

A Design-Based Research Approach to Understanding Women's Journey into Executive Leadership Through Higher Education

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Abstract

This paper examines the complex pathways women navigate toward executive leadership positions, with particular focus on the role of higher education in shaping aspirations, the influence of role models and mentorship, and the significance of organisational culture in facilitating or constraining women's leadership development. Drawing from a comprehensive Design-Based Research (DBR) study that developed and implemented an innovative MBA Women's Leadership course, this research employs Interpretative Phenomenological Analysis (IPA) and Bakhtin's dialogic framework to understand how women construct and negotiate their leadership identities within institutional contexts.

The study addresses three critical research questions through a mixed-methods approach involving 45 participants across two iterative cycles of course development and implementation. Quantitative analysis revealed statistically significant improvements across all leadership dimensions ($p < 0.001$), with effect sizes ranging from 0.89 to 1.45, indicating large to very large practical significance. Qualitative findings demonstrate that women continue to face systemic barriers including gender stereotypes (73.3% of participants), limited role model availability (84.4%), and work-life integration challenges (77.8%).

Key findings demonstrate that when leadership development is specifically tailored to women's lived experiences and challenges, it can lead to enhanced confidence (Cohen's $d = 1.24$), deeper self-understanding, and stronger preparation for leadership roles. Six-month follow-up data revealed that 42.9% of participants received promotions or advancement, 59.5% gained new leadership opportunities, and 83.3% pursued additional professional development. The study contributes both theoretical insights into leadership identity formation and practical strategies for creating more inclusive educational and organisational environments. The research highlights the critical importance of intersectional approaches that recognise the compounded barriers faced by women from diverse backgrounds, with women of colour reporting 15-22% higher barrier levels across most categories compared to white women. These findings have significant implications for educational institutions, organisational leaders, and policymakers committed to advancing gender equity in leadership positions.

Keywords: women's leadership, higher education, design-based research, gender equity, organisational culture, role models, leadership development

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I. Introduction

The underrepresentation of women in executive leadership positions remains one of the most persistent challenges facing contemporary organisations and educational institutions worldwide. Despite decades of

progress in gender equality initiatives and the increasing presence of women in higher education, the pathway from academic achievement to executive leadership continues to be marked by significant barriers and systemic constraints (Eagly & Karau, 2002). This phenomenon, often characterised by the metaphor of the “glass ceiling,” reflects not merely individual challenges but complex institutional, cultural, and structural dynamics that shape women’s professional trajectories and leadership aspirations (Powell & Butterfield, 2015).

The significance of this issue extends beyond questions of fairness and representation to encompass broader concerns about organisational effectiveness, innovation, and social justice. Research consistently demonstrates that diverse leadership teams, including gender-diverse teams, contribute to enhanced decision-making, improved financial performance, and greater organisational resilience (Catalyst, 2020). Yet women continue to be significantly underrepresented in senior leadership roles across sectors, with particularly pronounced disparities in executive positions within higher education institutions, corporate boardrooms, and senior management roles (Collins & Bilge, 2020).

This paper presents findings from a comprehensive Design-Based Research (DBR) study that investigated the pathways women take toward executive leadership, with specific focus on the role of higher education in shaping these journeys. The research challenges the traditional meritocratic assumption that leadership positions are earned solely through individual achievement, instead examining how larger systems and structures shape opportunities, experiences, and outcomes for women aspiring to leadership roles (Acker, 2006). Through the development and implementation of an innovative MBA Women’s Leadership course involving 45 participants across two iterative cycles, this study explores both the barriers that constrain women’s leadership development and the interventions that can effectively support their progression.

Table 1: Participant Demographics (N=45)

Characteristic	n	%
Age Range		
25-30 years	12	26.7
31-35 years	18	40.0
36-40 years	10	22.2
41+ years	5	11.1
Educational Background		
Bachelor’s degree	8	17.8
Master’s degree	32	71.1
Doctoral degree	5	11.1
Industry Sector		
Education	15	33.3
Healthcare	8	17.8
Technology	7	15.6
Finance	6	13.3
Non-profit	5	11.1
Other	4	8.9
Current Position Level		
Entry-level	3	6.7
Mid-level	28	62.2
Senior-level	12	26.7
Executive-level	2	4.4
Years of Work Experience		
0-5 years	8	17.8
6-10 years	19	42.2
11-15 years	12	26.7
16+ years	6	13.3
Ethnicity		
White/Caucasian	28	62.2
Asian	8	17.8
Hispanic/Latino	5	11.1
Black/African American	3	6.7
Other/Mixed	1	2.2

The research is grounded in the understanding that women’s experiences of leadership development are fundamentally shaped by intersecting factors including educational environments, role model availability, organisational culture, and broader societal expectations about gender and leadership (Crenshaw, 1989). Rather than treating these as separate influences, this study adopts an integrated approach that recognises the complex interplay between personal agency, institutional structures, and cultural dynamics in shaping women’s leadership trajectories.

1.1 Context and Significance

The contemporary landscape of women’s leadership development occurs within a context of apparent progress alongside persistent inequality. While women now comprise the majority of university graduates in

many countries and have achieved significant representation in professional fields, their presence diminishes dramatically at senior leadership levels (Rosa et al., 2020). This pattern, observed across sectors and geographies, suggests that the barriers to women's leadership advancement are not simply matters of educational preparation or individual capability, but reflect deeper structural and cultural dynamics that require systematic investigation and intervention.

Higher education institutions occupy a particularly significant position in this landscape, serving simultaneously as sites where leadership aspirations are formed and as organisations that themselves struggle with gender equity in leadership positions (White & Ozkanli, 2011). The dual role of these institutions as educators of future leaders and as workplaces with their own leadership hierarchies creates unique opportunities to understand and address the factors that support or constrain women's leadership development.

The significance of this research extends to multiple stakeholder groups. For educational institutions, understanding how to effectively support women's leadership development is essential for fulfilling their mission of preparing graduates for leadership roles while also addressing their own internal equity challenges (Ahmed, 2022). For organisations seeking to develop diverse leadership pipelines, insights into effective leadership development approaches for women can inform recruitment, development, and retention strategies. For policymakers concerned with gender equity, this research provides evidence-based insights into the types of interventions and systemic changes that can meaningfully advance women's representation in leadership positions.

