the field of socialisation research, the focus has predominantly been on the initial stages, while the later stages, such as exit, have received limited attention from scholars (Berkelaar & Harrison, 2019).

The discussion of this chapter continued by reviewing literature on organisational socialisation and job embeddedness, which are identified as the primary explanatory factors for turnover intentions of the current research. It included definitions of key terms, an overview of past research related to socialisation and embeddedness, and specific considerations in the context of women engineers. Generally, organisational socialisation has been examined from two perspectives: an organisational perspective focusing on socialisation tactics and an individual perspective concentrating on employees' behaviour in information seeking. However, much of the research on organisational socialisation has predominantly centred on proactive behaviours aimed at reducing the uncertainty and ambiguity of newcomers' job roles and relationships with insiders. This focus aligned with the principles of uncertainty reduction theory (Ashforth et al., 2007; Ashford & Nurmohamed 2012; Saks & Ashforth 1997; Bauer et al., 2007; Batistič & Kaše, 2015; Saks & Gruman, 2018).

Furthermore, while several scholars have explored the organisational socialisation experiences of engineers and their impact on various outcomes, these studies have limitations. For instance, some did not specifically focus on the socialisation experiences of women (e.g., Kowtha, 2008), were conducted among newly graduated engineering students (e.g., Kowtha, 2018), lacked empirical study (e.g., Ellis & Bauer, 2017), or only focused on the challenges in the socialisation process among first-year engineers (e.g., Beddoes, 2021). Given the limited evidence on the organisational socialisation experienced by women engineers in the workplace, this research aimed to fill this gap. It intends to explore both organisational and non-

organisational factors that influence the socialisation and career decisions of women engineers.

In addition, the literature review revealed that the mechanisms through which organisational socialisation tactics influence turnover have received limited scholarly attention. Since the development of turnover theory, which highlighted the significance of job embeddedness in explaining voluntary turnover (Mitchell et al., 2001), only a few studies have examined job embeddedness as a link between socialisation and employees' attitudes towards turnover (exceptions include Allen, 2006; Allen & Shanock, 2013; Ahmad et al., 2019; Peltokorpi et al., 2022). When women engineers enter a male-dominated work environment, they encounter various forces that may either facilitate or hinder their adjustment process and career decisions. In scenarios where they experience a greater fit and stronger relationships within the organisation, their likelihood of remaining increases, and the opposite is true for weaker organisational ties. In line with the suggestions by Lee et al. (2014) and Lee et al. (2017) to explore how socialisation contributes to embeddedness, this study aimed to comprehensively examine the relationship between organisational socialisation tactics and job embeddedness in predicting employee turnover, particularly in the context of women in engineering professions. This approach unites a few research streams that have rarely been integrated.

On the methodological note, while socialisation research in the engineering context has garnered significant attention from qualitative researchers (e.g., Korte, 2009; Korte et al., 2019; Beddoes, 2021), Rogers (2020) contended that most studies examining socialisation in professions where women are minorities have been

conducted quantitatively (e.g., Bigliardi et al., 2005; Kowtha, 2008; 2018). Such quantitative approaches may not sufficiently elucidate how women navigate the socialisation process and how various forces within women's life spaces subsequently influence their career trajectories. Woodrow and Guest (2017) observed that, while existing research has identified a broad range of antecedents and consequences of adjustment during socialisation, many findings are based on quantitative designs. These designs suggest a 'stable set of factors that consistently push and pull-on newcomers' (Ashforth et al., 2007, p. 6). However, it is surprising that combining both qualitative and quantitative methods in investigating organisational socialisation, particularly in the engineering work context, remains a rarity (Beddoes, 2019).

The study of the relationship between organisational socialisation, job embeddedness, and turnover intentions is particularly critical among women engineers. Given their unique attributes as women and their roles as engineers in the workplace, it is important to investigate how organisational socialisation tactics might influence the turnover intentions of women engineers through job embeddedness. Additionally, the roles that women occupy outside the organisation, such as family responsibilities and social expectations, also significantly shape their career trajectories. These external factors can influence their job embeddedness and, consequently, turnover intentions. Examining the life spaces of women engineers could yield deeper and richer data on the factors influencing turnover, extending beyond the straightforward relationship between organisational socialisation and job embeddedness. Drawing on field theory to explain the relationships among the study's variables, this research aimed to provide a more holistic understanding of turnover decisions in the context of women engineers. In the next chapter, a conceptual

framework based on Lewin's field theory was developed to illustrate the interrelated components and variables of the study. This framework informed the entire research process, which encompassed both quantitative and qualitative studies.

CHAPTER 4

CONCEPTUAL FRAMEWORK AND HYPOTHESES

4.1 Introduction

In Chapter 2, the work opportunities and challenges faced by women engineers and their attributes and needs were discussed. Based on the discussions, women in engineering often juggle multiple roles, leading to challenges in balancing work and personal life. Furthermore, in a male-dominated workplace characterised by a masculine work culture, women engineers frequently encounter various stereotype threats. Empirical research in this area has identified numerous factors that may influence women engineers' attitudes and behaviours towards work, including the decision to leave their jobs.

Women engineers' turnover has been studied through various theoretical lenses, including work adjustment theory (Fouad et al., 2017; 2020), social cognitive career and integrated model of career change (Fouad et al., 2016; Singh et al., 2013; 2014), conservation of resources (Singh et al., 2018), and the job demands-resources (JDR) model (Zhang et al., 2016). However, these findings remain inconclusive. While some researchers have attempted to identify the possible factors influencing turnover among women engineers, there has been a tendency to emphasise work-related factors, often overlooking the broader life issues faced by these professionals (See Section 2.3.2 for further reading). Based on the idea that human behaviour is influenced by interdependent driving and restraining forces derived from their life spaces (Lewin,

1951), this thesis argues that a more holistic approach, considering all aspects of this dynamic field, is essential.

In Chapter 3, the discussion focused on organisational socialisation and job embeddedness as key explanatory factors for the turnover intentions of women engineers. It is observed that women engineers often leave their organisations after five to ten years of service, prompting an investigation into the factors influencing this trend. Engineering requires diligence, agility, and sharp thinking in hands-on tasks, making continuous learning and development crucial at every career stage. Such development is vital for gaining familiarity with work roles within an organisation, which subsequently aids in achieving task mastery and social integration. Previous research has identified the organisational socialisation of newcomers as a significant factor associated with turnover intentions. However, the literature review in Chapter 3 revealed a gap in studies specifically focusing on organisational socialisation tactics in the context of women engineers. Given that women engineers may experience socialisation tactics differently due to various environmental and personal impacts, this aspect becomes a primary construct examined in this thesis.

Based on the literature reviewed in Chapters 2 and 3, this chapter introduces a conceptual framework designed to expand understanding of the turnover intentions of women engineers. This framework is constructed by formulating hypotheses that integrate findings from the previous literature review and apply logical reasoning to predict outcomes within the specific context of women engineers.

4.2 Women Engineers' Turnover Intentions: Conceptual Framework

Past research on turnover among women engineers has predominantly explored organisational factors influencing turnover decisions (e.g., Hamid & Ahmad, 2017; Fouad et al., 2016; 2017; 2020; Fouad & Singh, 2011; Scott et al., 2021; Ayre et al., 2013; Singh et al., 2013), current research aims to broaden this exploration by examining forces arising from the wider life roles of women engineers. As a result, this research sought to expand the understanding of off-job embeddedness, thus incorporating non-organisational factors into the study of turnover.

To do this, Field Theory and Role Theory were selected to offer a theoretical framework for this research. As explained in Section 2.6 and 2.7, these theories provide a holistic explanation on the women engineers' turnover intentions considering the various forces originating from their dynamic personal and professional environments. Therefore, a holistic understanding of their life context which encompasses both work-related and non-work-related forces, is crucial. This approach is particularly pertinent in studying women's attitudes and behavior in a male-dominated profession such as engineering.

When entering the workplace, women engineers often face work-related challenges shaped by a hegemonically masculine culture and a range of driving and restraining forces influencing their integration into the organisation (Takeuchi et al., 2021). Concurrently, as working women, they are also tied to multiple roles both inside and outside the workplace, as detailed in Section 2.6 (Role Theory). The interaction between a woman engineer, as an individual with unique attributes and responsibilities across different life roles, and her environment, encompassing both work and non-

work aspects, is crucial in determining her intentions and behaviours regarding leaving her job. This situation is described by Lewin as the "totality of coexisting and interdependent forces that impinge on a person or group and make up the life space in which the behaviour takes place" (Burnes & Cooke, 2013, p. 410).

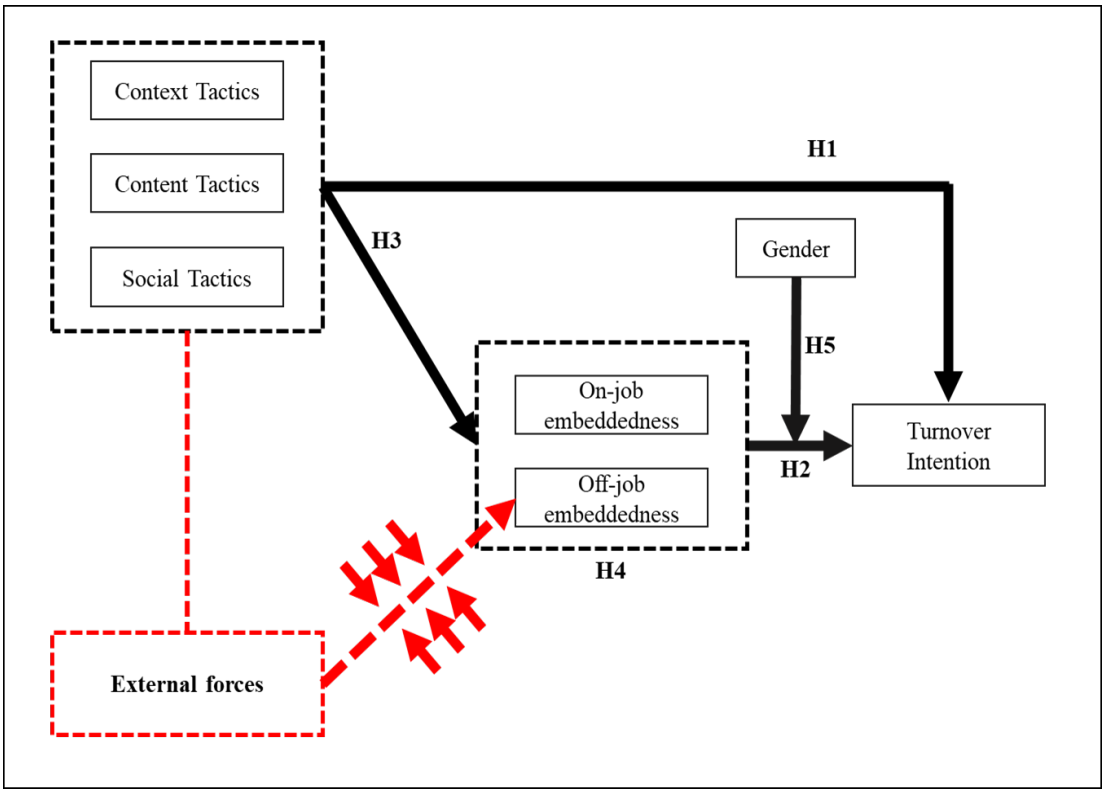

Figure 4.1: Conceptual Framework of the Research

An overarching framework and its constituent parts, signalling their interconnectivity, is depicted in Figure 4.1. This conceptual framework guides the development of research questions by providing a theoretical context and a conceptual basis for this research. As outlined in Chapter 1, the direction and focus of this study was shaped by three research questions:

1. What factors influence the intentions of women engineers to stay in or leave their organisations?
2. What are the key driving and restraining forces within the broader environment of women engineers that influence their turnover intentions?

3. How do these driving and restraining forces affect the turnover decision of women engineers?

The research questions aimed to explore the concepts identified within the framework, creating a symbiotic relationship between theories and empirical investigation. Based on Field Theory (Lewin, 1951) and Role Theory (Kahn et al., 1964), it is crucial to consider the entire environment, composed of interrelated forces, when analysing an individual or a situation. Lewin's Field Theory posited that an individual's behaviour is a result of the interaction between the individual and their environment, which often encompasses multiple fields. Therefore, women engineers operate within a broader environmental scope that extends beyond their organisational workplace. The concept of 'life space' in Field Theory indicates that women engineers may be subject to complex forces derived from both organisational and non-organisational fields, where they assume various roles in accordance with the life space they belong to. This theoretical framework provided by Lewin's Field Theory offers a valuable foundation for a more comprehensive investigation. It aids in understanding the reasons why women engineers might leave their organisation or the engineering profession altogether, thus ensuring that the factors influencing turnover are not viewed from a narrowly confined perspective.

The conceptual framework of this study incorporated various elements: organisational socialisation tactics (context, content, and social tactics as identified by Van Maanen & Schein, 1979), job embeddedness (including both on-job and off-job embeddedness as outlined by Mitchell et al., 2001), gender, non-work-related factors, and turnover intentions. These factors were categorised into two major contexts: the work context (encompassing organisational socialisation tactics and on-job embeddedness) and the non-work context (including off-job embeddedness). Mitchell et al. (2001) suggested that off-job embeddedness, particularly attachment to the community, can influence turnover intentions. However, in the context of women engineers, non-work factors are often closely related to family matters, as highlighted in various studies (e.g., Singh et al., 2018; Fouad et al., 2017; Fouad & Singh, 2011; Kahn & Ginther, 2015; Casper et al., 2007). In addition, cultural expectations, such as motherhood, have been identified as reasons for job departure (Lipasova, 2023). Therefore, it is necessary to explore a broader range of non-work factors contributing to off-job embeddedness, extending beyond community factors as proposed by Mitchell et al. (2001). To gain a comprehensive understanding of women engineers' socialisation, attachment, and the various forces affecting their career decisions, an integrated approach employing both quantitative and qualitative methods is essential. The following section explained the components of this framework.

In this thesis, a quantitative approach was employed to examine the influence of various factors on turnover intentions among women engineers. Specifically, this involved testing the relationships among organisational socialisation tactics, job embeddedness, and gender, articulated through five main hypotheses (H1, H2, H3, H4, and H5). The framework represents these relationships by black arrows, indicating the

directional influence among these factors. To complement and deepen the understanding gained from the quantitative analysis, a qualitative approach was also utilised. This approach focused on exploring the driving and restraining forces behind the turnover intentions of women engineers. In the framework, components examined through qualitative methods are indicated in red. The red dotted line served a dual purpose.

First, it indicated the interaction between organisational socialisation and non-work factors, highlighting that the link between these elements is not isolated but rather dynamic. This interaction suggested that socialisation and integration into the workplace are influenced by various forces, with a particular emphasis in this research on non-work factors. These forces ultimately affect a woman's attachment to an organisation and her decision to continue or discontinue employment. Consistent with Field theory, which argues that behaviour is influenced by the interaction between the individual and their life spaces, this study investigated forces influencing turnover intentions from both work and non-work environments.

Field Theory suggests that the environment, also known as the 'field' or 'life space,' surrounding an individual significantly influences their behaviours (read Section 2.6 for further explanation). This environment is characterised by a mix of driving and restraining forces. Driving forces are those that propel an individual towards a particular action, such as leaving a job, whereas restraining forces act to pull a person away from this intended direction, encouraging them to stay. The conceptual framework of this research visually represented these two types of forces using red opposing arrows, indicating their impact on both the work-related and non-work-

related life spaces of women engineers. To gain a more profound understanding of turnover intentions in the context of women engineers, these driving and restraining forces were explored through a qualitative approach.

Secondly, the red dotted line in the framework showed the integration of quantitative and qualitative approaches. While the black elements (i.e., black boxes and black arrows) in the framework represent the relationships among variables that were investigated quantitatively, the red elements show the qualitative investigation. Specifically, it indicates the necessity for focus group discussions to broaden the understanding of the forces influencing turnover intentions. In addition, the red dotted square encompassed factors from the non-work context. These factors were then explored qualitatively through focus group discussions, allowing for a deeper investigation into how these non-work elements contribute to turnover decisions of women engineers.

In conclusion, this thesis empirically examined the conceptual framework developed using mixed methods to explore turnover intentions factors among women engineers. The adjustment process and subsequent career decisions in the workplace are not determined solely by organisational factors, such as organisational socialisation tactics and job embeddedness. Instead, individual factors and the factors from broader life of the woman engineer also play a crucial role in influencing her intentions to leave or stay. Understanding these dynamics can yield significant insights for researchers and practitioners interested in the factors influencing the turnover decisions of women engineers. In the following sections, the relationships and relevant hypotheses among the key variables of this study, with a particular focus on organisational socialisation

tactics, job embeddedness, turnover intentions, and gender as the moderating variable, are presented.

4.3 Relationship Between Organisational Socialisation Tactics and Turnover Intentions

Organisational socialisation refers to the initial process through which newcomers adjust to their work environment, job, work groups, and supervisors, with the goal of achieving value congruence with the organisation (Ostroff & Kozlowski, 1992). This process primarily aims to facilitate the acculturation of newcomers to the norms, values, and culture of the organisation. In addition, it assists them in aligning with their organisational roles (Jones, 1986; Van Maanen & Schein, 1979; Bauer et. al, 1998, Bauer et al., 2007; Saks et al., 2007).

Over time, socialisation helps employees achieve a good a good organisational fit by familiarising them with organisational goals and values, job performance expectations, social interactions, language, and an understanding of organisational history and politics (Chao et al., 1994). Successful adjustment to their roles and work environment makes employees less likely to leave (Peltokorpi et al., 2022; Bauer et al., 2007; 2025). Allen (2006) observed that certain socialisation tactics, specifically investiture and serial tactics, were significantly negatively related to turnover. In a meta-analytical study, Bauer et al. (2007) examined the antecedents and outcomes of employee adjustment, finding that socialisation tactics are crucial in facilitating social interaction, such as through mentoring, and in enhancing self-efficacy in job performance. This, in turn, affects employees' likelihood to stay or leave. In other words, socialisation tactics can enhance social comfort, adaptation to organisational

norms, and job performance capability through interactions with existing organisational members who provide positive social support (Cable & Parsons, 2001; Jones, 1986).

Saks et al. (2007), in their meta-analyses of socialisation tactics and newcomer adjustment, found that social tactics have negative relationship with role ambiguity and conflict, as well as intentions to quit. They also found a positive correlation with job satisfaction, organisational commitment, job performance, perceived fit, and custodial role orientation. On the other hand, context tactics showed the weakest predictions for role ambiguity, role conflict, role orientation, job satisfaction, organisational commitment, and intentions to quit, while content tactics were the weakest predictors of performance and perceived fit. In addition, Huang et al. (2024) reported a positive relationship between organisational socialisation and organisational commitment. Given that committed employees are often less likely to quit (Guzeller & Celiker, 2020), this led to the following hypotheses:

H_{1a}: There is a negative relationship between context tactics and turnover intentions

H_{1b}: There is a negative relationship between content tactics and turnover intentions

H_{1c}: There is a negative relationship between social tactics and turnover intentions

4.4 Relationship Between Job Embeddedness and Turnover Intentions

Job embeddedness theory is based on the principle of "a net or a web in which an individual can become stuck" (Mitchell et al., 2001, p. 1104). The theory proposed two primary variables: on-the-job and off-the-job embeddedness, which collectively

determined how deeply an employee is entrenched in the organisation. Within these two types of embeddedness, there are three key sub-dimensions: 'fit,' 'link,' and 'sacrifice.' 'Fit' pertains to the employee's perceived compatibility with their work environment and community. 'Link' encompasses the formal and informal connections between the employee, others in the organisation, and their community. 'Sacrifice' involves the perceived social, material, and psychological costs associated with leaving the organisation and community. Mitchell et al. (2001) conceptualises these three sub-dimensions—fit, link, and sacrifice—as an aggregate construct, emphasising their collective role as a robust component of the restraining forces.

According to the theory, there is a strong influence of job embeddedness on employee turnover. This is supported by Xue et al. (2023), Holtom et al. (2008) and Zhang et al. (2012), who, in their extensive reviews, affirmed the significant impact of job embeddedness on turnover. Mitchell et al. (2001) originally posited that an individual possesses a 'perceptual life space' or 'field', comprising various interconnected aspects. An individual's behaviour is influenced by changes within this field. Therefore, Field Theory, as articulated by Lewin (1951), focuses on the causes of behavioural changes, forming the foundation of Mitchell and colleagues' job embeddedness theory. In the employment context, an employee's decision to stay with or leave an organisation is influenced by both work-related factors (e.g., relationships with colleagues) and non-work-related factors (e.g., living in a safe neighbourhood). These factors are considered concurrently in the employee's career decision-making process.

Studies by Mitchell et al. (2001), conducted among grocery store and hospital employees, concluded that job embeddedness, considered an aggregate construct, is a significant predictor of both the intent to leave and voluntary turnover. These studies also indicated that job embeddedness is a more proximal factor in predicting turnover intentions compared to common attitudinal factors such as job satisfaction, organisational commitment, job alternatives, and job search activities. Extending this theory, Lee et al. (2004) disaggregated the concept into two types: on-the-job embeddedness and off-the-job embeddedness. Their regression analyses revealed that off-the-job embeddedness significantly predicts voluntary turnover, while on-the-job embeddedness does not. Recent studies have also shown that the two dimensions can operate differently. For instance, a systematic review among nurses demonstrated that on-the-job embeddedness had a stronger negative correlation with turnover intentions compared to off-the-job embeddedness ($r = –0.527$ vs. $r = –0.234$) (Wang et al., 2024). Similarly, a multi-wave study revealed that on-the-job embeddedness buffered the relationship between job insecurity and turnover, whereas off-the-job embeddedness exacerbated it, highlighting that each facet exerts distinct influences on employees' decision to leave (Peltokorpi & Allen, 2024).

In a cross-cultural study conducted by Ramesh and Gelfand (2010), which compared the job embeddedness as the turnover predictor in individualistic (United States) and collectivistic (India) cultures, the results showed that there is no significant effect of community embeddedness on turnover. However, organisational embeddedness was found to be an important factor in both contexts. To date, job embeddedness has been extensively studied in various organisations, primarily in Western settings. Generally, these studies identified a significant relationship between

job embeddedness and attitudinal factors, such as turnover intentions (e.g., Setthakorn et al., 2024; Crossley et al., 2007) as well as behavioural factors, such as voluntary turnover (e.g. Peltokorpi & Allen, 2024; Allen & Shanock, 2013; Crossley et al., 2007; Peltokorpi et al., 2015).

The inconsistent findings showed that job embeddedness can be analysed both as an aggregate construct and as a separate dimension. It is essential to ascertain the extent to which each dimension influences turnover. As a result, this research aimed to investigate the applicability of these findings to engineers in Malaysia. Bearing this objective in mind, the following hypotheses was formulated:

H_{2a}: There is a negative relationship between on-the-job embeddedness and turnover intentions

H_{2b}: There is a negative relationship between off-the-job embeddedness and turnover intentions

4.5 Relationship Between Organisational Socialisation Tactics and Job Embeddedness

Socialisation plays an important role in facilitating the adjustment process of newcomers and establish their fit within the organisation. Its primary objectives are to perpetuate core organisational values and provide employees with a framework for responding to their workplace environment. This recognition of the need for a harmonious fit between employees and employers has spurred increased interest in organisational socialisation. Socialisation is often viewed as an effective means to foster relationships between employees and employers, helping both parties

understand their reciprocal obligations, needs, and expectations. The fundamental goal of socialisation is to ensure that employees can adapt to their new working environment and achieve value congruence with the entire organisational system. Understanding this dynamic may elucidate how organisational socialisation influences an individual's propensity to leave their job, potentially through a process of job embeddedness (Peltokorpi et al., 2022).

Allen (2006) investigated the relationship between a six-factor model of socialisation and job embeddedness, suggesting that all six socialisation factors were significantly positively correlated with on-the-job embeddedness but not with off-the-job embeddedness. Based on these findings, Allen and Shanock (2013) examined a three-factor model of socialisation tactics in relation to on-the-job embeddedness. Their results indicated that only content and social tactics were significantly related to embeddedness, whereas context tactics were not. In line with the recommendation by Lee et al. (2014), this research examined the role of socialisation in predicting job embeddedness. Therefore, the following hypothesis was proposed:

H_{3a}: There is a negative relationship between context tactics and on-the-job embeddedness

H_{3b}: There is a negative relationship between content tactics and on-the-job embeddedness

H_{3c}: There is a negative relationship between social tactics and on-the-job embeddedness

H_{3d}: There is a negative relationship between context tactics and off-the-job embeddedness

H_{3e}: There is a negative relationship between content tactics and off-the-job embeddedness

H_{3f}: There is a negative relationship between social tactics and off-the-job embeddedness

4.6 Relationship Between Organisational Socialisation Tactics and Turnover Intentions Mediated by Job Embeddedness

Job embeddedness theory, initially proposed by Mitchell et al. (2001), was developed to explain employee turnover and retention. Recently, scholars, including Shah et al. (2020), have shown a growing interest in exploring the mediation effect of job embeddedness in examining various predictors and work outcomes. Allen (2006) was among the first to investigate the mediating role of job embeddedness in the relationship between organisational socialisation tactics and employee turnover. His findings indicated that on-the-job embeddedness is negatively related to turnover and mediates the relationship between certain socialisation tactics and turnover. In subsequent studies by Allen and Shanock (2013), the findings revealed that the mediation effect of on-the-job embeddedness in the relationship between social and content tactics on commitment was significant. However, since context tactics were not significantly related to embeddedness, their mediating effect on the relationship with commitment was not examined. Therefore, it can be inferred that employees adjust to their working environment either through organisational efforts, such as onboarding programmes, or through their own initiatives in learning about the new organisational system and developing relationships with colleagues.

According to Sutarjo (2011), socialisation is critical in the process of assimilating new employees into the corporate culture. At the entry level, there is a mutual commitment between the employee and the organisation to achieve value congruence and fit. Socialisation, fostered through various tactics implemented by the organisation and the individual employee's initiative to adapt to the work environment and job requirements, cultivates job embeddedness. This, in turn, influences turnover intentions (Peltokorpi et al., 2022). Effective socialisation enhances employees' attachment to the company, thereby reducing their likelihood of quitting (Changhong & Tjosvold, 2013). Hence, the discussion above leads to the following suggestion:

H_{4a}: On-the-job embeddedness mediates the relationship between context tactics and turnover intentions.

H_{4b}: On-the-job embeddedness mediates the relationship between content tactics and turnover intentions.

H_{4c}: On-the-job embeddedness mediates the relationship between social tactics and turnover intentions.

H_{4d}: Off-the-job embeddedness mediates the relationship between context tactics and turnover intentions.

H_{4e}: Off-the-job embeddedness mediates the relationship between content tactics and turnover intentions.

H_{4f}: Off-the-job embeddedness mediates the relationship between social tactics and turnover intentions.

4.7 Gender as Moderator

The topic on gender has been studied widely in work psychology. An increasing amount of research has explored the moderating effect of gender on job embeddedness and turnover intentions. However, there is little agreement on how individual demographic such as gender could interact with embeddedness and the decision to leave (Ryan & Harden, 2014; Hom et al., 2008). A significant meta-analysis by Cotton & Tuttle (1986) found that gender was strongly associated with turnover, indicating that women are more likely to leave their jobs than men. Concurrently, Pipan & Ambrož (2022) suggested that males and women experience different turnover processes. Yang et al. (2011) discovered disparities in the perceptions of job embeddedness between men and women. In a study involving 643 full-time employees across various organisations in Japan, Peltokorpi et al. (2015) found that gender and risk aversion moderate the relationship between organisational embeddedness and turnover intentions, which subsequently predict voluntary turnover. Furthermore, they noted that organisational embeddedness had a stronger indirect impact on voluntary turnover for men than for women.

Ryan and Harden (2014), in their studies on the effect of gender on job embeddedness among information technology professionals in a government agency, found some mixed results, particularly in terms of organisational embeddedness (on-the-job embeddedness). For instance, they reported no significant gender differences in perceptions of organisational fit. However, they found a notable difference in perceived organisational sacrifice, with women believing they would lose more by leaving the firm compared to their male counterparts. Regarding organisational link, which relates to the connections employees have with others in the organisation, they

observed significant gender differences in terms of years of service and participation in work groups. However, there was no significant gender difference in terms of interaction with other employees.

These observed differences in job embeddedness between men and women may originate from distinct psychological mindsets and value systems that influence their decision-making processes. This notion is supported by the work of Abraham et al. (2014), who argue that males and women, due to their different thinking patterns, can contribute to high-quality decisions from diverse perspectives (Diaz-Garcia et al., 2013). In addition, social role theory, as proposed by Eagly (1987), explains the varying attributes and social behaviours of men and women, which could account for their differing approaches to career decisions. From a conservative perspective, men are generally more engaged in the work domain, while women tend to prioritise caring for their family and the surrounding community—the non-work domain. Women have been seen to place a greater value on their connections with the organisation and their communities and may therefore experience higher emotional costs when leaving their job (Wood & Eagly 2002, Jiang et al., 2012).

Therefore, this research aimed to investigate the moderating role of gender in the relationship between job embeddedness and employee turnover among engineers in Malaysia. This line of reasoning led to the formulation of the following hypothesis:

H_{5a}: Gender moderates the relationship between on-the-job embeddedness and turnover intentions.

H_{5b}: Gender moderates the relationship between off-the-job embeddedness and turnover intentions.

Figure 4.2 provides a comprehensive summary of the hypotheses within this study's conceptual framework. The framework, forming the basis of the quantitative research model, incorporated six key constructs: turnover intentions, content tactics, context tactics, social tactics, on-job embeddedness, and off-job embeddedness. This model represented a synthesis of the organisational socialisation model by Van Maanen and Schein (1979) and the job embeddedness model by Mitchell et al. (2001).

Within this framework, the three constructs of organisational socialisation tactics—content, context, and social tactics—are posited as independent variables that predict turnover intentions, the dependent variable. Job embeddedness, comprising both on- and off-job embeddedness, is proposed to mediate the relationship between organisational socialisation tactics and turnover intentions. Furthermore, gender is hypothesised to act as a moderating factor in the relationship between job embeddedness and turnover intentions.

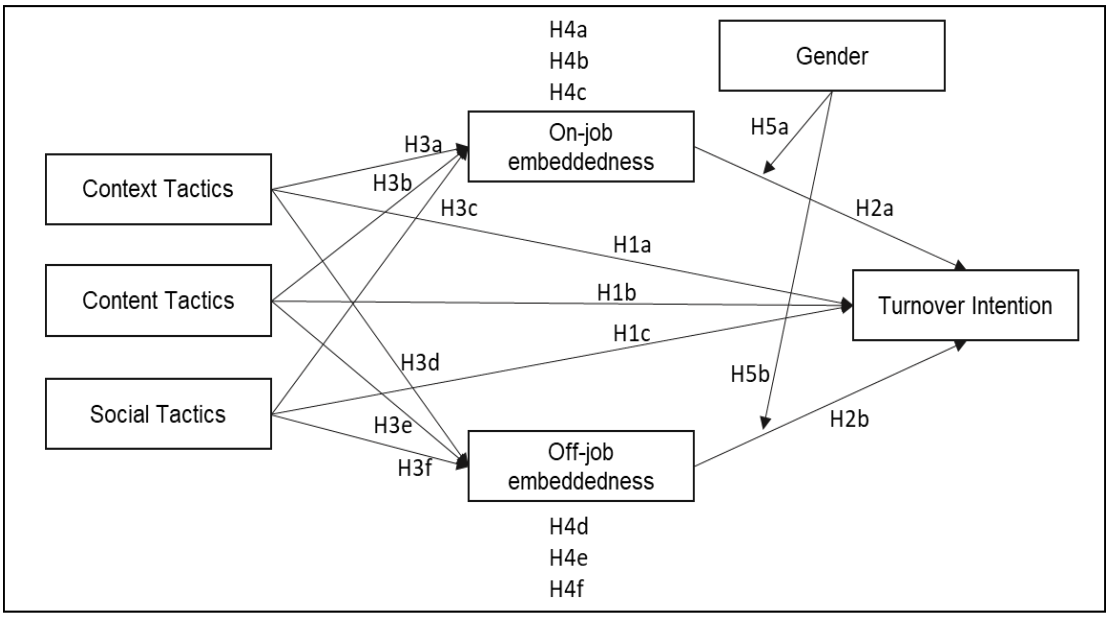

Figure 4.2: Research Hypotheses

4.8 Summary

Field Theory and Role Theory provide the overall framework for this study, explaining the interaction between the individual (i.e., women engineers) and their environment (both work and non-work). The interaction influences their attitude and behavior patterns on turnover. For women engineers, this interaction encompasses not only the organisational context but also extends to non-organisational fields. The concept of "life space" within Field Theory emphasises that women engineers experienced complex forces derived from both of these fields, with their roles varying across different life spaces. This broader environmental perspective addressed two critical research questions of this study: first, exploring the driving and restraining forces originating from the extensive environment of women engineers and assessing their impact on turnover intentions; and second, investigating into do these forces influence the actual turnover decisions made by women engineers. By examining these questions, the study aimed to achieve a comprehensive understanding of the multifaceted influences that shape turnover dynamics within the unique context of women engineers.

Therefore, to further understand the intentions to leave among women engineers, this research investigated organisational socialisation tactics (Van Maanen & Schein, 1979) and job embeddedness (Mitchell et al., 2001) as the key explanatory factors. Five main hypotheses have been developed to examine the influence of organisational socialisation tactics and job embeddedness on turnover intentions among women engineers, as well as to explore the moderating impact of gender in this framework.

Organisational socialisation tactics and job embeddedness, particularly on-the-job embeddedness, primarily focus on the organisational context as key work factors influencing turnover intentions among women engineers. However, the adjustment process in an organisation is also influenced by factors beyond just organisational aspects. For women engineers who work in a workplace that is dominated by men, it might be challenging to adapt and adjust to the work environment. They might experience various forces that may either facilitate or hinder their adjustment process. Consequently, having a greater fit and stronger relationships within the organisation can enhance their likelihood of remaining, and conversely, a lack of fit or weaker relationships may increase their propensity to leave.

The investigation of the relationship between the explanatory variables (i.e., organisational socialisation and job embeddedness) and turnover intentions was conducted through survey, hence, provided insight into the organisational context of turnover. However, to gain a more comprehensive understanding, further exploration and analysis are essential, particularly through qualitative data collection. This approach was necessary to refine and extend the quantitative findings (Creswell, 2015), and to broaden the scope of inquiry related to the driving and restraining forces affecting the turnover intentions of women engineers (Greene et al., 1989), especially in a non-organisational context.

Thus, to comprehensively understand the perspectives of women engineers on the various forces available in their life spaces that may drive or restrain their intentions to leave their organisation, focus group discussions were performed. These discussions not only explored the work-related factors influencing turnover but also

the personal values and perceptions of women engineers regarding forces beyond the organisational context. The aim was to elucidate how these external forces contribute to their socialisation in a male-dominated profession and, ultimately, their intentions to leave the organisation.

To conclude, this thesis proposed that the factors influencing the turnover intentions of women engineers extend beyond the organisational context. As noted by Peltokorpi et al. (2015), when examining reasons for turnover, both organisational and non-organisational factors are interlinked. These factors reflect the varied roles and life spaces an individual inhabits. Moreover, integrating both quantitative and qualitative results has enriched the conceptual framework developed in this thesis, offering a more comprehensive understanding of the factors contributing to turnover among women engineers. This comprehensive insight could significantly contribute to the development of effective intervention programs aimed at retaining and engaging women engineers in the field of engineering.

CHAPTER 5

RESEARCH METHODOLOGY

5.1 Introduction

Based on the conceptual foundation discussed in Chapter 4, Chapter 5 presented the research methodology and design employed in this study. The conceptual framework and hypotheses outlined in the previous chapter served as the guiding principles for the investigation. This chapter explored the methodological choices and design considerations fundamental to addressing the research questions.

In this exploration, a mixed methods approach was adopted. The design begins with a survey (Study 1), which aims to test the hypotheses and establish a foundational understanding of the relationships between organisational socialisation tactics, job embeddedness, turnover intentions, and gender. Focus groups were then used to allow an in-depth exploration of the driving and restraining forces from the broader environment that influence the turnover intentions of women engineers (Study 2).

By clarifying the rationale behind the chosen approaches, detailing the selected research methods, and outlining the overall design, this chapter aims to provide transparency and insight into the systematic and robust nature of the inquiry. Thus, this chapter offers a comprehensive understanding of how the research is structured and conducted, which made a meaningful contribution to the field of women in the engineering profession.

5.2 Research Design: Mixed Methods Approach

The current research contributes to the ongoing development in social science, where, over several decades, the integration of both quantitative and qualitative methods, along with their respective designs, has become a widely adopted approach (Teddlie & Tashakkori, 2009; Ivankova & Stick, 2006). In the current research, the choice between qualitative and quantitative approaches is driven by the specific goals of the study, which are: first, *to provide a reasonable explanation of the relationships between turnover intentions and its predictors* and, second, *to explore driving and restraining forces that influence turnover from a wider life aspect of women engineers*. The application of mixed-methods approach in this research is beneficial for capturing a more holistic understanding of the turnover issue among engineers.

In the field of turnover studies, there has been substantial growth in both theoretical frameworks and research methodologies used to understand why employees leave organisations. Employee turnover has been studied from various contexts and perspectives for over a century: from individual to macro perspectives, from cross-sectional to panel design. In addition, the application of a "standard research design" in turnover research (i.e., test validation and theory testing) and the emergence of various turnover models since the introduction of March and Simon's (1958) traditional turnover theory (as discussed in Chapter 3) have been significant (Steel, 2002; Hom et al., 2017). Bolt et al. (2022), in their systematic literature review on labour turnover research across five periods from 1901 to 2019, found that the quantitative method is the most applied method by turnover researchers. Lyons and Bandura (2020), in their review on turnover features and perspectives, reported that for the past three decades, most empirical turnover research has been based on surveys

(e.g., Lee et al., 1999; Nierderman et al., 2007; Singh et al., 2018). Other than that, interviews (e.g., Lee et al., 1996; Maertz et al., 2003; Basnyat & Clarence Lao, 2020), and focus groups (e.g., Takase et al., 2006; Qiu et al., 2015; Yun & Yu, 2021) have also received greater interest among turnover researchers. Over the past century, various methods, including surveys, interviews, and focus groups have been used to understand the various aspects of turnover, indicating a growing recognition of the value of both quantitative and qualitative approaches in gaining a comprehensive understanding of employee turnover.

Although previous researchers have concentrated on either a qualitative or quantitative approach, management research necessitates the development of new methods for examining complex research issues and analysing data to understand and clarify social phenomena (Jogulu & Pansiri, 2011). Furthermore, Rubenstein et al. (2018), in their meta-analysis on voluntary employee turnover, suggested that the combination may be needed to enhance the data quality rather than relying on a single approach.

In this research, a convergent mixed methods design was used (Creswell & Plano Clark, 2018). Convergent mixed methods design refers to the implementation of quantitative and qualitative research independently with the aim "to obtain different but complementary data on the same topic" (Morse, 1991, p. 122) in order to gain the most comprehensive and complete understanding of the research problem (Bryman, 2005). In a convergent mixed methods design, both the quantitative and qualitative strands are implemented concurrently, given equal priority, and analysed separately before being integrated during the overall interpretation of the findings (Creswell &

Plano Clark, 2011). This process is considered as triangulation (Plano Clark & Ivankova, 2016) as it "seeks convergence, corroboration, correspondence of results from the different methods" (Greene et al., 1998, p. 259). In this thesis, "convergence" of findings was considered after each stage of data collection and data analysis. This is presented in Chapter 8 (Discussion) and Sections 8.3 to 8.6.