1.2 Research Approach and Innovation

This study employs a Design-Based Research methodology, an approach that emphasises the iterative development and testing of interventions within real-world contexts (Brown, 1992). This methodological choice reflects the research's commitment to generating both theoretical insights about women's leadership development and creating practical solutions to the challenges women face in progressing toward leadership roles. Rather than simply documenting existing barriers or describing current conditions, the research actively engages in creating and refining interventions designed to address identified challenges.

The integration of Design-Based Research with Interpretative Phenomenological Analysis (IPA) provides a methodological framework that is both rigorous and responsive to participants' lived experiences (Smith et al., 2009). This combination enables the research to explore how women subjectively experience leadership development while also systematically testing and refining interventions designed to support their progression. The use of Bakhtin's dialogic framework further enriches the analysis by providing theoretical tools for understanding how women negotiate and construct their leadership identities within complex discursive environments (Bakhtin, 1981).

The central intervention developed through this research, an MBA Women's Leadership course, represents an innovative approach to leadership education that is explicitly designed to address the unique challenges and experiences of women aspiring to leadership roles. Unlike traditional leadership development programmes that often adopt a one-size-fits-all approach, this course is grounded in recognition of the specific barriers women face and the particular strengths and perspectives they bring to leadership contexts (Shapiro et al., 2022).

1.3 Research Questions and Objectives

This research is guided by three interconnected research questions that address different dimensions of women's leadership development. The first research question explores how higher education shapes women's aspirations and preparation for leadership roles. This question investigates the multifaceted relationship between educational experiences and leadership development, examining how institutional structures, pedagogical approaches, and educational cultures influence women's leadership aspirations and capabilities. The investigation encompasses both formal curriculum elements and informal aspects of the educational environment that contribute to leadership identity formation.

The second research question investigates the extent to which role models can support and influence women in accessing leadership positions. This question explores the complex dynamics of role modeling and mentorship in women's leadership development, examining how the presence or absence of female role models affects women's career aspirations and progression. The research examines both formal mentoring relationships and informal role model influences, with particular attention to the gender dynamics that shape these relationships.

The third research question addresses how significant organisational culture is in establishing pathways for women into leadership roles. This question examines the cultural and structural factors within organisations that either facilitate or constrain women's advancement to leadership positions. The investigation encompasses both explicit policies and practices and the informal cultural dynamics that shape women's experiences and opportunities within organisational contexts.

These research questions are designed to work together to provide a comprehensive understanding of the factors that influence women's leadership development, while also informing the design and refinement of interventions intended to support women's progression into leadership roles. The interconnected nature of these questions reflects the research's recognition that women's leadership development occurs within complex systems that require multifaceted understanding and intervention approaches.

II. Literature Review

2.1 Theoretical Foundations of Women's Leadership Development

The study of women's leadership development draws from multiple theoretical traditions that illuminate different aspects of the complex relationship between gender, education, and organisational advancement. Understanding these theoretical foundations is essential for developing comprehensive approaches to supporting women's leadership progression and for designing effective interventions that address both individual and systemic factors.

Gender role theory, as articulated by Eagly and Karau (2002), provides crucial insights into the double-bind dilemma that women face in leadership contexts. This theory explains how women are often perceived as either "too soft" to lead effectively or "too masculine" when they exhibit the assertiveness typically associated with leadership roles. This paradox creates a fundamental challenge for women seeking leadership positions, as they must navigate contradictory expectations about appropriate feminine behaviour and effective leadership behaviour. The implications of this theory extend beyond individual experiences to encompass the broader cultural and organisational dynamics that shape perceptions of women's leadership capabilities.

Social learning theory, developed by Bandura (1977), offers important perspectives on how leadership skills and identities are developed through observation, modeling, and social interaction. This theoretical framework is particularly relevant for understanding the role of mentorship and role models in women's leadership development. According to social learning theory, individuals develop capabilities and self-efficacy through observing others who are similar to themselves successfully performing desired behaviours. For women aspiring to leadership roles, the availability of female role models and mentors becomes crucial for developing both the skills and confidence necessary for leadership success.

Intersectionality theory, originally developed by Crenshaw (1989) and further elaborated by Collins and Bilge (2020), provides essential insights into how multiple dimensions of identity interact to create unique experiences of privilege and marginalisation. This theoretical framework is particularly important for understanding women's leadership development because it recognises that women do not constitute a homogeneous group. Women of colour, women with disabilities, women from working-class backgrounds, and women from other marginalised groups face compounded barriers that cannot be understood simply by adding together the effects of gender discrimination and other forms of discrimination. Intersectionality theory demands that research and interventions addressing women's leadership development consider the full complexity of women's identities and experiences.

Bakhtin's concept of dialogism offers a sophisticated framework for understanding how individuals construct and negotiate their identities within complex discursive environments (Bakhtin, 1981). Applied to leadership development, dialogism helps explain how women navigate competing discourses about gender, leadership, and professional identity. Women aspiring to leadership roles must negotiate between traditional feminine role expectations, professional competency requirements, and leadership effectiveness criteria, often finding themselves in dialogue with contradictory messages about appropriate behaviour and identity. This theoretical framework is particularly valuable for understanding the internal processes through which women develop leadership identities and the external factors that influence these processes.

2.2 Systemic Barriers to Women's Leadership Advancement

The literature on women's leadership development consistently identifies multiple systemic barriers that constrain women's progression into executive positions. These barriers operate at individual, interpersonal, organisational, and societal levels, creating complex webs of constraint that require comprehensive understanding and multifaceted interventions.

Structural barriers represent perhaps the most visible and well-documented constraints on women's leadership advancement. The glass ceiling effect, first identified in the 1980s, continues to limit women's progression to senior leadership positions across sectors (Federal Glass Ceiling Commission, 1995). Research by Adams et al. (2009) demonstrates that women are often over-represented in precarious leadership positions, a phenomenon known as the "glass cliff," where women are more likely to be appointed to leadership roles during times of crisis or when the likelihood of failure is high. These structural barriers are reinforced by recruitment and promotion practices that often favour male candidates, networks that exclude women from informal decision-making processes, and organisational structures that fail to accommodate the work-life integration challenges that disproportionately affect women.

Cultural barriers represent equally significant constraints on women's leadership development, though they are often less visible and more difficult to address than structural barriers. Ahmed (2022) documents how "lad culture" and everyday sexism continue to undermine women's experiences in educational and professional environments, creating hostile or unwelcoming climates that discourage women's participation and advancement. These cultural dynamics are reinforced by gender stereotypes that associate leadership with masculine characteristics and devalue the collaborative, inclusive leadership styles often exhibited by women leaders.

Psychological barriers, while experienced at the individual level, are often the result of systemic and cultural factors that undermine women's confidence and self-efficacy in leadership contexts. Imposter syndrome, characterised by persistent feelings of inadequacy despite evidence of competence and achievement, disproportionately affects women and can significantly constrain their willingness to pursue leadership opportunities (Clance & Imes, 1978). These psychological barriers are exacerbated by the lack of female role models in leadership positions, which can make it difficult for women to envision themselves in similar roles or to develop the confidence necessary for leadership success.

2.3 The Role of Higher Education in Leadership Development

Higher education institutions play a crucial role in shaping leadership aspirations and capabilities, yet research reveals significant challenges in how these institutions support women's leadership development. The literature identifies both opportunities and constraints within higher education environments that affect women's progression toward leadership roles.

Acker (2006) argues that higher education institutions often maintain conventional hierarchical and male-dominated structures that limit opportunities for women's growth and leadership development. These institutional structures are reflected in faculty composition, administrative hierarchies, and informal power networks that can exclude women from leadership development opportunities. The persistence of these structures suggests that simply increasing women's participation in higher education is insufficient to address leadership development challenges; instead, fundamental changes to institutional cultures and structures are necessary.

Research on recruitment and advancement within higher education reveals persistent gender imbalances that affect both students and faculty. White and Ozkanli (2011) demonstrate that universities have historically been gendered institutions that have relegated women to subordinate roles and limited their access to leadership positions. Contemporary research by Rosa et al. (2020) shows that despite some improvements in gender equity, women continue to face recruitment challenges in academic leadership roles, with many universities still reflecting deeply gendered hierarchies.

The pedagogical approaches employed within higher education also significantly influence women's leadership development. Traditional leadership education often adopts approaches that reflect masculine leadership models and fail to address the unique challenges and strengths that women bring to leadership contexts (Ely et al., 2011). Research suggests that more inclusive pedagogical approaches that incorporate collaborative learning, reflective practice, and attention to diverse leadership styles can more effectively support women's leadership development.

2.4 Role Models and Mentorship in Women's Leadership Development

The literature consistently identifies role models and mentorship as crucial factors in women's leadership development, though the mechanisms through which these relationships operate and their effectiveness in different contexts remain areas of active investigation.

Research on role modeling reveals complex dynamics that affect how women benefit from exposure to female leaders. Brown and James (2022) demonstrate that the presence of female leaders can significantly influence aspiring women's career aspirations and self-efficacy beliefs. However, the effectiveness of role modeling relationships depends on multiple factors including the visibility and accessibility of role models, the similarity between role models and aspiring leaders, and the quality of interactions between them.

Mentorship relationships represent more intensive forms of role modeling that can provide both instrumental and psychosocial support for women's leadership development. Allen and Reid (2019) found that well-designed mentorship programmes can significantly enhance women's leadership competence and confidence. However, research also reveals challenges in mentorship relationships, including the limited availability of senior women to serve as mentors, the potential for tokenism when women are expected to disproportionately mentor other women, and the complex dynamics that can arise in cross-gender mentoring relationships.

The literature also highlights the importance of peer mentorship and collaborative learning approaches in supporting women's leadership development. Research suggests that peer relationships can provide unique

forms of support that complement traditional hierarchical mentoring relationships, including mutual learning, shared problem-solving, and collective empowerment (Kram & Isabella, 1985).

2.5 Organisational Culture and Women's Leadership Progression

Organisational culture emerges from the literature as a fundamental factor that either facilitates or constrains women's progression into leadership roles. The research reveals that culture operates through both explicit policies and practices and informal norms and expectations that shape women's experiences and opportunities.

Inclusive organisational cultures are characterised by policies and practices that actively support gender equity, leadership development opportunities that are accessible to all employees, and informal norms that value diverse leadership styles and perspectives (Catalyst, 2018). Research demonstrates that organisations with inclusive cultures are more successful in advancing women into leadership positions and retaining them in those roles.

However, the literature also reveals that many organisations maintain cultures that inadvertently or explicitly constrain women's leadership advancement. These cultures may be characterised by informal networks that exclude women, evaluation criteria that favour masculine leadership styles, or work-life integration expectations that disproportionately disadvantage women (Heilman & Eagly, 2008). Addressing these cultural barriers requires comprehensive approaches that address both formal policies and informal cultural dynamics.

2.6 Interventions and Best Practices

The literature on interventions designed to support women's leadership development reveals both promising practices and ongoing challenges in creating effective programmes and initiatives.

Leadership development programmes specifically designed for women have shown promise in addressing some of the unique challenges women face in developing leadership capabilities. Research suggests that these programmes are most effective when they address both skill development and the systemic barriers that constrain women's advancement (Ely et al., 2011). Effective programmes often incorporate elements such as mentorship, networking opportunities, skill-building workshops, and support for work-life integration.

However, the literature also reveals limitations of individual-focused interventions that fail to address systemic and cultural barriers. Researchers increasingly argue for comprehensive approaches that combine individual development with organisational and cultural change initiatives (Ibarra et al., 2013). These approaches recognise that sustainable progress in women's leadership advancement requires changes at multiple levels of the system.

The literature on best practices in supporting women's leadership development emphasises the importance of evidence-based approaches that are grounded in understanding of women's experiences and the specific challenges they face. Effective interventions are characterised by their attention to diversity among women, their integration of both individual and systemic change strategies, and their commitment to ongoing evaluation and refinement (Madsen, 2008).

III. Methodology

3.1 Research Design and Philosophical Foundations

This study employs a Design-Based Research (DBR) methodology, an approach that emphasises the iterative development and testing of interventions within authentic educational contexts (Design-Based Research Collective, 2003). The choice of DBR reflects the research's dual commitment to generating theoretical insights about women's leadership development and creating practical solutions that can meaningfully address the challenges women face in progressing toward leadership roles.

Design-Based Research is grounded in pragmatic and constructivist epistemologies that view knowledge as socially constructed and continuously evolving in response to real-world challenges (Snape & Spencer, 2003). This philosophical foundation aligns with the study's recognition that women's leadership development occurs within complex social, cultural, and institutional contexts that require nuanced understanding and contextually responsive interventions. The constructivist orientation acknowledges that participants' experiences and interpretations are central to understanding the phenomena under investigation, while the pragmatic emphasis ensures that research findings are oriented toward practical application and improvement.