A survey was conducted to investigate the research hypotheses. The quantitative methodology is suitable for this study because it allows for the examination of relationships between constructs of research, namely turnover intentions, organisational socialisation tactics, and job embeddedness, which can be analysed more scientifically and objectively. A structured questionnaire is considered the most suitable technique because it can generate quantifiable data from large numbers of participants, representing a wider population of engineers (Bryman, 2005).

In the qualitative strand (i.e., Study 2), focus group discussions were conducted to explore the experiences of women engineers from the time they joined their organisations, how socialisation helps them become embedded within the company, and how this influences their intentions or decision to leave the job and organisation. Given that the research was seeking a deeper understanding of women engineers' work experiences, a qualitative data gathering phase was essential (Patton, 2015). Focus group discussions were suitable for several reasons. Firstly, focus groups are an excellent method for gathering insights, as they allow participants to engage in dynamic group interactions. Through these interactions, group members can exchange information and encourage one another to generate ideas, fostering a productive discussion that enhances understanding of the topic at hand (Kaplowitz & Hoehn,

2001). As the engineering work environment consists of a unique work climate (e.g., highly technical, masculine culture), group members can share the similarities and differences of their work experiences in their organisation. Based on the participants' experiences, the researcher can characterise their views of the phenomena (Vasileiou et al., 2018). Since socialisation and embeddedness develop through learning, interactions and adapting to the work environment in an organisation, focus group discussions may help the researcher to capture rich information from the interactions among group members. By using a focus group method to explore the experiences of a selected group of women engineers, it was expected that key themes would emerge relating to the issue of turnover as it impacts women in engineering contexts (Merriam & Tisdell, 2016).

Furthermore, focus group discussions are considered a 'cost-effective' method in terms of time, cost, and energy, as they involve only a few members at a time compared to one-to-one interviews. Given the ongoing COVID-19 pandemic at the time of data collection, which required restrictions and discouraged physical meetings, virtual focus group discussions were conducted. This study also adopted a cross-sectional strategy especially in the quantitative strand, whereby research was conducted in one-time events and non-contrived settings. The advantage of conducting cross-sectional research is that it is generally quick, easy, and inexpensive to perform (Cohen et al., 2013).

The integration of the quantitative and qualitative data took two forms. First, integration may occur through “connecting,” where one type of data (i.e., qualitative data) is linked with the other (i.e., quantitative data) through the sampling frame

(Fetters et al., 2013). In the current research, the sample of women engineers for the focus group discussions was selected from the respondents who participated in the survey research. Secondly, integration takes place after the data analysis for both strands of the study has been completed. Quantitative (see Chapter 6) and qualitative analysis (see Chapter 7) are first presented in separate chapters, before being synthesised (see Chapter 8) to identify corroborating and corresponding evidence.

It is argued that this process of synthesis provides a more comprehensive understanding of the issue of turnover intentions among female engineers in the Malaysian context. By integrating the quantitative and qualitative findings, the study not only identifies statistical associations among organisational socialisation, job embeddedness, and turnover intentions but also explains the human and contextual dimensions underlying these relationships. The focus groups offered the opportunity to explore how women engineers interpret their experiences of socialisation and embeddedness within male-dominated engineering environments, which are aspects that the quantitative survey alone could not fully capture (Creswell, 2014). Through this synthesis, the qualitative data played an important role in giving voice to women engineers and revealing how broader socio-organisational contexts influence their turnover decisions. This integrative approach therefore underscores the value of the focus groups as a critical component in achieving a holistic understanding of the turnover phenomenon in Malaysia's engineering sector.

5.3 Survey Research

Survey research was conducted to explore the predictive model and hypotheses. A questionnaire was developed using established and validated scales

from the literature on turnover, job embeddedness and organisational socialisation. To enhance content validity, a pilot test was administered to thirty engineers in Malaysia using a sample questionnaire. During the pilot, respondents were also asked to verify the list of engineer job levels, engineering disciplines, and employment sectors. Feedback was collected when respondents returned the completed questionnaires. The pilot test was conducted among a small group of engineers by giving an online survey link. The main aims of conducting this pilot test were to test the research instruments' adequacy, identify any unclear or ambiguous items in the questionnaire, and detect possible flaws in measurement procedures, such as instructions and time limits. Respondents who participated in the pilot test were excluded from the actual survey.

Once changes were made to the questionnaire, a new survey link was created and shared with the actual survey respondents. The timeline for actual data collection was set at one month. After achieving the targeted response rate, the data collection process was stopped and prepared for the data cleaning and analyses. Due to the massive amount of internet use and computer-based communication, the survey was conducted online. One of the most significant benefits of using an online survey is that it makes data gathering simpler, faster, and less expensive (Skarupova, 2014). Besides, online surveys can minimise measurement error, missing data, and respondent attrition (Stantcheva, 2023), which makes them more efficient in data gathering.

5.3.1 Data Collection Procedure, Population, and Sample

Initially, the data collection was planned by distributing the survey among the members of the Institute of Engineers Malaysia (IEM). However, due to limitations (e.g., no access granted to the data of IEM members), the data collection procedure

was modified. Engineers who are members of IEM and have LinkedIn profiles were invited to participate in the survey. The targeted population consisted of engineers registered on LinkedIn and working in Malaysia, while those who opted in and completed the survey were considered part of the survey sample.

Figure 5.1 shows the respondent recruitment process on LinkedIn. The process began by entering the keyword "engineer" into LinkedIn's search engine and filtering by location, such as Malacca, Malaysia, to ensure reach across all states. The search results display the number of engineers from Malacca registered on LinkedIn. Each engineer was contacted by clicking the “Connect” button, followed by sending a survey invitation. Upon acceptance of the connection, a thank-you note along with the survey link was sent to the engineer. Participation in the survey was completely voluntary, with only those respondents who willingly accepted the invitation completing the survey.

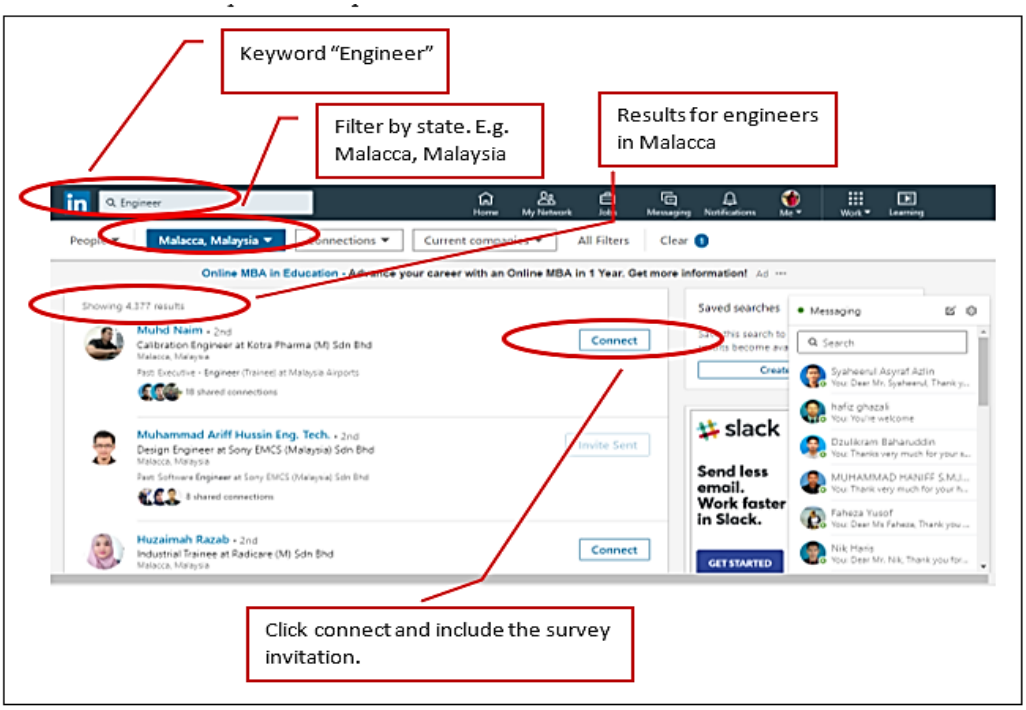

Figure 5.1: Respondent Recruitment Process in LinkedIn

5.3.2 Scale Development

This research employed the existing validated instrument to measure the variables in the studies. Using the developed measurement scales makes it easy to compare, integrate, and synthesise the findings across different studies. Although this research was conducted in Malaysia and the original measurements were developed in a Western context, no translation of the instruments was necessary. This is because the sample consisted of professionals, specifically engineers, who use English as their primary mode of communication.

The questionnaire survey was conducted online and included a cover page that explained the study's purpose and provided instructions for completing the survey. The questionnaire started with three questions on intentions to leave, followed by 12 questions on organisational socialisation tactics and 12 questions on job embeddedness. It concluded with 15 questions on demographic information.

Regarding the questionnaire scale, Cavana et al. (2001) and Churchill and Peter (1984) suggested that a scale with a midpoint is more reliable and can produce better research outcomes. Therefore, all items to measure the research variables, such as organisational employee turnover intentions, socialisation tactics, and job embeddedness, were measured on a seven-point Likert scale ranging from (1) Strongly Disagree to (7) Strongly Agree. Table 5.1 summarises the instruments employed in this study. The measurements used for the current study are discussed in the next section and are included in Appendices.

Turnover Intentions. This study employed a three-item scale developed by Hom et al. (1984) to measure turnover intentions. This measurement has shown high validity and reliability in different contexts in past studies, including Mitchell et al. (2001). An averaged composite was used in the analysis (α = .95 and .97), and all three items were rated on a seven-point Likert scale (1=Strongly Disagree; 7=Strongly Agree). Examples of items include "I have an intention to leave the organisation in the next 12 months" and "I have a strong feeling about leaving the organisation within the next 12 months."

Organisational Socialisation Tactics. To date, there are two most popular versions of organisational socialisation tactics scales. The first is the complete 30-item scale developed by Jones (1986), and the second is a condensed version featuring 12 high-loading items adapted from Jones (1986) by Cable and Parson (2001). Cable and Parson chose to retain only 12 items from the original 30-item scale to keep the survey as short as possible. This version consists of 2 items from each of the six socialisation tactics. Other researchers who have used the instruments by Cable and Parson (2001) include Allen (2006), Allen and Shanock (2013), and Song et al. (2015). In this instrument, the respondents are required to indicate their level of agreement with the statements based on a 7-point scale ranging from 1 = strongly Disagree to 7 = strongly Agree. Examples of items include "The steps in the career ladder are clearly specified in this organisation" and "My colleagues went out of their way to help me adjust to this organisation."

Job Embeddedness. The original job embeddedness instrument was developed by Mitchell et al. (2001) and comprised 40 items. This measurement

included a mixed-response format such as Likert-type scales (e.g., “I feel attached to this organisation”), yes-no questions (e.g. “Are you currently married”), and fill-in-the-blank questions (e.g., “How long have you been in your present position?”), which made it challenging to apply common methods of scale evaluation and latent variable analysis (Crossley et al., 2007). Furthermore, as a formative or composite measure, it exhibited statistical, practical, and validity issues (Clinton et al., 2012). In 2006, Holtom et al. conducted a measure development study where 769 corrections officers were surveyed using an updated instrument consisting of 18 Likert items and three yes-no questions. This revised scale was validated and demonstrated a high coefficient alpha of .88.

There is another version of the job embeddedness measurement adapted from Mitchell et al.’s scales: the 7-item Global Measure of Job Embeddedness by Crossley et al. (2007). To simplify the original measure by Mitchell et al.’s, this reflective measure assesses the overall impressions of attachment by asking general questions such as “It would be difficult for me to leave this organisation” and “I simply could not leave the organisation that I work for.” All items are Likert-type scales and scored from 1 = strongly disagree to 7 = strongly agree, with a Cronbach alpha value of .88. Although this measurement is shorter than the previous scales, all items in the global measure refer only to the organisational embeddedness; therefore, off-the-job embeddedness, which reflects community embeddedness, is not directly measured. As the off-the-job embeddedness is not isolated from the scales, it is difficult to examine the contribution of the construct towards the intentions to quit. Furthermore, the global measure of job embeddedness does not clearly differentiate the measurement of fit,

link, and sacrifice, making it difficult to measure the original conceptualisation of job embeddedness.

Recently, Clinton et al. (2012) developed a new measurement for job embeddedness to address the limitations of the lengthy scales by Mitchel et al. (2001) and Holtom et al. (2006), as well as the overly general global scales by Crossley et al. (2007). Comprising 12-Likert-type items with two items for each sub-dimension, this scale shows high internal reliability with a coefficient alpha of 0.83. In the measure development study, this scale was tested among two different samples: military and non-military (Information Technology) workers. Another study that employs this measurement is by Heritage et al. (2016), which involved 246 Australian university employees. An example of an on-the-job item is "Overall, I fit very well in the organisation," and for the off-the-job embeddedness, "Even if I decide to leave the organisation, I would still live in the area where I am based at the moment."

For the current study, this research employed the job embeddedness measurement developed and validated by Clinton et al. (2012) because it demonstrates several psychometric properties indicative of a good measurement: internal consistency, construct validity, discriminant validity, and the invariance across various samples of workers. The measures use a seven-point response scale ranging from 1 = strongly disagree to 7 = strongly agree.

Table 5.1: Summary of the Instruments

Factor Variable	No. of Items	Sources
Information Background	17	Various sources
Turnover Intentions	3	Hom et al. (1984)
Organisational Socialisation Tactics	12	Cable & Parsons (2001)
Job Embeddedness	12	Clinton et al. (2012)
TOTAL	**44**	

5.3.3 Survey Data Analysis

Data from quantitative research were sorted and analysed using SPSS Version 27. Before data screening could commence, all variables were assigned unique codes to make the data file more structured. Once the variables had been defined, the data screening process was initiated to ensure the cleanliness of the data before further analysis. Data screening serves as a preliminary step before conducting more extensive statistical analyses. The purpose of screening the data is to verify correct data entry and to handle missing values appropriately, in order to ensure the reliability and integrity of subsequent analyses.

Before proceeding with further analyses, all negatively worded items were reverse coded to ensure that all responses aligned in the same direction. Descriptive statistics were conducted to summarise and describe the collected data, and internal consistency was analysed to ensure that all instruments exhibited acceptable reliability. In addition, the assumptions for multivariate analyses were examined, including outliers, normality, linearity, homoscedasticity, and multicollinearity. For the main data analysis, regression was used to test the hypothesis. Direct relationships were

tested using the simple linear regression, mediation effects were analysed using the path analysis, and moderation effects were examined using hierarchical regression analysis. Interpretations and the discussion of findings were conducted accordingly to provide a comprehensive understanding of the results.

5.3.4 Survey Distribution and Participation

The dataset is described using descriptive statistics. Data collection was conducted for one month. A total of 2,200 engineers across 13 states and three federal territories were invited to participate in the survey. Table 5.2 summarises the response rate of the survey. Among those invited, 1,250 engineers accepted the survey invitation, while 950 invitations did not receive any reply. Among the respondents, 733 respondents were employed. Since the survey was designed specifically for fully employed engineers, self-employed (18) and unemployed engineers (29) were excluded from further analysis.

Out of the 733 engineers (58.64% response rate) who responded to the survey, only 309 questionnaires were complete and usable, which led to a 24.73% valid response rate. The remaining 424 returned questionnaires were deemed unusable because more than 85% of each questionnaire was not completed (Hair et al., 2017).

Table 5.2: Response Rate of the Survey

Response	Frequency
Number of invitation and questionnaire distributed	2200
Number of accepted invitations (A)	1250
Questionnaires returned (B)	733
Returned and usable questionnaires (C)	309
Returned and excluded questionnaires	424
Questionnaires not returned	1467
Response rate (B/A x 100)	58.64%
Valid response rate (C/A x 100)	24.72%

5.3.5 Demographic Profile of the Respondents

The total number of respondents for the current study is 309. Table 5.3 depicts the personal information of the respondents. The majority of the respondents fall within the age range of 25–34 years (70.2%), 18.1% are aged 24 and below, 9.4% are between 35–44 years, and only 2.3% are aged 45 and above. The gender distribution among respondents was 75.4% male (233) and 24.6% female (76). In Malaysia, engineering is considered a male-dominated field. This is reflected in the membership of the Institute of Engineering Malaysia (IEM) as of 2015, where out of 40,057 engineers registered, 30,460 (76%) were males, and 9,597 (24%) are females.

In terms of ethnicity, more than 85% of the respondents are Malays, while the rest are comprised of 9 Chinese (2.9%), 12 Indian (3.9%), and 24 from other ethnicities (7.8%). Malaysia is a multi-racial country. According to the Department of Statistic Malaysia (DOSM), in 2019, 69.3% of the total population of citizens were Bumiputera, followed by Chinese (22.8%), Indians (6.9%), and others (1.0%). The term

"Bumiputera" encompasses the Malays and other indigenous groups such as the *Orang Asli* in Peninsular Malaysia, as well as numerous ethnic groups in Sabah and Sarawak, including Kadazans, Dusuns, Bajaus, Ibans, Bidayuh, Orang Ulu, Melanaus, Penans, etc.

Among the respondents, 171 are single (55.3%), 134 are married (43.4%), and three respondents are either divorced or have another marital status (0.6%). With regards to the number of dependents, 138 respondents (44.7%) have 1–2 dependents, 94 respondents (30.4%) have no dependents, 59 respondents (19.1%) have 3–4 dependents, and 18 respondents (5.8%) have five or more dependents. The educational backgrounds of the respondents vary, with the majority holding a bachelor's degree. The breakdown is as follows: bachelor's degree (81.2%), master's degree (14.6%), other qualifications (3.2%), and Ph.D. (1.0%).

Table 5.3: Personal Information of the Survey Respondents

Variables		**Frequency (*N = 309*)**	**Valid (%)**
Age	24 and below	56	18.1
	25 – 34	217	70.2
	35 – 44	29	9.4
	45 and above	7	2.3
Gender	Male	233	75.4
	Female	76	24.6
Race	Malay	264	85.4
	Chinese	9	2.9
	Indian	12	3.9
	Others	24	7.8
Marital Status	Married	134	43.4
	Divorce	2	0.6
	Single	171	55.3
	Others	2	0.6
Dependents	No dependent	94	30.4
	1 – 2	138	44.7
	3 – 4	59	19.1
	5 and above	18	5.8

Continue

Highest Education	Bachelor's degree	251	81.2
	Master's degree	45	14.6
	PhD	3	1.0
	Others	10	3.2

A majority, 79.9% or 247 respondents, travel to work for less than one hour. Meanwhile, 45 respondents, or 14.6%, travel for 1–2 hours, and only 17 respondents, or 5.5%, take more than 2 hours to travel to work. The majority of the respondents (79.6%) are employed in the private sector, followed by 13.6% working in a government-linked company (GLC), and only 6.8% are working in the public sector.

With regards to organisational tenure in the current organisation, 32% or 99 respondents have been working there between 1 and 2 years. This is followed by 90 respondents (29.1%) who have been working for less than one year, 61 respondents (19.7%) who have been working for 3–4 years, 35 respondents (11.3%) with at least 7 years of experience, and only 24 respondents (7.8%) with 5–6 years of experience in the organisation. Moreover, the majority of the respondents, or 80.6% (249), have worked in 1–2 organisation(s). Meanwhile, 14.2% have worked in 3–4 organisations, and 5.2% have worked in more than four organisations.

Engineering can be classified into various disciplines. According to the 60th Annual Report of the IEM published in 2019, there are 71 engineering disciplines consisting of 48,612 members in total. However, civil or structural engineering (15,891 members), mechanical engineering (12,270 members), electrical engineering (7,895 members), chemical engineering (3,270 members), and electronics engineering (4,810 members) are the major disciplines. The remaining 66 disciplines consist of

less than 1200 members each. Therefore, for the current study, questions regarding engineering disciplines were grouped into civil or structural, mechanical, electrical, chemical, electronics, and all other disciplines were classified as others. In the current study, 31.1% or 96 respondents are from mechanical disciplines, followed by other disciplines at 23.9% (74), electronics at 14.2% (44), chemical at 10.7 (33), civil/structural at 10.4% (32), and electrical at 9.7% (30).

Engineering encompasses various sectors, with manufacturing being the biggest and employing many engineers. Therefore, it is no surprise that the majority of the respondents (35.9%, 111) are from the manufacturing sector, followed by the oil and gas sector (20.1%, 62), and other sectors (18.8%, 58). Less than 10% of respondents originate from each of the remaining sectors.

Among all respondents, slightly more than 66% (205) are engineers, while the remaining respondents are distributed across various roles: senior engineers (12.9%), junior/graduate/trainee engineer (9.4%), manager/lead/principal engineer (8.1%), and other positions (3.2%). With regards to the size of the organisation where the respondents work, 53.7% (166) are employed in a big organisation, while 29.4% work in mid-sized organisations and 16.8% in small-sized organisations.

The respondents have different income levels: approximately 51% earned RM4,000 and below (about £740 and below) per month, while 27.8% earned between RM4,001 and RM7,000 per month (£740–£1,300); only 7.8% earned between RM7,001 and RM10,000 per month (£1,300–£1,850), followed by 6.8% earning between RM10,001 and RM14,000 per month (£1,850–£2,600), and finally, 6.5% earned over RM14,000 per month (over £2,600).

The final demographic question addressed the workstation location of the respondents. Malaysia comprises 13 states and three federal territories, with a total population of 32.5 million in 2019 (Department of Statistic Malaysia, 2019). Table 5.4 and Figure 5.2 show that the highest percentage of respondents are from Selangor, at 20.4% (63 respondents), while the lowest percentages are from Kelantan and Perlis, each with 1% (3 respondents). Penang follows with 11% of the respondents (34), and Melaka has 10.4% (32 respondents). Less than 10% of respondents come from each of the remaining states.

Table 5.4: Profile of Respondents Related to Work and Organisation

Variables		**Frequency (*N* = 309)**	**Valid (%)**
Distance from home to work	< 1 hour	247	79.9
	1 – 2 hours	45	14.6
	> 2 hours	17	5.5
Organisational Sector	Private Sector	246	79.6
	Public Sector	21	6.8
	Government-Linked-Company (GLC)	42	13.6
How many years in total have you worked in your current organisation?	< 1 year	90	29.1
	1 – 2 years	99	32.0
	3 – 4 years	61	19.7
	5 – 6 years	24	7.8
	7 years and above	35	11.3
How many organisation(s) in the same industry have you worked for?	1 – 2	249	80.6
	3 – 4	44	14.2
	More than 4	16	5.2
Which engineering discipline best describes your current organisation?	Civil/Structural	32	10.4
	Mechanical	96	31.1
	Electrical	30	9.7
	Chemical	33	10.7
	Electronics	44	14.2
	Others	74	23.9
Employment sectors	Construction/Properties	21	6.8
	Infrastructure Project	9	2.9
	Oil & Gas	62	20.1
	Manufacturing	111	35.9

Continue

	Govt./Local Authority	7	2.3
	Power	22	7.1
	University/College	5	1.6
	Trading/Service transportation	2	0.6
	Agriculture	1	0.3
	ICT	11	3.6
	Other	58	18.8
Job position	Junior/Graduate/Trainee Engineer	29	9.4
	Engineer	205	66.3
	Senior Engineer	40	12.9
	Manager/Lead/Principal Engineer	25	8.1
	Others	10	3.2
What size is your current organisation?	Large size organisation (Over 500 employees)	166	53.7
	Midsize organisation (50-500 employees)	91	29.4
	Small size organisation (Less than 50 employees)	52	16.8
Household income	RM4000 and below	158	51.1
	RM4001 - RM7000	86	27.8
	RM7001 - RM10000	24	7.8
	RM10001 - RM14000	21	6.8
	RM14001 and above	20	6.5
Where do you work?	Johor	26	8.4
	Melaka	32	10.4
	Negeri Sembilan	26	8.4
	Kedah	13	4.2
	Kelantan	3	1.0
	Pahang	9	2.9
	Pulau Pinang	34	11.0
	Perak	11	3.6
	Perlis	3	1.0
	Sabah	14	4.5
	Sarawak	18	5.8
	Terengganu	13	4.2
	WP Kuala Lumpur*	26	8.4
	Selangor*	63	20.4
	WP Labuan	10	3.2
	WP Putrajaya*	8	2.6

Notes: * Klang Valley; WP – Wilayah Persekutuan (Federal Territories)

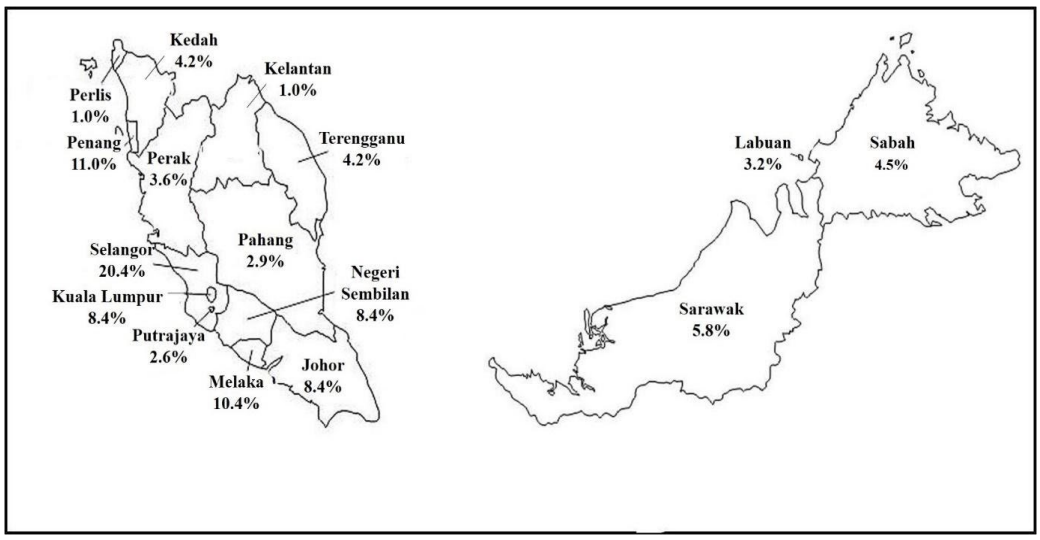

Figure 5.2: Workstation of Survey Respondents in Malaysia

5.4 Reliability

This study employed survey questions from previously validated surveys to ensure reliability. A three-item scale developed by Hom et al. (1984) was used to measure turnover intentions. Organisational socialisation tactics were assessed using an instrument developed by Cable and Parsons (2001). The job embeddedness constructs were measured using an instrument developed by Clinton et al. (2012).

Although all indices were taken from the previously validated measure, internal consistency was evaluated to ensure the reliability of the instrument in the current study. Overall, the coefficient alpha values ranged from 0.531 to 0.962 (refer to Table 5.5). Despite the alpha value for the context tactics variable being relatively low at 0.531, the items still exhibit moderate reliability. According to Hinton et al. (2004), there should be no reason to believe that these indices are unreliable.

Table 5.5: Internal Consistency

Variable	Alpha Value	No. of Items
Turnover Intentions	0.962	3
Context Tactics	0.531	4
Content Tactics	0.767	4
Social Tactics	0.756	3
On-the-Job Embeddedness	0.831	6
Off-the-Job Embeddedness	0.862	6
	TOTAL	**59**

5.5 Focus Groups

Traditionally, a focus group interview is conducted face-to-face, which involves a small group of members from a homogeneous group and a moderator who facilitates the discussion. In this research, synchronous groups were developed to gather data from discussants (Stewart & Williams, 2005), in order to ensure participants, engage in real-time conversations and interactions. This approach was chosen to foster more spontaneous and natural discussions, which facilitated the establishment of group dynamics and opinions. However, due to the Covid-19 outbreak, physical meetings have been restricted. Therefore, conducting a virtual focus group discussions has become the best option. Moreover, online focus group discussions have become an increasingly popular method for collecting qualitative data (Nyumba et al., 2018; Sim & Waterfield, 2019; Dos Santos Marques et al., 2020). Advances in technology and the widespread use of the internet have enabled researchers to adapt traditional in-person focus group methods for use in an online environment.

For the current research, guidelines for conducting virtual focus group interviews as suggested by Dos Santos Marques et al. (2020) and Morgan et al. (1998) were followed. Dos Santos Marques et al. (2020) thoroughly discussed designing and implementing virtual focus groups during the COVID-19 pandemic in their paper titled "Implementation of Virtual Focus Groups for Qualitative Data Collection in A Global Pandemic," published in the *American Journal of Surgery*. The guidelines they proposed consist of eight steps: First, planning involves choosing the appropriate meeting platform, reviewing consent forms, preparing the interview script and protocol, and applying for ethical consideration. The second step is the participants' recruitment process through phone calls or emails. Steps three, four, and five deal with the consent form for the participants and other guidelines of the meeting. Next, a reminder through email or phone calls can ensure the participants are aware and prepared for the meeting. Step seven is executing a focus group interview, where the moderator and co-moderator should take all the necessary actions. Lastly, the post-meeting follow-up, where the moderator needs to contact the participants again to confirm that they have received any promised incentives successfully and to thank them for their participation.

According to Morgan et al.'s (1998) guidelines on focus group interview techniques, four major stages need to be followed. The process began with the research design, where the researcher defined the study objectives, recruited the participants, and decided on a suitable location. In this case, the meetings were conducted virtually. The second step involved the preparation of data collection, where the researcher prepared the pre-session requirements such as familiarising themselves with the script and protocol, setting up the technical support, and executing the discussion. In general,

the facilitation of the meeting was similar to the suggestions by Dos Santos Marques et al. (2020), except that the medium of discussion required a different arrangement.

In addition to Dos Santos Marques et al.'s (2020) guidelines, all participants were given a short survey to indicate their discussion experience before the meeting ended. Using a 5-point Likert scale, questions related to the technical aspects of the online interview, such as video quality, sound quality, and session lag, were asked. Participants were also allowed to provide additional comments about the focus group discussion. This survey was important for the researcher to identify any weaknesses, and necessary improvements could be made for future research. The moderator ended the meeting when the discussion was finished. Afterward, the researcher contacted all participants again through email to express appreciation for their willingness to participate in the focus group interview and to give tokens of appreciation. Next, once all focus group discussions were conducted, the data analysis process began. In the current research, thematic coding was conducted using ATLAS.ti software. The final step involved result and reporting, where the findings from the thematic analysis were presented.

Focus group discussions offer various advantages and disadvantages. The use of focus group discussions techniques in the current research enabled researchers to learn about participants' common understandings of a subject and how they are influenced by others in a group setting (Khan & Abedin, 2022), which is not possible with other approaches such as one-on-one interviews or questionnaire surveys (Vanderstoep & Johnston, 2009). As this research aims to explore the socialisation experience, attachment in a male-dominated workplace, and factors from a broader life

space of a woman that influence the turnover intentions, discussions among participants could reveal the common driving or restraining factors of withdrawal intentions among women engineers.

Through open and interactive discussions in a group setting, the researcher was able to explore women engineers' opinions and perspectives on turnover, providing a rich and diverse range of data for analysis. The conversation also created fresh avenues for discussion and gave the moderator (i.e., the researcher) the freedom to delve deeper into some of the participants' comments. Moreover, the dynamics of the group could prompt others to share their experiences and thoughts in response to one group member's point of view (Mertens, 1998). Group interaction can facilitate the exchange of ideas and information, thus stimulating individual group members' thinking and allowing group members to build on each other's ideas. This provides the possibility of a broad range of viewpoints, including the similarities and differences between opinions, which can lead to a broader understanding about the common supports or pressures experienced by women engineers working in a male-dominated workplace. Brown (1999) noted that the conflicting perspectives might also lead to new areas for future research. Ultimately, focus group discussions can help researchers and practitioners gain a deeper understanding of women engineers' perceptions, attitudes, and motivations, which is essential for informing strategies and decision-making related to necessary supports for women and employee retention.

The focus group discussions were conducted virtually, where the participants can join the meeting from anywhere without needing to commute. This arrangement enabled participants to save time by not planning for travel costs and finding a meeting

point (Stewart & Shamdasani, 2017). For the researcher or moderator, this method eliminated the difficulty of gathering all participants from different locations or accommodating their tight schedules, as engineering is often associated with long working hours and tight schedules (Subramaniam & Abu Bakar, 2021; Stewart & Shamdasani, 2017). Furthermore, conducting focus group discussions virtually ensured that all participants felt safe having a group discussion remotely (Turney & Pocknee, 2005), without having a physical meeting during the ongoing Covid-19 outbreak.

Although virtual focus group discussion can serve as a good replacement for face-to-face meetings, internet connectivity issues can pose a major challenge for both participants and the moderator. A poor internet connection can affect the quality of the discussion, potentially causing participants to miss important points being discussed. Therefore, the moderator may need to repeat the main points made by individual participants to keep the discussion on track. In addition, while all participants are engineers and are expected to be digitally and technologically savvy, the ability of the participants to use technology in an online meeting should not be taken for granted. The moderator will allocate extra time to the participants to verify that the meeting software is functioning well on their devices before starting the discussion. A clear guideline of the meeting is provided a few days in advance, so that participants can prepare and take necessary actions before the actual meeting.

In addition, the absence of face-to-face contact may lead to reduced engagement among group members during discussions. Stewart and Shamdasani (2017) argued that the group members tend to exhibit less non-verbal communication,

which can influence the participants' spontaneous participation in the discussion. Therefore, the skills of the moderator in maintaining and encouraging the involvement of the participants are particularly important. Nyumba et al. (2018) suggested that moderators should skilfully create a warm, supportive, and enjoyable ambiance to stimulate an honest and transparent conversation among group members. Being a good listener and flexible with the flow of dialogue is important to make group members feel comfortable discussing and providing their insights on the topic openly.

5.5.1 Process to set up Online Focus Group Discussions

The implementation of the online focus group discussion is based on the guidelines suggested by Dos Santos Marques et al. (2020) and Morgan et al. (1998). For the purpose of the current research, several amendments have been made to suit the study's needs. The flow of the online focus group discussion implementation can be referred to in the Appendices.

Step 1: Planning

The first step in conducting the online focus group discussion involves several activities. Firstly, the researcher chooses the online platform. For the purpose of the current study, the Google Meet app was used as the OFGD platform. Google Meet was chosen because it is user-friendly, simple, and widely familiar to many people. Secondly, the researcher prepares the OFGD protocols. The interview protocol outlines the list of questions (see in Appendices, focus group questions guides) for the focus group discussions. The interview protocol also includes the meeting agenda for the focus group discussion, which details the activities before and after the discussions.

This protocol was essential as it guided the researcher in obtaining informed consent from participants and served as a reminder for the moderator about the information to be collected. The interview protocol played a crucial role in directing the moderator throughout the entire focus group discussion process.

In this research, a semi-structured interview protocol was employed. The interview questions were created by integrating key domains from the academic literature. The protocol's questions were entirely open-ended, enabling participants to discuss their own experiences freely without being limited to yes/no responses. A pilot study was conducted with a group of women engineers before the actual focus group discussions. Feedback from the pilot participants was included in the final interview protocol. The purposes of conducting the pilot study for the focus group were to check the flow of conducting the focus group discussion—from the recruitment of participants to the distribution of tokens of appreciation. Secondly, the pilot study was useful for obtaining feedback on how the focus group interview questions were perceived by representatives of the target group, such as checking the clarity of terms used. Thirdly, conducting a pilot study helped revise the structure of the questions where necessary and determined whether additional questions needed to be included or some should be deleted. Lastly, the moderator learned about the effectiveness of the discussion to determine if there was a need to modify the level of their involvement in the interview, as well as how they probed and asked follow-up questions to participants.

The focus group questions for participants addressed the following areas: (1) the experiences that women engineers went through at the entry stage; (2) the

socialisation practices implemented by the employer to support the adjustment process; (3) the fit and closeness of interpersonal relationships within the organisational system; and (4) the reasons for leaving or staying in the organisation.

The focus group discussions were conducted bilingually (in English and Malay) to ensure that participants felt comfortable expressing their points of view at their convenience. The discussions were recorded, as stated in the consent form. Each discussion lasted between 45 minutes to 60 minutes. After the focus group discussions were conducted, an appreciation email was sent to every participant. The researcher also provided a token of appreciation (e.g., a shopping voucher) to every participant who fully participated in the discussion, as a gesture of gratitude for their support, time and efforts.

Thirdly, the researcher prepared a list of available dates, times, and groups from which participants could choose. The focus group size and the number of focus group discussions were determined in advance. Focus group size refers to the number of participants in each discussion group, while the number of focus group discussions refers to the total number of separate group sessions conducted. For the focus group size, the common practices in in-person FGDs (offline) involve 6–8 groups with 5–10 participants per group (Krueger & Casey, 2014) or 3–5 groups with 6–10 participants per group (Morgan, 1997). It is not advisable to have fewer than three participants per group, such as two, because such session can be considered a "dyadic interview," which involves conversation between two people rather than a group discussion (Morgan, 1997). Based on a comprehensive review on qualitative research or focus group methodology, Guest et al. (2017) concluded that the sample size

recommendations varied considerably, ranging from 2 to 40 groups, with a common guideline to conduct at least two focus groups for each defining demographic trait. Guest et al. (2017) and Carlsen and Glenton (2011) noted that a standard rule in deciding the sample sizes for qualitative inquiry, including the focus groups, is "data saturation," which refers to "the point in data collection and analysis when new information produces little or no change to the codebook" (Guest et al., 2006, p. 65). However, data saturation can only be determined after the focus group discussions have been conducted, while the number of groups needs to be estimated prior to the discussions (Charmaz, 2014; Guest et al., 2017).

Therefore, determining the number of focus groups in the current study needs to be based on the existing guidelines provided by past researchers. While many methodology textbooks and research papers on focus groups are not factually based (Hennick et al., 2019) and thus the suggestions for the number of focus groups remain questionable. Guest et al. (2017) developed empirically informed recommendations on sample sizes for focus group research using data from a study involving 40 homogenous focus group discussions. The findings show that three to six groups are sufficient to capture 90% of the themes. Meanwhile, in a study involving 49 heterogenous focus groups discussions, Coenen et al. (2012) found that saturation was achieved at five focus group discussions. Based on these significant findings, it is suggested that six to eight groups will allow for robust discussions among participants, in order to reach data saturation and provide sufficient depth and detail in the data.

Krueger and Casey (2014) argue that the number of focus groups should depend on the complexity of the research question and the composition of the groups.

They suggest that if the topic is more complex and the participants are well-experienced, it is preferable to invite fewer participants. There are questions that can be answered quickly, while others require more thought and discussion. For instance, participants might be asked a simple question such as “Do you feel attached to the company?” or a more complex one such as “Can you explain how external factors affect your attachment to the company?” For complex questions, participants need more time to explain and discuss, thus fewer participants in a particular group are required to ensure that discussions are not excessively lengthy and important issues are not overlooked (Horn, 1998). Therefore, in deciding the number of participants per group (focus group size) and the number of groups, the list of questions (i.e., main questions, follow-up questions, and probe questions) should be reviewed to determine whether there are more simple questions or complex questions that need thorough discussion by participants.

However, since these FGDs will be conducted virtually, several factors need to be considered when deciding the group size, such as the stability of the internet connection for all participants in a group, technological issues faced by participants, and the ambiguity about how interactions would proceed with too many participants per group on an online platform. Therefore, this study has limited the group size to three to four participants, as suggested by Dos Santos Marques et al. (2020), and the total number of groups is six groups (Guest et al., 2017; Coenen et al., 2012; Krueger & Casey, 2014). Often, the advice given is to follow the rules of thumb but to suggest a slightly higher number to be "on the safe side." Therefore, more participants (more than four persons) will be invited to join a group just in case there are participants who decide to withdraw from the discussions.

Next, the researcher decided on the composition of the focus group. Managing the composition of a focus group requires careful planning. Bloor et al. (2001, p. 35) suggested that a researcher should avoid groups composed of "individuals with such conflicting views that the resultant discussion might cause distress to individual members." However, it is crucial to strike a balance between this strategy and the need to collect a variety of viewpoints necessary to achieve the research objectives. A focus group can be successful if it consists of the right number of the right people participating in the discussion. Focus groups are guided by the principle of homogeneity but with sufficient variation among participants to allow for contrasting opinions. The nature of that homogeneity depends on the study's objectives (Krueger & Casey, 2009). To compose a focus group, factors related to homogeneity need to be considered.