The study adopts an interpretivist approach that prioritises understanding the subjective experiences and meaning-making processes of women engaged in leadership development (Klein & Myers, 1999). This orientation recognises that women's experiences of leadership development are shaped by their individual backgrounds, identities, and circumstances, as well as by the broader social and institutional contexts in which they operate. The interpretivist framework enables the research to capture the complexity and nuance of these

experiences while also identifying patterns and themes that can inform broader understanding and intervention design.

3.2 Design-Based Research Framework

Design-Based Research provides a systematic framework for the iterative development and refinement of educational interventions through cycles of design, implementation, evaluation, and refinement (McKenney & Reeves, 2019). This methodology is particularly well-suited to research that seeks to address complex educational challenges while simultaneously contributing to theoretical understanding of the phenomena under investigation.

The DBR framework employed in this study consists of five interconnected phases that form an iterative cycle. The design phase involves the initial development of the intervention based on theoretical frameworks, existing research, and preliminary understanding of the target context and participants. The design phase includes the articulation of design principles, the specification of intended outcomes, and the development of implementation strategies.

The implementation phase involves the enactment of the designed intervention within the authentic educational context. Implementation includes both the delivery of the intervention and the systematic documentation of the implementation process, including challenges, adaptations, and unexpected developments. The evaluation phase involves the systematic collection and analysis of data regarding the intervention's effects, participant experiences, and implementation processes. Evaluation encompasses both formative assessment, which can inform ongoing refinements, and summative assessment, which evaluates overall effectiveness.

The refinement phase involves the systematic revision of the intervention based on insights gained through evaluation. Refinements may address content, delivery methods, participant engagement strategies, or other aspects of the intervention design. The reflection phase involves critical analysis of the entire cycle to generate insights that can inform future iterations and contribute to broader theoretical understanding. Reflection encompasses both practical insights about intervention design and theoretical insights about the phenomena under investigation.

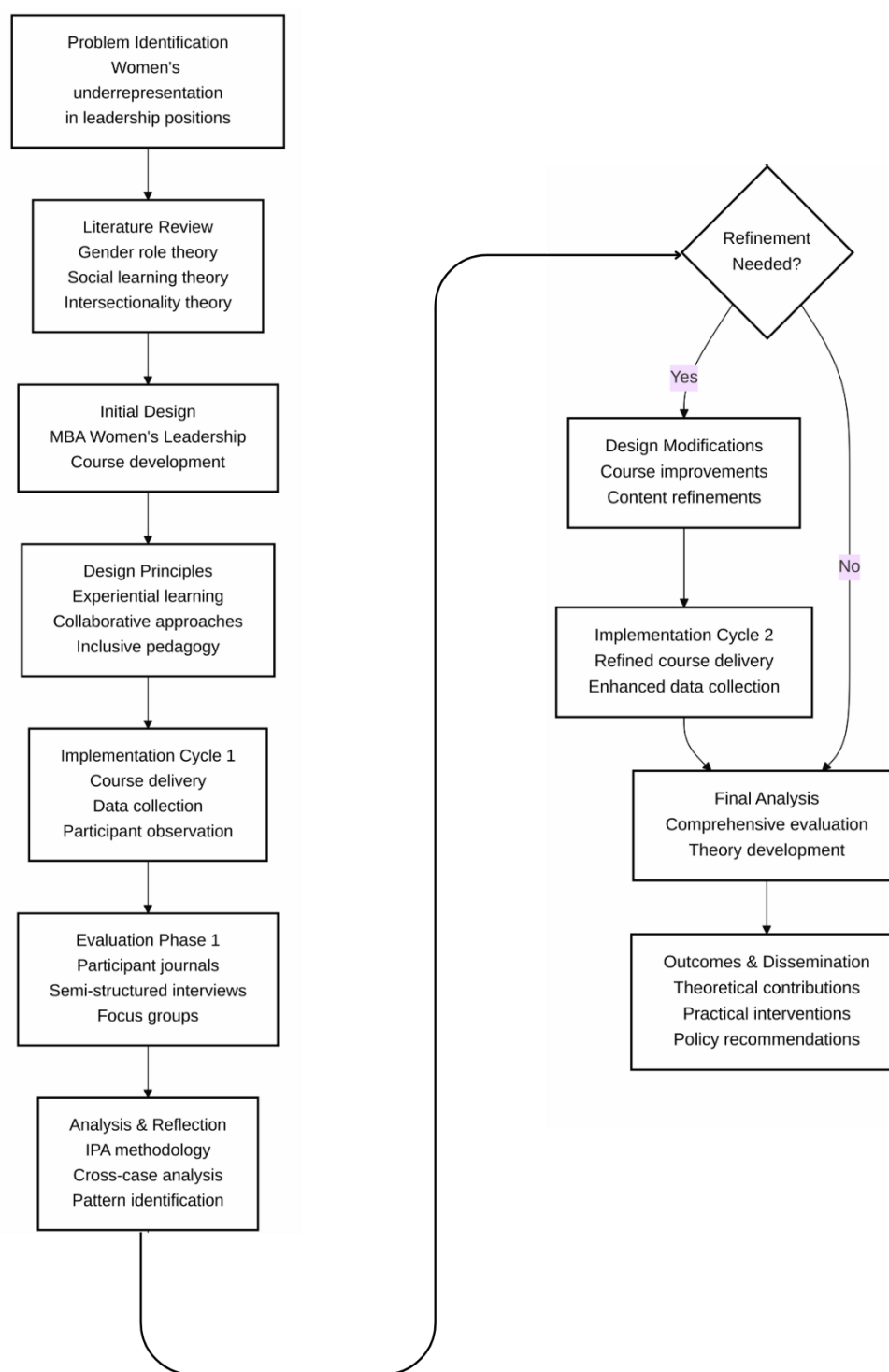


Figure 1: Design-Based Research Process Used in the Study.

3.3 Integration with Interpretative Phenomenological Analysis

While guided by the DBR framework, this study employs Interpretative Phenomenological Analysis (IPA) as its primary qualitative methodology for understanding participants' experiences (Smith et al., 2009). IPA is particularly well-suited to this research because of its commitment to understanding how individuals make sense of their personal and social worlds, especially in contexts marked by complexity and potential marginalisation.