In the current study, the aim is to explore the factors of turnover intentions among women engineers. Therefore, the focus groups comprised of women engineers with several characteristics: they come from different career stages, have different marital statuses, and have previous experience with leaving an organisation. As organisational socialisation is an ongoing process from the time a woman engineer starts her career in the organisation, heterogeneity between groups also needs to be considered in terms of years of service in the current organisation. This is to ensure that participants feel more comfortable being in a group consisting of individuals with similar tenure.

The final activity in the planning process is obtaining ethics clearance. The researcher has received a certificate of Principles and Practice of Risk Assessment as

part of the ethics clearance procedure. In addition, the researcher prepared the Participant Information Sheet (PIS) and Consent Forms based on the template provided by the faculty, as well as the script and OFGD protocol. This research has received ethics approval from the Department Ethics Committee, Department of Work, Employment, and Organisation at the University of Strathclyde before the commencement of data collection. The PIS, consent form, and OFGD protocol are included in the Appendices.

Step 2: Recruitment Process

The recruitment for virtual focus groups begins with a list of potential participants, drawn from respondents of the previous survey research. In that survey, 76 women engineers participated. These respondents were contacted and invited through LinkedIn and the email addresses listed on their LinkedIn profiles. In the OFGD invitation, the participants were informed that they had participated in the previous survey research and were now invited to join the OFGD. An invitation to participate in the OFGD was sent to these women engineers. The content of the invitation message is provided in the Appendices.

Step 3: Participant Information Sheet, Consent Form, Privacy Notice and personal information form

Once a women engineer agrees to participate, she is given a link to a folder containing several important documents. These include the Privacy Notice, which outlines how the University of Strathclyde processes participants' personal data; the Participant Information Sheet, which explains the purpose of the research and how participants are involved in the online focus group discussions; an online consent form

to inform participants of potential risks and benefits, confidentiality, and privacy policies, and to obtain their voluntary agreement to participate in the OFGD; and a personal information form to collect data such as years of service in engineering, number of dependents, marital status, and current job position. The reason for using Qualtrics to develop the consent form and personal information form is to facilitate an easy and convenient process for participants to read and sign the documents without the need to download and return them via email. This information is treated as highly confidential and will not be revealed or used outside of the FGD. Once participants have agreed to partake in the FGD, they are provided with a link to a Google Drive folder containing all important documents related to the focus group discussions, which they can access at any time during the data collection period. The Participant Information Sheet (PIS), Privacy Notice, a sample online consent form, and the personal information form are available for reference in the Appendices.

Step 4 & 5: Follow-up Email and Reminder

Once the researcher has received the signed consent form, participants are given several options for OFGD sessions. Each participant can choose the OFGD slot that best fits their work or personal schedule. A reminder about the OFGD session is sent to participants one day before their session and again 10 minutes before the session starts.

Step 6: The day of virtual focus group

On the day of the virtual focus group, the researcher makes early preparations, such as ensuring that important documents like scripts, the focus group protocol, the list of participants, and the focus group schedule are printed out. The researcher also

checks that the recorder is ready and that the device (e.g., laptop) and internet access are in good condition. Participants are reminded 10 minutes before the session starts. Once everyone has entered the meeting, the moderator (i.e., the researcher) initiates the session based on the prepared focus group protocol. The focus group discussions are conducted bilingually (in English and Malay) to ensure that participants feel comfortable expressing their views at their convenience. The discussions are recorded, as informed in the consent form, and last between 60 to 90 minutes.

Step 7: Follow-up

After the OFGD session is completed, the researcher contacts each participant to send an appreciation message and provide a token of appreciation. Each participant receives a RM50 shopping voucher, as previously disclosed in the Participant Information Sheet. This gesture acknowledges their valuable contribution to the research.

5.5.2 Demographic Profile

21 participants had agreed to participate in six virtual focus group discussions. Due to the engineers' tight schedules, most of the discussions were held over the weekend, accommodating the availability of the participants. The duration of most discussions ranged from 1 hour and 15 minutes to 1 hour and 50 minutes. The specific time slots for these discussions are detailed in Table 5.6.

Table 5.6: Online Focus Group Discussions Sessions

Group	Date and Time	Number of Participants	Duration
1	20 March 2023, Monday - 8PM	3	1H 15M
2	25 March 2023, Saturday - 2PM	4	1H 40M
3	05 April 2023, Wednesday - 12PM	4	1H 10M
4	08 April 2023, Saturday - 830AM	3	1H 45M
5	09 April 2023, Sunday - 10AM	4	1H 50M
6	16 April 2023, Sunday - 230PM	3	1H 20M
		21	

Table 5.7 illustrates the profile of the research participants. Nine participants were married, and eleven were unmarried. Ten participants had between one to five dependents, while the remaining participants did not have any dependents. Seven participants were younger than 30 years old, eleven were aged between 31 and 45 years, and two participants were older than 45. Four participants had less than two years of experience in practicing engineering. Nine participants had 2 to 10 years of experience as engineers, and seven participants had more than 10 years of experience in practicing engineering. Out of the 21 women engineers who participated in these focus group discussions, 13 are still working as engineers. Meanwhile, four participants have transitioned to non-engineering careers or are not practicing engineering as their main job (e.g., entrepreneurs in engineering-related businesses). Three participants are currently unemployed, and one is retired.

Table 5.7: Profile of the Research Participants

Participants	Marital Status	No. of Dependent	Age	Experience as engineer	Engineering Sector	Year of service in engineering	Current Employment Status	Current Job
FGD1_I	married	0	31 – 45	Design Engineer	Manufacturing	13	1	Engineer
FGD1_N	married	1	25 – 30	Middleware system engineer	Information technology	5	1	Engineer
FGD1_H	Unmarried	0	31 – 45	APM Integrity Consultant	Information technology	11	1	Engineer
FGD2_E	Unmarried	0	25 – 30	Mechanical Engineer	Textile	4	2	Sales & Marketing Manager
FGD2_A	Unmarried	0	25 – 30	Civil engineer	Construction	4	1	Engineer
FGD2_F	Unmarried	0	25 – 30	Process engineer	Oil and Gas	2	2	Data Management Associate
FGD2_N	Married	2	31 – 45	Senior Engineer	Telecommunication	10	1	Engineer
FGD3_NB	Unmarried	0	25 – 30	Test Engineer	Manufacturing	1	1	Engineer
FGD3_H	Unmarried	0	25 – 30	Process Engineer		1	1	Engineer
FGD3_ND	Unmarried	0	25 – 30	Process Engineer	Manufacturing	4	1	Engineer
FGD3_SH	Unmarried	0	25 – 30	Process Engineer	Manufacturing	6	1	Engineer
FGD4_N	Married	2	31 – 45	Civil engineer	Construction (Gov)	10	1	Engineer

Continue…								
FGD4_Q	Unmarried	0	31 – 45	Civil engineer	Construction (Gov)	11	1	Engineer
FGD4_L	Unmarried	2	31 – 45	Commercial engineer	Manufacturing	10	2	Procurement
FGD5_A	Married	1	46 and above	Project Director	Construction (Gov)	40	5	Retired (Honorary Treasurer of IEM)
FGD5_C	Married	2	31 – 45	Lead Structural Engineer	Construction	12	1	Engineer
FGD5_G	Unmarried	2	31 – 45	Petroleum Engineer	Oil and gas	20	3	Entrepreneur (Engineering)
FGD5_H	Married	1	46 and above	Electrical Engineer	Construction (Gov)	30	1	Engineer
FGD6_A	Married	5	31 – 45	Mechanical Engineer	Construction	1	5	Unemployed
FGD6_Z	Married	4	31 – 45	Design Engineer	Manufacturing	1	5	Unemployed
FGD6_I	Unmarried	0	31 – 45	Chemical Engineer	Manufacturing	3	4	Unemployed

Note:

Current Employment Status:

1 = Employed engineer.

2 = Fully employed in non-engineering work but have worked as engineer before.

3 = Self-employed engineer.

4 = Self-employed in non-engineering work but have worked as engineer before.

5 = Unemployed now but have worked as an engineer before.

5.5.3 Focus Group Data Analysis

The focus group discussions were recorded using a voice recorder to gather data from the participants, who had been informed in advance through the consent form that the meetings would be audio recorded. The recorded discussions were then transcribed, followed by a thematic analysis that involved coding, creating terms, and themes using Microsoft Excel and ATLAS.ti. Clarke and Braun (2017, p. 297) define thematic analysis as "a method for identifying, analysing, and interpreting patterns of meaning ('themes') within qualitative data." Thematic analysis is a fundamental method of qualitative analysis and is considered particularly appropriate for studies that aim to generate insights through interpretation due to its flexibility (Braun & Clarke, 2006). This flexibility allows researchers to adapt the method to suit the specific research question, data, and context of the study.

Thematic analysis is a method that examines categories and identifies themes or patterns relevant to the data. It provides a detailed illustration of the data and interprets a wide range of topics (Boyatzis, 1998). Themes within data can be identified in two primary ways through thematic analysis: (1) inductive or 'bottom-up' approach, and/or (2) deductive or theoretical or 'top-down' approach. Inductive thematic analysis involves identifying themes that emerge directly from the data, without being guided by any pre-existing theoretical framework or research questions (Patton, 1990). This approach aims to generate new insights and understanding, making it similar to grounded theory (Braun & Clarke, 2006). Inductive analysis involves coding the data without trying to fit it into a pre-conceived coding framework or the researcher's analytical assumptions. In contrast, deductive thematic analysis

refers to an approach where themes are identified based on pre-existing theoretical concepts, frameworks, or research questions. Deductive thematic analysis aims to test or refine existing theories. In the current research, inductive thematic analysis was applied, whereby the initial codes were generated directly from the focus group discussions. The process of inductive thematic analysis was conducted following the guidelines proposed by Braun and Clarke (2006), which consist of six steps: familiarising with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and reporting.

First, familiarizing oneself with the data involves transcribing the audio recordings into typed documents. Transcribing is an active process that allows the researcher to actively engage with the study material (Mertens, 2010). Generally, there are two types of transcriptions—naturalised (i.e., verbatim), which captures every word and sound, and denaturalised (i.e., selective), which focuses on essential content while omitting idiosyncratic elements of speech to enhance readability (Bucholtz, 2000). To transcribe the audio, the researcher transcribed it manually to ensure accuracy and to familiarise herself with the content (Kiger & Varpio, 2020).

In this research, the audio is transcribed using denaturalised transcription, where the focus is on the verbal speech and efforts are made to omit idiosyncratic speech elements to ensure that the transcripts are clear and readable. During the focus group discussions, many participants spoke in a mix of English and Malay, used slang, and made grammatical errors that could lead to misinterpretations if transcribed verbatim, making them irrelevant to the main content of the research (Stuckey, 2014). However, since this research focuses on women engineers, the transcriptions are not

entirely denaturalised; aspects of the original situation are preserved to provide context. For example, instances were noted when some participants held their children during the discussion, or when a participant needed to leave early to take care of her niece.

Once the transcribed documents are ready, researchers need to immerse themselves in the data by reading and re-reading the transcripts multiple times (Braun & Clarke, 2006). This thorough review is the first step in the coding process for analysing qualitative data, known as open coding or initial coding (Saldaña, 2016). This approach is particularly suitable for this study because it allows the data to be broken down into manageable segments, which facilitate the development of themes and sub-themes.

In the current study, the researcher began by manually identifying open codes, highlighting them in the transcripts, extracting these codes, and inserting them into a grid drawn on a piece of paper, as depicted in Figure 5.3. As the research aimed to explore factors influencing turnover among women engineers beyond the organisational context, the researcher created a table with columns labelled as "driving forces" and "restraining forces," and rows labelled as "work-related" and "non-work-related" factors of turnover. This approach helped the researcher clearly see which keywords mentioned by the discussants fell into each category. The transcripts of the focus groups were then consolidated into a single document for analysis using ATLAS.ti 23 software. During this process, similar and recurring ideas and phrases (codes) were grouped together to facilitate a more organised analysis.

FGD1_I, FGD1_N, FGD1_H

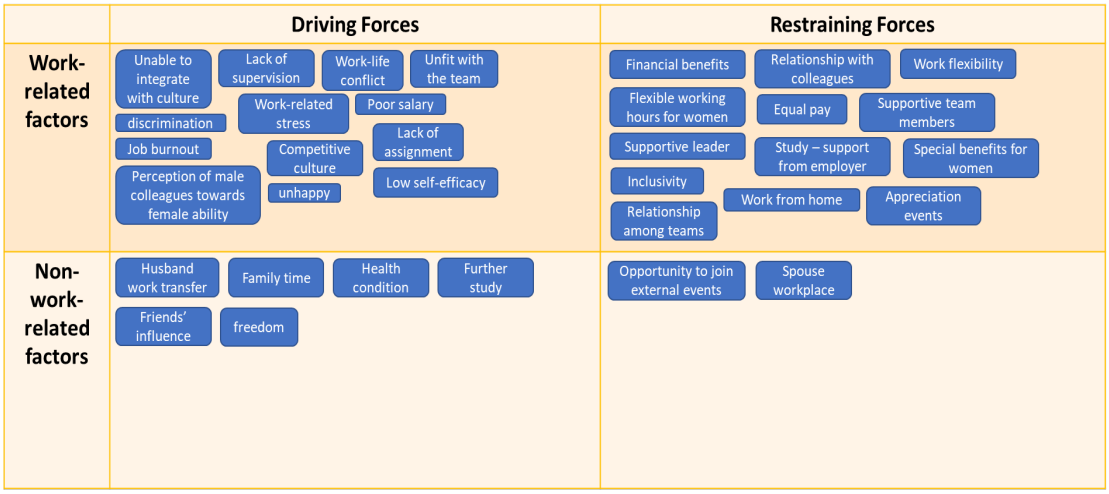

Figure 5.3: Sample of Open Coding

Secondly, the researcher conducted word frequency analysis to generate initial codes. During this process, the researcher began jotting down notes on possible data elements that might be relevant, along with inquiries, correlations among data elements, and other initial thoughts. Key elements from the transcripts were also arranged in an Excel spreadsheet to visualise the overall picture of initial codes and potential categories. This organisation aids in identifying the driving and restraining forces related to both within and outside the organisation more easily. For example, terms such as “married,” “family responsibilities,” and “family commitment” were mentioned by nearly all participants across all focus groups. Identifying the frequency of these terms allowed the researcher to observe emerging patterns.

Coding refers to the process of "selecting parts of the data that conceptually hang together and assigning a label to excerpts of the data" (Mertens, 2010, p. 425). During the coding process, the researcher read and reread the transcripts from the recorded focus group discussions. Through coding, data were segmented to create

themes and sub-themes. This step also marks the initial part of descriptive analysis, which involves identifying word frequencies in the focus group discussion data. Descriptive analysis was conducted to obtain a basic understanding of the themes, codes, or relationships among them (Miles et al., 2014).

In step three, all coded data extracts deemed pertinent are sorted and compiled into themes (Braun & Clarke, 2006). This stage involves analysing the extensive list of codes to determine how different codes might combine to form a cohesive theme. Thematic maps are particularly useful during this process because they illustrate how different ideas are interconnected, showing the relationships between broader themes and sub-themes (Braun & Clarke, 2006). Subsequently, themes are reviewed and refined to ensure they accurately reflect the data and are relevant to the research questions. At this stage, it is feasible to rearrange data extracts and adjust themes to better represent and encapsulate the coded data, enhancing the clarity and impact of the findings.

Once the thematic map has been refined, the themes are clearly defined and named to capture their essence and significance to the broader research question (Braun & Clarke, 2006). This naming process is crucial as it ensures each theme directly relates to the key investigative queries of the study. Example of the process in the current research, codes such as “primary caretaker,” “quitting job after marriage,” “long-distance marriage,” and “need husband’s support” were frequently mentioned and reflected participants’ struggles in balancing professional and family responsibilities. These codes were grouped to form the sub-theme Work–Family Conflict. The final step involves producing a written report that outlines the analysis

and findings. This report should include a detailed justification of how the researcher's interpretations effectively address the research question. To enrich the narrative descriptions, the analysis must incorporate relevant data extracts, such as direct quotes from participants, that vividly illustrate the themes (Braun & Clarke, 2006).

5.6 Trustworthiness

Credibility and trustworthiness are crucial in qualitative data analysis. To ensure the credibility, dependability, confirmability, and transferability of the data analysis and findings, the trustworthiness criteria established by Lincoln and Guba (1985) were employed. Credibility refers to the confidence in the truth of the study's results. Polit and Hungler (1999, p. 23) noted that credibility involves aligning the research focus with the data and analysis processes to ensure they effectively address the intended research focus. To maintain the credibility of the data, participants for the focus group discussions were recruited from a previous quantitative study survey, and their participation was entirely voluntary. In addition, participants were selected based on specific criteria, such as those who are currently working or have experienced voluntary turnover, to ensure they could provide legitimate information about the forces influencing their decision to leave. Women who graduated in engineering but never worked as engineers were excluded because they have not been exposed to the engineering work environment. Participants were also given ample time to discuss, ensuring that all important points could be thoroughly addressed.

Dependability in qualitative research refers to the trustworthiness and transparency of the data collection and analysis processes (Rubin & Rubin, 2012; Lincoln & Guba, 1985). There are various ways to ensure dependability. In the current

research, meticulous record-keeping is maintained throughout the study to manage this aspect effectively (Bloomberg & Volpe, 2012). A detailed data collection procedure was developed to guide the researcher, and a copy of this procedure was also made available to participants to ensure transparency; this document can be found in the Appendices. In addition, an expert check involving the supervisory team and other qualitative researchers, as well as engaging participants to verify the accuracy of codes and themes, further supports the dependability of the study (Creswell, 2014).

Transferability is a critical aspect of the trustworthiness of qualitative research. It has been argued that the findings from qualitative research cannot be transferred or generalised to other contexts like those from quantitative research, given that qualitative research does not aim for replicability (Stahl & King, 2020). However, in the context of qualitative studies, the patterns and descriptions from one context (i.e., the current research) may be applicable to another context. To ensure transferability in qualitative research, a "thick description" of the findings is required. This involves providing detailed information about the participants, methods, and procedures used to collect data during the study. By offering a detailed explanation of how the qualitative research was conducted, how the data was analysed, and how conclusions were drawn, it helps other researchers evaluate whether the results are applicable to other situations. Similar to quantitative research, the goal of qualitative investigation is to enhance understanding by applying findings from one setting to another (Lincoln & Guba, 1985).

Confirmability in qualitative research focuses on ensuring that the researcher's analyses and results are clearly based on the collected data. Lincoln and Guba (1985)

noted that a qualitative research project achieves confirmability when the elements of credibility, transferability, and dependability are all met. To ensure the confirmability of the qualitative data analysis and results, the researcher should include detailed explanations and reasoning behind the decisions made regarding theoretical, methodological, and analytical choices (Guenduez et al., 2025).

5.7 Limitations

A few issues were encountered while undertaking this research, which may have impacted its ability to achieve its aim. The researcher took suitable measures to counter these limitations and maximise the overall robustness of the data.

First, as discussed in Section 5.2 of this thesis, the integration of the quantitative and qualitative methods in this study occurred through a "connecting" approach, where one type of data (qualitative) was linked to another (quantitative) via the sampling frame (Fetters et al., 2013). As detailed in Section 5.5.2, participants for the focus group discussions were recruited from a subset of female respondents who had completed the survey in Study 1. Recruiting participants for the focus groups proved challenging, as many women engineers were unable or unwilling to commit to the extended discussion sessions. Out of 76 female respondents who participated in the survey, 21 women engineers agreed to take part in the focus group discussions. To ensure adequate participation, all female survey respondents were contacted and invited, and information was provided regarding the purpose and potential benefits of participation. All participants who joined the focus groups did so voluntarily and without any coercion.

Although the number of participants was relatively small (Marshall et al., 2013), qualitative adequacy is determined by the depth and richness of the data rather than numerical size, which is considered a strength of this research (Collins, 2010). The focus group participants were purposefully selected to provide detailed, experience-based insights that were sufficient to address the research objectives and achieve thematic saturation. They comprised women engineers from diverse professional backgrounds, including junior engineers, senior engineers, consultants, and retirees. The participants represented various engineering fields such as manufacturing, information technology, construction, oil and gas, and telecommunications, each exposing them to different challenges, work demands, and professional environments. This diversity of backgrounds provided rich insights that strengthened the qualitative findings and offered a contextual understanding of women engineers' turnover in Malaysia. While the relatively small qualitative sample limits generalisability, the participants' diverse experiences and detailed reflections produced sufficiently rich data to explain key quantitative relationships, thereby strengthening the overall integration and synthesis of the mixed-methods findings (Collins, 2010).

Secondly, while the qualitative participants were recruited from the survey sample to enhance connection between strands, the small number of women engineers who volunteered for the focus group discussions may limit the representativeness of the qualitative findings. Consequently, the integration was more complementary (Morse, 1991) than fully convergent, with the qualitative strand serving to elaborate and contextualise rather than confirm the quantitative results (Creswell & Plano Clark, 2018; Fetters et al., 2013). Nevertheless, this approach aligns with the purpose of a

convergent design that is to obtain a more comprehensive understanding of the research problem through the corroboration and expansion of findings from different sources (Greene, 2007).

Thirdly, the focus group discussions were conducted online, which raised two issues. The first issue was that the internet connection for some of the discussants was unstable, causing delays in the discussions as they worked to fix it. However, these internet connection problems only occurred when the discussants were away from stable locations such as their offices or homes. Before the focus group discussions were made, all participants were informed to ensure they were set up with the necessary resources to conduct the discussions smoothly, such as providing the place was free from noise and that their internet connectivity was good. However, the participants' preparation for their locations was beyond the researcher's control, and the researcher anticipated this issue might arise. Therefore, the researcher took all necessary steps, such as allowing discussants to reconnect to the internet, giving them time to settle down, and repeating questions they might have missed during disconnections. Thus, the researcher has not missed any vital information.

The next issue with the online focus group discussions was that data collection was conducted during the COVID-19 outbreak when physical meetings were restricted. As a result, the focus group discussions had to be conducted online, contrary to the common practice of face-to-face focus group discussions (Stewart & Williams, 2005). Traditionally, a focus group interview is conducted in a physical setting involving a few members of a group and a moderator who facilitates the discussion. In a traditional focus group discussion, participants can engage in real-time

interactions, fostering more spontaneous and natural discussions enabling group dynamics and opinions. Furthermore, physical focus group discussions allow the moderator to observe the situation and participants' body language, which may be relevant to the data collection (Krueger, 2014). However, in the current research, since the focus group discussions were conducted online, the moderator was limited in observing the overall situation of the discussion and the interactions among discussants. Additionally, most participants did not turn on their cameras, making it impossible to observe their body language.

Even though it was not the main aim of the research to utilise observational approaches as a part of the data collection, observing the overall situation and discussion process would enhance the understanding of the moderator of the stories shared by participants (Krueger, 2014). For instance, if others in the group show agreement through body language, such as nodding, that can cue the researcher about agreement with the points and ask the participant to explain what it means. This technique ensures more accurate and concrete data collection. To enhance the understanding of researchers on the overall situation of the discussion, the researcher asked all participants about their thoughts about other's point of view if they would like to add more comments. The researcher also engaged with all participants to ensure no one remained silent (Stewart & Shamdasani, 2017).

5.8 Summary

This chapter presents the methodology and research design. A convergent mixed-methods design was selected, using survey questionnaires and focus group discussions with women engineers working in Malaysia. This design was intended to

test the research hypotheses in Study 1 and explore the driving and restraining forces behind women engineers' turnover intentions beyond the organisational context in Study 2. The chapter also addresses the limitations and challenges of the chosen methodology and discusses the measures taken to overcome these limitations and maximise the overall robustness of the data. The analysis of the data and the findings will be presented in the following chapters.

CHAPTER 6

FINDINGS: HYPOTHESIS TESTING

6.1 Introduction

In the previous chapter, the research methodology and design adopted for this thesis were comprehensively discussed and justified. In the current chapter, the aim is to focus on the hypotheses testing of Study 1 formulated in Chapter 4. Notably, this chapter is important to address the research question of this thesis. Through systematic hypothesis testing, the motive is to investigate the factors influencing the turnover intentions of women engineers. The subsequent sections will provide a detailed illustration of the findings, shedding light on the factors that shape these intentions. Prior to the hypotheses testing, regression diagnostics were conducted to ensure that the underlying assumptions were met and to identify potential issues that could affect the reliability and validity of the model's results. The chapter then continues with Pearson's correlation analysis to examine the strength and direction of the linear relationships between the study variables. The hypotheses were tested through regression analysis. Simple linear regression was conducted to test the direct relationships, the mediation effect was analysed using path analysis, and the moderation effect was examined using hierarchical regression analysis.

6.2 Regression Diagnostics

Descriptive statistics and preliminary analyses were conducted in accordance with the guidelines provided by Tabachnick and Fidell (2013). Before proceeding with further analysis, all negatively worded items were reverse coded to ensure that all

responses for each item were aligned in the same direction. Missing values were identified and addressed accordingly. Key assumptions for multivariate analyses, including the presence of outliers, normality, linearity, homoscedasticity, and multicollinearity, were thoroughly diagnosed to ensure the integrity and reliability of the subsequent analyses.

6.2.1 Missing value

Firstly, the missing value refers to when respondents intentionally or accidentally omit the question(s). Missing data is a common issue in social science research, particularly when data is collected via questionnaires. The decision to exclude a case depends on the percentage of missing data. According to Hair et al. (2017), if the missing value in one case (i.e., one respondent) is below 15%, then the case can be included, but the missing data must be addressed. However, if 15% of missing values pertain to a single construct, the case should be excluded from further analyses (Hair et al., 2017).

In the current research, the questionnaire was developed with each question set as a forced-response item. This approach ensures that respondents answer the questions and do not leave them unanswered before proceeding to the next. As Hair et al. (2017) suggest, each questionnaire must be at least 85% complete, and missing values can be addressed using various techniques in SPSS. As shown in Table 5.2, out of 733 returned questionnaires, only 309 are usable, while 424 did not meet the 85% completion criterion. The questionnaires were designed to ask questions related to the study constructs at the beginning, with demographic questions positioned at the end of the survey. Two respondents answered all non-demographic items but did not

complete the demographic profile section. In such cases, these questionnaires have to be excluded due to the absence of the respondents' profiles, which are crucial for the analysis.

6.2.2 Outliers

Outliers refer to the extreme scores by respondents that are either significantly lower or higher than the normal range of potential scores (Pallant, 2011). These can be visually identified in a boxplot, which provides a graphical representation of the distribution's quartiles and potential outliers. When assessing a boxplot, consider: (1) the position of the box, (2) one or more small circles located at the upper or lower edge of the box, and (3) the asterisk symbol. When the box is closer to the top, this indicates that the distribution is negatively skewed, and if it is closer to the bottom, the distribution is positively skewed. The small circles at the upper or lower edges of the box represent outliers. If there are one or more asterisk symbols, these denote extreme outliers.

Outliers can cause serious problems in statistical analyses such as incorrect estimate and significantly impact the mean value and skewness (Sullivan et al., 2021). Therefore, it is crucial to identify outliers and decide whether they should be removed. To facilitate this, several detection tools can be employed. These include the median absolute deviation for detecting univariate outliers, comparative analysis of two variables for bivariate outliers, and the Mahalanobis D^2 measure for detecting multivariate outliers (Hair et al., 2017; Field, 2013).

In the current research, univariate (boxplot) and multivariate outliers were determined using Mahalanobis distance. Mahalanobis D^2 is distributed as a chi-square statistic, with degrees of freedom (df) equal to the number of independent variables in the study (Hair et al., 2010). An outlier was identified if the Mahalanobis distance score for any case exceeded the critical value of the chi-square distribution. Table 6.1 of the residual statistics shows the maximum value of Mahalanobis distance at 22.619 (ID = 296). Although this value was slightly higher than the critical value of Mahalanobis distance with five independent variables at $\alpha = .001$, which is 20.515, case 296 was not deleted because it did not deviate significantly from the cluster of most data points. Furthermore, Cook's Distance confirmed that this case did not unduly influence the prediction of the outcome. Cook's Distance measures how much an observation influences the coefficient estimates of the fitted regression equation (Zhu et al., 2012). It is generally recommended that any cases with a Cook's Distance greater than 1 should be removed from the model. SPSS lists Cook's Distance in the residual table. As indicated in Table 6.1, Cook's Distance for this model was 0.041, which is less than 1. Therefore, no case was deleted (Field, 2013).

Table 6.1: Residual Statistics

Residuals Statistics[a]					
	Minimum	Maximum	Mean	Std. Deviation	N
Mahal. Distance	.236	22.619	4.984	3.708	309
Cook's Distance	.000	.041	.003	.006	309

a. Dependent Variable: TURNOVER INTENTIONS

The box plot in Figure 6.1 illustrates the univariate outliers in the current research. A few outliers were detected for content tactics, social tactics, and on-the-job embeddedness, indicated by small circles on the plot. However, no extreme cases were detected.

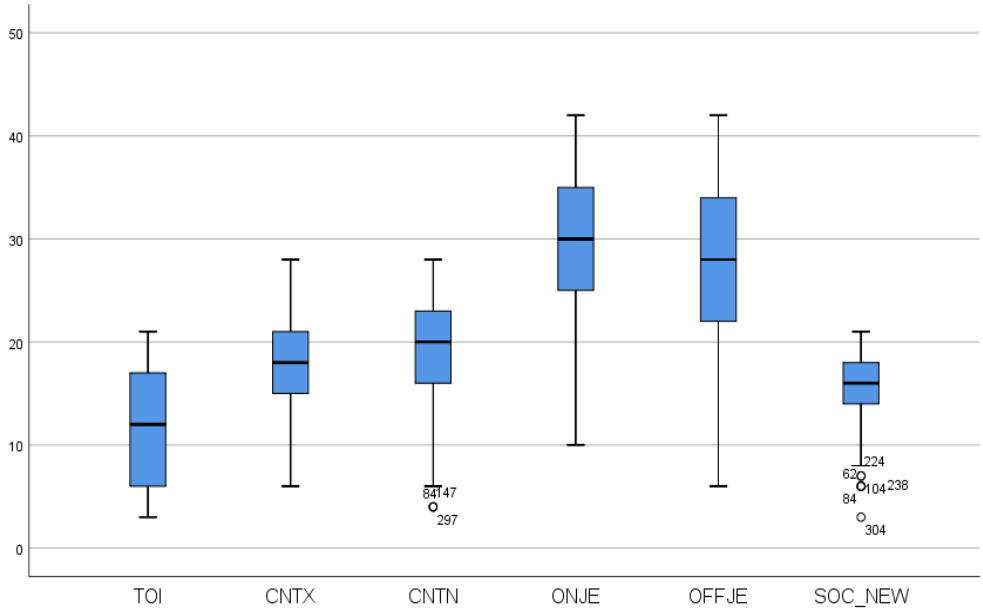

Figure 6.1: Outliers in Box plot

6.2.3 Descriptive Statistics

To understand the features of the data, descriptive statistics was conducted to describe and summarise the data by calculating the range of score, mean, standard deviation, and score distribution (skewness and kurtosis). Table 6.2 depicts the descriptive statistics of the variables of the study, and Table 6.3 shows the details of descriptive statistics for each item. The mean represents the centre of a distribution of scores, while the standard deviation is an estimate of the average variability of a set of data, measured in the same unit of measurement (Field, 2010, p. 794). The usable

samples for this study consisted of 309 respondents, all of whom were fully-employed engineers in Malaysia. All variables were measured on a seven-point Likert scale, with a score of '1' indicating strong disagreement and a score of '7' indicating strong agreement with the survey questions.

All variable means ranged from 3.9461 to 5.2578, indicating that the respondents ranged from "neither disagree nor agree" to "somewhat agree" with the overall items. Turnover intentions displayed the lowest mean at 3.9461, suggesting respondents were undecided about whether to quit their organisation. Among the socialisation tactics, respondents showed a relatively high mean (5.2578), indicating they received slightly more support from employers and colleagues in understanding their role within the organisation. For the job embeddedness constructs, the mean values for on-the-job embeddedness and off-the-job embeddedness were similar (4.9218 and 4.5863, respectively), indicating that the respondents had a somewhat stronger attachment to both the organisation and the community.

Table 6.2: Descriptive Statistics of the Variables of the Study

	N	Mean	SD	Skewness	Kurtosis
Turnover Intentions	309	3.9461	1.96927	-.035	-1.289
Context Tactics	309	4.4992	1.11340	-.224	-.508
Content Tactics	309	4.8042	1.17576	-.630	.274
Social Tactics	309	5.2578	1.10556	-.722	.573
On-job Embeddedness	309	4.9218	1.11452	-.495	-.252
Off-job Embeddedness	309	4.5863	1.36842	-.399	-.578

Table 6.3: Measures of the Constructs and Descriptive Statistics

	N	Mean	SD	Skewness	Kurtosis
Turnover Intentions					
I have intentions to leave the organisation in the next 12 months.	309	4.10	2.050	-.181	-1.317
I have a strong feeling about leaving the organisation within the next 12 months.	309	3.86	2.063	.052	-1.353
I am likely to leave the organisation in the next 12 months.	309	3.87	2.013	.032	-1.305
Context Tactics					
After being recruited, I was extensively involved with other new recruits in common, job-related activities.	309	4.34	1.812	-.359	-1.035
This organisation puts all newcomers through the same set of learning experiences.	309	4.82	1.684	-.676	-.549
I went through a set of training experiences that were s	309	4.88	1.702	-.792	-.341
I did not perform any of my normal job responsibilities until I was thoroughly familiar with departmental procedures and work methods.	309	3.96	1.710	-.071	-1.088
Content Tactics					
There was a clear pattern in the way one role leads to another, or one job assignment leads to another, in this organisation.	309	4.99	1.437	-.863	.228
The steps in the career ladder were clearly specified in this organisation.	309	4.58	1.637	-.360	-.891
I can predict my future career path in this organisation by observing other people's experiences.	309	5.07	1.502	-1.002	.510
The way in which my progress through this organisation will follow a fixed timetable of events was clearly communicated to me.	309	4.58	1.539	-.604	-.474
Social Tactics					
Almost all of my colleagues were supportive of me personally.	309	5.47	1.234	-1.126	1.616
My colleagues went out of their way to help me adjust to this organisation.	309	4.98	1.433	-.712	.158
I received little guidance from experienced organisational members as to how I should perform my job (R)	309	3.11	1.632	.814	-.128
I gained a clear understanding of my role in this organisation from observing my senior colleagues.	309	5.32	1.372	-1.115	1.070

Continue…					
On-the-job Embeddedness					
The organisation provides me with a way of life that suits me.	309	4.83	1.546	-.554	-.553
Overall, I fit very well in the organisation.	309	5.28	1.294	-.804	.304
My closest friends are in the organisation.	309	4.14	1.890	-.349	-1.128
Overall, I have strong ties with people throughout the organisation.	309	5.13	1.360	-.962	.711
I would miss the excitement that this job brings if I left.	309	5.11	1.553	-.907	.314
There would be many things about organisational life t	309	5.04	1.507	-.840	.253
Off-the-job Embeddedness					
The area where I am based right now is suitable for my family and friends.	309	4.97	1.752	-.730	-.419
There is plenty to keep me happy off duty around here.	309	4.96	1.508	-.842	.207
Even if I decide to leave the organisation I would still live in the area where I am based at the moment.	309	4.51	1.814	-.381	-1.009
My family/partner has strong ties around the community where I am currently based.	309	4.17	1.929	-.185	-1.231
Leaving the area where I am currently based would mean many personal and/or family sacrifices.	309	4.49	1.911	-.387	-1.098
I would be very sad to leave the general community where I am based right now.	309	4.42	1.720	-.349	-.815
Valid N (listwise)	309				

6.2.4 Normality

The first assumption to address is the normality of the data. The violation of the normality assumption can affect the reliability and validity of the interpretation (Razali & Wah, 2011). There are various techniques to assess the normality of data, including graphical methods (e.g., Q-Q plots, boxplots), numerical methods (e.g., skewness and kurtosis), and formal normality tests (e.g., Shapiro-Wilk test, Kolmogorov-Smirnov test). To analyse the normality of residuals, the Kurtosis &

Skewness test is applied (Hair et al., 2017; Field, 2013). Skewness describes the shape of the data distribution. When the data distribution for a variable is uniformly scattered around the central point, the data is symmetric, producing a bell-shaped curve where the mean, median, and mode all lie at the same point. If the data distribution is stretched to the right, the data is positively skewed, and if it is stretched to the left, it is negatively skewed.

Meanwhile, kurtosis explains the shape of the data distribution by examining the extremity of the tails. In conditions where the distribution has fatter tails and a higher peak (leptokurtic), the kurtosis is greater than that of a normal distribution (kurtosis > 3). Conversely, for distributions with thinner tails and lower peaks (platykurtic), the kurtosis is lower than that of a normal distribution (kurtosis < 3). A normal distribution occurs when the skewness is equal to or near zero and the kurtosis is equal to or near 3. According to Hair et al. (2017), an acceptable range for both skewness and kurtosis is within ±2.58, indicating proximity to a normal distribution. Based on Table 6.2 and Table 6.3, no values fall outside the acceptable range for skewness and kurtosis, thus confirming that the data were normally distributed.

6.2.5 Linearity and Homoscedasticity

Linearity and homoscedasticity are two fundamental assumptions for correlational analysis. The relationships between variables are considered homoscedastic when the normality assumption is met. Linearity indicates that the relationship between two variables is linear, as evidenced by a straight line in scatterplots (Field, 2013), such as in Figure 6.2. Homoscedasticity refers to the condition where the variability in scores for the dependent variable is equal or

somewhat similar at all values of other variables (predictors) (Pallant, 2011). This means that the data is considered homoscedastic if the variance of the dependent variable's values is similar across a range of values of the independent variable. To meet the assumption of homogeneity of variance, the significance value should be more than .05, indicating that the test for homogeneity of variance is not significant. Figure 6.2 visualises the Normal P-P Plot of the Regression Standardised Residual, showing that the points are evenly scattered and maintain approximately the same distance from the line. As demonstrated in Figure 6.3, the confirmation of linearity is evident as a rectangle can be drawn around the data points, indicating a linear relationship. Therefore, the assumption of homoscedasticity is met, signifying that the variability of the residuals is constant across the range of values.

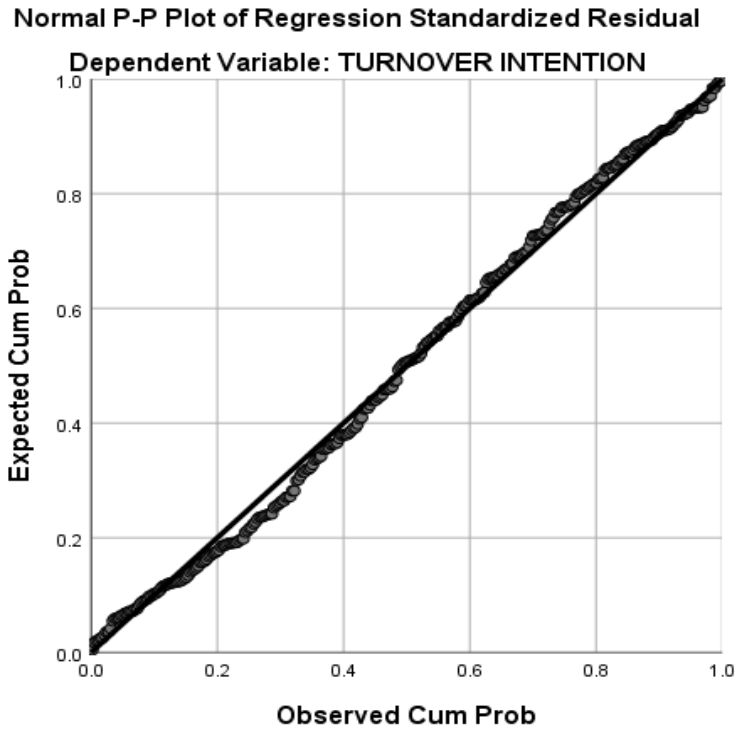

Figure 6.2: The P-P Plot of Regression Standardized Residual

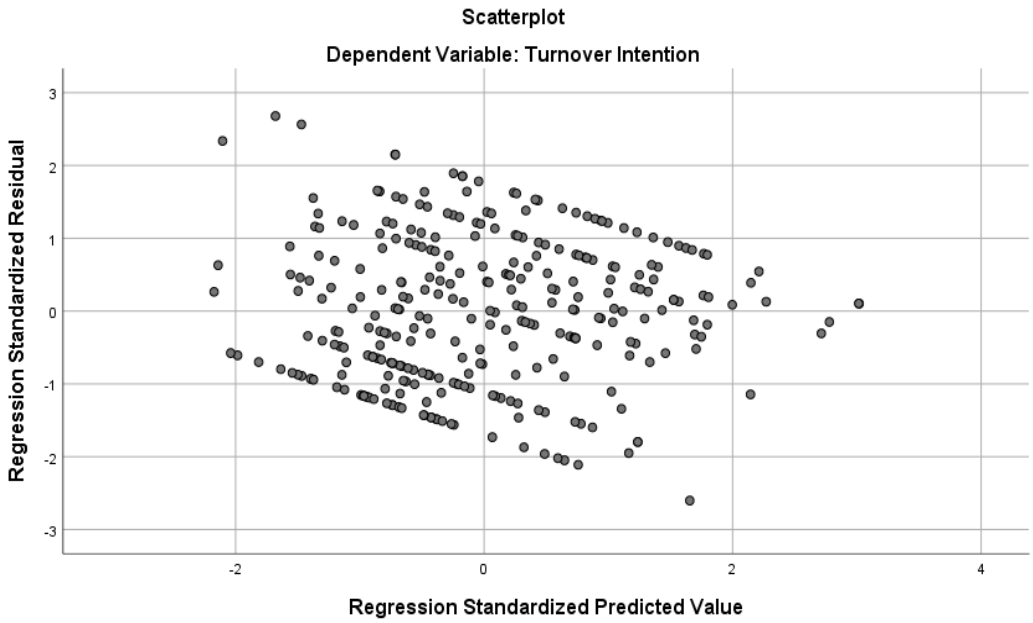

Figure 6.3: The Scatterplot

6.2.6 Multicollinearity

Multicollinearity refers to the phenomenon of very high intercorrelation existing among independent variables (Hair et al., 2017). When multicollinearity is present, it is considered a type of disturbance or data problem that can result in misleading interpretations of the relationships between independent variables and the dependent variable (Coakes, 2012). This occurs because when two or more predictors are highly correlated, it increases the standard error of the coefficients (Lindner et al., 2020). If collinearity exists, it can inflate the standard error, potentially leading to insignificant findings rather than statistical significance (Cohen et al., 2013).

Multicollinearity can be identified by referring to the coefficient table, particularly looking at the tolerance and Variance Inflation Factor (VIF) values. The tolerance value indicates "the amount of variability of the selected independent

variable not explained by the other independent variables" (Hair et al., 2014, p. 197). If the tolerance value is less than the commonly used cutoff threshold of .10, multicollinearity is considered to exist. Conversely, the VIF value, which is the inverse of the tolerance value (1/tolerance), provides another measure; a VIF value higher than 10 suggests the presence of multicollinearity (Myers, 1990). As indicated in Table 6.4, no tolerance values were below .10, and all VIF values were below 10. Therefore, multicollinearity was not a concern in the current research.

Table 6.4: Multicollinearity

	Collinearity Statistics	
Model	**Tolerance**	**VIF**
1 (Constant)		
Context Tactics	.705	1.419
Content Tactics	.586	1.707
Social Tactics	.576	1.735
On-The-Job Embeddedness	.546	1.832
Off-The-Job Embeddedness	.780	1.282

Dependent Variable: Turnover Intentions

6.3 Pearson's Correlation Analysis

The relationships among the variables of the study were examined using Pearson Product Moment Correlation, commonly referred to as Pearson's Correlation (*r*). A correlation table, as shown in Table 6.5, was generated, presenting the correlation coefficients among variables at a significance level of $p \leq .01$ (N = 309). In terms of the strength of the relationships among variables, Cohen's (1988) guidelines were referred to. According to Cohen, a correlation coefficient (*r*) of .10 is considered "small," .30 is "medium," and .50 and above is "large." A negative correlation coefficient indicates an inverse relationship between the two variables; for

example, if the content tactics score is high, the employee turnover intentions score is likely to be low or reversed.

Context tactics have no significant relationship with turnover intentions (r=-.073) and off-job embeddedness (r=.006). The lack of association suggests that the structure or format of the onboarding process, on its own, may have limited influence on an employee's intentions to leave or on their attachment to the community outside work. It is possible that these structural elements are perceived as procedural rather than relational and thus may not significantly shape long-term attachment or turnover intentions.

Content tactics and social tactics were significantly negatively correlated with turnover intentions at a medium correlation (r = -.301** and r = -.288**, respectively). These findings suggest that when employees receive clear role-related information and are socially integrated through interpersonal support, they are less likely to consider leaving the organisation. On-the-job embeddedness was found linearly related with turnover intentions (r = -.455**) at a medium relationship. This finding indicating that employees who feel closely connected to their workplace through fit, links, and perceived sacrifice are less likely to report intentions to leave. While off-the-job embeddedness was weakly negatively correlated with turnover intentions (r = -.180**). This suggests that factors outside the organisation, such as community fit and non-work commitments, do contribute to employees' decision-making, although to a lesser extent than organisational factors. Overall, all independent variables except for context tactics had a significant negative relationship with turnover intentions.

Table 6.5: Pearson's Correlation

	TOI	CNTX	CNTN	SOC	ONJOB	OFJOB
TOI	1					
CNTX	-.073	1				
CNTN	-.301**	.521**	1			
SOC	-.288**	.370**	.516**	1		
ONJE	-.455**	.252**	.430**	.567**	1	
OFFJE	-.180**	.006	.156**	.233**	.455**	1

Notes: TOI = Turnover Intentions; CNTX = Context Tactics; CNTN = Content Tactics; SOC = Social Tactics; ONJE = On-the-job Embeddedness; OFJE = Off-the-job Embeddedness; N = 309; $p \leq 0.01$

6.4 Test of Hypotheses

The research model outlined in Chapter 4 suggests that organisational socialisation tactics—including context tactics, content tactics, and social tactics—impact employee turnover intentions. However, it was proposed that the relationship between these three tactics and turnover intentions is likely not direct but may be mediated by job embeddedness, specifically on-the-job embeddedness and off-the-job embeddedness. In addition, it was hypothesised that the relationship between on-the-job and off-the-job embeddedness with turnover intentions would likely be moderated by gender. This is based on the underlying assumption that the relationship between job embeddedness and turnover intentions would be stronger for women than for men, due to a weaker attachment to their job.

There are three hypotheses for the direct relationship between organisational socialisation tactics (context, content, and social tactics) and turnover intentions, and two hypotheses for the relationship between job embeddedness (on-the-job and off-the-job embeddedness) and turnover intentions. Next, three hypotheses for the direct

relationship between organisational socialisation tactics (context, content, and social tactics) and on-the-job embeddedness and three hypotheses for the direct relationship between organisational socialisation tactics (context, content, and social tactics) and off-the-job embeddedness are developed. To test the mediation effect of on-the-job embeddedness, three hypotheses for indirect relationships between context, content, and social tactics with turnover intentions have been developed. The same goes for the mediation effect of off-the-job embeddedness. Three hypotheses for an indirect relationship between context, content, and social tactics and turnover intentions were proposed. Lastly, there are two hypotheses for gender as a moderator in the relationship between on-the-job embeddedness and off-the-job embeddedness with turnover intentions. Altogether, there are five main hypotheses, which consist of 19 sub-hypotheses, that have been tested.

The regression analysis was conducted to test the hypotheses. This analysis aimed to determine whether the variance in dependent variable scores could be explained by the set of independent variables. Hierarchical multiple regression analyses were employed to examine Hypotheses 5_a and 5_b. Both hypotheses posited that gender would moderate the relationship between on-the-job embeddedness and turnover intentions, and off-the-job embeddedness and turnover intentions, respectively.

6.4.1 Hypotheses Testing for the Direct Relationships

The hypothesis testing process relied on information derived from the Model Summary, ANOVA table, and regression coefficients. The coefficient of determination (R^2) was used to determine the extent to which the variance of the

criterion variable was explained by the predictor variables. An R^2 value of 1 indicates a perfect linear relationship between the independent and dependent variables, whereas a value of 0 suggests that no linear relationship exists between them. The F value was used to assess the overall significance of the regression model, while the t value was used to evaluate the individual contribution of each predictor variable to the prediction of the criterion variable. The tables generated from these analyses, including the Model Summary, ANOVA table, and regression coefficients, are provided in Appendix H for reference.

H_1: Relationship between Organisational Socialisation Tactics and Turnover Intentions

Three hypotheses were developed to explain the relationship between organisational socialisation tactics (i.e., context tactics, content tactics, and social tactics) and the turnover intentions of engineers. The results of the regression analysis showed that context tactics explained only 0.5% of the variance in turnover intentions ($R^2 = .005$, $F(1, 307) = 1.665$, $p = 0.198$). The low R^2 value indicates that context tactics have a very weak impact on turnover intentions, suggesting that other factors, not captured by this model, likely contribute more to turnover intentions among women engineers. The p-value of 0.198 suggests that the relationship between context tactics and turnover intentions is not statistically significant, meaning that no meaningful influence of context tactics on turnover intentions can be concluded in this case. Additionally, the Beta coefficient of -0.073 ($t = -1.290$) reinforces the finding of no significant relationship, as it indicates a weak and non-significant association.

Overall, these results suggest that context tactics alone do not significantly predict turnover intentions in this sample.

In contrast to the context tactics, which showed no significant relationship with turnover intentions, the other two tactics of organisational socialisation, content tactics and social tactics, were found to have significant relationships with turnover intentions. Specifically, content tactics explained 9% of the variance in turnover intentions ($R^2 = .09$, $F(1, 307) = 30.515$, $p = .000$). The statistically significant p-value ($p = .000$) suggests that content tactics play a key role in predicting turnover intentions. The negative Beta coefficient (Beta = -.301, t = -5.524) implies that as content tactics increase, turnover intentions tend to decrease. This suggests that effective content-related socialisation tactics such as providing the right resources, information, and feedback may help reduce the likelihood of women engineers considering leaving their jobs.

Similarly, social tactics explained 8.3% of the variance in turnover intentions ($R^2 = .083$, $F(1, 307) = 27.670$, $p = .000$), also showing a statistically significant relationship ($p = .000$). The negative Beta coefficient (Beta = -.288, t = -5.260) indicates that higher engagement with social tactics, such as building strong interpersonal networks and mentoring, is associated with a decrease in turnover intentions. This suggests that fostering social connections and support within the workplace can help reduce the tendency of women engineers considering leaving their jobs.

To determine the most influential predictor of turnover intention, multiple regression analysis was conducted on the three organisational socialisation tactics. The

coefficients table revealed that content tactics were the strongest predictor of turnover intention, with the highest standardised beta coefficient (β = –.271, p = .000), followed by social tactics (β = –.200, p = .002) and context tactics (β = –.142, p = .025). These findings suggest that content tactics represent the most significant factor in reducing turnover intention among women engineers, although social and context tactics also contribute, albeit to a lesser extent. This underscores the importance of providing meaningful work content and fostering social integration within the organisation to enhance retention among women engineers.

H_2: Relationship between job embeddedness and turnover intentions

Two hypotheses were developed to examine the relationship between job embeddedness (i.e., on-the-job embeddedness and off-the-job embeddedness) and turnover intentions among engineers. The analysis of on-the-job embeddedness showed that it explains 20.7% of the variance in turnover intentions (R^2 = .207, F (1, 307) = 80.042, p = .000), indicating a strong and statistically significant relationship. The negative Beta coefficient (Beta = -.455, t = -8.947, p = .000) further suggests that higher levels of on-the-job embeddedness are associated with a lower likelihood of turnover intentions. This finding implies that when engineers are more embedded in their current roles through factors such as social integration, and perceived fit, they are less likely to consider leaving the organisation.

In contrast, off-the-job embeddedness explained 3.2% of the variance in turnover intentions (R^2 = .032, F (1, 307) = 10.224, p = .002), which is a weaker

relationship compared to on-the-job embeddedness. Although still statistically significant, the lower R^2 value indicates that off-the-job embeddedness has a lesser impact on turnover intentions. The negative Beta coefficient (Beta = -.180, t = -3.198, p = .002) suggests that off-the-job embeddedness, which includes personal and external factors such as family and community connections, also plays a role in reducing turnover intentions, but to a lesser extent than on-the-job embeddedness.

Further analysis through multiple regression confirmed that on-the-job embeddedness (Beta = -.471, p = .000) was the strongest predictor of turnover intentions, significantly outpacing off-the-job embeddedness (Beta = -.035, p = .544), which did not emerge as a significant predictor in the regression model. This result underscores the crucial role of work-related factors, such as integration within the organisation, in influencing turnover intentions.

H_3: Relationship between organisational socialisation tactics and job embeddedness

Six hypotheses were developed to explore the relationship between each organisational socialisation tactic (context, content, and social tactics) and job embeddedness (on-the-job embeddedness and off-the-job embeddedness). The results indicate that all three organisational socialisation tactics have a significant relationship with on-the-job embeddedness.

For context tactics, the model summary and ANOVA analysis revealed that context tactics explained 6.4% of the variance in on-the-job embeddedness (R^2 = .064, F (1, 307) = 20.876, p = .000). The statistically significant p-value (p = .000) confirmed

that this relationship was reliable. The Beta coefficient of .252 (t = 4.569) indicates that context tactics significantly influence on-the-job embeddedness. Context tactics, which involve activities such as socialisation processes for employees (e.g., undergoing uniform training, and gaining thorough knowledge of job-related skills), contribute to strengthening employees' connection with their roles. When organisations provide structured socialisation opportunities, such as organised training and procedural familiarisation, employees are better equipped to integrate into their roles. This enhanced integration increases their embeddedness, making them less likely to leave the organisation.

For content tactics, the model summary and ANOVA analysis revealed that content tactics explained 18.5% of the variance in on-the-job embeddedness (R^2 = .185, F (1, 307) = 69.816, p = .000). This significant result indicates that the content of information provided during socialisation plays a crucial role in embedding employees in their roles. Content tactics, which involve activities such as clarifying career progression, defining job responsibilities, and outlining career ladders, help employees understand their potential career trajectories and the steps they need to take to advance within the organisation. The Beta coefficient (Beta = .252, t = 4.569, p = .000) further reinforces that content tactics are statistically significant in predicting on-the-job embeddedness. This indicates that employees who are provided with clear and structured career progression information are more likely to feel embedded within the organisation, which may reduce turnover intentions.

For social tactics, the model summary and ANOVA analysis revealed that social tactics explained 32.2% of the variance in on-the-job embeddedness (R^2 = .322,

F (1, 307) = 145.781, p = .000). This is a strong relationship, indicating that social integration and support play a crucial role in embedding employees within the organisation. Social tactics involve activities such as building supportive relationships with colleagues, receiving guidance from more experienced employees, and understanding one's role through social interactions within the organisation. The significant Beta coefficient (Beta = .567, t = 12.074, p = .000) suggests that the stronger the social connections and support employees experience, the greater their embeddedness in the organisation, reducing their likelihood of leaving. For instance, support from colleagues, as well as mentoring and role modelling by senior employees, contributes to a sense of belonging and clarity within the organisation. Employees who receive personal support and guidance are more likely to feel socially integrated, which directly contributes to their retention.

Three hypotheses were tested to examine the relationship between organisational socialisation tactics and off-the-job embeddedness. The analysis revealed that context tactics did not significantly predict off-the-job embeddedness. The model summary and ANOVA results showed that context tactics explained no variance in off-the-job embeddedness (R^2 = .000, F (1, 307) = .010, p = .921). The regression coefficient analysis further indicated that context tactics are not statistically significant in predicting off-the-job embeddedness (Beta = .006, t = .099, p = .921). This suggests that the socialisation tactics related to the broader work context (e.g., initial orientation processes and general organisational environment) do not appear to influence an individual's attachment to life outside work, such as family, community, and other external factors.

In contrast, content tactics and social tactics showed significant relationships with off-the-job embeddedness. For content tactics, the model summary and ANOVA revealed that content tactics explained 2.4% of the variance in off-the-job embeddedness (R^2 = .024, F (1, 307) = 7.649, p = .006). This indicates that clear communication of career progression, job responsibilities, and career ladders provided during the socialisation process significantly influenced how embedded employees felt in their lives outside work. The positive Beta coefficient (Beta = .156, t = 2.766, p = .006) shows that employees who perceive clear, structured career pathways are more likely to feel embedded not only in their jobs but also in their external lives.

Similarly, social tactics were found to have a stronger impact, explaining 5.4% of the variance in off-the-job embeddedness (R^2 = .054, F (1, 307) = 17.566, p = .000). The regression coefficient analysis (Beta = .233, t = 4.191, p = .000) indicates that social integration through socialisation tactics such as building strong relationships with colleagues and receiving support from senior mentors is a significant factor in increasing off-the-job embeddedness. The results suggest that employees who experience strong social support at work are more likely to have stronger connections to their lives outside of the organisation, which could reduce their likelihood of leaving their job.

The multiple regression analysis further explored which of the organisational socialisation tactics was the most influential predictor of embeddedness. Among the three tactics, social tactics emerged as the most significant predictor of both on-the-job (Beta = .474, p = .000) and off-the-job embeddedness (Beta = .226, p = .001). This highlights the importance of social support and peer relationships in both work and

non-work contexts as key factors that contribute to an employee's overall embeddedness and retention. The summary of the hypotheses tested is presented in Table 6.6. Based on the regression analysis of the direct relationships, only two hypotheses were not supported: *H_1: There is a significant negative relationship between context tactics and turnover intentions,* and *H_9: There is a significant positive relationship between context tactics and off-the-job embeddedness*.

Table 6.6: Summary of Hypotheses Testing of the Direct Relationships

No.	Hypotheses	B	Sig.	Result
H1	H_{1a}: There is a significant negative relationship between context tactics and turnover intentions	.076	.198	Rejected
	H_{1b}: There is a significant negative relationship between content tactics and turnover intentions	-.378	.000	Accepted
	H_{1c}: There is a significant negative relationship between social tactics and turnover intentions	-.512	.000	Accepted
H2	H_{2a}: There is a significant negative relationship between on-job-embeddedness and turnover	-.402	.000	Accepted
	H_{2b}: There is a significant negative relationship between off-job-embeddedness and turnover	-.129	.002	Accepted
H3	H_{3a}: There is a significant positive relationship between context tactics and on-job-embeddedness	.379	.000	Accepted
	H_{3b}: There is a significant positive relationship between content tactics and on-job-embeddedness	.612	.000	Accepted
	H_{3c}: There is a significant positive relationship between social tactics and on-job-embeddedness	1.144	.000	Accepted
	H_{3d}: There is a significant positive relationship between context tactics and off-job-embeddedness	.010	.921	Rejected
	H_{3e}: There is a significant positive relationship between content tactics and off-job-embeddedness	.272	.006	Accepted
	H_{3f}: There is a significant positive relationship between social tactics and off-job-embeddedness	.576	.000	Accepted

6.4.2 Test for Mediation Effect

The model aimed to assess the effects of organisational socialisation tactics—specifically context, content, and social tactics—as independent variables on employee turnover intentions, the dependent variable. Job embeddedness, both on-job and off-the-job, served as mediating variables. Mediation was analysed using path analysis based on the causal steps approach proposed by Baron and Kenny (1986). Structurally, the procedure for testing mediation via structural equation modeling (SEM) parallels the four-step mediation analysis suggested by Baron and Kenny, as discussed by Thakur and Bhatnagar (2017). Considering the research questions aimed at examining the relationships among the variables and their significance levels, regression analysis was deemed sufficient to assess both the direct and indirect relationships among the variables (Gale et al., 2013).

To test the mediation, three regression equations were conducted: regressing the mediator on the independent variable; regressing the dependent variable on the independent variable; and regressing the dependent variable on both the independent variable and the mediator. Separate coefficients for each equation were tested. According to Baron and Kenny (1986), to establish mediation, three conditions must be met: (1) there must be a significant relationship between the independent variable and the mediating variable (path a); (2) there must be a significant relationship between the independent variable and the dependent variable (path c, as shown in Figure 6.4); and (3) there must be a significant relationship between the mediating variable and the dependent variable (path b). Perfect mediation occurs if the independent variable has no effect when the mediator is controlled. If path c' (the direct effect of the independent

variable on the dependent variable, controlling for the mediator) is closer to zero than path c and is non-significant, then complete mediation is established. However, if path c' remains significant, this indicates only partial mediation between the independent variable and the dependent variable.

The regression results were illustrated in a model (see Figure 6.5) that shows the direct and indirect effects of the independent variable on the dependent variable. Information such as the Beta value of the unstandardised coefficient from the coefficient table was incorporated into the single mediator model.

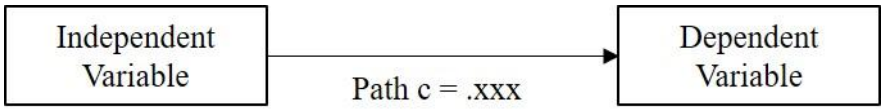

Figure 6.4: Total Effect of an Independent Variable on a Dependent Variable

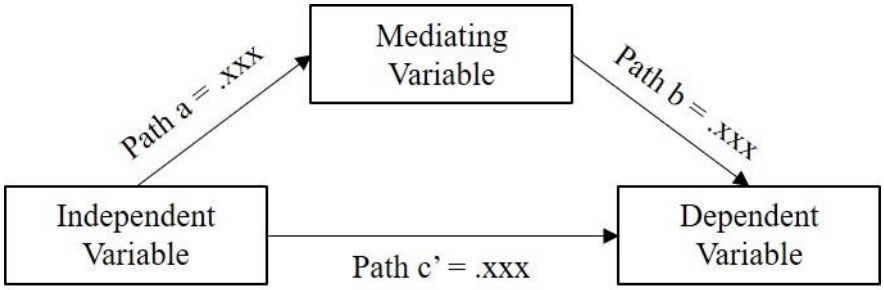

Figure 6.5: Indirect Effect of an Independent Variable on a Dependent Variable

As explained earlier, testing for mediation is only relevant if all direct effects of the study variables are statistically significant. Based on the analysis of direct relationships conducted in the previous section, two hypotheses were not supported: the relationship between context tactics and turnover intentions, and context tactics

and off-the-job embeddedness. Therefore, mediation analysis for on-the-job embeddedness as the mediating variable in the relationship between context tactics and turnover intentions was not conducted. Therefore, H_{4a}, which posited that *on-the-job embeddedness mediates the relationship between context tactics and turnover intentions*, was rejected. Similarly, mediation analysis for off-the-job embeddedness as the mediating variable in the relationship between context tactics and turnover intentions was not conducted. Thus, H_{4d}, which suggested that *off-the-job embeddedness mediates the relationship between context tactics and turnover intentions*, was also rejected.

H_{4b}, which posits that on-the-job embeddedness mediates the relationship between content tactics and turnover intentions, was tested. Regression analyses were conducted, and coefficient tables were produced, as reported in the previous section (for tables, refer to Appendix H). The path coefficients are illustrated in Figure 6.6. The results of the regression analysis confirmed that content tactics were positively and significantly correlated with on-the-job embeddedness, as shown in path a ($B = .612$, $p < .05$), thereby fulfilling the first condition for mediation. In path b, on-the-job embeddedness was found to be negatively and significantly correlated with turnover intentions ($B = -.353$, $p < .05$), supporting the second condition. Furthermore, path c revealed that the direct effect of content tactics on turnover intentions remained significant ($B = -.378$, $p < .05$), meeting the third condition.

When on-the-job embeddedness was included in the model, the regression coefficient for content tactics decreased from -.378 to -.162 (see Table 6.7), but it remained statistically significant ($p < .05$). This suggests that while the direct effect of

content tactics on turnover intentions was still significant, the inclusion of on-the-job embeddedness partially accounted for this relationship. As such, it can be concluded that on-the-job embeddedness partially mediates the relationship between content tactics and turnover intentions. These findings highlight the importance of both organisational socialisation (specifically content tactics) and the embeddedness employees experience within their roles in shaping their decisions to stay or leave.

Table 6.7: Mediation Analysis of On-job Embeddedness in the Relationship Between Content Tactics and Turnover Intentions

Coefficients[a]					
	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	t	Sig.
1 (Constant)	25.365	1.531		16.567	.000
CNTN	-.162	.070	-.129	-2.303	.022
ONJE	-.353	.049	-.399	-7.140	.000

a. Dependent Variable: TOI

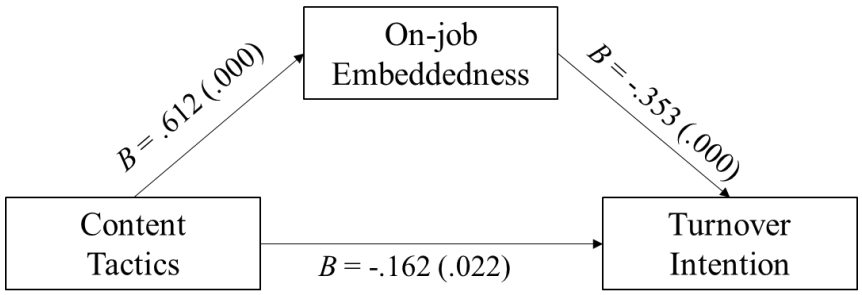

Figure 6.6: Indirect effect of Content Tactics on Turnover Intentions Through On-job Embeddedness

H_{4c}, positing that on-the-job embeddedness mediates the relationship between social tactics and turnover intentions, was tested through regression analyses, with

coefficient tables generated (refer to Appendix H for tables). The results of the path coefficients are depicted in Figure 6.7. In path a, social tactics were positively and significantly correlated with on-the-job embeddedness (B = 1.144, p < .05), meeting the first condition. Path b analysis showed that on-the-job embeddedness was negatively and significantly correlated with turnover intentions (B = -.380, p < .05), supporting the second condition. For path c, the direct effect of social tactics on turnover intentions was significant (B = -.512, p < .05), indicating that social tactics alone can directly influence employees' turnover decisions. However, when on-the-job embeddedness was included in the model, the direct effect of social tactics on turnover intentions decreased from -.380 to -.077, and this effect was no longer statistically significant (p > .05). This reduction in the direct effect, coupled with the non-significance of path c', suggests that on-the-job embeddedness completely mediates the relationship between social tactics and turnover intentions. This indicates that the influence of social tactics on employees' intentions to leave their job is largely explained by the level of embeddedness they experience in their roles.

Table 6.8: Mediation Analysis of On-job Embeddedness in the Relationship Between Social Tactics and Turnover Intentions

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	24.281	1.589		15.278	.000
	SOC	-.077	.110	-.044	-.704	.482
	ONJE	-.380	.055	-.430	-6.961	.000

a. Dependent Variable: TOI

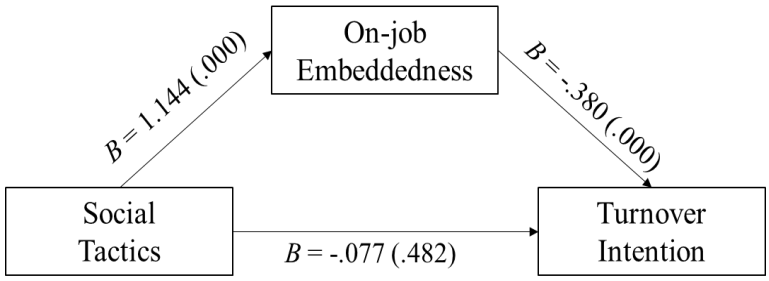

Figure 6.7: Indirect effect of Social Tactics on Turnover Intentions Through On-job Embeddedness

H_{4e} posits that off-the-job embeddedness mediates the relationship between content tactics and turnover intentions. This was tested through regression analysis, and coefficient tables were produced (refer to Appendix H for tables). The results of the path coefficients are depicted in Figure 6.8. In path a, content tactics were positively and significantly correlated with off-the-job embeddedness (B = .272, p < .05), meeting the first condition. Path b analysis showed that off-the-job embeddedness was negatively and significantly correlated with turnover intentions (B = -.098, p < .05), supporting the second condition. For path c, the direct effect of content tactics on turnover intentions was significant (B = -.378, p < .05). This suggests that content tactics themselves have a direct and meaningful influence on reducing turnover intentions. However, when off-the-job embeddedness was included in the model, the regression coefficient for the direct effect of content tactics on turnover intentions was reduced from -.380 to -.351, while still remaining statistically significant (p < .05). This reduction in the direct effect implies that part of the impact of content tactics on turnover intentions is explained by the mediating role of off-the-job embeddedness. Taken together, these results indicate that off-the-job embeddedness partially mediates the relationship between content tactics and turnover intentions. The significant direct

effect of content tactics on turnover intentions suggests that while embeddedness in external life plays a role in reducing turnover, the influence of content tactics is not fully mediated by embeddedness. In other words, while content tactics contribute to employees' external embeddedness, they also directly affect turnover intentions.

Table 6.9: Mediation Analysis of Off-job Embeddedness in the Relationship Between Content Tactics and Turnover Intentions

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	21.277	1.602		13.280	.000
	CNTN	-.351	.069	-.279	-5.115	.000
	OFFJE	-.098	.039	-.136	-2.488	.013

a. Dependent Variable: TOI

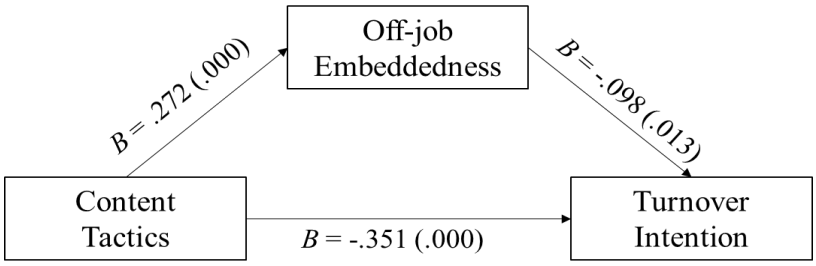

Figure 6.8: Indirect effect of Content Tactics on Turnover Intentions Through Off-job Embeddedness

H_{4f} posits that off-the-job embeddedness mediates the relationship between social tactics and turnover intentions. This was tested through regression analysis, and coefficient tables were produced (refer to Appendix H for tables). The results of the path coefficients are depicted in Figure 6.9. In path a, social tactics were positively and significantly correlated with off-the-job embeddedness (B = .576, p < .05), meeting the first condition. Path b analysis showed that off-the-job embeddedness was

negatively and significantly correlated with turnover intentions (B = -.086, p < .05), supporting the second condition. For path c, the direct effect of social tactics on turnover intentions was significant (B = -.512, p < .05), showing that social tactics directly influence turnover intentions. However, when off-the-job embeddedness was included in the model, the direct effect of social tactics on turnover intentions decreased from -.512 to -.463, yet it remained statistically significant (p < .05). This reduction in the direct effect indicates that off-the-job embeddedness partially mediates the relationship between social tactics and turnover intentions. In other words, while social tactics play a significant role in reducing turnover intentions directly, the positive influence of social tactics is partially explained by the embeddedness employees experience in their personal life. This suggests that the social aspects of organisational socialisation, which enhance employees' social integration, not only have a direct influence on turnover intentions but also exert an indirect influence by increasing employees' embeddedness in their personal and social lives.

Table 6.10: Mediation Analysis of Off-job Embeddedness in the Relationship Between Social Tactics and Turnover Intentions

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	21.496	1.727		12.444	.000
	SOC	-.463	.100	-.260	-4.650	.000
	OFFJE	-.086	.040	-.119	-2.131	.034

a. Dependent Variable: TOI

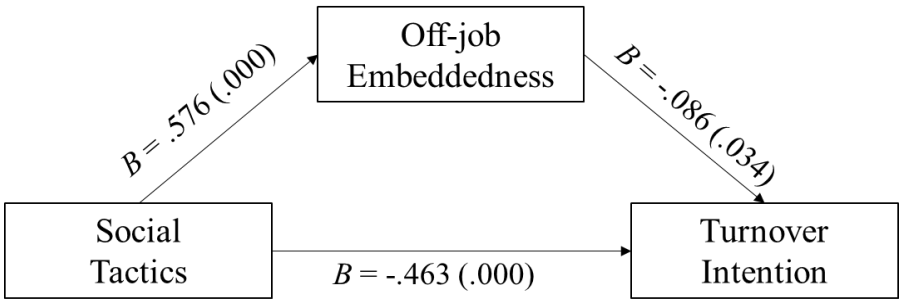

Figure 6.9: Indirect effect of Social Tactics on Turnover Intentions Through Off-job Embeddedness

Mediation analysis was conducted using path analysis. Two hypotheses, H_{4a} and H_{4d}, were not supported due to the absence of mediation. Based on the path analyses for the remaining four hypotheses, only H_{4c} demonstrated full mediation and was supported. The other hypotheses that are H_{4b}, H_{4e} and $H_{4f,}$ showed partial mediation. The summary of the mediation analysis and the results are presented in Table 6.11.

Table 6.11: Summary of Path Coefficient between Variables

Hypotheses	Path a	Path b	Path c	Path c'	Result
H_{4a} CNTX – ONJE – TOI	Significant	Significant	Not Significant	Not Significant	No Mediation
H_{4b} CNTN – ONJE – TOI	Significant	Significant	Significant	Significant	Partial Mediation
H_{4c} SOC – ONJE – TOI	Significant	Significant	Significant	Not Significant	Full Mediation
H_{4d} CNTX – OFFJE – TOI	Not Significant	Significant	Not Significant	Not Significant	No Mediation
H_{4e} CNTN – OFFJE – TOI	Significant	Significant	Significant	Significant	Partial Mediation
H_{4f} SOC – OFFJE – TOI	Significant	Significant	Significant	Significant	Partial Mediation

CNTX = Context Tactics; CNTN = Content Tactics; SOC = Social Tactics; ONJE = On-job Embeddedness; OFFJE = Off-job Embeddedness; TOI = Turnover Intentions

6.4.3 Test for Moderation Effect Using Hierarchical Multiple Regression

The strength of mediated effects in the model may depend on another variable, known as a moderator. To analyse the moderating effect in the model, hierarchical multiple regression was conducted. This method involves adding more variables to the model in "blocks" during the analysis. Certain variables should be statistically controlled to determine whether they can enhance or moderate the strength of the relationship between the predictor and criterion variable. In the current study, the overall measurement model included gender as a moderating variable between job embeddedness constructs and turnover intentions.

To test the moderating effect of gender on the relationship between on-the-job embeddedness and turnover intentions, a hierarchical regression model was conducted. In Step 1, the predictor variable (on-the-job embeddedness) was entered into the regression equation. In Step 2, the moderator variable (gender) was added. In Step 3, the interaction term (gender x on-the-job embeddedness) was included. A significant change in R^2 for the interaction term indicates a significant moderating effect. The results of these analyses are presented in Table 6.12. It has been found that gender (*Beta* = -.049, $p > .05$) did not significantly predict turnover intentions in step two. The R^2 value of .209 associated with this regression model indicates that gender accounts for 20.9% of the variation in the turnover intentions factor, meaning that 79.1% of the variation in turnover intentions cannot be explained by gender alone. The change in R^2, reported as .001 (from .209 to .210), implies that the percentage increase in the variation explained by the addition of the interaction terms of gender and on-the-job embeddedness is only 0.1%. In addition, there was a nonsignificant interaction

between gender and on-the-job embeddedness (*Beta* = -.118, p > .05). These findings imply that, in this context, gender does not play a significant role in influencing how on-the-job embeddedness affects engineers' turnover intentions. This suggests that the impact of on-the-job embeddedness on turnover intentions is consistent across genders, and gender may not be a relevant moderator in this particular relationship.

Table 6.12: Hierarchical Regression Analysis Predicting Turnover Intentions from Gender and On-job Embeddedness

	B	**SE**	***β***	***t***	***p***	***R²***
Step 1						
On-job Embeddedness	-.402	.045	-.455	-8.947	.000	.207
Step 2						
Gender	-.678	.696	-.049	-.973	.331	.209
Step 3						
Gender x On-job Embeddedness	-.045	.101	-.118	-.440	.660	.210

The moderating effect of gender on the relationship between off-the-job embeddedness and turnover intentions was tested using a hierarchical regression model. In Step 1, the predictor variable (off-the-job embeddedness) was entered into the regression equation. In Step 2, the moderator variable (gender) was included. In Step 3, the interaction term (gender x off-the-job embeddedness) was added. A significant change in R^2 for the interaction term would indicate a significant moderating effect. The results of these analyses are presented in Table 6.13. It was found that gender (*Beta* = -.035, p > .05) did not significantly predict turnover intentions in step two. The R^2 value of .033 associated with this regression model indicates that gender accounts for 3.3% of the variation in the turnover intentions factor (i.e., 96.7% of the variation in turnover intentions cannot be explained by gender alone). Similarly, the change in R^2 is reported as .001 (from .033 to .034), which

implies that the addition of the interaction terms of gender and off-the-job embeddedness only increases the variation explained by 0.1%. In addition, there was a nonsignificant interaction between gender and off-the-job embeddedness (*Beta* = -.106, p > .05). The findings imply that the impact of off-the-job embeddedness on turnover intentions is consistent across gender. Gender does not appear to significantly alter how off-the-job embeddedness influences turnover intentions in this study.

Table 6.13: Hierarchical Regression Analysis Predicting Turnover Intentions from Gender and Off-job Embeddedness

	B	**SE**	***B***	***t***	***p***	R^2
Step 1 Off-job Embeddedness	-.129	.040	-.180	-3.198	.002	.032
Step 2 Gender	-.474	.772	-.035	-.614	.540	.033
Step 3 Gender x Off-job Embeddedness	-.037	.096	-.106	-.386	.699	.034

6.5 Summary

This chapter presented the results of the data analysis for the main survey. Data was collected from engineers working in Malaysia and analysed to investigate the relationship between turnover intentions, organisational socialisation, job embeddedness, and gender as the moderator. Prior to the hypothesis testing, regression diagnostics were conducted to confirm that the underlying assumptions were satisfied and to detect any potential issues impacting the model's reliability and validity. Based on the regression diagnostics, all underlying assumptions were met. This confirms that the regression model was appropriate for hypothesis testing and yielded trustworthy findings.

The relationship of study variables was analysed through correlational and regression analyses. From the analysis, all independent variables have a significant negative relationship with turnover intentions except context tactics. Additionally, context tactics have no significant relationship with off-job embeddedness. The mediation effect was examined through path analysis. Overall, job embeddedness mediates the relationship between organisational socialisation tactics and turnover intentions, except in the relationship between context tactics and turnover intentions. The moderation effect of gender was analysed through hierarchical regression analysis, with findings showing that gender did not moderate the relationship between job embeddedness and turnover intentions. Based on the findings of this research, further discussions that integrate the results from both the quantitative analysis (Chapter 6) and qualitative findings (Chapter 7) are presented in Chapter 8, the Discussion chapter.

CHAPTER 7

FOCUS GROUP FINDINGS

7.1 Introduction

In this chapter, the focus shifts towards the analysis of the focus group data in Study 2. In alignment with the research questions of this thesis, an understanding of the driving and restraining forces originating from the broader environment of women engineers is sought, providing an inclusive perspective on the factors shaping their turnover intentions. The findings show that these dynamics extend beyond workplace settings, tapping into the personal, societal, and environmental factors that shape the turnover intentions of women engineers. Employing a carefully planned and detailed approach as outlined in Section 5.5 of the thesis, thematic analysis was conducted to distil key patterns and insights from the rich discussions and participants' contributions.