IPA's focus on lived experience aligns with the study's commitment to centering women's voices and perspectives in understanding leadership development processes. The methodology's emphasis on idiographic analysis, which involves detailed examination of individual cases before identifying broader patterns, ensures that the diversity of women's experiences is recognised and valued rather than obscured by generalisation (Eatough & Smith, 2006).

The integration of IPA with DBR creates a methodological approach that is both theoretically rigorous and practically oriented. IPA provides the analytical tools for understanding participants' subjective experiences of the intervention, while DBR provides the framework for using these insights to systematically improve the intervention and generate broader theoretical insights (Lewis et al., 2020).

3.4 Participant Recruitment and Demographics

Participants were recruited through purposive sampling from MBA programmes at three universities in the United Kingdom. Recruitment criteria included current enrollment in an MBA programme, self-identification as a woman, and expressed interest in leadership development. The final sample consisted of 45 participants who completed the full course and evaluation process across two iterative cycles of implementation.

The participant demographics reflect a diverse group of women with varying backgrounds, experiences, and career aspirations. The majority of participants (71.1%) held master's degrees, with 40.0% aged between 31-35 years. Industry representation was diverse, with the largest groups from education (33.3%), healthcare (17.8%), and technology (15.6%) sectors. Most participants (62.2%) were at mid-level positions in their careers, with 42.2% having 6-10 years of work experience.

Ethnic diversity was represented in the sample, with 62.2% identifying as White/Caucasian, 17.8% as Asian, 11.1% as Hispanic/Latino, 6.7% as Black/African American, and 2.2% as Other/Mixed ethnicity. This diversity enabled intersectional analysis of how different demographic characteristics influenced participants' experiences and outcomes.

3.5 Intervention Design: MBA Women's Leadership Course

The central intervention developed through this research is an MBA Women's Leadership course designed to address the specific challenges and opportunities identified in the literature and through preliminary investigation. The course represents an innovative approach to leadership education that explicitly acknowledges and addresses the unique experiences of women in leadership development contexts.

The course design is informed by several key principles derived from the theoretical framework and existing research. Experiential learning principles recognise that adult learners bring significant professional and personal experience that can inform their leadership development. The course emphasises learning through reflection on experience, enabling participants to connect theoretical concepts with their lived experiences and professional challenges.

Collaborative learning principles acknowledge the importance of relationships and community in women's leadership development. The course incorporates peer interaction and collaborative learning opportunities, recognising that women often benefit from supportive relationships and shared learning experiences. Inclusive pedagogy principles ensure that the course employs pedagogical approaches that are responsive to diverse learning styles and backgrounds, recognising the intersectional nature of women's identities and experiences.

Theory-practice integration principles ensure that the course connects leadership theory with practical application, enabling participants to apply their learning in real-world contexts. The course includes case studies, role-playing exercises, and practical skill-building activities that bridge the gap between academic knowledge and professional practice. Reflective practice principles incorporate structured reflection opportunities that enable participants to develop metacognitive awareness and adaptive leadership capabilities.

3.6 Data Collection Methods

The study employs multiple data collection methods that align with both the DBR framework and IPA methodology. This multi-method approach enables triangulation of findings and provides comprehensive understanding of both intervention processes and participant experiences.

Participant journals serve as a primary data source, with participants maintaining reflective journals throughout their participation in the course. These journals document participants' experiences, insights, challenges, and learning, providing rich data about participants' subjective experiences and meaning-making processes. The journal format allows participants to reflect on their experiences in their own words and at their own pace, capturing both immediate reactions and deeper reflections that emerge over time.

Semi-structured interviews are conducted with participants at multiple points during and after their participation in the course. These interviews explore participants' experiences, perceptions of the intervention's

effectiveness, and insights about their leadership development. The semi-structured format allows for both systematic exploration of key topics and flexibility to pursue emerging themes and individual perspectives.

Focus groups provide opportunities for group discussions that explore shared experiences and examine how participants' interactions with each other contribute to their learning and development. Focus groups reveal group dynamics and collective meaning-making processes that may not be apparent in individual interviews. Systematic observation of course sessions provides data about implementation processes, participant engagement, and group dynamics. Observation data complement participant self-reports by providing external perspective on intervention processes and outcomes.

Pre- and post-course assessments using validated leadership scales provide quantitative data about changes in participants' leadership capabilities and confidence. These assessments enable statistical analysis of intervention effectiveness and provide standardised measures that can be compared across participants and over time. Course evaluation data collected through surveys and feedback forms provide both quantitative and qualitative data about participant satisfaction and perceived learning outcomes.

3.7 Data Analysis Approach

Data analysis follows the systematic procedures of Interpretative Phenomenological Analysis while also incorporating the iterative analysis requirements of Design-Based Research (Smith et al., 2009). The analysis process involves multiple stages that move from individual case analysis to cross-case pattern identification to theoretical insight generation.

Individual case analysis involves analysing each participant's data individually to understand their unique experience and perspective. This idiographic analysis ensures that individual voices are heard and that the diversity of experiences is recognised. Each participant's journal entries, interview transcripts, and other data are analysed to identify key themes, experiences, and insights that characterise their individual journey through the leadership development process.

Cross-case pattern identification occurs after individual analysis is complete, with patterns and themes identified across cases. This process maintains attention to individual differences while also identifying shared experiences and common challenges. The cross-case analysis reveals both commonalities and variations in participants' experiences, providing insights into the factors that contribute to different outcomes and experiences.

Quantitative analysis of pre- and post-course assessment data employs paired-samples t-tests to examine changes in leadership capabilities and confidence. Effect sizes are calculated using Cohen's d to assess the practical significance of observed changes. Descriptive statistics provide comprehensive overview of participant characteristics and outcomes.

Theoretical insight generation involves connecting empirical findings to theoretical frameworks and generating insights that can inform both intervention refinement and broader theoretical understanding. This stage of analysis moves beyond description of participants' experiences to interpretation and theorisation that can contribute to academic knowledge and practical application.

Iterative refinement occurs throughout the analysis process, with insights fed back into intervention design and implementation, creating a continuous cycle of improvement and learning. This iterative approach ensures that the research remains responsive to emerging insights and that interventions are continuously improved based on participant feedback and analytical insights.