Based on discussions with 21 women engineers across six focus groups, seven dominant themes related to internal and external organisational forces were identified through a careful and systematic process of thematic analysis. This thorough examination of qualitative data allowed for the identification and exploration of recurring patterns, key insights, and perspectives within the narratives shared by the women engineers. The emergent themes, categorised into internal and external driving forces and internal and external restraining forces, encapsulate a comprehensive understanding of the mixed factors influencing turnover intentions among women

engineers. These themes provide valuable insights into the complexities of their experiences within the professional work environment.

7.2 Thematic Analysis

Driving and restraining forces are explored qualitatively to gain a deeper understanding of turnover intentions in the context of women engineers and how these forces influence their intentions or decisions to leave or stay within an organisation. Driving forces refer to the elements that push a situation towards change or sustain it (i.e., leaving the organisation). Meanwhile, restraining forces are those elements that prevent change by pulling a person away from the intended direction (i.e., remaining in the organisation). Field Theory suggests that individual behaviour is influenced by the interaction between the individual and their life spaces; therefore, the internal (i.e., within the organisation) and external (i.e., outside the organisation) factors that influence turnover intentions are explored (Lewin, 1951). The findings comprise two major themes under internal driving forces, two major themes under internal restraining forces, two major themes under external driving forces, and one major theme under external restraining forces. These themes are described in the next section.

7.3 Internal Driving Forces

Internal driving forces refer to the forces inside an organisation that influence turnover. Under meta theme internal driving forces, there are two dominant themes emerged namely work environment and fairness and equity. These themes capture how workplace conditions, communication patterns, and perceptions of gender equity shape women engineers' experiences and influence their turnover intentions.

7.3.1 Work Environment: Communication Barriers and Challenging Work Conditions

Women engineers commonly face significant challenges related to the work environment in engineering. As a result of these challenges, women engineers often struggle to cope at work and may thinking or decide to leave their jobs or organisations. In this study, the work environment emerged as an overarching theme where (1) communication barriers and (2) challenging work conditions have significantly influenced the attitudes of women engineers towards leaving their jobs. These factors influence how women engineers feel connected, supported, and challenged in their organisations, which in turn influence their decisions to remain or leave.

7.3.1.1 Communication Barriers

Engineering is often associated with a masculine culture, which can pose challenges for women engineers, who may embody attributes more traditionally associated with femininity. This cultural mismatch can make effective communication between women and men in the workplace challenging. Team interactions involve various forms of communication, including verbal elements such as language used, and nonverbal elements such as tone of voice, facial expressions, and gestures. Due to the contrasting attributes between the nature of engineering work and the characteristics of women engineers, communication issues may arise, potentially disrupting relationships among team members. Consequently, a disrupted relationship among team members may reduce the engagement between women engineers and the workplace. Many participants shared about communication barriers in male-dominated engineering workplaces. They noted that the masculine culture often

restricted open dialogue, created tension in teamwork, and left women feeling undervalued. Participant FGD5_G, for example, shared— *"All my mentors were male. Those days, it was very tough for me... maybe because of they hardly to see the women engineers. They don't know how to deal with women".* Others shared how gendered humour and personal remarks were common in informal interactions, as one participant mentioned, *"We also always get comment like…oh… you female engineer…do you have a boyfriend or not…? If you don't have boyfriend, it will be difficult to find one because they always think female engineers are very difficult to handle…bad tampered".* Furthermore, the participants reported experiencing communication difficulties when engaging with male leaders or colleagues, as these interactions were sometimes affected by male ego and a sense of insecurity when women engineers demonstrated superior ideas or competence. Participant FGD4_L, for instance, reflected— *"During that time, in my team, there were 2 females engineers and 10 males engineers. It was very challenging working with them… you know… men… they have their own ego and they refused to share something… they were like… you women… I don't give a damn".* This is also supported by other participants — *"we as women engineers, if we wanted to give opinion, and our boss is a man, it is common I have conflict. Such as if our idea challenges his idea, he will be like insecure…that will make it difficult for us to freely share and throw our idea in our job.* Such remarks illustrate how masculine norms of communication continue to shape the social environment of engineering workplaces. When humour or informal comments reinforce gender stereotypes, women may feel marginalised or excluded from team interactions.

7.3.1.2 Challenging Work Conditions

In addition to communication challenges, women engineers described how the demanding and inflexible nature of engineering work created constant physical and emotional pressure. Challenging working conditions emerged as the second sub-theme under the work environment theme and represent a major issue among women engineers. Most of the participants mentioned about tough job, competitive work culture, work overload, work pressure, unfriendly environment for women, and poor team support in their workplace. Participant FGD3_SH reflected that she experienced long working hours and was expected to work quickly despite the excessive workload— *"I've been in the company for quite a long time. About 6 years. And after a few years I worked there as a QC engineer, my boss expects me to know everything. My job scope will be half on the paperwork and half on the site. So, my boss expects me to do more on both tasks at the same time. I can do both actually but it's quite suffering for me".* Similarly, participant FGD2_E mentioned that *"So I felt pissed off because when they know my capabilities in doing my job, they assign more job to me… so I experienced job overload…".* Another participant added— *"Since R&D is project-based, we often work beyond the standard 8am-5pm schedule. When we develop new models, we may have to stay at the office for a week to complete the project. As a woman engineer, when I first joined Samsung, I was single and had to follow a daily routine of arriving at 8am, leaving the office around 3am, and returning to the office at 8am the next day. If the woman engineer is single, is ok. But if they are married, usually they will quit".* For many women engineers, such conditions conflicted with personal and family responsibilities. The long working hours and irregular schedules

have made the job particularly stressful for women engineers, especially those who are married and have children.

In addition, demanding engineering job assignments were often challenging for women. Most focus group participants emphasised that engineering is an inherently demanding profession. Participant FG6_I recounted that working as a chemical engineer requires her to handle heavy duties, which physically challenge her strength— *"For female engineers, some of them are pregnant and at the same time dealing with chemical, so we can't say no to the job even though we expose to chemical hazards. There is one case that my colleague miscarriage due to the tough job we do. Besides exposing to chemical hazards, we also need to handle heavy drum that contained the sample around 7kg… there are some of my female colleagues requested to change to other department that is not dealing with chemical such as handling documentation or quality assurance".* Participant FGD6_Z also agreed that engineering is particularly challenging for pregnant women— *"And some more, engineering involves a lot of tough job to women especially if the women engineers are pregnant".* In addition to heavy job responsibilities, women engineers working in sectors such as construction are also required to conduct site visits, which may involve climbing and walking on uneven surfaces. Participant FGD6_A commented that such working environments can be particularly hazardous for pregnant women— *"As for me myself, I was an engineer where I needed to go to construction site. That is a big challenge for women engineers. As a woman especially if we're married, we may be pregnant, so, it is dangerous to go to site…to climb".* These accounts demonstrate how work overload and unrealistic expectations of productivity contribute to fatigue and reduce motivation, especially for those balancing family responsibilities.

The challenging work environment may also stem from settings that are unfriendly to women. Many women engineers shared various experiences of working in environments that were not welcoming to them as women. Through their stories, it was evident that there were instances where male counterparts did not warmly welcome new women engineers. For instance, participant FGD4_L recounted— *"I still remember the HR people bring me and introduced to the team…" hey guys, this is new engineer…". And the guys were like… "huh… hi…". Just like that! And not even look at me properly. So, I was thought, I'm gonna die here…working with those arrogant engineers".* Participant FGD5_G had a different experience working on an offshore platform where facilities for women were very limited— *"…at offshore, certain platform have no toilet too… even I witnessed a guy just peed straight to the sea. To me, it was really tough when I decided to be the petroleum engineer, knowing the environment in those days was not friendly to female at all".*

Lack of support from team members make the situation even worst. When support from team members is absent, it can burden women engineers and leave them feeling helpless. Participant FGD5_C shared her story— *"I still remember when I deliver my second child, I was in labour, my architect contacted me and asked…are you on maternity leave already... because we have pile of works and problem to solve…it was like…you have to work until you unable to work. That's the culture".* This is particularly pronounced in the engineering field, where engineers are often required to learn independently. For example, participant FGD2_F shared that she frequently had to explore her work on her own through on-the-job training— *"…when I was an engineer, everything is on our own… we need to explore by ourselves, we need to ask senior, and it was more on the on-the job training. It was tough when we*

have to learn by ourselves. It is even worse when we have unsupportive colleagues, so it's difficult for me to fit in with the team as well as in performing my job". These experiences of the women engineers demonstrate that challenging work conditions and the absence of team support can heighten stress and diminish motivation among women engineers. Physically demanding environments, long hours, and inflexible schedules often clash with personal responsibilities, while limited organisational empathy compounds the strain. When these pressures persist without adequate support, women may begin to question their long-term fit with the job and organisation, leading to higher turnover intentions.

7.3.2 Fairness and Equity: Gender Inequity

In the previous theme, women engineers shared extensively about the various challenges they experienced in the workplace. Many of these challenges are linked to the treatment they received as women in their organisations, particularly concerning fairness and equity. From the focus group discussions, fairness and equity emerged as a key theme, particularly in relation to gender inequity. This theme explores how perceptions of fairness and equity influence women engineers' sense of inclusion and opportunity within their organisations. It highlights how gender bias in task assignment, promotion, and evaluation processes can impact their motivation, career satisfaction, and ultimately their decision to quit or remain in the job and organisation.

In a male-dominated workplace such as engineering, women engineers often experience unfair or unequal treatment based solely on their gender. All focus groups shared similar observations regarding the perceptions of male counterparts towards women's competence. Male colleagues and supervisors were frequently sceptical

about women engineers' ability to perform their work effectively. For instance, Participant FGD1_H recounted: *"My supervisor is a field engineer, and he once said…are you serious about working in the oil and gas industry? It seems unsuitable for women"*. FGD3_SH shared — *"I was working as a site engineer before this…and then they have a perception like it is difficult for woman to work at height… working late hours… and even in my case, about one year I still heard that the males' colleagues talking about my ability…"*. Two participants in the second focus group experienced similar situations where their male colleagues were sceptical of their ability to work, basing their judgements on the women's appearance and attire. For instance, *"As a young woman engineer, the men always have the perception that…oh… you only know how to dress up… you women definitely refuse to work under the sun... They are actually very common when they see me"* — FGD2_A. These accounts reveal how deep-rooted stereotypes continue to shape perceptions of women's competence and suitability for engineering work. When credibility is questioned based on gender or appearance rather than ability, it can undermine women's confidence and sense of belonging in their teams. Over time, such bias may lead to disengagement or a desire to seek alternative work environments where their skills are more valued.

Furthermore, gender bias remains a prevalent issue within the engineering profession, manifesting through prejudicial treatment towards women. Such bias often leads to unequal opportunities and disparities in how male and female engineers are treated in the workplace. Stories from the women engineers in these focus group discussions highlighted that their male counterparts often received better opportunities for work assignments and career development simply because they are men. For

instance, Participant FGD5_A shared that it is difficult for women engineers to be promoted to higher levels because they are women, and there are many issues associated with this. When asked about why it is difficult for women engineers to reach top management levels, FGD5_A said: "*They just don't want women to handle it. It's not because of women cannot do the work professionally… women engineers are capable… in terms of qualification sometimes we are better. But it is more to the networking… you know…like in the case of flood… for instance… during flood, you have to go there… wake up early in the morning and come to the site earlier… so thinking of to deal with a female director… in the middle of night…3am in the morning…5am in the morning you know…so the director must be on site".* This example demonstrates how organisational norms and assumptions about gender roles shape workplace expectations. Requirements related to mobility, fieldwork, or physical presence often reinforce a male standard of availability, disadvantaging women who may face additional personal or safety considerations.

In addition, because the engineering field is predominantly male-dominated, women engineers often receive fewer opportunities for work assignments, such as international postings. Participant FGD1_N explained that one of the reasons is logistical in nature, particularly accommodation arrangements when women engineers are expected to join male colleagues on international assignments. She elaborated — *"…when it comes to projects that require engineers to go overseas, such as to the USA or other Intel branches outside of Malaysia, male engineers tend to get better opportunities. This is because it's easier for Intel to manage the logistics of the trip with male engineers, who aren't pregnant and don't require long maternity leave. Additionally, when booking hotels for these work assignments, it's often easier to*

reserve rooms for men only. Unfortunately, there have been many cases like this". This example illustrates how organisational practices, although often justified as logistical or practical decisions, can unintentionally reinforce gender inequality in career opportunities. When women engineers are systematically excluded from job assignments, their career growth and visibility become limited. Over time, such unequal access can lead to feelings of frustration, reduced organisational commitment, and increased intentions to leave the organisation in search of fairer opportunities.

Furthermore, participant FGD1_I added that women engineers who are married and pregnant are often not considered the best candidates for hiring in her organisation because of their marital status and having children. She elaborated — *"…in engineering related works, they will trying not to hire women… and even during interview, they will ask whether the candidate is married or not... whether the candidate having a plan to get married in near future… whether they have kids or not…".* Such hiring practices reflect persistent gender bias embedded in organisational decision-making, where women are often evaluated based on marital or parental status rather than professional competence. Consequently, these practices reinforce structural inequities that limit women's interest in engineering job and discourage their long-term retention in the engineering workforce.

7.4 External Driving Forces

External driving forces refer to factors outside of the organisation that drive women engineers to quit their jobs or leave their organisations. Under the meta-theme of external driving forces, two dominant themes emerged: family influence and career development plans. These themes capture how personal responsibilities, social

expectations, and individual aspirations interact with workplace demands, shaping women engineers' decisions about whether to remain in or leave their organisations.

7.4.1 Family Influence

As expected, family-related factors were identified as dominant codes frequently mentioned by many women engineers in the focus group. Whether married or single, with or without children, family plays a significant role in influencing the career decisions of women engineers. The focus group discussions revealed two sub-themes concerning the influence of family, namely work–family conflict and commuting distance. This theme captures how family responsibilities and domestic expectations intersect with women's professional roles, influencing their capacity to sustain careers in a particular organisation.

Past research on turnover among women engineers has indicated that work-family conflict is a common factor. Work–family conflict may arise from various circumstances that make it difficult for women engineers to balance professional and family responsibilities. This was echoed in the focus group discussions, where the conflict between managing work and personal life was frequently mentioned. Women engineers across all focus groups noted that commitment to family was the main reason for quitting their job or organisation. Participant FGD4_N commented that usually women engineers leave the job because of non-organisational reasons rather than organisational ones. She shared, *"I would say family matter carry greater weightage in influencing the career decisions of women engineers. I'd like to share a story of my friend, she's married, has children, and went through long distance marriage with husband. And the husband can't sacrifice his job to travel from his office in Johor and*

home in Negeri Sembilan, which is very far. So, she has no choice…she needs to quit her job so that she can stay together with her husband and children…". This example reflects how family commitments can take precedence over professional aspirations. Such situations illustrate the influence of traditional family structures, where women are often expected to prioritise familial unity over individual career advancement. Consequently, these pressures contribute to higher turnover among married women engineers.

In addition, the lack of family time has been mentioned by most participants in the focus groups, reflecting the issue of work–family conflict that arises when long working hours and heavy job demands interfere with personal and family responsibilities. Women engineers often faced heavy workloads and irregular working hours, which contributed to difficulties in maintaining work–life balance. Some women engineers mentioned that they are unable to spend sufficient time with their families due to long working hours and late arrivals at home. Participant FGD2_N shared, *"I work in KL but my house is in Cyberjaya, by the time I reach home, it's 7.30pm already. Around 9.30pm is time to go to bed. So, I just have about 2 hours to spend with my son. So, I don't think I have work-life balance because I feel so exhausted".* Such accounts highlight the physical and emotional exhaustion that stems from the demanding nature of engineering work. When work schedules encroach on personal and family time, women experience strain that diminishes both well-being and job satisfaction. Over time, this imbalance may lead to withdrawal intentions or a search for roles offering greater flexibility.

Participant FGD6_A shared a similar situation, where long work hours led to late homecomings and sometimes arguments with her spouse due to these hours— *"We don't really have a work-life balance. Some more, when the husband expects us to come back from work earlier like a normal working hour, it creates arguments between husband and wife…consequently, the wife will fill stressful. End up, the female engineer stress at work, and come back home, stress more".* The issue extends beyond married women, single women also expressed concern about the need for work-life balance, even though they don't have family commitments at home. Participant FGD3_SH mentioned, *"So, women engineers tend to move to other company because they would like to find company that can offer break on the weekend so that they have more time for their family. Like me myself, I don't have my own family yet, but I am still looking for a company that can offer work-life balance".* This highlights that the desire for balance is not limited to married women, even single engineers seek workplaces that respect personal time. The findings suggest that work–life balance is a universal concern among women engineers, reflecting a growing awareness of well-being as a key component of sustainable careers.

In addition, strong family attachment and the prioritisation of family responsibilities significantly influence women engineers' career decisions. For instance, participant FGD1_I, who has been with her current company for about ten years and values the workplace benefits and close relationships with colleagues, expressed that she would still be willing to give up these advantages if her husband were relocated. She stated, *"Yes, I will leave Samsung and follow him".* The reason married women are willing to quit their jobs and follow their husbands is the difficulty of managing their children alone when their husbands are not living with them.

Participant FGD2_N shared her story about leaving her great job in Cyberjaya to stay with her husband, who was far from her hometown. She described the challenges of raising her child alone while her husband was away— "*Family needs to be together. But our situation is difficult because my husband is working in public sector, so he cannot easily to transfer job location and find other job due to bond… my husband got a job in Dungun. At that point of time, I got promoted but I have to resign because I wanted to follow him and also, I just delivered my first born so I need extra support from my husband"*. Such examples illustrate the deep cultural expectation that women adjust their professional trajectories to accommodate family needs. These decisions are often framed as personal choices but are shaped by structural norms around gender and caregiving. For many, relocation or resignation becomes a necessary response to maintain family stability.

This challenge is particularly evident in the local cultural context, where women are expected to bear the main responsibility for childcare. In such circumstances, long-distance marriages make it even more difficult for women to manage these duties without adequate support from their husbands. Participant FGD5_C highlighted the societal expectation that women are still stereotypically seen as the "primary caretaker" of the family— *"I think society still have this kind of conception…that female still the primary caretaker of the family…so it's not easy to say to your husband…hey you take leave lah today…"*. This sentiment is consistent across groups, with many women engineers preferring to leave their job and organisation once they get married and have children. This perception reinforces a gendered division of labour where caregiving is still viewed as women's primary role. The persistence of this social norm constrains women's professional flexibility and

reinforces organisational assumptions that women are less available or committed to long-term engineering careers.

Due to the perception that women bear greater responsibility for childcare, many women tend to seek workplaces located closer to their homes to make it easier to manage family and household responsibilities. Evidence from the focus group discussions suggests that commuting distance between the workplace and home is a significant concern for women engineers, particularly those living with their families. When women engineers live far from their workplace, they are required to spend more time commuting. For those who have children, this situation is compounded as they need to manage childcare responsibilities in the morning, such as taking their children to school or kindergarten, then navigating through heavy traffic to reach the office. Often, differing work schedules with their spouses further exacerbate the situation. The majority of the focus group discussed how the distance between home and office adds significant pressure to manage their time effectively for both work and family. Participant FGD2_N reported feeling exhausted by the daily travel between her home in Cyberjaya and her workplace in KL, as well as managing her child in the morning. She explained her decision to leave her previous job — *"I live in Cyberjaya and I work in KL. So in term of travelling, and child even though I only have 1 child, but I still feel tired. So I decide this is not right for me, so I try to find job that is near to my house (KL), alhamdulillah I got it, so that's why I resign".* The impact of commuting distance further underscores how family responsibilities intersect with women engineers' job in a particular organisation. Long travel times and logistical challenges amplify fatigue and reduce time with family, leading many women engineers to seek employment closer to home.

Consistently, participant FGD3_ND acknowledged that location is often a reason married women engineers leave their jobs to live nearer to their families—*"Some people may quit a particular company because of location such as near with family. As for me, I don't have other commitments, I don't actually think about the location between my workplace and where I live. My hometown is in Terengganu, but yet I come here to work in Penang. In my current situation now, I don't mind if I need to relocate to somewhere else. But if I get married, the location where I live, and my workplace is the key thing I need to consider".* Collectively, these findings reveal that family influence remains a powerful determinant of women engineers' career decisions. Factors such as organisational demands, commuting distance, and family expectations highlights how personal and cultural factors jointly shape turnover intentions among women engineers.

7.4.2 Lifetime Career Progression

The second dominant theme that emerged from the focus group discussions relates to the factors influencing women engineers' long-term career advancement and personal growth. While earlier themes focused on barriers such as workplace challenges and family responsibilities, this theme highlights how women engineers navigate opportunities and make career decisions across different stages of their professional lives. For many participants, career progression was not viewed solely in terms of upward movement within an organisation but also in relation to personal fulfilment and career sustainability over time, beyond their current organisation. Their reflections reveal that women engineers often engage in continuous evaluation of their career paths, weighing the benefits of remaining in the engineering field against

alternative opportunities that may offer better balance, recognition, or growth. Two sub-themes emerged under lifetime career progression: job alternatives and advancing career and personal development. These themes illustrates that women engineers' career decisions are not merely shaped by dissatisfaction but also by active evaluation of opportunities for growth, flexibility, and balance.

7.4.2.1 Job alternatives

Turnover researchers have identified perceived job alternatives as a common attitudinal factor influencing employee turnover, including among professionals such as engineers. Traditionally, the view on turnover suggests that when individuals are dissatisfied with their job, they will search for alternatives in the external labour market, evaluate their options, and make a decision to quit. From the focus group discussions conducted, it was evident that women engineers are looking for job alternatives not only within engineering sectors but are also considering career pivots to explore new careers that align with their interests. Two codes were identified from the discussions: career pivots and external engineering job alternatives.

Over time, women engineers may reconsider their commitment to the engineering profession and explore alternative career paths beyond technical roles in an organisation. This shift is often influenced by accumulated work-related stress and emotional strain arising from the demanding nature of engineering work. Opportunities outside the organisation such as roles in education, consultancy, entrepreneurship, or community-based work are often perceived as more flexible, rewarding, and compatible with their lifestyle aspirations. In this way, external opportunities become an appealing avenue for women engineers who wish to continue

using their skills in meaningful ways while escaping the pressures and rigid structures commonly experienced in traditional engineering environments. Most of the women engineers in the focus groups mentioned an interest in non-engineering jobs and opportunities to change to career paths not related to engineering. Participant FGD6_I, for instance, shared her story about the stress of her engineering job, which led her to develop post-traumatic stress disorder (PTSD). As she gained more knowledge about mental health, she began to pay more attention to her own. Over time, she lost interest in engineering and discovered a passion for working more directly with people. She recounted: *"…it was stressful to work in R&D department in the company. So, now I don't have any courage to work as an engineer anymore because I would like to take care of my mental health. When I quit, I was so stressed and met a doctor. The doctor confirmed that I got PTSD (Post-traumatic stress disorder). I have started to learn and gain more knowledge on mental health. After I quit, I tried to explore new things, join different fields, not related to engineering. And now, I focus more on "people" … and I even more interested to do research related to people. So, now I have a part time job teaching science and math and write a lot"*.

Participant FGD2_E quit her engineering job and became a tutor, a role she finds more fulfilling and financially rewarding due to its flexibility and the increased personal time it affords her. She loves teaching and appreciates the more relaxed schedule. She shared: *"One thing that makes me have stronger reason to quit is becoming tutor. I love teaching. At that point in time, I was doing a part time job as a tutor. I think it is a worth job because I got RM60 for an hour teaching secondary school students. When I compare it with my permanent job, I earned more as a private tutor as compared to my monthly salary as an engineer. And I enjoy my time as a*

private tutor… I can plan my time when I can be a private tutor… I can have my coffee time…". Such transitions highlight how women engineers may view job mobility as a means of restoring autonomy and work–life balance. The appeal of non-engineering roles lies not in rejection of the profession, but in the opportunity to regain control over time and well-being, that are factors that traditional engineering roles may not always accommodate.

In addition, several women engineers decided to leave their jobs in search of better remuneration. While the engineering profession is typically linked to competitive pay, a noticeable gender pay gap persists, with women engineers earning less than their male colleagues. In response, women engineers consider looking for other engineering jobs that can offer better salaries. Participant FGD4_N recounted her experience: *"…after graduating, I worked in Johor because my family is in Johor. It was not too long… because I got a new job with better salary for a fresh graduate in KL. So, I moved to KL*". When discussing the reasons for leaving during a group session, another engineer mentioned she left her previous company because she found a better opportunity and salary elsewhere— *"First is opportunity outside of the company…such as better opportunity in other company… and salary…woman engineers will start to find other company… better salary… like me myself, when I change the company, I realised that it is a good experience for me to learn new things… because to me, when I knew many things about my job in the previous company, I feel like why not I try new company… be beginner again and do all over again… gain new experience…".* These examples illustrate how turnover intentions can also be motivated by practical considerations such as pay equity and professional

growth. For many women engineers, changing organisations offers a chance to access fairer remuneration and a more supportive learning environment.

When a woman engineer changes her job to a different organisation, it may provide new experiences and opportunities to develop her career. Joining a new company can expose her to different work cultures, management styles, and engineering practices. Changing jobs can be a strategy to expand and extend a woman engineer's skill set, network, and career prospects. Hence, many women engineers quit when they see alternative opportunities in the external labour market that can help them grow professionally. For instance, participant FGD5_C expressed her desire to pursue new opportunities to enhance her skills and further develop her career— *"I wanted to learn new things. If I can add new skills, maybe I can jump out this job… not entirely out…but seeking advance opportunity for myself to climb higher".* This indicates that turnover decisions among women engineers may be proactive rather than reactive, reflecting their sense of agency, ambition, and pursuit of continuous development. Women who perceive limited progression opportunities within their current organisations are likely to explore external alternatives to sustain long-term career growth.

7.4.2.2 Advancing career and personal development

Advancing a career is not only achieved by moving from one company to another, but also through continuing education. For women engineers, pursuing further studies or professional training serves as a strategic way to enhance skills, expand job opportunities, and support personal growth. All focus groups discussed the preference of women engineers to enhance their technical knowledge and skills by pursuing

higher education or obtaining professional certifications, which is crucial for their career development. For instance, participant FGD6_Z reflected on her decision to pursue a master's degree in engineering to enhance her knowledge and skills— *"I want to further my master's degree in engineering because I would like to improve my knowledge and develop my skills. Once I got the scholarship, I quit the job and did full-fulltime study after 6 months working in the company"*. Participant FGD6_Z reflected on her decision to pursue a master's degree in engineering to enhance her knowledge and skills— *"I have many friends doing part time study and they said it is a good thing actually to back to school and relearn… such as doing PhD…and then change their career being a lecturer or become a trainer"*.

In addition to enhancing technical knowledge through formal education, women engineers are also keen on improving their skills by obtaining professional certifications. Participant FGD3_SH highlighted her initial steps towards certification— *"At first, we have to register as an engineer in the BEM and IEM. And there are a few courses that we need to attend. I'm looking forward to registering the professional programme for engineering"*. Participant FGD2_A, who is currently working as a senior engineer in the government sector, has aspirations beyond her current role and is planning for an academic career— *"…being an engineer or a teacher in the government sector is not my goal. That's the reason why I want to pursue my PhD, and I also want to get my PE, professional engineer title. It is because I want to become a lecturer"*.

Pursuing further studies is another pathway through which some women engineers manage their career progression and personal well-being. For many,

continuing their education serves not only as an avenue for professional development but also as a temporary reprieve from the demanding pace of engineering work. Participant FGD5_H explained that her decision to pursue a PhD was partly motivated by the desire to temporarily distance herself from professional responsibilities, while also aiming to strengthen her technical expertise through advanced academic study—*"During my services in the government agency, I got scholarship to further my master's degree and PhD and I took paid study leave to further the postgrad studies. But the main reason I took the study leave is because I want to take a break from my work*". Participant FGD2_N also have the same thought – *"When I had high workload, I'm thinking to quit my job and further study in PhD. I was thinking that's the only way out for me from the hectic work".*

7.5 Internal Restraining Forces

Internal restraining forces refer to the elements within an organisation that encourage women engineers to remain with their current employer. Under the meta-theme of internal restraining forces, two major themes have emerged: availability of work-related support and human resource management. These elements reflect how internal practices and support systems can strengthen women engineers' attachment to their organisation and reduce their intentions to leave.

7.5.1 Availability of Work-related Supports

Employment support is crucial for the well-being, work satisfaction, job performance, and overall organisational success of women engineers. Work-related support frequently discussed in the focus group discussions, highlighting various types

of support. Sub-themes that emerged cover several categories of support, such as helpful team members, a supportive community of women, helpful leaders, trust from leaders, and employer supports.

7.5.1.1 Supportive Team

Team support plays a vital role in enabling women engineers to adapt effectively to the demands of engineering work, particularly during career transitions or when assuming new responsibilities. Supportive leaders and colleagues can ease the adjustment process by providing guidance, technical assistance, and emotional encouragement. Such collaboration fosters confidence, enhances learning, and contributes to a more inclusive work environment where women engineers feel valued and capable of performing their roles. All focus groups concurred that having a supportive team is crucial for helping women engineers adapt to the demands of engineering work and perform effectively, especially for those new to the workplace. For instance, participant FGD6_A described how her team members provided different forms of support to help her master her tasks, illustrating the crucial role that teamwork plays in easing the transition process and contributing to professional success— *"I also have a helpful team. Even though I was a new engineer in the company and I'm not young either, but they still give great supports to me… provide guidance, and they didn't burden me with tough job, but they taught me well…especially on the calculation part…develop new software".* When women receive clear guidance and collegial backup, especially during transitions, they report higher task confidence and a stronger sense of fit with the organisation, which reduces thoughts of leaving.

In other instances, participants from FGD5, FGD4, and FGD3 shared their experiences of receiving help and support from their team members, who were attentive and responsive when they faced challenging tasks or were new to certain aspects of their jobs. Participant FGD5_A, for instance, reflected when her team members were particularly protective during a challenging scenario — *"I had this one experience when we do the Bakun project… we have to walk in the Bakun jungle to reach the site…and stay in the Sarawak Long House. The surveyor quite worries about me and my technical assistant who is a female too because we're women. He was thinking about our safety in the jungle and the long house. Even though we didn't request safety protection, the surveyor really took care of us. I'd say the male team members were so protective towards us".* Similarly, participant FGD3_SH experienced considerable support when she joined a new company. Initially uncertain about the new working environment, her team members made a point to check on her periodically to ensure she was adjusting well to her new role. She shared how this support helped ease her transition— "*I also received a good support from the team members because I still new there… they provide training… once a while they check on me if I'm ok to adapt with the new job".*

7.5.1.2 Community of Women

In addition to the supportive team, the availability of a supportive women's community is particularly crucial for women engineers. Such a community offers various benefits, including emotional support, career development advice, and the opportunity to build confidence through interactions with other successful women engineers in the organisation. Most women engineers in the focus groups agreed that having a women's community at their workplace could reduce feelings of isolation and

inspire them to pursue ambitious projects. When asked about the kind of support that women engineers should receive, participant FGD6_Z quickly responded, *"Community. I think for women engineers to be successful in this career we need to have a supportive community that will support them. For instance, I think women engineers need women mentor that can give advice in what are dos and don'ts at the workplace…career. And the mentor should be the senior women engineers that can share her knowledge and advice on how she can remain longer in her career and how to be a successful engineer".*

The presence of a substantial women engineers' community within a company can significantly enrich the work experience for women engineers, often leading to better work benefits tailored to their needs. For instance, FGD5_C highlighted the positive impact of having many women engineers in her company: *"My current company is quite interesting to me because we are structural consultant engineers. In my company, there're quite a lot of female engineers. It's quite different with other organisation I would say…so they are quite good in the sense that they offer flexible working hours… because they know as a female engineer, we are mothers too".* Similarly, participant FGD4_Q discussed how a balanced or sizeable women's community within the company can help minimise gender bias in employment treatment— *"When I worked as the design engineer in the first company, I didn't see any bias in terms of the treatment between men and women… maybe because of my team members were all women. So, I was happy working in that team".* These examples underscore the importance of a strong women's community within engineering firms. Such communities not only provide essential support and advice but also create a work environment where women engineers can confidently grow their

careers. This sense of belonging and equality can lead to greater job satisfaction and retention among women in engineering fields.

7.5.1.3 Supportive Leader

An effective and efficient team requires a supportive leader. Regardless of gender, a supportive leader can make a significant positive impact on the growth of women engineers in the workplace. From the focus group discussions, two codes were identified to categorise the various kinds of support from leaders in a particular team: helpful leader and leader's trust. A leader is considered helpful when they are always available to provide guidance and advice to women engineers. Participant FGD1_H expressed her gratitude for having a supportive leader in her team who trusted her capabilities— *"The best thing is that my bosses and senior team members are supportive. Even though they did not provide formal training, the senior member is helpful if I have any doubts about my job".*

For women engineers working in fields commonly dominated by males, it can be challenging to remain competitive among male colleagues and secure opportunities to contribute to assignments or projects. However, when leaders trust women engineers to perform engineering tasks, it can develop their confidence and motivation, consequently promoting a healthy and productive work environment. Women engineers have shared stories about their experiences with leaders who trusted their capabilities in handling specific projects. Participant FGD2_A, who was an engineer and held a top position in her company, shared that she was assigned to handle a project with complex issues due to her credibility and competencies. She said: *"I've been sent to Pengerang, Johor to become the project director of Pengerang Integrated Complex*

(PIC). At first, I'm unsure with that appointment because there were eight names suggested, and I was the only female. I asked my Director General why she wanted me to go there. I even don't know where Pengerang is. Then she said, "you have to go there because you are the problem solver". So, it is important when the boss trusts you, and they think you are the only solution".

Women engineers are often seen as diligent, meticulous, and precise. They possess qualities that lead to their being trusted by leaders to handle complex and tedious jobs. Participant FGD5_C recounted that her boss prefers to assign women engineers to lead teams or handle certain projects because they are considered hardworking, careful, and conscientious in their work— *"In my company, my boss prefers to hire female engineer as a leader. According to him, female engineer is more particular and diligent…and female engineer actually don't really change the job so often"*. Leaders who empower women engineers to make decisions also enhance job satisfaction. Participant FGD4_N shared, "*…my site engineer was a man… and I felt grateful because he still respects me as a woman engineer. He empowered me to make decisions in my job, but I still tolerate discussing and accept his advice too"*. Consistent with this, Participant FGD4_L shared her experience of being trained by her leader to become a skilled engineer and to confront engineering challenges with confidence— *"I would say I was so lucky I got a great lead project manager… even though he was like throw me in the ocean… let me survive by myself…but that was how I learned. The way he treated me made me what I am today… and the way my boss trained me, you throw me anywhere, I can survive. He was a great boss"*. Empowerment and fair challenge, paired with support, are the keys drivers of

retention. Women who see a path to growth with respectful autonomy are more likely to have a greater fit with an organisation.

Most of the women engineers also acknowledged that having a women leader or mentor could significantly impact their career positively. For instance, participant FGD1_I explained, *"My company provides formal training for us during the early stage of my career as an engineer. The leader is so supportive in giving guidance. We have many leaders, but my immediate leader is a female engineer too".* In the same focus group, participant FGD6_Z elaborated on the advantages of female mentors, stating that a female mentor is better than a male mentor because they are more understanding and might have the same experiences as a woman and a mother, which allows them to give practical advice to other women engineers — *"I think women engineers need women mentor that can give advice in what are dos and don'ts at the workplace…career. And the mentor should be the senior women engineers that can share her knowledge and advice on how she can remain longer in her career and how to be a successful engineer. As compared to male engineer, their situation and challenge is different as compared to woman. As we know, women we have huge responsibilities to take care of the child…so male mentor maybe they have less understanding on this".*

Even though many women engineers consistently recognise the unique role women leaders play in their work performance and career growth, it is also acknowledged that male leaders can be equally supportive and treat women engineers with fairness. For instance, participant FGD4_Q reflected that: *"When I moved to another company…a multinational company… I developed more skills. In this MNC*

company, I experienced different task…like before this, I design building… but in the second company I need to design the underground structure. My supervisor was very supportive… he kept track my progress". Another participant also shared a similar experience, noting that her male boss treated her with respect and did not differentiate in terms of treatment between women and men.

In addition to support from teams and leaders, organisational support plays a crucial role in enabling women engineers to perform their work effectively and in shaping their intentions to remain with a particular organisation. Such support includes the provision of technical assistance, educational opportunities, and training and development programmes. Participant FGD4_Q reflected on how supervisory guidance, along with organisational assistance such as the provision of technical resources, helped her design underground structures more efficiently— *"When I moved to another company…a multinational company… I developed more skills. In this MNC company, I experienced different task…like before this, I design building… but in the second company I need to design the underground structure. My supervisor was very supportive… he kept track my progress… and I also worked in supportive work environment… such as the technical supports…".* Furthermore, some groups mentioned that employer support, including encouragement and sponsorship for further studies, motivates them to advance their careers and enhance their knowledge and skills. For example, Participant FGD1_H shared how her employer is supportive and encourages her to pursue further studies and register with the Board of Engineers Malaysia (BEM) and the Institute of Engineers Malaysia (IEM)— *"The management of my company also requires engineers to register with BEM and IEM, and they are willing to pay any fees required to become members".*

7.5.2 Human Resource Management

In relation to the organisational support mentioned earlier, human resource management practices emerged as an important element that helps to prevent women engineers from leaving their jobs and organisations. Past research has revealed that human resource management has a significant impact on the intentions to quit or remain in an organisation among employees. It is not surprising that, from the focus group discussions, human resource management initiatives have been frequently mentioned by the women engineers. Most women engineers acknowledge the importance of skill development opportunities and believe these can influence their intentions to remain longer in a particular workplace. While many women engineers in the focus groups discussed the challenges they face in the engineering field, which can sometimes foster intense competition for advancement, the availability of development programmes provides them with hope for enhancing their skills and knowledge. As knowledge and technology continually evolve, training and development such as on-the-job training and formal training programmes are critically important for engineers to avoid skills obsolescence and aid in the career development of women engineers. Through on-the-job training, women engineers have the opportunity to learn by doing, with minimal assistance from senior engineers, team members, and leaders.

Several focus groups agreed that they received sufficient training, especially on-the-job training. Participant FGD6_A stated: *"Anything I need in performing my job, they will help me. And I also went through on-job training since I was new as an engineer. And the company also bring in a senior engineer from Singapore just to*

teach me related to my works… such as the calculation, mechanical concept design etc". Consistent with her, participant FGD1_I shared that through on-the-job training, she learnt effectively and was able to develop "survival skills" that allowed her to operate independently without relying too much on team members and senior staff. She said— *"Usually, we have on-the-job training, during which the most important skill we should have been "survival skills". This means we cannot rely too much on senior staff, and even teammates may be too busy with their own work to help and guide us. Therefore, we need to be independent and learn our job on our own. Typically, the on-the-job training for new staff lasts for about 3-4 months, during which senior staff will supervise and guide the newcomers. After 3-4 months, they will let us learn and work independently".* These experiences illustrate that when organisations provide practical on-the-job learning and guidance, women engineers are more likely to perceive their employers as supportive, which enhances satisfaction and lowers the likelihood of leaving.