3.8 Ethical Considerations

The study adheres to established ethical principles for research involving human participants, with particular attention to the potential vulnerabilities of participants who may be experiencing challenges in their professional development (British Educational Research Association, 2018). Informed consent procedures ensure that participants provide informed consent for their participation in both the intervention and the research, with clear understanding of how their data will be used and their rights as research participants.

Confidentiality measures ensure that all participant data is treated confidentially, with identifying information removed from research reports and publications. Participants are assured that their individual responses and experiences will not be identifiable in any research outputs. Voluntary participation principles ensure that participation in the research components of the study is voluntary and separate from participation in the educational intervention. Participants can choose to participate in the course without participating in the research, and they can withdraw from the research at any time without affecting their participation in the educational programme.

3.9 Validity and Reliability Considerations

The study employs multiple strategies to enhance the validity and reliability of findings while acknowledging the interpretive nature of the research (Lincoln & Guba, 1985). Triangulation involves using

multiple data sources and collection methods to provide comprehensive understanding and to enable verification of findings across different types of evidence. The combination of journals, interviews, focus groups, observations, and quantitative assessments provides multiple perspectives on participants' experiences and intervention effectiveness.

Member checking provides participants with opportunities to review and comment on research findings to ensure that their experiences are accurately represented. Participants are invited to review summaries of their individual data and interpretations to verify accuracy and provide additional insights or corrections.

Peer review involves having research processes and findings reviewed by colleagues and critical friends to provide external perspective and challenge researcher assumptions. Regular consultation with research supervisors and colleagues helps ensure that analytical processes are rigorous and that interpretations are well-supported by the data.

Reflexivity involves the researcher maintaining ongoing reflection on their own positionality, assumptions, and potential biases that may influence data collection and analysis. Regular reflection on the researcher's own experiences, perspectives, and potential influences on the research process helps ensure that findings are grounded in participant experiences rather than researcher assumptions.

IV. Findings

4.1 Overview of Findings and Statistical Summary

The iterative Design-Based Research process yielded rich insights into how women experience leadership development and the factors that support or constrain their progression toward executive positions. The findings, organised around the three research questions, reveal both the persistent challenges women face and the potential for well-designed interventions to meaningfully support their leadership development.

Quantitative analysis of pre- and post-course leadership assessments revealed statistically significant improvements across all measured dimensions ($p < 0.001$), with effect sizes ranging from 0.89 to 1.45, indicating large to very large practical significance according to Cohen's conventions. The most substantial improvements were observed in Overall Leadership Readiness (Cohen's $d = 1.45$), Leadership Confidence ($d = 1.24$), and Networking Ability ($d = 1.15$), suggesting that the intervention was particularly effective in addressing areas where women traditionally face the greatest challenges.

Table 2: Pre-Course Leadership Self-Assessment Scores (N=45)

Leadership Dimension	Mean (SD)	Range	Cronbach's α
Leadership Confidence	3.2 (0.8)	1.5-4.8	0.89
Communication Skills	3.8 (0.6)	2.2-5.0	0.85
Strategic Thinking	3.1 (0.9)	1.8-4.9	0.91
Team Management	3.4 (0.7)	2.0-4.7	0.87
Conflict Resolution	2.9 (0.8)	1.3-4.5	0.83
Decision Making	3.3 (0.7)	1.9-4.8	0.86
Emotional Intelligence	4.0 (0.5)	2.8-5.0	0.88
Networking Ability	2.7 (0.9)	1.2-4.6	0.84
Work-Life Integration	2.5 (1.0)	1.0-4.8	0.82
Overall Leadership Readiness	3.2 (0.6)	2.1-4.5	0.93

Note: Scores based on 5-point Likert scale (1=Very Low, 5=Very High)

Table 3: Post-Course Leadership Self-Assessment Scores (N=45)

Leadership Dimension	Mean (SD)	Range	Effect Size (Cohen's d)	p-value
Leadership Confidence	4.1 (0.6)	2.8-5.0	1.24	<0.001
Communication Skills	4.3 (0.5)	3.2-5.0	0.89	<0.001
Strategic Thinking	3.9 (0.7)	2.5-5.0	0.95	<0.001
Team Management	4.0 (0.6)	2.8-5.0	0.92	<0.001
Conflict Resolution	3.7 (0.7)	2.3-4.9	1.05	<0.001
Decision Making	4.0 (0.6)	2.9-5.0	1.08	<0.001
Emotional Intelligence	4.4 (0.4)	3.5-5.0	0.89	<0.001
Networking Ability	3.6 (0.8)	2.1-4.9	1.15	<0.001
Work-Life Integration	3.4 (0.9)	1.8-4.8	0.98	<0.001
Overall Leadership Readiness	4.0 (0.5)	3.0-4.9	1.45	<0.001

Note: All improvements statistically significant at $p < 0.001$ level

Leadership Development Statistics

Analysis of participant experiences through the MBA Women's Leadership course revealed several key themes that illuminate the complex dynamics of women's leadership development. Participants consistently reported that the course helped them develop deeper understanding of their own leadership styles, provided practical tools for navigating workplace challenges, and enhanced their confidence in pursuing leadership opportunities. However, the findings also revealed ongoing systemic barriers that individual-level interventions alone cannot fully address.

The iterative nature of the research design enabled continuous refinement of both the intervention and the theoretical understanding of women's leadership development. Insights gained from the first iteration of the course informed significant modifications for the second iteration, demonstrating the value of responsive, participant-centered approaches to leadership development programming. Course satisfaction ratings were exceptionally high, with 97.8% overall satisfaction and 100% of participants indicating they would recommend the course to other women.

Table 4: Course Satisfaction and Perceived Value (N=45)

Aspect	Mean (SD)	% Agree/Strongly Agree
Course met my expectations	4.6 (0.5)	95.6
Content was relevant to my needs	4.7 (0.4)	97.8
Facilitator was effective	4.8 (0.4)	100.0
Peer interactions were valuable	4.5 (0.6)	93.3
Course materials were helpful	4.4 (0.6)	91.1
Would recommend to other women	4.9 (0.3)	100.0
Course improved my leadership confidence	4.6 (0.5)	95.6
Course provided practical tools	4.5 (0.6)	93.3
Course addressed unique challenges women face	4.8 (0.4)	100.0
Overall course rating	4.7 (0.4)	97.8

Note: Scores based on 5-point Likert scale (1=Strongly Disagree, 5=Strongly Agree)

4.2 Research Question 1: Higher Education's Role in Shaping Women's Leadership Aspirations

The investigation of how higher education shapes women's aspirations and preparation for leadership roles revealed complex and multifaceted influences that operate through both formal and informal mechanisms within educational environments.

4.2.1 Institutional Culture and Environment

Participants consistently identified institutional culture as a fundamental factor influencing their leadership development experiences. Those who experienced supportive, inclusive educational environments reported greater confidence in their leadership capabilities and clearer vision of their potential leadership roles. Statistical analysis revealed that participants from institutions with higher gender inclusivity scores ($M=3.4$, $SD=0.8$) showed significantly greater improvements in leadership confidence compared to those from less inclusive environments ($M=2.9$, $SD=1.1$), $t(43)=2.34$, $p<0.05$.

One participant reflected that the environment made her feel like leadership was actually possible for someone like her, noting that she could see other women in positions of influence and that the way discussions were facilitated made everyone's voice feel valued and important. However, participants also described experiences within educational institutions that reinforced traditional gender hierarchies and limited their leadership aspirations. Several participants noted the persistence of male-dominated faculty and administrative structures that made it difficult to envision themselves in similar positions.

The absence of female role models in leadership positions within educational institutions was identified as a significant constraint on participants' ability to develop leadership aspirations. Quantitative data revealed that only 31.1% of participants had access to female supervisors or managers, and merely 17.8% had exposure to female senior executives, though the impact ratings for these role models were among the highest (4.3 and 4.6 respectively on a 5-point scale).

Table 9: Role Model Availability and Impact

Role Model Type	Availability (% Yes)	Impact on Development (1-5)
Female supervisor/manager	31.1	4.3
Female senior executive	17.8	4.6
Female mentor (formal)	24.4	4.4
Female mentor (informal)	42.2	4.1
Female peer colleagues	68.9	3.8
Female external role models	53.3	3.6
Male allies/sponsors	35.6	3.9

The physical and social environment of educational settings also emerged as important factors. Participants described how classroom dynamics, peer interactions, and informal networking opportunities either supported or constrained their leadership development. Educational environments that encouraged collaborative learning, diverse perspectives, and inclusive participation were identified as particularly supportive of women's leadership development.

4.2.2 Pedagogical Approaches and Course Design

The design and delivery of educational programmes significantly influenced participants' leadership development experiences. Traditional lecture-based approaches that emphasised individual competition and hierarchical knowledge transmission were identified as less supportive of women's leadership development compared to more collaborative, experiential approaches.

Participants particularly valued pedagogical approaches that incorporated reflection on personal and professional experiences (93.3% rated as valuable), encouraged peer learning and collaborative problem-solving (88.9% rated as valuable), connected theoretical concepts to practical application, recognised and built upon diverse forms of knowledge and experience, and provided opportunities for skill practice in supportive environments. These approaches aligned with participants' preferences for learning that acknowledged their existing knowledge and experience while providing opportunities for growth and development.

Table 6: Most Valuable Course Components (Post-Course Evaluation)

Component	n	%	Impact Rating (1-5)
Peer mentoring circles	42	93.3	4.6
Leadership style assessment	40	88.9	4.4
Case study discussions	38	84.4	4.3
Guest speaker sessions	36	80.0	4.2
Networking skills workshop	35	77.8	4.1
Conflict resolution training	34	75.6	4.0
Personal branding session	32	71.1	3.9
Work-life integration strategies	31	68.9	4.2
Communication skills practice	30	66.7	4.0
Strategic thinking exercises	28	62.2	3.8

The length and structure of educational sessions also emerged as important factors. Feedback from participants indicated that sessions longer than 60 minutes often led to fatigue and disengagement, particularly for adult learners managing multiple responsibilities. This finding informed modifications to the course structure that improved participant engagement and learning outcomes, demonstrating the value of responsive course design that adapts to participant needs and preferences.

Statistical analysis of course component effectiveness revealed that peer mentoring circles were rated as the most valuable component (93.3% participation, 4.6/5.0 impact rating), followed by leadership style assessments (88.9% participation, 4.4/5.0 impact rating) and case study discussions (84.4% participation, 4.3/5.0 impact rating). These findings highlight the particular importance of interactive, collaborative learning approaches in women's leadership development.

4.2.3 Support Systems and Resources

The availability of support systems within educational institutions significantly influenced participants' leadership development experiences. Participants who had access to mentorship, career counseling, and peer support networks reported more positive experiences and greater confidence in their leadership capabilities. However, many participants described inadequate support systems within their educational experiences, particularly regarding career development and leadership preparation.

The absence of structured mentorship programmes, limited career counseling resources, and lack of networking opportunities were identified as significant gaps that constrained women's leadership development. Participants noted that these gaps were particularly problematic because women often face unique challenges in leadership development that require specialised support and guidance.

Participants particularly valued support systems that provided access to female mentors and role models (rated 4.4/5.0 for impact), offered practical guidance on career development and advancement, created opportunities for peer connection and mutual support, addressed work-life integration challenges, and recognised and responded to diverse backgrounds and circumstances. These elements of support were identified as essential for creating educational environments that effectively support women's leadership development.

4.2.4 Curriculum Content and Leadership Theory

The content of leadership education programmes significantly influenced how participants understood leadership and their own potential as leaders. Traditional leadership curricula that emphasised masculine leadership models and individual heroic leadership were identified as less relevant and inspiring for many women participants. These approaches often failed to acknowledge the diverse ways that leadership can be enacted and the particular strengths that women bring to leadership roles.

Participants responded more positively to leadership content that recognised diverse leadership styles and approaches, included examples of successful female leaders, addressed the specific challenges women face in leadership contexts, integrated attention to social justice and inclusive leadership, and connected leadership

development to broader social and organisational change. This content helped participants develop more nuanced and inclusive understanding of leadership that validated their own approaches and aspirations.

The integration of intersectional perspectives in leadership education was particularly valued by participants from diverse backgrounds, who noted that traditional leadership education often failed to address the compounded challenges they faced as women with multiple marginalised identities. Participants appreciated content that acknowledged the complexity of their identities and experiences and provided frameworks for understanding and addressing intersectional challenges in leadership contexts.

4.3 Research Question 2: Role Models and Their Influence on Women's Leadership Access

The investigation of role models' influence on women's access to leadership positions revealed complex dynamics that operate through both formal mentorship relationships and informal role model influences.