Furthermore, in response to the high demands placed on employees in balancing work and family responsibilities, especially among married women, flexible work arrangements or policies designed to enhance workplace flexibility have become a significant concern among women engineers. Based on the key elements mentioned by various women engineers during the discussions, three codes have been identified and categorised under human resource policy and practices. Flexible work arrangements have been identified as a common factor that restrains women engineers from leaving their positions. Flexible working hours provide relief for women engineers, allowing them to manage their daily schedules more comfortably. Participant FGD5_C noted, *"It's quite different with other organisation I would*

say…so they are quite good in the sense that they offer flexible working hours… because they know as a female engineer, we are mothers too…". Flexible work arrangements have become a major concern among women with family commitments. Women engineers who also shoulder family responsibilities value the opportunity to work in organisations that allow remote or flexible working options. Participant FGD1_N expressed that joining her current company was the best career decision she has ever made. She now enjoys normal working hours and, notably, the flexibility to work from home. She stated: *"...in IT, the environment is not too complex like in manufacturing. And the working hours also is normal, like 8am – 5pm. Unless if we need to standby due to any IT issue arise. I would stay in the current company because I can work from home. Even if my husband has to be transferred to other company, I still can do my own work at home. So, I would say, I will not leave for other offer because I afraid if the nature of work in the other company will require me to be in the office frequently. I don't like that".* These accounts highlight that flexibility functions as an organisational retention tool by reducing work–family strain and increasing perceived autonomy. For women engineers managing both professional and domestic responsibilities, flexible organisational policies convey understanding and respect, which in turn encourage them to remain with the organisation.

Another important factor impacting women engineers' employment decisions is the rewards and benefits they receive. Rewards refer to the financial and non-financial benefits that women engineers receive in exchange for their work contributions. Not only is equity a concern, but equality is equally important. These rewards can serve as motivators for women engineers to continue advancing in their careers and remain engaged in their field. A few participants expressed concerns about

their compensation that may influence her intentions to stay in the organisation or leaving. Participant FGD3_SH recounted that she would remain with her current company primarily because of the good salary— *"If I have the opportunity to leave the current company, I have to remain here maybe because of the salary…".*

Similarly, participant FGD1_N also values the excellent benefits she receives at her current company. She simply said— *"Benefits! I must say that I'm happy now because I'm working in airline industry, so I got the benefits such as cheaper flight tickets, got more leave because it is GLC".* In male-dominated fields like engineering, pay equity and equality are significant concerns for women engineers. Despite reports of unequal pay and the existence of a gender pay gap in the engineering field, participant FGD2_A expressed satisfaction with the rewards she receives at her current company, perceiving them as fair and equitable— *"the salary between men and women engineers are not too different, just about equal because we always being treated the same way…".*

7.6 External Restraining Forces

External restraining forces refer to the factors outside of an organisation that influence women engineers to remain in their jobs or with their organisations. Under the meta-theme of external restraining forces, only one dominant theme emerged that is social connection. This theme primarily focuses on the importance of living close to family members, which has been frequently mentioned by the women engineers as a significant factor in their decision to stay with their current employer.

7.6.1 Social Connection

Past research has revealed that social connections play a critical role in influencing employee turnover or retention. For women engineers, living in a community they know well, such as with family members or close friends, or living nearby, is crucial as they perceive this proximity as a form of support. In Malaysia's collectivist culture, proximity to family members is often equated with security, belonging, and emotional balance. For women engineers, who frequently juggle multiple roles, this closeness provides an informal support network that reduces stress and strengthens their resolve to remain in their current positions.

Many women engineers in the focus group discussions emphasised the importance of living together with or near family members, such as husbands (for married women) and parents (for single women). The location of the workplace, particularly its proximity to family, can strongly influence women engineers' career choices. Working near their hometown often provides emotional comfort and family support, whereas relocating to distant areas may create tension or hesitation due to safety concerns and unfamiliar environments. Participant FGD4_Q for example shared her experience related to family proximity and its impact— *"...when I worked in Sabah, my family was very happy because my workplace was near the hometown…. after about 2 years I worked in Sabah, then, I thought that I needed to move somewhere…. So, I asked my parents, can I work in KL, at that point of time I can see their unhappy face and disagree… you know… they must be worried about me… living in KL is different… with all the risks and challenges…".* This account highlights that family proximity not only offers emotional comfort but also alleviates safety and

adjustment concerns. Working far from familiar surroundings can intensify feelings of vulnerability, which makes local employment or positions near home more appealing and sustainable.

Similarly, participant FGD1_N shared that her work locations allow her to maintain close family ties, balance personal responsibilities, and enjoy an improved quality of life— *"I would stay in the current company because I can work from home. I can work anywhere; I can be with my family and it is easier for me to meet my parents in my hometown in Terengganu"*. Flexible work options complement these external supports by allowing women to maintain family closeness while fulfilling professional duties. Such arrangements create a balance between occupational commitment and social belonging, reinforcing attachment to the current organisation and reducing the tendency to quit the job.

Meanwhile, unmarried women engineers also take into account their living arrangements, often choosing to reside with friends or colleagues when working for a particular company. For women engineers unfamiliar with a new location, living with friends is a factor they consider when deciding whether to continue working in the organisation. For instance, participant FGD4_N shared that she preferred to live with friends she knew when she moved to Kuala Lumpur for work, far from her hometown— *"I will stay with my course mate when I did bachelor's degree… we planned together to find rent house together…"*. Participant FGD3_ND also mentioned the importance of communal living with colleagues as a factor in her decision to remain with her current company— *"we're living in the same area… I live together with FGD3_H and FGD3_NB, so we always catch up together with the other*

colleagues as well… even with the managerial levels…". She further commented on her residential ties and their impact on her career choices— "*I have to remain here maybe because of the location. My hometown is in Kedah. I purchased a property here… not too far from my company. If I had a better opportunity somewhere else far from Penang or Kedah, I don't think I will relocate myself".* These reflections demonstrate how friendship networks, shared housing, and property ownership create physical and social ties that bind women engineers to their current locations. The cost (e.g., financial, emotional, and social) of breaking these ties acts as a restraining force against turnover, even when alternative jobs are available elsewhere.

7.7 Individual Factor

Field Theory explains the interaction between an individual and their total field or environment. The career progression of women engineers in the engineering sector depends on how they interact with various forces in their lives, whether these forces originate within the organisation or outside it. Ultimately, individuals have control over the decisions they make and how they respond to these forces. The previous sections discussed various internal and external factors that influence women engineers either to leave or to remain in their organisations. Based on the focus group discussions, individual factors also play an important role in shaping how women engineers respond to these driving and restraining forces.

7.7.1 Individual Factors in Relation to the Driving Forces of Turnover

Past research has consistently found a relationship between self-efficacy and withdrawal intentions. Based on the focus group discussions, women engineers are

concerned about how male engineers perceive their capabilities, which can affect their confidence to perform at work. Participant FGD1_H recounted her experience, stating: "*I found my groove in engineering consultancy and software consulting. But yeah, it's still a male-dominated industry. In my current team, there are only two other female engineers out of thirteen people. I felt quite awkward and uncertain about how men would perceive my ability to perform work in the field of mechanical engineering"*. The high-pressure nature of engineering work sometimes leads women engineers to feel a poor fit with their roles and to experience a lack of confidence in performing their job responsibilities. Participant FGD1_N explained, "*My target at that point of time is to leave manufacturing and join IT because of the pressure in manufacturing works. The pressure in terms of competitiveness, high workload, I think I'm not doing good in manufacturing related works…I see the other colleagues are doing good"*.

The perceptions held by male counterparts and leaders regarding women engineers' capabilities contributed to lower self-efficacy, particularly when such perceptions were linked to women's limited work experience and perceived lack of knowledge. Participant FGD4_Q mentioned her plan to quit and pursue further studies at a higher level because she felt that her technical knowledge was still limited. She explained— *"And another reason I moved to KL [to further study] is because when I was in Sabah, I was a design engineer. But, at that point of time, I feel like my knowledge is still not enough in designing… I feel less confident with what I'm doing… my senior also having lesser confidence towards my design"*.

7.7.2 Individual Factors in Relation to the Restraining Forces of Turnover

Individual factors play an important role in shaping how women engineers respond to the forces that influence their decision from leave and organisation. Personal attitudes, confidence levels, and coping abilities determine how they manage challenges within the workplace and navigate the demands of the engineering profession. From the focus group discussions that have been conducted, it is evident that women engineers are struggling to adapt and be accepted in this sector. Individual factors, such as dedication, professionalism, an agentic personality, and the initiative to improve, play a significant role in influencing women engineers to remain in their jobs or organisations. One of the participants in the discussions mentioned that interest in engineering—whether technical or office-based—also depends on the personality of the women engineers. FGD2_F said: *"For women who are active and tough women, they love the field works, construction sites, tough jobs that require site visit. But to me, women love the technical knowledge… they love to study… so this type of female engineers love engineering in office base".* The agentic personality may drive women engineers to adapt to work challenges and persist in their jobs. Participant FGD1_F viewed the scepticism of male engineers towards her abilities as a challenge and was determined to prove that their perceptions were wrong. She expressed— *"My supervisor is a field engineer, and he once said "Are you serious about working in the oil and gas industry? It seems unsuitable for women." However, I took his comment as a challenge, and despite feeling scared at first, I was determined to do my best".*

Women engineers often experience difficulties climbing the career ladder and finding opportunities to grow their skills. As a result, they take the initiative to learn

and improve their knowledge with the hope that it will aid their career growth. Participant FGD5_G shared her experience of enduring a challenging journey as a woman engineer in the oil and gas industry. After spending around 20 years in the industry, she struggled to establish herself as one of the most competent engineers. To remain competitive among her male counterparts, she took the initiative to learn and equip herself with the skills and competencies required to match the capabilities of male engineers. She reflected on her story: *"…they see female cannot work with them… cannot do tough works like lift up heavy things…but I said to them, no. I can do the works with them. So, the thing that changed my mentality after that was, I needed to find my niche. I have my own shortcoming…for example…I'm not as strong as man… I cannot lift up heavy things…connect the tools… so I have to find my niche that make them need me. So, I turned the whole situation. So, I learnt new skills…different engineering skills that will make them turnaround and ask me…like about the new technology… testing tools…so I can be very specialised in that area…become the specialist that they need".*

There are women engineers who have considered leaving their positions, but their dedication to their work restrains them from doing so. This situation is observed in participant FGD4_L where she had thoughts of withdrawal many times yet remained with the company due to a sense of responsibility to complete her tasks. She explained," *It's not because of I'm being loyal to the company…but when I was thought about to jump to other company, I have a lot of projects at hand…I felt pity to the team if I leave them. I'm not sure whether if this is the personality of female or this is me individually. But it is common among my female friends, when they about to quit,*

they also have the same feeling…pity the team if we quit…so give us some time…that's ok…we proceed with the projects".

7.8 Summary

This chapter presented the findings based on inductive thematic analysis to address the research questions related to women engineers' intentions to leave their job or organisation, including the factors influencing this decision, the driving and restraining forces from the broader work environment impacting their turnover intentions, and how these forces ultimately influence their decision to stay or leave. The force field model by Lewin (1951) provides an organising framework for the research, positing that an individual's behaviour, such as turnover intentions, is influenced by the interaction between internal factors within the organisation and external factors outside the organisation. Accordingly, seven dominant themes were generated, as illustrated in Figure 7.1.

The themes are grouped into four meta-themes that are internal driving forces, external driving forces, internal restraining forces and external restraining forces that influence women engineers' turnover intentions, capture the Lewin's idea on the dynamic interaction between individual and his/her environment. From the analysis, work environment, fairness and equity, availability of work-related supports and human resource management practices are found to be the major themes related to organisational-related forces of turnover intentions. Meanwhile, family influence, lifetime career progression and social connection are found to be the major themes on non-organisational related forces of turnover intentions.

The findings recognise the importance of considering gender dynamics within the socialisation at the workplace, highlighting that communication barriers and challenging work conditions are integral aspects that disproportionately affect women in engineering. Women engineers in the focus groups emphasised that workplace challenges impose mental and physical pressure on them. Factors such as excessive workloads, a competitive work culture, and demanding engineering roles contribute to the challenging nature of their work. The unwelcoming work environment for women complicates their adaptation to and acceptance of a work culture traditionally more favourable to men. This contributes to a deeper understanding of how women engineers experience and navigate organisational socialisation in a male-dominated work environment.

Moreover, gender-segregated workplace like engineering expose women engineers to various forms of discrimination, biases, and disparities. Women engineers disclosed that they are subjected to unfair treatment, particularly concerning promotions to higher positions, opportunities to practice or participate in assignments, and the chance to contribute to problem-solving. They also expressed that male team members often harbour scepticism about their abilities to contribute to technical engineering tasks. These encounters undermine their confidence, stifle their professional growth, and erode their sense of belonging in the field.

Despite the work challenges experienced by women engineers that influence them to think about quitting their job, enough employment support to women engineers would restrain them from leaving. Work related supports have been mentioned many times in the focus group discussions such as helpful team members,

supportive women community, helpful leader, trust from leader and employer supports. Furthermore, a strong human resource management policy and practices in managing the workforce could influence the woman engineers to remain longer in their company. For instance, women engineers in the focus groups appreciate the sufficient training and development programs, as well as opportunities for advancement for all employees. These signalling the organisations concern about their professional progress and wellbeing, showing a commitment to investing in their development.

The focus group discussions also reveal that the women engineers' intentions or decisions to quit the job or organisation are multifaceted. Turnover motivations are influenced by a range of factors extending beyond the confines of the workplace, including family obligations that commonly associated with women. Factors such as spouse relocation and long-distance marriage are among others that frequently mentioned by women engineers as the factors that influence them to think about leaving their current job. Moreover, due to nature of engineering works that require engineers to work longer hours, it created conflict to women to balance between works and family commitments especially by women engineers who are married. Furthermore, most of the women engineers described they experienced work pressure due to heavy workload, thus create tensions to them in having work-life balance.

The findings also reveal that women engineers may consider with whom they are staying with and the distance of home and office. Women engineers discussed living together with family members, such as spouses, children, and parents, as an important factor influencing their choice of workplace. Some single women engineers mentioned that family is not a significant consideration in deciding where they should

work. Therefore, they have the freedom to work wherever they prefer, as long as it is close to their workplace and allows them to stay with friends. The women engineers in the focus groups discussed how the presence of family and friends who share the same community with them serves as a factor that dissuades them from leaving their current organisation and seeking employment elsewhere.

Last but not least, the lifetime career progression is another major theme emerged under external driving forces of turnover among women engineers. Women engineers in the focus groups highlighted how their intentions to pursue different career paths and the availability of external engineering job opportunities impact their decision to leave their current engineering positions. Women engineers in the focus group discussions also expressed their desire to advance their careers, often contemplating further education or professional development as they seek a better alignment with their career aspirations. The participation in professional institution such as Board of Engineers Malaysia (BEM) and Institute of Engineers Malaysia (IEM) open a lot more opportunities to advance their career professionally.

The above data showed the complexity of driving and restraining forces that may influence women engineers to consider about quitting their current job. It is clear that women engineers encounter diverse challenges from internal and external of organisation that shape their intentions to quit an organisation (or stay). In the next chapter, a more detailed discussion integrating the findings of datasets from Study 1 and Study 2 are presented. This integration allows for the comparison of patterns and relationships identified in both datasets, highlighting areas of convergence and

divergence. Through this approach, a deeper and more comprehensive understanding of the factors influencing turnover intentions among women engineers is achieved.

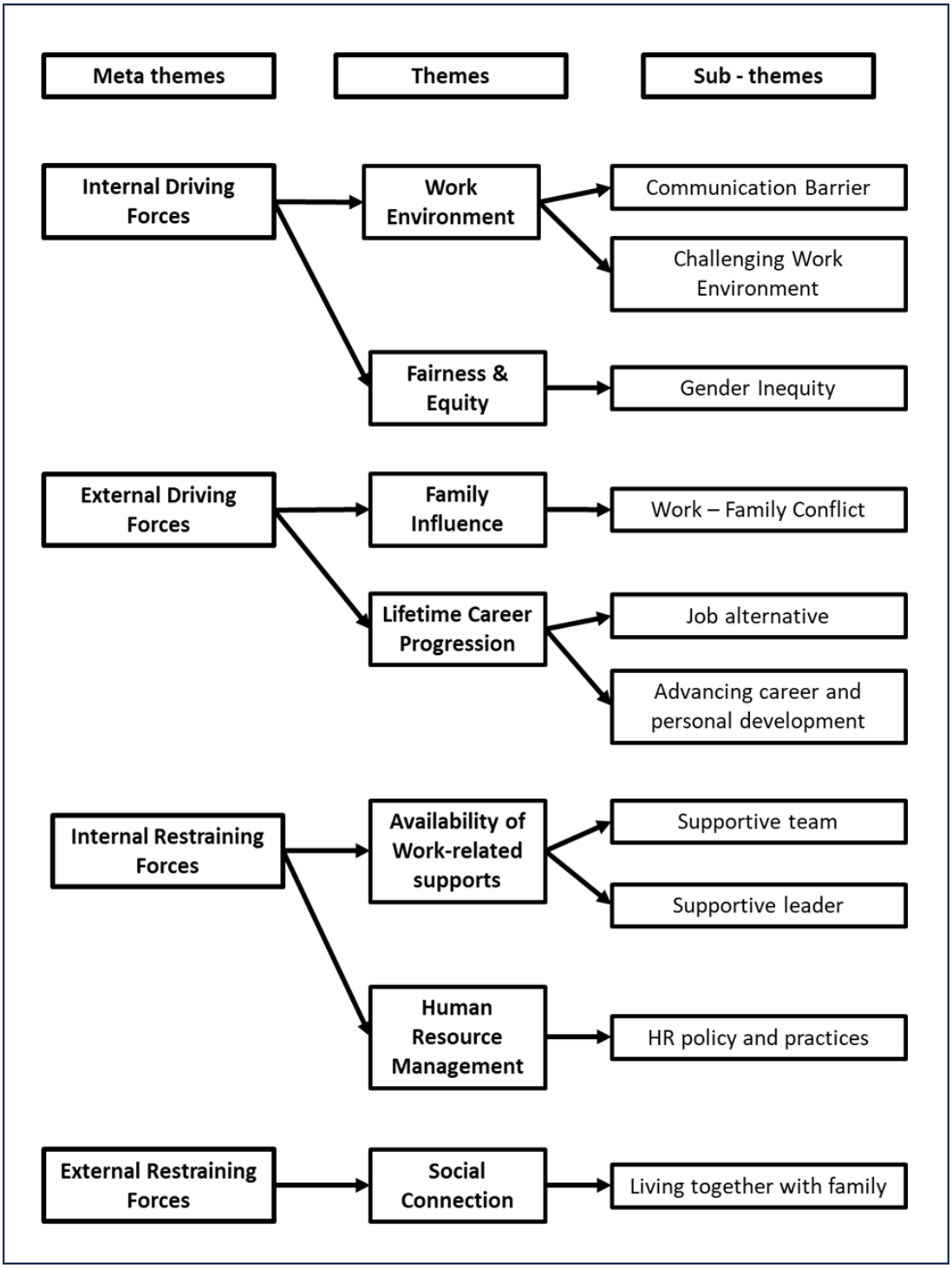

Figure 7.1: Sub-themes, and Themes Used in Thematic Analysis

CHAPTER 8

DISCUSSION

8.1 Introduction

The current research aims to understand the factors of turnover intentions from the perspective of women engineers. It investigates the relationship between turnover intentions and its predictors and explores the driving and restraining forces that influence turnover from the life aspects of women engineers beyond the organisational context. This study addresses these concerns by utilising Lewin's Field Theory (refer Section 2.4) and Role Theory (refer Section 2.5) to provide a better understanding of turnover intentions factors both empirically, within the context of engineering professions in Malaysia. It also aims to broaden the theoretical comprehension of this concept within the context of women engineers.

As explained in Chapter 5 of this thesis, the research adopted a convergent mixed methods design, in which the integration of the quantitative and qualitative strands took place after the analysis of both data sets. The current chapter draws on the findings from the two data sets in Study 1 (survey) and Study 2 (focus group discussions), as reported in Chapters 6 and 7, respectively. The quantitative and qualitative results are synthesised in this chapter to identify corroborating and corresponding evidence, thereby providing a more comprehensive understanding of turnover intentions among women engineers. This synthesis allows for a deeper exploration of the research questions central to this study:

1. What factors influence women engineers' intentions to leave their organisation?
2. What are the driving and restraining forces, derived from the broader work environment, that impact women engineers' turnover intentions?
3. How do these driving and restraining forces influence turnover decisions?

To address Research Question 1, five hypotheses were developed and tested quantitatively. These hypotheses were derived from the literature on organisational socialisation, job embeddedness, and turnover intentions, and were intended to examine the relationships among these constructs. Research Questions 2 and 3 were explored through the qualitative strand, which investigated the broader contextual, organisational, and external forces influencing turnover decisions. The integration of both data sets in this chapter provides a holistic understanding of how individual, organisational, and external factors interact to shape women engineers' turnover intentions.

8.2 Summary of Key Findings

In the previous two chapters, the findings from the quantitative (Study 1) and qualitative analyses (Study 2) were presented. The findings from Study 1 reveal several important factors influencing turnover intentions among engineers. First, organisational socialisation was found to have varying effects on turnover intentions. Context tactics, such as job-related training and organisational orientation, had a minimal impact, explaining only 0.5% of the variance in turnover intentions. In contrast, both content tactics, such as clarity regarding career progression and job responsibilities, and social tactics, like interpersonal support and mentoring, were

found to significantly reduce turnover intentions. Specifically, content tactics explained 9% of the variance, while social tactics accounted for 8.3%. Multiple regression analysis further confirmed that content tactics were the strongest predictor of turnover intentions, followed by social tactics, while context tactics had the weakest effect.

Regarding job embeddedness, on-the-job embeddedness (e.g., integration within the organisation and fit with the role) emerged as a strong predictor, explaining 20.7% of the variance in turnover intentions. Higher on-the-job embeddedness was significantly associated with lower turnover intentions. On the other hand, off-the-job embeddedness (e.g., personal and family connections outside work) had a weaker relationship with turnover intentions, explaining only 3.2% of the variance. On-the-job embeddedness was identified as the most significant predictor of turnover intentions, with off-the-job embeddedness playing a much smaller role.

Additionally, on-the-job embeddedness partially mediated the relationship between both content tactics and social tactics with turnover intentions, suggesting that while content and social tactics were directly related to turnover intentions, their effect was partially explained through job embeddedness. Off-the-job embeddedness also mediated the relationship between content tactics and turnover intentions, but its impact was weaker. Finally, gender did not moderate the relationship between either on-the-job embeddedness or off-the-job embeddedness and turnover intentions. The analysis indicated that gender did not significantly influence the effect of job embeddedness on turnover intentions, with gender accounting for only a small portion

of the variance in turnover intentions. These findings suggest that the impact of job embeddedness on turnover intentions is consistent across genders in this context.

In Study 2, the focus group discussions reveal several critical factors influencing the turnover intentions of women engineers, both within and beyond the organisational context. These findings align with the force field model by Lewin (1951), where turnover intentions are shaped by a dynamic interaction between internal and external forces.

Within the organisational context, work environment and fairness and equity were major themes. Women engineers discussed the mental and physical pressure imposed by excessive workloads, a competitive work culture, and demanding roles. Many participants highlighted the challenges of adapting to a work environment traditionally more favourable to men, which created a sense of exclusion and hindered their professional growth. Gender biases and discrimination were also prevalent, with women engineers reporting unfair treatment, especially regarding promotions, career advancement opportunities, and the opportunity to contribute to technical tasks. These experiences contributed to a lack of confidence and a diminished sense of belonging within the workplace.

Despite these challenges, work-related support played a significant role in counteracting turnover intentions. Positive support from colleagues, leaders, and the organisation was frequently mentioned as a factor that helped women engineers feel valued and retained in their roles. Additionally, a strong human resource management policy that emphasises training, development, and career progression opportunities was seen as crucial in motivating women engineers to remain in the organisation.

Beyond the organisational context, family obligations emerged as a key external factor influencing turnover intentions. Many women engineers expressed the conflict between their professional and family responsibilities, particularly around work-life balance. Factors like spouse relocation, long-distance marriages, and family commitments, including childcare, were often cited as reasons for contemplating leaving their jobs. In particular, married women engineers found it challenging to balance the long working hours required by their roles with family commitments.

The presence of family and social networks also played a significant role in women engineers' decisions to stay with or leave their organisation. Those who lived with family members or had strong social ties in their community were less likely to consider leaving their jobs. In contrast, single women engineers reported that family considerations were not as influential in their decision-making, and they were more flexible in choosing jobs that suited their personal preferences.

Lastly, the theme of lifetime career progression emerged as a key external driving force. Women engineers expressed a desire for career advancement and often considered pursuing further education or professional development opportunities. Participation in professional institutions, such as the Board of Engineers Malaysia (BEM) and the Institute of Engineers Malaysia (IEM), was seen as a means to advance their careers and open up new opportunities in the engineering field.

The findings are consistent with previous research, while also offering important new insights into the context of the engineering profession in Malaysia. The study highlights the role of both internal and external factors, such as organisational support, gender biases, and family responsibilities, in shaping turnover intentions

among women engineers. Based on the findings, this thesis strengthens its quantitative findings with additional qualitative insights, offer a complete understanding on the factors of turnover intentions. The main findings from both the quantitative and qualitative data are discussed in more detail in the subsequent sections. This integration follows the principles of a convergent research design (Creswell & Plano Clark, 2011), where both sets of data are combined to present a clearer and more complete understanding of the factors influencing turnover intentions among women engineers. A summary of the discussion is provided in subheading 8.7.

8.3 Turnover Intentions: The Influence of Organisational Socialisation and Job Embeddedness

It was hypothesised in Hypothesis 1 (H_1) that organisational socialisation tactics are related to turnover intentions, while Hypothesis 2 (H_2) examined the relationship between job embeddedness and turnover intentions. In addition, Hypothesis 3 (H_3) tested the relationship between organisational socialisation tactics and job embeddedness, and Hypothesis 4 (H_4) proposed that job embeddedness mediates the relationship between organisational socialisation tactics and turnover intentions. The findings have shown that certain forms of socialisation were evident, and these played a role in influencing both job embeddedness and turnover intentions.

The findings indicate that content tactics have a significant relationship with on-job embeddedness and turnover intentions. This suggests that content-related socialisation tactics are influential in how employees perceive their roles and their fit within the organisation. Specifically, as content-related socialisation tactics increase, such as having a clear career progression, well-defined job assignments, and

transparent communication about career advancement opportunities, turnover intentions tend to decrease. Learning materials, information exchange, and a conducive learning community are crucial for engineers (Dong et al., 2022), especially given the technical nature of engineering work, which demands diligence, agility, and sharp thinking in performing hands-on tasks. Managerial support plays a vital role in helping engineers master their tasks by providing access to learning materials and development opportunities that strengthen their technical skills and knowledge essential for performing their job responsibilities. When engineers are provided with those necessary resources, it not only improves role clarity (Wingerter & Ahn, 2020), but also improved quality of relationships with coworkers (Lapalme et al., 2017) and enhances retention (Fernando et al., 2018). In other words, if there is limited information regarding the tasks, and the criteria for success within the organisation, it creates uncertainty about what is required and how to achieve it. This uncertainty can lead to decreased attachment to both the job and the organisation, as well as a decline in job interest and the consideration of withdrawal (Peltokorpi et al., 2022; Korte et al., 2019).

Additionally, effective content tactics such as clear learning stages can facilitate engineers in acquiring knowledge progressively. This is important to establish value congruence with their job and organisation (Allen, 2006), helps them gain a better understanding of their work, increase job satisfaction, thereby reducing failure, frustration, and uncertainty (Dong et al., 2022; Wingerter & Ahn, 2020; Korte et al., 2019) which in turn reducing the propensity to quit the job (Bauer et al., 2025; Cable & Parsons, 2001). Effective content tactics not only provide essential job-related information but also foster an inclusive and supportive environment that mitigates

communication barriers. For women engineers who are the minority in her organisation, inadequate and ineffective content tactics will make the communication barriers more pronounced, leading to increased stress, feelings of isolation, and ultimately higher turnover intentions (Bigliardi et al., 2005; Bauer et al., 2007; Wingerter & Ahn, 2020). This situation is further explained by women engineers in the qualitative data in Study 2. Women engineers in the focus group discussions revealed that limited knowledge about their work diminished their interest in continuing in their roles, with some choosing to quit. In a situation where a supervisor tracks the progress of women engineers by providing sufficient support in terms of job-related resources and information, women engineers gain more knowledge, develop additional skills in their roles and pursuing growth opportunities. Scholars have highlighted that communication, and instructional abilities are critically important in STEM disciplines, particularly in engineering, as they enable engineers to share knowledge, collaborate effectively, and contribute meaningfully to the scientific community (Martin et al., 2018).

Furthermore, this thesis also examined the relationship between social tactics, on-job embeddedness, and turnover intentions. The findings are consistent with the proposed hypotheses. This indicates that stronger social connections and support experienced by engineers are associated with greater organisational embeddedness and a reduction in turnover intentions. These findings correspond with previous studies such as Korte et al. (2015) and Wingerter and Ahn (2020) who found that organisational social aspect led to workgroup integration, learning growth, job satisfaction and retention among the engineers. Extensive studies suggest that social tactics have a greater impact on various proximal (e.g., work integration) and distal

(e.g., intentions to quit) socialisation outcomes (Bauer et al., 2025; Peltokorpi et al., 2022; Korte al. al., 2019). In some cases, social tactics were having the strongest effect on person-organisation fit perception as compared to the other socialisation tactics (Kowtha, 2008; Cable and Parsons, 2001). Social tactics explains the social aspects of socialisation such as assigning role models for employees and the interpersonal relationship with the recent insiders (Jones, 1986). Social tactics involve activities such as building supportive relationships with colleagues, receiving guidance from more experienced employees, and understanding one's role through social interactions within the organisation. These activities play a crucial role in embedding employees within the organisation and foster integration among the organisational community (Peltokorpi et al., 2022). The integration occurs when employees undergo organisational socialisation processes initiated by the employer, which enables them to facilitate the adaptation of organisational values and develop the necessary skills for better job performance (Bauer et al., 2025). Through social tactics such as building supportive relationships with colleagues, receiving guidance from more experienced employees, and understanding one's role through social interactions within the organisation, employees become attached to their work environment and enhancing their sense of belonging (Wilson & VanAntwerp, 2021).

Scholars agree that through interactions with insiders facilitated by employer and individual's proactive behaviour, employees tend to be more familiar with their working environment and develop greater attachment. Liu et al. (2024) in their meta-analysis on socialisation programs and retention commented that when organisations use effective socialisation tactics, individual employee is less likely to experience

uncertainty about their roles, feel more at ease in the work environment and increase retention.

Informants' perspectives in focus group discussions also converged with and extended the survey results by showing that social aspects of socialisation, such as assigning role models to women engineers and establishing interpersonal relationships with recent insiders, can be associated with greater attachment in an organisation. This was supported by past research, which suggests that tactics such as offering role models within the organisation, engaging in activities that foster a sense of belonging to the collective group, and ensuring a comprehensive process of acculturation can help individual employees integrate into a work group or organisation (Peltokorpi et al., 2022). In the context of socialisation at work, interaction among colleagues is particularly important in negotiating personal identity (Cable et al., 2013) and improving social acceptance (Bauer et al., 2007). Given that engineering works require engineers to truly understand and be clear about their work roles and expectations, social supports are essential in improving self-efficacy, workplace integration (Kowtha, 2008), fit between an individual and organisation, and sequentially influences turnover decisions (Bauer et al., 2025; Wingerter & Ahn, 2020; Cable & Parsons, 2001; Oh, 2018).

Moreover, women engineers in the focus group discussions commented that they feel comfortable and attached to the organisation if there is a strong women's community within the organisation. They emphasised the importance of such a community in male-dominated workplaces such as engineering, noting that it can provide emotional support, mentorship, and advocacy. Having a community of fellow

women colleagues can offer a safe space to discuss and address work-related challenges. This finding is consistent with the literature, which Visweswaran (2014) argued that a women's community within the workplace can create a positive and enjoyable atmosphere where women can connect and cultivate relationships that assist them in navigating the challenges of both their professional and personal lives. She also mentioned that creating a women's society, whether within the workplace or outside the organisation, has improved job satisfaction and expanded networking opportunities by offering women a chance to build a supportive community. Women engineers are even more likely to remain in the workplace longer than their male counterparts when they are part of supportive communities that enhance their sense of belonging and counter feelings of isolation (Bernstein, 2011).

In addition to the social aspects of socialisation tactics, the focus group discussions reveal that validation and recognition of women engineers' identity by others within the organisation is critical for women in adjusting to the male-dominated workplace. This aligns with the concept of investiture tactics (i.e., social tactics), which emphasise the acceptance of an individual's existing identity and personal characteristics during the socialisation process. When organisational insiders affirm an employees' identity, it can enhance their confidence at work and foster stronger peer relationships (Song et al., 2024). Moreover, the successful adjustment through social acceptance would contribute to better job satisfaction, commitment, and retention (Bauer et al., 2007). In the engineering work context, where projects often entail collaboration among diverse experts, the affirmation and validation from organisational insiders can reinforce women engineers' sense of identity as engineers. When colleagues and other organisation members acknowledge and affirm their

contributions, it can strengthen their professional identity and sense of belonging within the engineering community (read further on social tactics in Section 3.3.2.2 and 3.3.3.2). There is a tacit expectation for all team members to embody the traits and behaviours associated with the engineering profession. This implicit prescription requires individuals to 'act like an engineer,' emphasising the importance of cultivating strong interpersonal connections, collaborating effectively, and contributing unique skills (Lockhart & Rambo-Hernandez, 2024; Cejka & Eagly, 1999). These qualities facilitate work success and help individuals integrate seamlessly into the profession and organisation, regardless of gender. As the engineering work environment is commonly associated with a hegemonic masculine work culture (Merkins et al., 2019; Seron et al., 2018), identity affirmation from male counterparts is essential in helping women engineers feel accepted and develop a sense of fit and attachment within the profession, thereby reducing the potential to leave the job (Fouad et al., 2017; Blickenstaff, 2005).

8.4 Gender Influence on Job Embeddedness and Turnover Intentions

The quantitative research also explored whether gender moderates the relationship between job embeddedness and turnover intentions among engineers, as proposed in Hypothesis 5 (H_5). The findings indicated that gender does not significantly influence how job embeddedness affects engineers' turnover intentions. This suggests that the impact of job embeddedness on turnover intentions is consistent across genders, meaning gender may not be a relevant moderator in this relationship. This challenges conventional wisdom and existing literature, which often suggests that men and women tend to exhibit different behaviours and attitudes towards turnover (Frehill, 2010; Jiang et al., 2012; Fouad et al., 2017; 2020). Commonly, men are

typically more immersed in the professional domain, whereas women tend to give more attention to family and community responsibilities—the non-work domain (Wood & Eagly, 2002). Theorists believe that women may place higher importance on their ties with the organisation and their community, which could lead to greater emotional costs when deciding to leave their job. However, this is not the case in the present study. This finding is consistent with previous research, such as Setthakorn et al. (2024), which found that the gender-based difference in the overall job embeddedness to turnover intentions correlations was nonsignificant.

One possible explanation on this is that when employees are integrated into their jobs and communities and fulfil their expected roles, they experience similar levels of integration and role fulfilment regardless of gender (Kismono, 2011). The integration occurs when both male and women employees undergo organisational socialisation processes initiated by the employer together, which enables them to facilitate the adaptation of organisational values and develop the necessary skills for better job performance (Bauer et al., 2007). It can be argued that when an employee goes through a socialisation process that involves a group of employees with the same level of working experience and attending the learning activities on the side-lines of normal work context (context tactics), it contributes to a more significant role clarity (Bauer et al., 2025), which in turn influence the participation in the company (Kammeyer-Mueller & Wanberg, 2003).

During the socialisation process, some authors have also argued that women tend to prioritise interpersonal relationships and emphasise group participation (Cross & Madson, 1997), which often develops through collective tactics (Van Maanen &

Schein, 1979). Participating in the learning process alongside colleagues serves not only to convey a common message about the job and organisation, reducing uncertainty (Cable & Parsons, 2001), but it also fosters strong bonds among engineers, making them feel more comfortable in their work environment (Kowtha, 2008) and reducing workplace frustration (Huang & Jia, 2010). Here, context tactics can be a valuable supporting tool in assisting women engineers to master their job roles and strengthen relationships with colleagues, especially within a team.

This is further explained by the focus group discussion data. The findings from the focus group discussions reveal a diverse range of experiences among women engineers regarding their integration and ties with the organisation. On one hand, some participants reported receiving strong support from the organisation, describing a supportive work environment where they felt valued and integrated. These women highlighted aspects such as colleagues have played a crucial role in helping women engineers feel comfortable and happy in their workplace. Atzori et al. (2008) discovered that women valued the guidance of experienced colleagues. This highlights that women are eager to contribute to an organisation if they receive adequate support from their colleagues or team members. As engineering involves complex tasks and requires critical thinking in solving problems, guidance and feedback from colleagues are very helpful in facilitating the woman engineers to perform their work competently. In addition, women engineers, who often face challenges such as gender biases in a male-dominated work environment, feeling supported by their colleagues and employer can significantly enhance their job satisfaction and sense of belonging which crucial for longer retention (Wilson & VanAntwerp, 2021).

Furthermore, the absence of a gender moderation effect may be attributed to the cultural context of Malaysia. This is consistent with the findings of Setthakorn et al. (2024), who conducted a meta-analytic review on job embeddedness and turnover intentions in the South-East Asian context and also found that the correlation between organisational and community embeddedness and turnover intentions did not differ significantly by gender. The absence of a gender moderation effect may be explained by the cultural context of Southeast Asia, including Malaysia, where collectivist and feminine values (as per Hofstede's framework) are prevalent. In these societies, decisions are often made with consideration for group harmony and the well-being of others, rather than individual interests, which may reduce the influence of gender on turnover decisions. Zhang et al. (2016) also found that gender does not significantly affect decision-making in contexts where group cohesion and care for others are central. It can be suggested that in a collectivist society like Malaysia where there is a strong sense of group identity, it is understandable that gender does not moderate the intentions to leave a job.

8.5 Organisational Influences on Women Engineers' Turnover Intentions

In the Study 1, work-related factors influencing turnover intentions were measured in terms of organisational socialisation and job embeddedness (i.e., on-the-job embeddedness). The findings from the quantitative analysis show that both organisational socialisation and on-the-job embeddedness have a significant relationship with turnover intentions which suggest that the way women engineers are integrated into the organisation and how connected they feel to their roles and colleagues play a crucial role in shaping their intentions to stay or leave (see Section 8.3 for further readings). The qualitative data, obtained through focus group

discussions with women engineers based in Malaysia, provided additional insight and deeper context into the work-related factors that influence their intentions to quit the job or decisions to leave. These findings also highlight a range of organisational challenges faced by women engineers that may hinder their ability to fully engage and progress, ultimately influencing their decision to remain or leave the organisation.

The findings of this study reveal that the work environment plays a crucial role in shaping women engineers' withdrawal cognition, particularly through the way information is communicated during socialisation in the organization. Two main conditions that make the work environment challenging for women engineers are communication barriers and the stressful nature of engineering work, which is often accompanied by limited support. Women engineers in Study 2 highlighted workplace communication issues at during socialisation throughout their tenure in a particular organisation. One possible explanation of this situation is that the contradictory attributes between the nature of engineering work and the femininity often associated with women engineers may cause communication issues and disrupt relationships among team members. Attitudinal barriers, such as personality conflicts (Velentzas & Broni, 2014) between women and the nature of the work, can further disrupt communication effectiveness. Dorrance Hall and Gettings (2020) postulated that the lack of awareness regarding gender-related communication barriers can lead to misinterpretations and subsequent misguided responses during the communication process. Findings in Study 2 show that this barrier is pronounced in the communication between male leaders and women engineers.

Theoretically, women are often associated with communal traits rather than agentic ones that are always associated with men's characteristics (Bakan, 1966). Communal personality traits include qualities like feminine, expressive, and warm (Hentschel et al., 2019), a tendency to connect with others (Eagly & Steffen, 1999), emotional expression, and a stronger interpersonal orientation (Conway et al., 1996) such as negotiation skills (Kaewsri & Tongthong, 2014). In contrast, males are often associated with agentic personalities encompassing qualities like assertiveness, control, dominance, and competitiveness (Bakan 1966), which sometimes give tension to women (Timko, 2017). The stereotype "think manager - think male" perpetuates the belief that managerial positions characterised by masculine qualities, which can adversely challenge the interaction between male leaders and women engineers (Clifton et al., 2019). Gender orientation and its personalities can result in variations in communication between males and women by shaping individuals' self-perception and perceptions of others (Wood, 2003). It impacts how individuals communicate and their understanding of the behaviour of other communicators. Poor communication skills, and differences in traits and communication styles of leaders, particularly male leaders, affect the quality of communication and socialisation at the workplace, leading to unfavourable consequences such as conflict, work delays, and inefficiency in task performance (Lymberakaki et al., 2021), higher absenteeism, and turnover among employees (Dorrance Hall & Gettings, 2020). The challenges in communication between women engineers and their colleagues or superiors affect the effectiveness of socialisation tactics (e.g., content tactics and social tactics) that emphasise the relationships and interactions an individual has with existing organisational members (Jones, 1986).

Furthermore, the findings of Study 2 also showed that common work practices in engineering may contribute to a stressful and unsupportive work environment. Some women engineers shared examples of situations in which they often lacked support from colleagues during the informal task learning process or on-the-job training. In engineering, learning is commonly conducted through on-the-job training, as it not only accelerates skill development but also builds confidence in job performance (Jacobs & Jaseem Bu-Rahmah, 2012). However, the women engineers reported experiencing learning challenges during this process. They noted that although the structure of the training itself was not inherently problematic, the lack of support affected the effectiveness of their learning experience. The learning process was described as challenging, characterised by a high degree of independent learning, where the skills required during on-the-job training were perceived as 'survival skills'. Grönlund (2012) commented that on-the-job training is common in male-dominated occupations as part of skill development programmes because it facilitates socialisation and task mastery, saves time, and is more effective. However, as on-the-job training is typically less structured than formal socialisation tactics, it can contribute to a stressful work environment, particularly when the quality and depth of training vary across individuals. This is particularly relevant in occupationally segregated fields such as engineering, where male engineers may have greater access to informal support and meaningful learning tasks, while women engineers are more likely to be excluded from these learning opportunities (Grönlund, 2012; Dämmrich et al., 2015). As a result, the same training structure may benefit men while placing women at a disadvantage, reinforcing existing inequity in skill development.

The findings from the focus group discussions highlight persistent gender inequities experienced by women engineers in the Malaysian engineering sector, particularly in relation to perceptions of competence, access to opportunities, and career advancement. These inequities are rooted in broader cultural and organisational norms that continue to reinforce masculine ideals within engineering workplaces (Shiang & Ngo, 2020). Pressure from male colleagues and superiors, who may question their capability to learn and carry out technical tasks, often contributes to heightened work-related stress. The assumption of inferiority by male team members or male leaders towards women engineers undermines women's professional credibility and reinforces exclusionary norms within the workplace. This scepticism can significantly negatively impact women engineers' self-esteem, opportunities, and overall well-being, consequently challenging their intentions to stay longer (Scott et al., 2021).

Past research reported that male engineers or male leaders believe or perceive that women engineers are inherently less competent in performing engineering technical tasks (Campbell-Montalvo et al., 2022). These perceptions are frequently rooted in longstanding gender stereotypes and biases that continue to shape workplace attitudes in the engineering profession. As a consequence, women engineers often face internal barriers that hinder their professional growth, stemming from these biased stereotypes and the environments in which they are embedded. Such conditions can lead to self-doubt and limit women's confidence in advancing their careers (Shiang and Ngo, 2020). This lack of confidence is often reinforced by discriminatory practices, including being excluded from certain projects simply because they are 'women'. It is evident from the qualitative data whereby one of the informants reported

that her leader refuse to accept her idea just because of she is a woman. Male team members tend to sceptical about whether women engineers can perform tasks as competently as they do (Campbell-Montalvo et al., 2022). As a result, women are frequently perceived as less capable or insufficiently skilled to succeed in the field. This contributes to feelings of isolation and a sense of not belonging in what is often regarded as an "elite field", making it challenging for them to establish a clear and structured career path. Ultimately, this affects their job satisfaction and retention (Funk & Parker, 2018; Shiang & Ngo, 2020; Buzzanell et al., 2023).

Furthermore, the competitive nature of engineering work often involves demanding tasks and work overload, which can lead to increased pressure and work-related stress. This is evident in the qualitative findings, where women engineers reported having to work longer hours due to excessive workloads, making it difficult for them to return home early with tasks left unfinished. This reflects the reality faced by many women engineers, particularly those who are unmarried or married without children. Past research has reported that the perceived workload has influenced the attitude toward work, including turnover intentions (Rubenstein et al., 2018; Ghapanchi & Aurum, 2011), especially among women in science, engineering, and technology professions (Hewlett et al., 2008). For women engineers who live family, the situation leads to work-family conflict (Au, 2021; Singh et al., 2018) and consequently spark the thought to quit (Hamid & Ahmad, 2017).

Given that the engineering work environment is commonly demanding and hostile to women (Merkins et al., 2019), the lack of support from team members and unfriendly treatment makes them feel unhappy and unwelcome in their work. This

field is characterised by physically demanding tasks, technical and practical problems solving (Dimkpa, 2011) that usually are performed by men. The hegemonic masculine culture and "hostile climate" or unwelcoming atmosphere of engineering (Merkins et al., 2019) have influenced how women perceive that this occupation was not intended for women who are associated with feminine qualities. Bastalich et al. (2007) concluded that women engineers are considered as “outsider” if they fail to conform with masculine code of conduct, consequently leaving the profession (Baker et al., 2023). This sense of being an outsider can be exacerbated by traditional socialisation processes that emphasise conformity to existing norms and behaviours (i.e., investiture tactics), which are typically male-oriented in engineering fields (Faulkner, 2011).

8.6 Non-Organisational Factors are More Than Just a Community Where the Women Engineer Live

In Study 1, job embeddedness was measured based on three dimensions: the connections an engineer has with other people and activities in the organisation and community; the extent to which the engineer perceives compatibility or comfort with the organisation and community; and the perceived cost of what would be lost if the engineer were to leave their job (Mitchell et al., 2001). While on-the-job factors, such as fit and workplace relationships, remain crucial for women engineers, off-the-job factors are equally important and play a significant role in their turnover decisions. Off-the-job embeddedness focuses on aspects of the community or residential area where the engineer lives, which help to create strong social ties (Crossley et al., 2007; Mitchell et al., 2001; for further details, see Section 3.4.1 and Appendix A). Off-the-job embeddedness—also referred to by some scholars as community embeddedness (Mitchell et al., 2001; Lee et al., 2004; Thome & Greenwald, 2019; Jiang et al.,

2012)—describes an individual's attachment to life outside the workplace and is largely shaped by their connection to the local community or place of residence (Mitchell et al., 2001; Treuren & Fein, 2021). According to Lewin's field theory, an individual's behaviour is influenced by the forces within their environment and their responses to those forces (Lewin, 1951). In line with this, the present research suggests that turnover intentions among women engineers are also shaped by external, non-organisational factors.

The current research hypothesised that off-the-job embeddedness has a significant relationship with turnover intentions among engineers (H_{2b}). The findings support this hypothesis, indicating that off-the-job embeddedness—comprising fit, links, and sacrifice related to one's personal life and community—has a significant influence on engineers' intentions to leave. These results suggest that emotional attachment and connection to the local community may deter individuals from relocating or resigning from their jobs. This is consistent with previous research indicating that personal life and external social factors are key contributors to employee retention or turnover (Ghaleb et al., 2025; Sahoo et al., 2023; Thome & Greenwald, 2020; Sender et al., 2018; Hom et al., 2017).

Past research has shown that employees who are deeply embedded in their communities and derive greater benefit from these connections are less affected by work-related factors (Treuren & Fein, 2021). When an individual is required to leave their job and relocate, the decision to leave a neighbourhood that is safe, attractive, and where they are well-regarded can be particularly challenging. Furthermore, the more active an employee is within their community, the greater the likelihood of

forming strong social support networks. As connections to the community grow, they may prompt a dynamic response that encourages an individual to think about leaving their jobs (Setthakorn et al., 2024).

Findings from Study 2 offer additional insight into these results as women engineers reported that it was not just the components of the community, such as having family nearby, the nice neighbourhood, and a location suitable for family life. There are other off-job factors that are also critical to women engineers that impacting their turnover intentions. This is consistent with Feldman et al. (2012), who contended that off-job embeddedness should not be used interchangeably with community embeddedness, as it can include social ties beyond the local community where the employee lives (Sahoo et al., 2023). The range of external factors that keep an individual tied to their current location includes significant elements that are not covered by "community embeddedness." Hence, the qualitative findings revealed the factors beyond community embeddedness that would enhance the knowledge on off-job factors that influence the turnover intentions among women engineers. These insights broaden the scope of off-the-job embeddedness by highlighting external factors not limited to the community or place of residence, thereby expanding the scope of off-the-job embeddedness, which may have been ill-defined in Study 1. This concept encompasses the social ties, family responsibilities, and community involvement including the professional community that can significantly influence a women engineers' intentions to leave a job.

8.6.1 Family influence especially married women engineers with children

Off-the-job embeddedness goes well beyond the community or the place where the employee lives (Sahoo et al., 2023; Feldman et al., 2012; Toumbeva, 2012). The qualitative findings indicate that off-the-job embeddedness encompasses a broader range of influences, including family-related factors. For women, these factors are especially salient, as societal expectations and traditional gender norms often position them as primary caregivers, linking their career decisions closely to family responsibilities (Au, 2021). The literature recognised that women are stereotypically assigned caregiving duties in the household (Crosby et al., 2004; Sarathchandra et al., 2018). Women, particularly mothers, face more significant challenges balancing personal (e.g., caregiving duties) and career responsibilities than men (Meeussen & Van Laar, 2018). There is a strong assumption that women should play the role of "homemaker", while men are expected to work and provide financially for the family—often referred to as the "breadwinner". This perception remains particularly evident in Malaysia and is especially relevant for working women (Au, 2021). For example, within a patriarchal social system, women are often expected to shoulder primary responsibility for childcare and household duties. Research on childcare in Malaysian families has consistently shown that mothers devote significantly more time to childcare than fathers (Hossain et al., 2022; Boo, 2018), as cultural and societal continue to shape women's roles both in the workplace and at home (Moorthy et al., 2022; Subramaniam & Arumugam, 2013).

Given that these responsibilities largely rest on women, those who are married and remain in the workforce often face considerable difficulties in managing both their

professional roles and family obligations. When women are bound by the need to fulfil family duties, create imbalance between work–family obligations and these can significantly influence and, at times, lead to turnover and challenge their career stability (Salleh & Mansor, 2022). The findings from Study 2 indicate that family–work conflict is a crucial factor for women engineers and has a significant influence on their turnover decisions. When a woman is required to juggle multiple roles simultaneously, it can lead to role conflict, which occurs when fulfilling the demands of one role makes it difficult to fully meet the expectations of another (Super, 1980). This is explained by role theory, in which Katz and Kahn (1978) propose that roles constitute the basic units of social systems, and that gender plays a significant role in shaping both work and non-work experiences. In the case of working women, the concept of dual roles is often perceived as a uniquely female challenge. Within this framework, the role of paid employment is viewed as an additional responsibility layered upon traditional roles such as wife and mother.

Consistent with past research on women engineers' turnover, when a woman is unable to find solutions to the conflicting demands between their job and personal life, it becomes difficult to achieve work-life balance; consequently, leaving a job or organisation is the best option (Fouad et al., 2020; 2017). This is supported by Zhang et al. (2016) and Singh et al. (2018) where the personal life interference with work impacts the level of commitment and reduces women engineers' interest in staying longer in their jobs. This is especially pronounced for women engineers who are married. Career women who are married and have dependant family members are prone to quit a job or organisation (King et al., 2020) due to conflict in balancing between family commitment and works. Singh et al. (2018) and Casper et al. (2007)

commented that concerns about family obligations were prevalent among women engineers regardless of their marital status, whether married with or without children, or unmarried. Hence, the current research suggested that the conflict between family and work is not limited to those with children but extends to all women who face societal expectations to prioritise family responsibilities.

A long-hour work culture in engineering has exacerbated the conflict between work, leisure, family, and community interests for women (Watts, 2009). Findings from Study 2 shown that women engineers did not have a fixed working hour and worked beyond the standard eight-hour shift. This situation is more common for women engineers who are married without children or unmarried. Consequently, women engineers often find it challenging to strike a balance between family responsibilities and their job demands. This situation puts the person-job fit among women engineers at risk. It could also potentially result in burnout, health issues, job dissatisfaction, and intentions to quit (Allen et al., 2000; Blanch & Aluja, 2012; Fouad et al., 2017).

Women engineers reported that due to the long working hours, they do not have time to develop close relationships with their neighbours in their residential area, as their time is primarily dedicated to their families when they reach home. This is especially common in the Malaysian context, where women engineers working in urban areas face significant traffic congestion (Yap et al., 2022), causing them to reach home late and have less time to interact with their neighbours. Consequently, the limited opportunity for social engagement in their community results in lesser

community embeddedness, making it less significant for women engineers in this context.

It is evidenced in Study 2 that family factors have a significant impact on women engineers' careers. The connection between a woman engineer and her family often determines whether she is willing to make sacrifices in her current job or give it up to meet family demands (Shaikh et al., 2020). For women engineers who are working in engineering, which is commonly associated with the hectic nature of work and long working hours, support from the people close to women engineers is particularly important to ensure they can simultaneously meet the work and family demands. Social circles such as family members or friends provide important psychological links for women's embeddedness in engineering professions (Sendze, 2022). This observation aligns with prior research that underscores the relevance of social connections, particularly those involving family, in shaping employment-related decisions (Rubenstein et al., 2018). In managing and adapting to the pressures associated with family responsibilities, individual characteristics also play a critical role in how women respond to conflicts between work and family demands. The findings from Study 2 suggest that women who display agentic traits and self-initiative are better equipped to cope with challenges arising from both work and non-work domains. As family–work conflict may stem from a lack of strategies to balance competing demands, developing personal maturity and competence in managing work–life integration can enhance their ability to meet both sets of responsibilities more effectively. De Sousa and Ney Matos (2017) suggest that women engineers who adopt a survivor mindset and develop coping strategies are better equipped to deal with work-life conflicts. By fostering these skills together with the availability of supportive

environments, women engineers can be more empowered in navigating their careers while maintaining a healthy work-life balance.

8.6.2 Home-office location and challenges of dual-career couple

Off-the-job embeddedness encompasses more than just community-related components, such as having family nearby, a familiar neighbourhood, or a location suitable for family life. It also includes practical considerations, such as the distance between home and workplace, which emerged as a significant concern of women engineers when deciding whether to stay in or leave an organisation. This was evident in the qualitative findings, where women engineers reported difficulties in caring for their children due to the considerable distance between home and workplace, especially when they were not living with their husbands. The physical separation placed additional strain on them, as they had to manage childcare independently and cover extra travel expenses to reunite with their families, particularly on weekends.

This tension is further compounded by spouse relocation, which Lee and Mitchell (1994) considered a "shock" to the system in their unfolding turnover model. Due to their spouse being relocated, such as being transferred to a different branch or state, a woman engineer may experience withdrawal cognition and feel compelled to follow her husband, becoming a reluctant leaver (Hom et al., 2012). In such instances, the previous place of residence does not exert a strong enough attachment to encourage them to remain with the organisation. The connection to the local community appears insufficient to retain these women in their current roles. This suggests that off-the-job embeddedness, particularly in relation to location-based ties, may not have a strong influence on turnover intentions, as reflected in the findings of Study 1.

However, women engineers often face challenges in securing new employment that aligns with their professional interests and engineering expertise when relocating to follow their spouses. Some women engineers quit their jobs to follow their husbands but could not find a suitable engineering job in the new location. Consequently, they returned to their former company and endured a long-distance marriage again. In other cases, women engineers decide not to quit but instead commute long distances between home and the office as long as they can live together with their spouse, children, or other family members.

The trend of dual-career couples has contributed to challenges for women in managing career decisions. When both spouses work, they are also exposed to organisational plans and changes that may require them to relocate, potentially disrupting the other partner's career. This situation challenges both spouses, especially if they do not work in the same company or their workplaces are not nearby. In the case of dual-career couples staying far away from other family members, the home-work distance becomes a concern to the husband and wife. Gu et al. (2024) found that dual-income households often prioritise the wife’s commute when selecting a home location, ensuring that she has a shorter journey and can return home earlier for childcare. Otherwise, the female employee is more likely to quit her job. In this context, the relationships and routines established within the local community are crucial in enabling women engineers to remain in the area and work for a nearby organisation. This reflects the original concept of job embeddedness, where the residential location fulfils an individual’s personal needs and lifestyle preferences, thereby contributing to a strong personal–community fit. In addition, commuting time and the extent to which the residential area meets other family-related needs such as

access to schools, grocery stores, and daily essentials are equally important considerations (Gu et al., 2024).

In the case of engineering jobs that require traveling, attending foreign assignments, and site visits (Allert et al., 2007), which job is not necessarily performed in the office all the time and during standard office hours, home-office distance can be a more significant concern to women engineers (Watts, 2009). Civil engineers, for instance, involve planning, designing, and supervising the construction and maintenance of building and infrastructure projects; their job may involve a hybrid office and construction site mode. The distance between home, office, and site would greatly concern women engineers, especially those with young children, because it may take time to travel to a few places. Previous research discovered that married and cohabiting women and mothers were more likely than men to avoid long commutes (Kley & Reimer, 2023), and a few factors, including occupation types, influence this. Shearmur (2016) commented that higher-status occupations, such as those in the high-tech manufacturing sector where many engineers work, are associated with greater work-travel distances. This could pose a challenge for women engineers who frequently commute long distances, leading to exhaustion from travel and ultimately influencing their thoughts about quitting.

However, for certain engineering jobs that typically involve remote work or working from home, such as software engineering, the distance between home and office is not the main factor of leaving intentions among women software engineers. Working from the comfort of one's home provides more family and personal time (Courtney, 2020), a significant concern for many working women (Ibarra et al., 2020).

It is evident from Study 2 that women engineers are content to work from home since they may raise their children independently and guarantee their safety if they do so. Women engineers see working from home as an opportunity to spend more time with their families and less time commuting to and from work, allowing them to be more flexible with their work and family schedules (Kley & Reimer, 2023).

8.6.3 Professional networks in shaping the career trajectories of women engineers

As discussed in the literature review, off-the-job embeddedness may encompass extended family living nearby, features of the surrounding community, and involvement in professional networks (Kaizad et al., 2015). The current research found that women engineers demonstrate attachment to external influences beyond their immediate work environment, such as professional engineering networks, higher education institutions, and wider social groups beyond their residential communities. Women engineers in the focus group discussions revealed that their affiliation with engineering professional institutions contributed to their decision to stay in their current organisations. They also highlighted their motivation to quit to pursue higher education at distant universities.

A strong connection and well-integration into interpersonal relationships in a group outside of an organisation can result in valuable benefits or rewards for women engineers. This connection may help women engineers become socially embedded in professional networks, develop the occupational networks beyond the immediate workplace, leading to professional success, personal fulfilment, emotional support, and other positive outcomes from being socially connected with others in a particular

group outside an organisation (Kaizad et al., 2015; Hyun-Soo Kim, 2016; Porter et al., 2023).

The findings of the current research align with the well-established theory of job embeddedness by Mitchell et al. (2001), underlining the importance of off-job factors outside the workplace. The connection between women engineers and professional societies reflects the notion of off-job embeddedness. The fit between women engineers and their external professional and social groups aligns with their values, goals, and identity, contributing to a strong sense of belonging. The links formed in these groups create a support system that goes beyond the organisational boundaries, reinforcing a network of relationships that are challenging to sever. Simultaneously, the notion of sacrifice comes into play, as leaving the current organisation may require sacrificing the professional ties within the company and the significant connections nurtured outside. The difficulty in sacrificing these connections significantly influences the decision-making process regarding whether leaving the current company where they work is worthwhile. Engaging with professional bodies can provide valuable support and exposure to diverse perspectives, further enriching women engineers' career trajectories (Kaizad et al., 2015).

The current research findings offer additional insight into off-the-job forces, suggesting that this concept should be expanded and interpreted more broadly to include external commitments and connections beyond the immediate community where women engineers reside, such as professional societies and other social networks. Consistent with Feldman et al. (2012), outside workforces' totality may influence individual attitudes toward their job and organisation. By expanding the

concept of community embeddedness to include these broader social influences, this research aligns with Lewin's holistic approach, highlighting the complex relationship between individual behaviours and their environmental context (Lewin, 1951).

Women engineers may actively engage with engineering professional networks, industry associations, or educational institutions to enhance their skills and explore opportunities beyond their current workplace. In Malaysia, engineers are attached to professional institutions such as the Board of Engineers Malaysia (BEM) and the Institution of Engineers Malaysia (IEM). University graduates must register as Graduate Engineers in BEM if they want to work as Graduate Engineers and continue to practice engineering. Moreover, participation in social clubs and professional societies or educational institutions has helped an individual to strengthen their interest in a particular field and offer networking opportunities to women engineers. For instance, IEM, the Malaysian Society for Engineering & Technology (MySET), the Society of Women Engineers (SWE), the Institute of Electrical and Electronics Engineers (IEEE), and the Women's Engineering Society (WES), to name a few.

Participation in professional organisations such as IEM allows women engineers to network with mentors, peers, and other industry experts, creating a supportive community. In Malaysia, IEM has 12 branches in almost every state, with its headquarters in Petaling Jaya, Selangor. Within IEM, there is a division specifically for women engineers with the mission of building a network connecting women engineers and forming strategic alliances among engineering professional bodies to inspire, support, and celebrate women engineers in their professional development.

The attachment of women engineers to the external professional society contributes to a sense of belonging beyond the workplace and community where women engineers live. Engaging in these social groups contributes to forming a thought collective and thought styles encompassing ideas, attitudes, courses of action, beliefs, and practices (Lester, 2022) within the engineering profession (Brito et al., 2018). Thus, when women engineers engage with professional society or institutions in engineering, it not only underpins their professional knowledge and engender creativity (Perry-Smith, 2006) but also builds bonds among individual members (Cullen et al., 2015), strengthening their work- and non-work-related interest.

Furthermore, active involvement in professional institutions and networking activities, such as IEM, allows women engineers to explore alternative job opportunities; in some cases, they might consider career pivots. The current research found that women engineers seek better alignment with their career goals and desire to advance their careers. This integration of professional engagement and the pursuit of career advancement highlight the dual role that professional organisations play in providing a support network and offering avenues for career progression and new opportunities. Evidence from the current research shows that women engineers might consider changing career paths or looking for a job alternative if external engineering jobs are available. Perceived job alternatives have long been recognised as a critical factor in employee turnover since March and Simon (1958) introduced it in their turnover theory (Griffeth et al., 2000; Ramesh & Gelfand, 2010; Rubenstein et al., 2018; Schaap & Olckers, 2020), including professional such as engineers (Treuren, 2013). If woman engineers would like to move to other organisations but remain in the engineering career pipeline, the availability of engineering jobs is important to them.

Živković et al. (2023) suggested that when employees within the workplace become aware of other job prospects and view them as more advantageous than their present position and organisation, it leads to a heightened intentions to depart from their current organisation. Indeed, employees seldom resign from the organisation without contemplating other employment options (Tessema et al., 2022). Employees closely monitor the conditions in the job market, and their decisions to leave their current jobs are often influenced by their beliefs about the availability of alternative job options.

After progressing through their careers for some time, women engineers tend to rethink their professional paths and may make significant changes. These could include staying within the engineering field but switching to a different company, changing career paths, or making a career pivot. The current research found that women engineers are interested in diverse fields such as marketing, business, and teaching, which Dik et al. (2009) refer to as "callings." With experience in a particular company and increased career maturity, women engineers develop better vocational self-clarity and have more explicit expectations of a particular career path (Duffy & Sedlacek, 2007; Dik et al., 2008), leading to increased well-being and satisfaction in their lives (Duffy & Dik, 2013).

It can be concluded that various off-the-job forces greatly influence women engineers' career decisions, particularly in engineering. Professional networking allows women engineers to evaluate the fit dimension, assessing how external options better align with their career aspirations. By being well-integrated into external professional associations and social groups, women engineers can enhance their

professional network, contributing to their overall well-being and satisfaction as engineer.

8.7 Summary

Overall, the current research provides a comprehensive understanding of women's challenges in engineering that may have impact on their intentions and decision to leave their job. The findings expand the traditional perspectives of job embeddedness, particularly in the context of women working in traditionally masculine fields such as engineering. It highlights that the decisions made by women engineers are multifaceted, where turnover motivations among women in engineering recognise that their choices are influenced by various factors extending beyond the confines of the workplace, including family considerations, social connections, and career aspirations.

It has been highlighted that women engineers are likely to leave the field due to stronger emotional impacts and challenges fitting into a masculine work environment. Given that the engineering workplace is usually dominated by males and characterised by a masculine culture — even though not all engineering fields — it creates challenges for women engineers. These challenges include work cultures that are not inclusive or supportive of women, stereotypes about their abilities in technical fields, which can affect their confidence and career advancement, and communication barriers, which can lead to feelings of isolation.

Moreover, non-organisational factors have been found to influence women engineers' career trajectories and turnover intentions significantly. While the traditional interpretation of off-job embeddedness focuses on community, expanding

it to include various non-work-related aspects captures a broader range of external connections that influence individuals' decisions beyond their immediate living community. Women, particularly those with family responsibilities, experience unique challenges in balancing personal and career responsibilities, often leading to increased withdrawal cognition. The demanding nature of engineering work, long hours, and the cultural expectation for women to prioritise family responsibilities exacerbate these conflicts. The influence of professional networking and social connections outside the organisation has significantly impacted how women perceive their career growth and their propensity to remain with or leave an organisation.

To change the social expectations on gender roles of women, environment, and engineering work culture to suit women’s needs is almost impossible. Thus, support can benefit women engineers, and the ability to cope with challenges will allow women to persist in their jobs and this profession. Social support, precise role definitions, and community building are crucial for their job retention. This research emphasises the importance of social aspects, such as assigning role models and fostering interpersonal relationships, in helping women engineers integrate and survive in their workplaces, as well as making sense of balancing work and personal life. It is also important to note that while resilient coping strategies are essential for women engineers to persist in the field despite challenges, the significance of women's communities in providing support cannot be ignored. These communities can enhance job satisfaction and create a more inclusive and supportive work environment.

CHAPTER 9

CONCLUSION

9.1 Introduction

The objective of the current research is to enhance understanding of the various forces contributing to turnover among women engineers, beyond the organisational context. Employee turnover researchers have discovered various factors that could impact women engineers' attitudes and behaviours toward work, including their intentions to depart from their current position. However, past research highlighted an important point that there is a limited body of research concerning the factors causing women engineers to exit their jobs and in certain instances, depart from the STEM field entirely (Hasan et al., 2021; Houston, 2022; Fernando et al., 2018; Hamid & Ahmad, 2017; Wong et al., 2016). Furthermore, there is little agreement on how individual demographics, such as gender, could interact with attachment to organisation and the decision to leave (Hom et al., 2008; Ghadeer, 2018), especially in the engineering work context (Ryan & Harden, 2014).

Furthermore, as established through multiple studies, turnover is often associated with organisational and non-organisational factors (refer to Chapter 3 of the thesis). However, turnover research among women engineers largely emphasises on the organisational and occupational factors (e.g., Fouad et al., 2011; 2016; 2017; 2020; Singh et al., 2013; Scott et al., 2021) as the main reasons for quitting, with little attention on broader life issues that need to be considered simultaneously (Peltokorpi et al., 2015). Hence, the current research was undertaken to explore the factors that

influence the turnover of women engineers, both within an organisation and outside of it.

Since the engineering sector is predominantly male and is widely regarded as a challenging profession for women, the nature of the engineering work environment can impact how women engineers interact, socialise, and establish fit with the work environment while balancing personal life demands. Thus, this research incorporates Lewin's field theory and Role Theory to unify the connection of interdependent forces from within and outside the organisation that can influence the turnover intentions of women engineers. Due to the scarcity of evidence and a comprehensive model connecting turnover and its predictors derived from broader life aspects among women engineers (Buse & Bilimoria, 2014; Fouad et al., 2017; Peltokorpi et al., 2015), an insight from women engineers' point of view is particularly important to shed light on the factors that drive them to quit or stay in the organisation, thereby generating new empirical evidence in the occupational engineering context.

Therefore, the scope of this study examines the forces that drive women engineers to quit their job or organisation, as well as the forces that restrain them from doing so. Thus, this research was designed to answer three research questions:

1. What factors influence women engineers' intentions to stay or leave their organisation?
2. What are the driving and restraining forces derived from the broader work environment, that impact women engineers' turnover intentions?
3. How do these driving and restraining forces influence turnover decisions?

The thesis' conceptual framework combined organisational factors such as organisational socialisation and job embeddedness with non-organisational factors such as community embeddedness, which may have influenced turnover intentions among women engineers. The research employed a convergent mixed methods design, in which the quantitative (Study 1) and qualitative (Study 2) strands were conducted concurrently and integrated during the interpretation stage to strengthen the overall validity of the findings. Study 1 tested hypotheses on the relationship between organisational socialisation, job embeddedness, and turnover intentions and the influence of gender as the moderating variable. Data gathered from 309 engineers working in Malaysia provided responses from 75.4% males (233) and 24.6% females (76). In Study 2, virtual discussions among six focus groups of 21 women engineers who had participated in the survey were employed to refine and extend the findings from the hypothesis tests (Creswell, 2015). This approach aimed to expand the breadth and range of inquiry (Greene et al., 1989) related to driving and restraining forces of the turnover intentions of women engineers. These focus group participants were either still in the profession, had quit their job or organisation, changed their career path, or become stay-at-home parent. The various participant backgrounds allowed various experiences within the profession or organisation to be gathered.

9.2 Theoretical Contributions

The theoretical contributions are based on the findings and highlight the most important conclusions of the thesis. The research findings suggest that the survey and focus group data complement one another, with the qualitative data extending and enriching the interpretation of the quantitative results, thereby enhancing the overall understanding of the factors influencing turnover intentions.

Firstly, this research provides a context-specific contribution by examining turnover intentions among women engineers in a multicultural and traditionally gendered society, Malaysia. While prior research has provided important insights into turnover, much of it has been conducted in Western contexts, particularly in the United States (Kowtha, 2008; Korte, 2009; Holtom et al., 2008; Chen, 2010; Allen et al., 2014; Lyons & Bandura, 2020). Although a few Malaysian studies have explored turnover among engineers (e.g., Thurasamy et al., 2011; Johari et al., 2013; Hamid & Ahmad, 2017), research specifically focusing on women engineers remains limited (Meiksins et al., 2020; Hasan et al., 2021; Hamid & Ahmad, 2017; Wong et al., 2016). Given Malaysia's unique socio-cultural context, this study addresses that gap by offering contextualised insights into turnover intentions among women engineers, thus contributing to a more inclusive understanding of turnover in non-Western and gender-specific contexts.

In addition, this research contributes to the engineering profession literature by providing insights into the career trajectories of women already working in the field especially in Malaysia context. Previous studies on engineering careers have focused more on the career plans and socialisation of undergraduate engineering students (e.g., Seron et al., 2016; 2018; Riney & Froeschle, 2012) rather than on women engineers who are currently employed (Brown & Godwin, 2019). Given that more women are leaving the engineering profession than entering it (Fouad et al., 2017), understanding the reasons for their job departure is even more crucial. While studying the career plans of engineering students provides valuable input into the early stages of career development, it is equally important to focus on women engineers who are already employed in the field. Thus, the current research focuses on women who have

navigated the initial barriers to entry and have real-world experience in the later stages of employment in engineering, making their perspectives essential for identifying the factors that contribute to turnover. A diverse representation of women from various engineering sectors such as manufacturing, information technology, construction, oil and gas, and telecommunication, with varying years of professional experience, and from different organisational roles have contributed to a comprehensive understanding of the factors influencing turnover intentions across different contexts. Furthermore, exploring the challenges and reasons for leaving among employed women engineers has helped identify more effective strategies to improve retention and ensure that the industry retains talented women who have already demonstrated their commitment and capabilities (Singh et al., 2013).

Secondly, this research makes an important theoretical contribution by extending the understanding of how organisational socialisation tactics influence turnover intentions among women engineers, as well as the mediating role of job embeddedness in this relationship. Drawing upon the frameworks of organisational socialisation, job embeddedness, Field Theory, and Role Theory, the study presents a more refined perspective on the processes that shape turnover intentions in engineering jobs. The key findings illustrate that some of the socialisation tactics that involve clear communication, structured learning, and defined career pathways, were significantly associated with job embeddedness and turnover intentions. These findings reinforce existing evidence that access to relevant job-related information and guidance not only facilitates role adjustment but also strengthens engineers' connection to the organisation (Wingerter & Ahn, 2020; Lapalme et al., 2017; Fernando et al., 2018). Among women engineers, limited access to such content was associated with greater

uncertainty, reduced motivation, and a higher likelihood of considering departure (Dong et al., 2022; Wingerter & Ahn, 2020; Korte et al., 2019; Bauer et al., 2025).

Other than that, the current research adds further evidence that experiences such as peer support, mentoring relationships, and workplace inclusion can enhance person–organisation fit, foster a sense of acceptance, and promote longer tenure. These findings reinforce the argument that socialisation is both relational and developmental, and that its effectiveness is shaped by the quality of social connections formed within the organisation (Korte et al., 2015; Wingerter & Ahn, 2020). For women engineers, this includes the presence of gender-sensitive social environments and opportunities to engage with supportive communities. Overall, the findings underscore the importance of socialisation tactics in shaping engineers' sense of belonging and their continued participation in the workplace. This emphasis supports earlier research on workplace integration but provides a contextual lens relevant to engineering environments where women are underrepresented.

Interestingly, the current research challenges existing assumptions regarding gender differences in the embeddedness–turnover relationship. The quantitative findings indicate that gender does not moderate the relationship between job embeddedness and turnover intentions, suggesting that when women and men experience similar levels of workplace integration, their behavioural outcomes do not significantly differ. This finding is consistent with recent research from Southeast Asia and highlights the importance of cultural context, such as collectivism and shared group identity, in shaping turnover decisions (Setthakorn et al., 2024). This research adds to theoretical understanding by emphasising the importance of organisational

socialisation as a levelling factor that supports employee integration, regardless of gender, while also highlighting the influence of cultural norms in shaping engineers' turnover intentions.

Finally, the current research contributes to theory by applying Lewin's Field Theory (Lewin, 1951) and Role Theory (Kahn et al., 1964) to explore the driving and restraining forces of turnover among women engineers. To the best of the researcher's knowledge, no study in the English language academic literature has looked into the forces of turnover through the lens of Field Theory and Role Theory among women engineers in Malaysia. Lewin's Field Theory explains that individuals exhibit certain behaviour in response to interdependent forces derived from various aspects of their lives, such as within and outside the organisational environment. This behaviour also depends on the individual's role in their respective environment. Role Theory complements this by explaining how women navigate competing role expectations within professional and personal domains. Therefore, by employing both Field Theory and Role Theory, this research provides a multidimensional understanding of how various organisational and non-organisational factors interact to influence turnover intentions within the engineering profession in the Malaysian context.

The novel empirical contribution of this research is the identification of various driving and restraining forces originating from both the organisation and external factors within the context of the engineering profession. It enhances the exploration of turnover intentions among women engineers, which has predominantly been examined through the lens of work-related theories (e.g., Fouad et al., 2017, 2020; Singh et al., 2013; 2018; Houston, 2022; Smith et al., 2023).

Consistent with past evidence, the current research found that organisational factors such as the engineering work environment, fair treatment, and the availability of work-related support have a significant impact on the work experiences of women engineers. The engineering work environment is traditionally male-dominated, and women are often exposed to a range of workplace challenges that are shaped by masculine norms and expectations. These challenges begin as early as their entry into the profession and continue as they work to establish their career paths in the field (Shiang & Ngo, 2020).

This research also contributes to the understanding that non-organisational factors are equally important for women engineers in progressing their careers within an organisation. Echoing the suggestion that a lot more research needs to be done to improve the understanding of off-job embeddedness and its influence on turnover (Holtom et al., 2018), the findings of the current research contribute to identifying the crucial off-job forces that bind women engineers to a job or organisation. Consistent with the findings of other studies (e.g., Au, 2021; Salleh & Mansor, 2022; King et al., 2020; Fouad et al., 2011; 2017; Singh et al., 2018; Ciciolla et al., 2017), the bind forces from family would be among the most crucial factor of leaving a job or organisation. Interestingly, external social connections, such as professional societies, which are especially relevant in the engineering context, improve the understanding of social aspects of off-job embeddedness proposed by Holtom et al. (2018) and Kiazad et al. (2015). Given that off-job embeddedness explains an individual's attachment to an environment beyond the organisational context, the current research broadens the scope of non-organisational context that is not limited to the place or community where the individual live.

9.3 Practical Implications

This research was conducted in the context of women in engineering professions in Malaysia. The research findings have important implications for line managers, human resource practitioners, policymakers, and engineers, particularly within male-dominated professions, in designing more inclusive organisational practices to better accommodate the needs and experiences of women engineers. This is especially relevant for those aiming to improve both the quality and quantity of the workforce by reducing turnover and, ultimately, supporting workforce diversity.

9.3.1 Enhancing Organisational Socialisation for Women Engineers in Male-Dominated Professions

The findings of this research show that some of the socialisation tactics particularly content and social tactics were significantly associated with job embeddedness and turnover intentions. Echoing the suggestion by Lee et al. (2014) that still warrants continuous attention, the research findings suggest more significant emphasis on organisational socialisation strategies towards improving the embeddedness specifically for women working in male-dominated professions like engineering. For instance, social tactics explain the importance of assigning the existing members to groom other employees and serve as role models (Van Maanen & Schein, 1979). Organisations can foster a culture of inclusion and empowerment by strategically employing social tactics in the context of women working in a male-dominated profession such as engineering. In this approach, experienced members (i.e., female role models) take on the role of guides and mentors within the women engineers' community. This strategic leveraging of mentorship ensures that women

engineers feel welcomed and empowers them to contribute their best (Van Emmerik, 2002). Elevating the presence of female role models can shape a positive perception of women engineers within the organisation and potentially dispel powerful stereotypes about women at work.

Within social tactics, one intervention that can be suggested is implementing an inclusive mentorship initiative where a mentor or well experienced woman engineer can be assigned to provide information, assistance and guidance in adapting the organisation's culture. In the current research, women engineers expressed their concerns about balancing work and personal life, as well as their future careers, if they choose to remain in their current jobs. They find no solutions to the work-life conflict, and leaving the field is seen as a last resort. One of the informants suggested a 'buddy scheme' as an initiative to support task mastery and to guide on balancing work and personal life responsibilities. ‘Buddy scheme’ intervention could help to change women engineers’ perception of the engineering world as an unfriendly environment for women. It demonstrates that they can also achieve success and find solutions to challenges in the workplace. Smith et al. (2023) found that a women's network group (e.g., buddy system or peer mentoring) can provide a safe environment for women to discuss work-nonwork challenges, supporting them in being their authentic selves both within and outside the work environment.

Furthermore, the engineering work culture, which is shaped by masculine work styles and male-centred approaches, presents challenges for women engineers in adapting and achieving a sense of fit. Therefore, it is essential to acknowledge the specific needs of women engineers in such environments in order to define the types

of support that can contribute to their professional success and overall well-being. Support systems and organisational measures provided through organisational socialisation tactics, including appropriate assistance, encouragement, and resources, play a critical role in helping women engineers integrate successfully into male-dominated workplaces (Kowtha, 2008). This support is important not only at the point of entry into the organisation but also throughout the later stages of their employment.

9.3.2 Improving Communication and Team Integration for Women Engineers

The findings of this research underscore the critical importance of effective communication and team integration in shaping women engineers' experiences within the organisation. Communication barriers were identified as a key challenge that can negatively affect the socialisation process, particularly during interactions with male colleagues and superiors. This challenge is often intensified by the demanding nature of engineering work, which is typically characterised by high pressure and limited support structures. Moreover, engineers are often stigmatised as ineffective communicators (Aberšek and Aberšek, 2010) and are perceived to lack professional communication skills (Mazurenko, 2021).

Based on the findings, employers are encouraged to train engineers and supervisors to provide constructive feedback and to motivate their subordinates, particularly women engineers, to participate actively in teams and contribute their ideas. The current research highlights that women engineers find it difficult to contribute when their team members, especially male counterparts, are sceptical of their capabilities. It might be helpful for organisations to provide more training opportunities for their engineers, not only focusing on the technical knowledge and

skills of engineers, but also the interpersonal skills, communication skills, and how to work in a team with diverse backgrounds. It would be interesting if the companies could organise social events to develop a strong bond among engineers and minimise the barriers to their interaction.

9.3.3 Implementing Flexible Work Schedules and Work-Life Programmes for Women Engineers

The focus group discussions revealed that women engineers often face heavy workloads that require them to work extended hours. Due to the demanding nature of the job, many expressed frustrations over the difficulty in managing multiple roles. Long working hours and high workloads are common features of engineering work culture. Although women engineers may receive support from team members and supervisors in relation to work performance and teamwork, these pressures can have a considerable impact particularly on those who are pregnant. Moreover, women engineers in this research highlighted the need for remote work where they can work anywhere. Women engineers shared that they quit their jobs to follow their spouse or to stay near with family.

Based on these findings, it is suggested that organisations support women engineers in performing their duties effectively while also balancing commitments within and outside the workplace by offering flexible work schedules or remote work options. Offering flexible work schedules or remote work options can benefit women engineers with caregiving responsibilities at home (Fouad et al., 2017). As the engineering profession is frequently associated with long working hours, flexible work arrangements for women engineers could be offering a win-win situation for both

employer and employee. Human resource practitioners and line managers could consider work flexibility by modifying workers' schedules, especially in unexpected events (Magda and Lipowska, 2022; Chung, 2018).

With regards to remote work, it is a trend following technological advances and greater demand among employees (Hunter, 2019). However, remote work should be planned carefully to support the socialisation at work (Myers & Woo, 2017). In context tactics for instance, the context in which employees are socialised becomes a concern, mainly whether this socialisation occurs collectively and formally within the everyday work environment. While organisational socialisation tactics are traditionally modelled within the on-site work relationships of a company (Van Maanen and Schein, 1979), remote work requires careful planning to ensure successful work adjustment (Eva et al., 2022). In addition, working remotely can sometimes decrease socialisation opportunities (Hoffman, 2021) and impact the quality of work (Tan et al., 2021). Therefore, tactics should be modified to facilitate effective communication, interaction, and collaboration among women engineers and their team members.

In the Malaysian context, this finding carries practical implications for both employers and policymakers. Under the Employment Act Amendment 2022, specifically Sections 60P and 60Q, employees are permitted to request flexible working arrangements in terms of hours, days, or location, and employers are required to respond to such applications within 60 days. If the request is denied, the employer must provide the reasons for the refusal. However, as flexible work arrangements may present challenges such as role suitability and the need to maintain productivity

(Yusaini et al., 2023), the law does not obligate employers to approve all requests. Approval remains at the employer's discretion, taking into account operational requirements and business needs.

Therefore, human resource professionals and managers should collaborate to develop work–life programmes and flexible work arrangements that are suitable for women engineers as part of broader human resource management initiatives. The engineering sector may differ from others in terms of gender proportion, and support for women might be less apparent. In their mixed-method study on the impact of work-life programmes on organisational performance in engineering and construction sectors, Baker et al. (2024) discovered that supportive measures, such as assistance with caring responsibilities, prove beneficial for women engineers in balancing work and home demands. Consequently, this balance contributes to improved financial performance for the organisation. When organisations implement work-life programmes and provide essential support, especially for women with caregiving responsibilities, it enhances employee productivity and subsequently influences organisational effectiveness.

9.3.4 Enhancing Career Advancement Opportunities for Women Engineers

The current research also found that women engineers are concerned about their career development on a broader scale, highlighting the importance of a long-term career progression plan. It is undoubtedly challenging for women engineers to develop careers in the engineering industry. Women in male-dominated fields like engineering may encounter bias, stereotypes, and unequal opportunities, which can impede their career advancement (Sarathchandra et al., 2018; Yates & Skinner, 2021)

and put women engineers at greater risk of professional attrition (Cardador & Hill, 2018). Additionally, engineering work cultures that are not inclusive or supportive of women's career development can create additional hurdles for women engineers (Campuzano, 2019; Scott et al., 2021). An essential lesson from prior literature highlights the frustration experienced by women engineers in their treatment at the workplace. Consequently, many opt to resign from their current engineering job or organisation, join another company, or pursue additional academic qualifications to grow their career. Organisations need to introduce a range of interventions to reduce women engineers' dissatisfaction with the treatments they receive in the company and ensure a more inclusive work environment. Even though the personal career plan of women engineers may be beyond the employer's control, ensuring a better fit between women engineers and the job or organisation could influence them to reconsider leaving. It is suggested that employers pay serious attention to what is valuable to women engineers in their career development if the company is serious about retaining this minority group.

It would be a promising intervention by employers to provide career development opportunities for women engineers by having a policy on equal development and practice opportunities. Given that Malaysia is still new in practicing Equal Employment Opportunity, such as in Western countries (Jabatan Tenaga Kerja Semenanjung Malaysia, 2018), employers' efforts to ensure equal treatment to all employees, especially minorities like women would create balanced and fair opportunities in the workplace. Employers who take the initiative to develop their employees (i.e., women engineers) can give them hope for a better future in the company. Moreover, with the rising emphasis on the requirement for additional skilled

professionals in engineering, it is time for employers to underscore professional education to enhance retention rates among women engineers and foster more significant equity and diversity within engineering careers (Gill et al., 2008).

9.4 Research Limitations and Area for Future Research

Although the current research provides a more detailed explanation of why women engineers leave the job or organisation, some limitations must be highlighted and are worth further investigation. First, this research has delved into the experiences of women engineers at various stages of their careers. The study includes women engineers from the early, mid, and late stages of their careers, each facing unique challenges during the socialisation process within their employment. Ashforth et al. (2007) suggested a comprehensive model on the socialisation stages of employees, which involved the anticipation stage (before organisational entry), encounter (entering an organisation), adjustment (integrate into the organisational network) and stabilisation (employees become more established, effective and settled in the organisation). These are the four socialisation stages experienced by employees before reaching the maximum point in their career in a particular organisation, such as retirement or exit (for further reading, please refer to Section 3.3.2.1). In this regard, women engineers may encounter diverse work and non-work challenges as they progress through different employment stages. For instance, Glass et al. (2013) commented that a significant number of women engineers have been found to leave engineering careers within the first five years on the job. Kachchaf et al. (2015) discovered that women in science and engineering faced significant career-life challenges after 12 to 20 years in the sector. In addition, along the employment stages, there are periods in a woman's professional growth where progress slows down or

reaches a plateau. During these times, the pursuit of lifelong learning and a willingness to take risks can enhance the competitiveness of women engineers in order to climb their career ladder (Noorlizawati et al., 2013). Understanding what women engineers encounter during different employment stages can help in identifying systemic barriers that hinder their professional advancement and develop targeted interventions to address these issues effectively. Furthermore, by recognising and addressing these challenges, organisations can foster a supportive environment conducive to employee growth and development at every stage of their employment journey, leading to longer retention of talented women engineers within the company.

Secondly, the current research might not distinguish between different fields within engineering (e.g., civil, mechanical, electrical, and software engineering). Although the current research collected data from women engineers across diverse engineering sub-disciplines, offering a comprehensive and holistic understanding of turnover factors may lead to data aggregation issues. This could obscure important subfield-specific issues and trends, making it challenging to identify overarching trends and potentially diluting the impact of specific insights relevant to subfields. As discussed in Section 8.6.2, women engineers from different disciplines shared their work challenges and opportunities and encountered unique works, cultures, and expectations. For example, the gender balance and work culture in software engineering might differ significantly from that in civil engineering. The varying proportions of women in different engineering sub-disciplines (Sweeney, 2020; Cech, 2013) raise questions about the factors contributing to this situation and the challenges and opportunities these disparities present. Thus, it is suggested that future research explore the turnover factors specific to different engineering subdisciplines to identify

tailored strategies for retention in each field. Comparisons among different engineering subdisciplines would add valuable knowledge to the engineering profession literature.

Thirdly, the identified forces are from the perspective of women in engineering. It is worth investigating whether women working in other male-dominated industries such as agriculture, architecture, construction and information technology also experience similar challenges. Hickey and Cui (2023) reported that women leaders experienced difficulties climbing their professional career ladder in the architecture, engineering, and construction (AEC) sector. Moreover, the underrepresentation of women in the agriculture sector calls for a more in-depth investigation into its root causes. Examining why it is often perceived as a sector 'unsuitable for women,' especially in male-dominated occupations like agriculture, may unveil how women define jobs suitable for their participation in the industry. These findings are expected to enhance the understanding of the nature of jobs and work environments that align well with the needs and preferences of women in the male-dominance workplace. By shedding light on these aspects, the findings aim to provide valuable insights for creating more inclusive and supportive job opportunities and work environments that cater to women's diverse talents and aspirations.

Finally, even though current research findings reveal some of the common turnover factors among women engineers, these factors may not be universally applicable to women in other geographies (e.g., Asian region). Countries and regions may have unique cultural, social, and economic contexts that influence women's experiences in engineering work. For instance, organisational policies, gender norms,

and support systems may vary significantly between countries. It is suggested that similar studies be conducted in different geographic regions to see how turnover factors might differ and can be compared with Malaysia's findings. This can provide a more global perspective and help identify region-specific challenges and solutions.

9.5 Summary

In conclusion, this thesis makes a substantial and distinctive contribution to the literature on women in engineering professions through its comprehensive approach. This thesis employed a convergent mixed methods design that integrated quantitative analysis and qualitative inquiry to examine the relationships between organisational socialisation, job embeddedness, and turnover intention. Overall, the research findings successfully addressed the research questions, aligned with its objectives, illustrated the study's significance, and contributed to the literature. This research uncovers the various turnover factors derived from multiple life domains of women engineers that influence their intentions to leave. Importantly, this study goes beyond the traditional organisational context to investigate turnover's driving and restraining forces, shedding light on the various factors that influence women engineers' career decisions.

Furthermore, this thesis proposes a guideline framework for engineering professionals to manage turnover among women engineers and matters related to women in male-dominated professions. It also emphasises the development of effective intervention programmes to retain and engage women engineers in engineering. By recognising the interconnectedness of different factors and their impact on career decisions, this study emphasised the significance of a comprehensive approach to addressing gender disparities in engineering fields.

Ultimately, this research highlights the significance of considering women engineers' unique challenges and opportunities and emphasises the importance of creating supportive and inclusive environments that facilitate their professional development and success. By elevating the discourse surrounding women in engineering professions and offering insights into the factors driving their career decisions, this thesis aimed to inspire further research and initiatives to promote gender equity, equality, and diversity in STEM fields specifically in engineering.

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APPENDIX A: SURVEY MEASURES

Turnover Intentions Scale

Variables	Operational Definition	Items
Turnover Intentions	An individual's behavioural intentions to leave an organisation (Bigliardi et al., 2005).	1. I have intentions to leave the organisation in the next 12 months. 2. I have a strong feeling about leaving the organisation within the next 12 months. 3. I am likely to leave the organisation in the next 12 months.

Organisational Socialisation Tactics Scale

Variables	Operational Definition	Items
Organisational Socialisation Tactics	A process by which an individual acquires the social knowledge and skills necessary to assume an organisational role (Van Maanen & Schein, 1979, p.211)	1. After being recruited, I have been extensively involved with other new recruits in common, job-related activities. 2. This organisation puts all newcomers through the same set of learning experiences. 3. I went through a set of training experiences that are specifically designed to give newcomers a thorough knowledge of job-related skills. 4. I did not perform any of my normal job responsibilities until I was thoroughly familiar with departmental procedures and work methods. 5. There is a clear pattern in the way one role leads to another, or one job assignment leads to another, in this organisation. 6. The steps in the career ladder are clearly specified in this organisation. 7. I can predict my future career path in this organisation by observing other people's experiences.

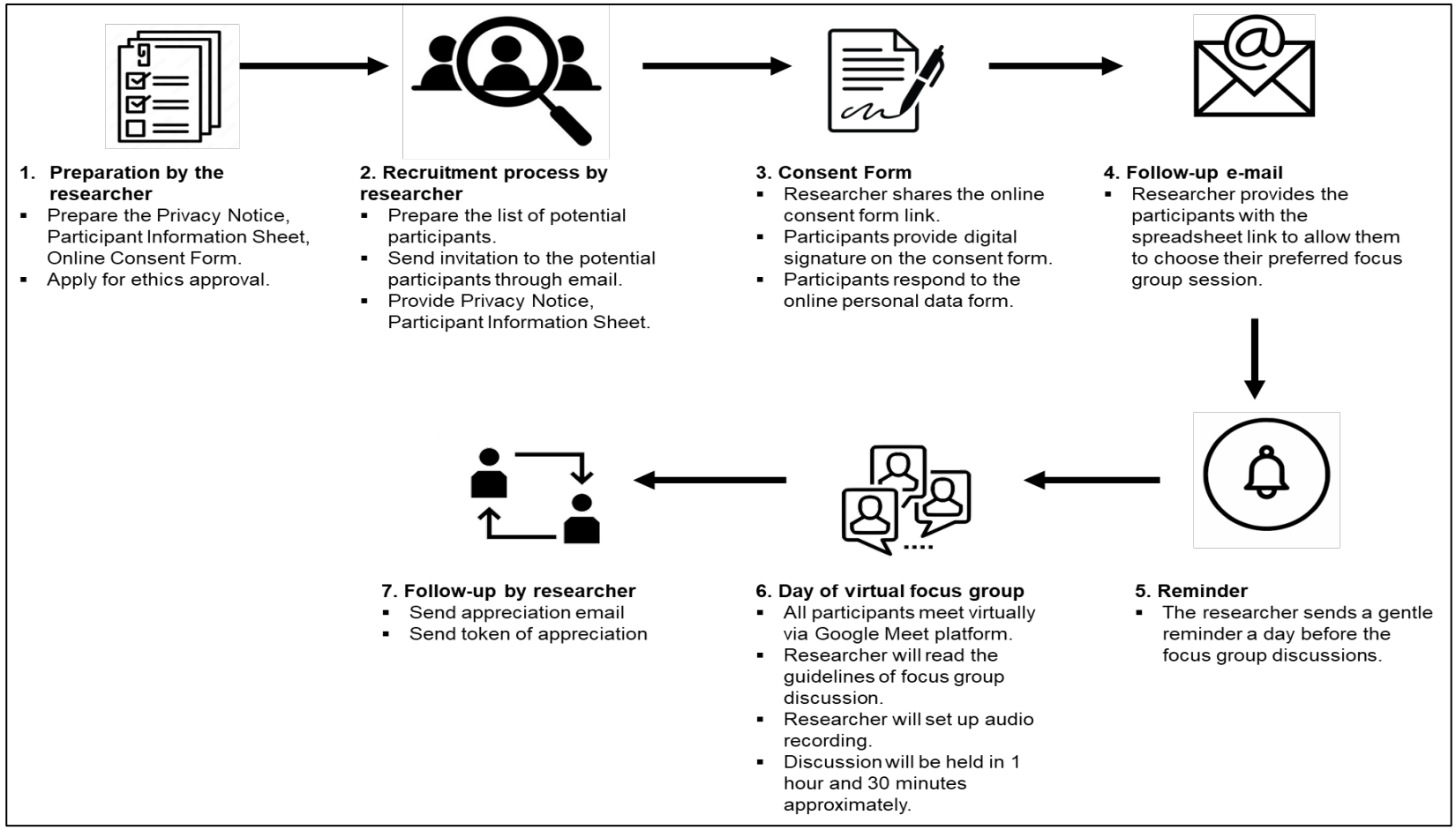
		8. The way in which my progress through this organisation will follow a fixed timetable of events was clearly communicated to me. 9. Almost all of my colleagues were supportive of me personally. 10. My colleagues went out of their way to help me adjust to this organisation. 11. I have received little guidance from experienced organisational members as to how I should perform my job. (R) 12. I gained a clear understanding of my role in this organisation from observing my senior colleagues.

Job Embeddedness Scale

Variables	Operational Definition	Items
Job embeddedness	The forces that bind people to the location, people, and issues at work (Crossley, Bennett, Jex, & Burnfield, 2007, p. 1031).	<u>On job embeddedness</u> 1. The organisation provides me with a way of life that suits me. 2. Overall, I fit very well in the organisation. 3. My closest friends are in the organisation. 4. Overall, I have strong ties with people throughout the organisation. 5. I would miss the excitement that this job brings if I left. 6. There would be many things about organisational life that I would be sad to lose if I left. <u>Off job embeddedness</u> 1. The area where I am based right now is suitable for my family and friends. 2. There is plenty to keep me happy off duty around here. 3. Even if I decide to leave the organisation I would still live in the area where I am based at the moment. 4. My family/partner has strong ties around the community where I am currently based.

		5. Leaving the area where I am currently based would mean many personal and/or family sacrifices 6. I would be very sad to leave the general community where I am based right now.

APPENDIX B: FLOW OF THE ONLINE FOCUS GROUP DISCUSSION



APPENDIX C: FOCUS GROUP PROTOCOL AND QUESTIONS

Step 1: Welcome and thank everyone for coming. Moderator introduced herself asked participants to introduce themselves.

Hi and good day everyone. My name is Arnida Jahya, a doctoral researcher from University of Strathclyde, and I'll be the moderator for our focus group today. Thank you so much everyone for being here and join this focus group discussion. Before we start our discussion, I'd like to invite everyone to introduce yourself, so let's go around the circle and start with Ms. AAA…

Step 2: Explain the purpose of the focus group discussion.

Before we start the discussion, I would like to explain a little bit why we are here and how we are going to conduct the focus groups. In this focus group, I will be leading today's discussion. My most important task is to ask questions, to keep to the time frame and to make sure that you all have the opportunity to share your knowledge and experiences.

As I mentioned in our previous email conversation, the purpose of this focus group is to learn more about the factors that drive female engineers to leave a company. I will ask you here to talk about your experiences working in your current company and also about your life outside the company. There are no right or wrong answers to my questions. I need your input and want you to share your honest and open thoughts with the group. I want everyone to participate in these discussions because everyone's experiences and opinions are important.

If someone expresses an idea that you would like to expand on, or if you have a different point of view, please speak up. Feel free to agree or disagree with what others say but respect their views. I may need to interrupt the discussion to bring us back to the topic or move on to another question or topic to make sure we cover everything on our agenda.

It is important to note that we will be audio recording the session to ensure that we do not miss any of the responses. Today's discussion session will last a maximum of one to one and a half hours in total, including a break.

Step 3: Confidentiality

All information collected today is confidential. I will use the information you provide, but I will not identify any of you in anything we do in connection with this meeting. For example, I will not use your name, address or other identifying information in reports or other materials related to this focus group.

OK, are there any questions or concerns before we begin?

Step 4: Start the discussion and turn on the recorder.

Ok, we will now begin.

— Ask question and probing —

Step 5: Closing Remarks

That was our final question. Thank you very much for participating in this focus group. The information you have provided is particularly important in improving our understanding of the opportunities and difficulties women engineers face in the workplace, which may impact on their career choices. This information will also be helpful for employers to take action to retain and support women in the company.

Are there any additional comments or any questions that I can answer before we end the session?

Thank you again for your help. I really, really appreciate your time and your knowledge.

I will contact you again after this with regards your token of appreciation.

Thank you and have a nice day everyone.

The researcher stops the recorder and ends the session.

APPENDIX D: BASIC FOCUS GROUP DISCUSSION QUESTIONS

1. Can you share your thoughts on the overall work environment at your workplace?
2. If you can recall, when you joined the organisation and during your employment, was it easy or difficult for you to settle into the organisation?
3. Based on your experience and observation, what is the usual practice when an engineer joins a company? What does the company do to help engineers adapt to the environment?
4. Tell us about your level of attachment to the team and the organisation once you joined the current company. Do you feel that you play an essential role within the team?
5. Let us talk about the situation outside the company. What has been your experience as a career woman in engineering, or what have you heard from others about outside commitments that a woman engineer usually has to fulfil?
6. If you were thinking about leaving your current company, what would be the main reason?
7. If you had the opportunity to leave the company now, why would you stay?
8. In your opinion, do women engineers usually leave the company for organisational or non-organisational reasons?

APPENDIX E: PARTICIPANT INFORMATION SHEET AND CONSENT FORM

Name of department: Work, Employment & Organisation
Title of the study: Turnover Intentions among Women Engineers: A Field Theory Perspective

Introduction

I am a full-time senior lecturer in HRM at the Faculty of Business and Management, Universiti Teknologi MARA and I am undertaking a PhD in HRM at Strathclyde Business School in Glasgow under the supervision of Professor Dora Scholarios and Professor Patricia Findlay. My contact details are: Mobile: +60193644XXX WhatsApp: +447517757XXX Email: arnida-binti-jahya@strath.ac.uk.

I would like to invite you to participate in an online focus group discussion as part of my doctoral research project. Before you decide whether you would like to take part, it is important that you understand why the research is being conducted and what it would involve for you. Please take the time to read the following information carefully and ask me if anything is unclear to you or you would like more information.

What is the purpose of this research?

The aim of this study is to gain a better understanding of the factors that may influence the career decisions of women engineers. This exploratory study will focus on the following:

1. *Identifying factors within and outside the organisation that may influence the turnover intentions of women engineers.*
2. *Exploring the experience of socialisation within an organisation and the factors that facilitate or hinder this process.*
3. *Investigate the factors that lead to women engineers staying in the company.*
4. *Investigate how different roles influence the career decisions of women engineers.*

Do you have to take part?

Your participation in this study would involve an online focus group discussion that would last approximately one to one and a half hours. Participation in these focus group discussions is entirely voluntary. If you decide not to participate or to withdraw from the study at a later date, you will not be entitled to any penalty that you would otherwise be entitled to. If you wish to withdraw from the focus group discussions, please let me know by email.

What will you do in the project?

Your participation would include a focus group discussion with 6 - 8 women engineers who will be asked to discuss the forces that could make you think about leaving or prevent you from leaving a company. I myself will moderate the discussion in each focus group and guide you through the entire discussion. There are no right or wrong answers in a discussion, but I am interested in your sharing and opinions. You can expect the discussion to last about one and a half hours (including preparation and group discussion). The focus groups will be conducted at a time that is convenient for the participants. I happy to conduct them during the weekdays or at the weekend, depending on the preferences of the participants.

You will be given a breakdown of the structure of the focus group discussions in advance. And if you feel comfortable after reading this information sheet, complete the consent form, answer the questions in a short survey and then indicate your availability for a focus group.

Although this research may not directly benefit your career, your contribution to the discussion will add to the body of knowledge in the topic area of this study - employee turnover. This is important for industry stakeholders and researchers when developing retention strategies, especially for women. As a thank you for your time and effort to fully participate in the focus group discussion, you will receive an RM50 shopping voucher.

Why have you been invited to take part?

You are invited to participate in this focus group discussion because your insight as a woman engineer is important to improve our understanding of women's career choices. However, only employed women engineers working in Malaysia, regardless of their personal and professional backgrounds, are eligible to participate in the focus group discussion to get an accurate response to the questions. Self-employed and unemployed women engineers are unfortunately not eligible to participate.

Participants must also have previous work experience and have left at least one organisation before joining the current one. Each focus group consists of women engineers from different backgrounds, e.g. marital status, position and seniority, in order to promote the quality of the discussions and allow contrasting opinions to be expressed.

What are the potential risks to you in taking part?

Your participation should not be associated with any possible danger or disadvantage. Your name, the name of the organisation you represent and the names of any other individuals you have mentioned during discussions will all be treated with utmost confidentiality and protection. Your email address will also be kept for the purpose of communication before and during the focus group but will not be shared with third parties. Any personal information that could identify you will not

be mentioned in the results of the study or in any subsequent publications. All participants will be given a pseudonym for reporting purposes.

This focus group discussion is also conducted virtually to protect you and other participants from Covid-19.

Who will have access to the information?
The data collected in the focus group discussion will be securely stored on a password-protected electronic device to which only I have access.

Where will the information be stored and how long will it be kept for?
The focus group discussion will be audio- recorded and later transcribed verbatim. A password-protected electronic device will be used to keep the information obtained from the focus group discussion secure and accessible only to me. The data will be kept for five years and protected for future use.

What happens next?
If you agree to participate in this focus group discussion, I will contact you again to discuss how to proceed. You will also be required to sign a consent form indicating your agreement to participate in the discussion. This consent form will be sent via Qualtrics; you just need to sign it digitally and send it. Once the consent form is signed, you will be given some options for the discussion sessions, and you can choose a date that suits you.

After the focus group discussions are completed and if you are interested in the results of the discussion, please do not hesitate to let me know. However, the results will not be shared until the PhD study is completed. It is important that you know that the results of this study will be published in the PhD thesis or in academic journals. Rest assured that no real name will be mentioned.

Researchers contact details:

If you have any questions about this study, you can contact me, Arnida Jahya by email arnida-binti-jahya@strath.ac.uk or by WhatsApp on +447517757XXX or directly on +60193644XXX.

Chief Investigator details:
Professor Dora Scholarios, Work, Employment and Organisation. Email address: d.scholarios@strath.ac.uk

This research was granted ethical approval by the University of Strathclyde Ethics Committee.

If you have any questions/concerns, during or after the research, or wish to contact an independent person to whom any questions may be directed or further information may be sought from, please contact:

Secretary to the University Ethics Committee
Research & Knowledge Exchange Services
University of Strathclyde
Graham Hills Building
50 George Street
Glasgow
G1 1QE

Telephone: 0141 548 3707
Email: ethics@strath.ac.uk

APPENDIX F: INVITATION MESSAGE

Good day Ms. XXX,

I hope you are doing well.

You might be aware that I contacted you in 2018 to invite you to take part in a survey about engineers' intentions to leave job/organisation.

I turn to you again to inform you about the results of the last survey and how you can contribute to the further investigation.

It is possible that you are currently employed at the same organisation, have transitioned to a different company, or pursued a new career path. Your experiences during this timeframe hold significant value to my research. In particular, I would like to have some discussion with you and few other women engineers regarding the factors that influence the career progress of women engineers.

Hence, I would very much like to arrange an online focus group with you and several other women engineers to discuss the forces that influence women engineers' career progress. This time around, only women engineers will participate in the focus group discussion.
As a thank you for your time and effort, you will receive an RM50 shopping voucher.

I sincerely hope that you will accept this invitation so that the opinions of female engineers on this issue can contribute to the development of knowledge, as well as help the organisation better understand the needs of female engineers. It is also very important for me to complete my PhD studies.

As for now, only 4 women engineers agreed to participate. I hope you can be the next participant of this focus group.

If you are interested to participate, you can inform me by replying to this message. Or contact me through WhatsApp (+447517757XXX) or direct call (+60193644XX).

For more information about me and my study, please click:
https://drive.google.com/drive/folders/1twulZjUKfKzvpK2SiYtILhNyAkSueiND?usp=sharelink

Looking forward to hearing from you.

Thank you and have a nice day.
#IWD2023 #EmbraceEquity

Arnida Jahya
University of Strathclyde, Glasgow.

APPENDIX G: BACKGROUND OF THE RESEARCHER TO BE SHARED WITH THE PARTICIPANTS OF FOCUS GROUPS

ARNIDA JAHYA

DOCTORAL RESEARCHER

PROFILE

My name is Arnida Jahya, and I am a senior lecturer at the Faculty of Business and Management at UiTM. I am currently pursuing a PhD in Human Resource Management at the University of Strathclyde, Glasgow, Scotland. As a senior lecturer in Human Resource Management, I am responsible for delivering curriculum, conducting research, and providing academic and professional guidance to students. In addition to my academic work, I am committed to making a positive impact on the community through various collaboration with government agencies, industrial players, and alumni.

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d.scholarios@strath.ac.uk

RESEARCH

Engineering is commonly related to men's work, with 80% of the engineering workforce being made up of men. However, the increasing involvement of women in this industry has demonstrated that it is not necessarily a profession exclusively for men, and that women are equally capable of being successful engineers. Despite this progress, the industry that is always associated with masculine identity can still be a challenging environment for women. Due to women are stereotypically expected to hold multiple roles (e.g., at work, home and community), consequently, role stress and role conflicts may arise and influence their withdrawal cognitions.

Basing the idea on role theory, which posits that women occupy multiple roles in various settings, I am motivated to investigate the challenges experienced by women engineers both within and outside of the organization, which may influence their career decisions. My research interest lies in understanding the driving and restraining forces behind employee turnover among women engineers, using Lewin's field theory as a theoretical framework. This theory posits that behavior is influenced by a dynamic interplay between driving forces that push individuals towards a particular action, and restraining forces that inhibit or resist such action. By applying this framework to the context of women engineers' turnover, I aim to identify the key factors that drive their decision to leave or stay in their organizations, as well as the barriers that prevent them from leaving. To explore this issue more detail, focus group discussion is employed to allow a more dynamic and interactive discussion among the women engineers, resulting in rich and in-depth data.

I hope that this research will help organizations develop more effective strategies to attract, retain, and promote women engineers, thereby enhancing gender diversity and equity in STEM fields.

University of Strathclyde Glasgow

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UNIVERSITY OF THE YEAR 2012 & 2019
Times Higher Education

SCOTTISH UNIVERSITY OF THE YEAR 2020
The Times & The Sunday Times

APPENDIX H: QUANTITATIVE ANALYSIS: HYPOTHESES TESTING

H_{1a} - There is a significant negative relationship between context tactics and turnover intentions

Model Summary for Linear Regression for Context Tactics and Turnover Intentions

Model Summary [b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.073[a]	.005	.002	5.90145

a. Predictors: (Constant), CNTX
b. Dependent Variable: TOI

ANOVA Model for Context Tactics and Turnover Intentions

ANOVA [a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	57.983	1	57.983	1.665	.198[b]
	Residual	10691.926	307	34.827		
	Total	10749.909	308			

a. Dependent Variable: TOI
b. Predictors: (Constant), CNTX

Coefficients Table for Context Tactics and Turnover Intentions

Coefficients [a]

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	13.592	1.400		9.710	.000
	CNTX	-.097	.076	-.073	-1.290	.198

a. Dependent Variable: TOI

H_{1b} - There is a significant negative relationship between content tactics and turnover intentions

Model Summary for Linear Regression for Content Tactics and Turnover Intentions

Model Summary [b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.301[a]	.090	.087	5.64359

a. Predictors: (Constant), CNTN

b. Dependent Variable: TOI

ANOVA Model for Content Tactics and Turnover Intentions

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	971.915	1	971.915	30.515	.000[b]
	Residual	9777.994	307	31.850		
	Total	10749.909	308			

a. Dependent Variable: TOI

b. Predictors: (Constant), CNTN

Coefficients Table for Content Tactics and Turnover Intentions

Coefficients [a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	19.097	1.353		14.118	.000
	CNTN	-.378	.068	-.301	-5.524	.000

a. Dependent Variable: TOI

H_{1c} - There is a significant negative relationship between social tactics and turnover intentions

Model Summary for Linear Regression for Social Tactics and Turnover Intentions

Model Summary [b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.288[a]	.083	.080	5.66753

a. Predictors: (Constant), SOC

b. Dependent Variable: TOI

ANOVA Model for Social Tactics and Turnover Intentions

ANOVA [a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	888.794	1	888.794	27.670	.000[b]
	Residual	9861.116	307	32.121		
	Total	10749.909	308			

a. Dependent Variable: TOI

b. Predictors: (Constant), SOC

Coefficients Table for Social Tactics and Turnover Intentions

Coefficients [a]						
		Unstandardized Coefficients		Standardized Coefficients		Si
Model		B	Std. Error	Beta	t	g.
1	(Constant)	19.917	1.569		12.692	.0
						00
	SOC	-.512	.097	-.288	-5.260	.0
						00

a. Dependent Variable: TOI

Most Important Predictors of Turnover Intentions among Organisational Socialisation Factors

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	20.623	1.746		11.808	.000
	CNTX	.188	.084	.142	2.246	.025
	CNTN	-.341	.086	-.271	-3.959	.000
	SOC	-.356	.112	-.200	-3.177	.002

a. Dependent Variable: TOI

H_{2a} - There is a significant negative relationship between on-job embeddedness and turnover intentions

Model Summary for Linear Regression for On-job-embeddedness and Turnover Intentions

Model Summary [b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.455[a]	.207	.204	5.27015

a. Predictors: (Constant), ONJE
b. Dependent Variable: TOI

ANOVA Model for On-job-embeddedness and Turnover Intentions

ANOVA [a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2223.140	1	2223.140	80.042	.000[b]
	Residual	8526.770	307	27.774		
	Total	10749.909	308			

a. Dependent Variable: TOI
b. Predictors: (Constant), ONJE

Coefficients Table for On-job-embeddedness and Turnover Intentions

Coefficients [a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	23.703	1.360		17.434	.000
	ONJE	-.402	.045	-.455	-8.947	.000

a. Dependent Variable: TOI

H_{2b} - There is a significant negative relationship between off-job embeddedness and turnover intentions

Model Summary for Linear Regression for Off-job-embeddedness and Turnover Intentions

Model Summary [b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.180[a]	.032	.029	5.82129

a. Predictors: (Constant), OFFJE

b. Dependent Variable: TOI

ANOVA Model for Off-job-embeddedness and Turnover Intentions

ANOVA [a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	346.465	1	346.465	10.224	.002[b]
	Residual	10403.444	307	33.887		
	Total	10749.909	308			

a. Dependent Variable: TOI

b. Predictors: (Constant), OFFJE

Coefficients Table for Off-job-embeddedness and Turnover Intentions

Coefficients [a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	15.393	1.160		13.270	.000
	OFFJE	-.129	.040	-.180	-3.198	.002

a. Dependent Variable: TOI

H_{3a} - There is a significant negative relationship between context tactics and on-job embeddedness

Model Summary for Linear Regression for Context Tactics and On-job-embeddedness

Model Summary [b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.252[a]	.064	.061	6.48125

a. Predictors: (Constant), CNTX

b. Dependent Variable: ONJE

ANOVA Model for Context Tactics and On-job-embeddedness

ANOVA [a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	876.912	1	876.912	20.876	.000[b]
	Residual	12896.046	307	42.007		
	Total	13772.958	308			

a. Dependent Variable: ONJE

b. Predictors: (Constant), CNTX

Coefficients Table for Context Tactics and On-job-embeddedness

Coefficients [a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	22.712	1.537		14.775	.000
	CNTX	.379	.083	.252	4.569	.000

a. Dependent Variable: ONJE

H_{3b} - There is a significant negative relationship between content tactics and on-job embeddedness

Model Summary for Linear Regression for Content Tactics and On-job-embeddedness

Model Summary [b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.430[a]	.185	.183	6.04574

a. Predictors: (Constant), CNTN

b. Dependent Variable: ONJE

ANOVA Model for Content Tactics and On-job-embeddedness

ANOVA [a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2551.824	1	2551.824	69.816	.000[b]
	Residual	11221.134	307	36.551		
	Total	13772.958	308			

a. Dependent Variable: ONJE

b. Predictors: (Constant), CNTN

Coefficients Table for Content Tactics and On-job-embeddedness

Coefficients [a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	17.769	1.449		12.263	.000
	CNTN	.612	.073	.430	8.356	.000

a. Dependent Variable: ONJE

H_{3c} - There is a significant negative relationship between social tactics and on-job embeddedness

Model Summary for Linear Regression for Social Tactics and On-job-embeddedness

Model Summary [b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.567[a]	.322	.320	5.51530

a. Predictors: (Constant), SOC

b. Dependent Variable: ONJE

ANOVA Model for Social Tactics and On-job-embeddedness

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4434.452	1	4434.452	145.781	.000[b]
	Residual	9338.506	307	30.419		
	Total	13772.958	308			

a. Dependent Variable: ONJE

b. Predictors: (Constant), SOC

Coefficients Table for Social Tactics and On-job-embeddedness

Coefficients [a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	11.485	1.527		7.521	.000
	SOC	1.144	.095	.567	12.074	.000

a. Dependent Variable: ONJE

H_{3d} - There is a significant negative relationship between context tactics and off-job embeddedness

Model Summary for Linear Regression for Context Tactics and Off-job-embeddedness

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.006[a]	.000	-.003	8.22376

a. Predictors: (Constant), CNTX

b. Dependent Variable: OFFJE

ANOVA Model for Context Tactics and Off-job-embeddedness

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.660	1	.660	.010	.921[b]
	Residual	20762.492	307	67.630		
	Total	20763.152	308			

a. Dependent Variable: OFFJE

b. Predictors: (Constant), CNTX

Coefficients Table for Context Tactics and Off-job-embeddedness

Coefficients [a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	27.331	1.951		14.012	.000
	CNTX	.010	.105	.006	.099	.921

a. Dependent Variable: OFFJE

H_{3e} - There is a significant negative relationship between content tactics and off-job embeddedness

Model Summary for Linear Regression for Content Tactics and Off-job-embeddedness

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.156[a]	.024	.021	8.12332

a. Predictors: (Constant), CNTN

b. Dependent Variable: OFFJE

ANOVA Analysis for Content Tactics and Off-job-embeddedness

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	504.730	1	504.730	7.649	.006[b]
	Residual	20258.423	307	65.988		
	Total	20763.152	308			

a. Dependent Variable: OFFJE

b. Predictors: (Constant), CNTN

Coefficients Table for Content Tactics and Off-job-embeddedness

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	22.287	1.947		11.447	.000
	CNTN	.272	.098	.156	2.766	.006

a. Dependent Variable: OFFJE

H_{3f} - There is a significant negative relationship between social tactics and off-job embeddedness

Model Summary for Linear Regression for Social Tactics and Off-job-embeddedness

Model Summary [b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.233[a]	.054	.051	7.99825

a. Predictors: (Constant), SOC

b. Dependent Variable: OFFJE

ANOVA Analysis for Social Tactics and Off-job-embeddedness

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1123.731	1	1123.731	17.566	.000[b]
	Residual	19639.421	307	63.972		
	Total	20763.152	308			

a. Dependent Variable: OFFJE

b. Predictors: (Constant), SOC

Coefficients Table for Social Tactics and Off-job-embeddedness

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	18.434	2.215		8.324	.000
	SOC	.576	.137	.233	4.191	.000

a. Dependent Variable: OFFJE

Most Important Predictors of Turnover Intentions among Job Embeddedness Factors

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	23.428	1.434		1Table33	.000
	ONJE	-.416	.050	-.471	-8.234	.000
	OFFJE	.025	.041	.035	.607	.544

a. Dependent Variable: TOI

Most Important Predictors of On-job Embeddedness among Organisational Socialisation Factors

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	9.721	1.710		5.686	.000
	CNTX	-.041	.082	-.028	-.504	.615
	CNTN	.284	.084	.200	3.375	.001
	SOC	.957	.110	.474	8.708	.000

a. Dependent Variable: ONJE

Most Important Predictors of Off-job Embeddedness among Organisational Socialisation Factors

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	19.494	2.509		7.770	.000
	CNTX	-.249	.120	-.135	-2.069	.039
	CNTN	.191	.124	.110	1.548	.123
	SOC	.560	.161	.226	3.472	.001

a. Dependent Variable: OFFJE