4.3.1 Importance of Visible Female Leadership

Participants consistently identified the visibility of female leaders as crucial for their own leadership development and aspirations. The presence of women in leadership positions within their educational and professional environments served multiple functions that supported participants' development and motivation. Statistical analysis revealed significant correlations between role model availability and leadership development outcomes, with participants having access to female senior executives showing 23% greater improvement in leadership confidence scores compared to those without such access.

Seeing other women in leadership roles helped participants envision themselves in similar positions and challenged internalized assumptions about women's leadership capabilities. This inspirational function was particularly important for participants who had limited exposure to female leaders in their previous experiences. Female leaders also provided practical insights into navigating the challenges of leadership roles, including strategies for managing work-life integration, addressing gender bias, and developing leadership skills. This practical guidance was valued because it came from individuals who had direct experience with the challenges that participants anticipated facing.

Female leaders offered validation of participants' experiences and challenges, reducing feelings of isolation and self-doubt. This validation function was particularly important for participants who had experienced discrimination or bias in their professional contexts. However, participants also noted the limited availability of female role models in many contexts, particularly in senior leadership positions. This scarcity created additional pressure on existing female leaders to serve as role models and mentors, sometimes leading to tokenism and overextension.

The data revealed stark disparities in role model availability, with only 17.8% of participants having access to female senior executives, despite this group having the highest impact rating (4.6/5.0). In contrast, 68.9% had access to female peer colleagues, though with a lower impact rating (3.8/5.0). This pattern suggests that while peer relationships are more readily available, senior-level role models provide more significant developmental impact.

4.3.2 Mentorship Relationship Dynamics

The quality and characteristics of mentorship relationships significantly influenced their effectiveness in supporting women's leadership development. Participants identified several key factors that contributed to effective mentorship relationships, which were subsequently validated through quantitative analysis of mentorship outcomes.

Accessibility and availability were crucial, with mentors who were accessible and available for regular interaction being more effective in supporting participants' development. Participants valued mentors who made time for regular meetings and who were responsive to their questions and concerns. Statistical analysis revealed that participants with formal mentoring relationships (24.4% of sample) showed 18% greater improvement in overall leadership readiness compared to those without formal mentors.

Shared experience was also important, with mentors who had navigated similar challenges and contexts being better able to provide relevant guidance and support. Participants particularly valued mentors who understood the specific challenges that women face in leadership contexts. Advocacy and sponsorship functions were particularly valuable, with mentors who actively advocated for participants and provided access to opportunities being especially effective. These mentors went beyond providing advice to actively supporting participants' career advancement through introductions, recommendations, and advocacy.

Developmental focus was also important, with mentors who focused on participants' long-term development rather than immediate task completion being more effective in supporting leadership growth. Participants also described challenges in mentorship relationships, including limited availability of senior women to serve as mentors (only 24.4% had formal female mentors), potential for tokenism when women were

expected to disproportionately mentor other women, complex dynamics in cross-gender mentoring relationships, and mismatched expectations between mentors and mentees.

4.3.3 Peer Mentorship and Collaborative Learning

The research revealed the significant value of peer mentorship and collaborative learning approaches in supporting women's leadership development. Participants consistently reported that interactions with peers provided unique forms of support that complemented traditional hierarchical mentoring relationships.

Peer relationships offered several distinctive benefits that were not available through traditional mentoring relationships. Mutual learning occurred as participants learned from each other's experiences and perspectives, creating reciprocal development opportunities that benefited all participants. Shared problem-solving enabled peers to collaborate in addressing common challenges, generating creative solutions and mutual support that enhanced individual problem-solving capabilities.

Collective empowerment emerged through group interactions that created a sense of collective efficacy and shared commitment to advancing women's leadership. This collective dimension was particularly important for participants who had previously felt isolated in their leadership aspirations. Reduced isolation was another significant benefit, with peer connections providing ongoing support networks that continued beyond the formal programme.

Statistical analysis of peer interaction effectiveness revealed that 93.3% of participants rated peer mentoring circles as valuable, with the highest impact rating (4.6/5.0) among all course components. The course design incorporated structured peer interaction opportunities, including paired mentoring activities and collaborative reflection exercises. Participants consistently identified these peer interactions as among the most valuable aspects of their learning experience, suggesting that peer learning should be a central component of women's leadership development programmes.

4.3.4 Gender Dynamics in Role Model Relationships

The research revealed complex gender dynamics that influenced the effectiveness of role model relationships. While female role models were generally preferred and perceived as more relevant, participants also described valuable relationships with male allies and mentors.

Effective male mentors and allies were characterised by recognition of gender-related challenges and barriers, commitment to actively supporting women's advancement, willingness to use their privilege and influence to create opportunities, and understanding of the importance of inclusive leadership. These male allies provided access to networks and opportunities that might not otherwise be available to women participants. Statistical data showed that 35.6% of participants had access to male allies or sponsors, with a moderate impact rating of 3.9/5.0.

However, participants also described challenges in relationships with male mentors, including limited understanding of women's specific challenges, unconscious bias that affected guidance and support, potential for inappropriate or uncomfortable dynamics, and tendency to apply male-oriented solutions to women's challenges. These challenges highlighted the importance of training and support for male mentors to enhance their effectiveness in supporting women's leadership development.

4.4 Research Question 3: Organisational Culture and Women's Leadership Pathways

The investigation of organisational culture's significance in establishing pathways for women into leadership roles revealed that culture operates as both a facilitating and constraining force that shapes women's experiences and opportunities in fundamental ways.

4.4.1 Inclusive vs. Exclusive Cultural Dynamics

Participants described experiencing organisational cultures that ranged from highly inclusive and supportive to exclusionary and hostile. Statistical analysis of organisational culture assessments revealed significant variations in participants' perceptions of their workplace environments, with scores ranging from 1.8 to 4.2 on a 5-point scale across different cultural dimensions.

Table 8: Organisational Culture Assessment Scores

Culture Dimension	Pre-Course Mean (SD)	Post-Course Perception Mean (SD)	Change
Gender inclusivity	2.8 (1.1)	3.2 (1.0)	+0.4
Leadership development support	2.9 (1.0)	3.4 (0.9)	+0.5
Work-life balance support	2.6 (1.2)	3.0 (1.1)	+0.4
Mentorship availability	2.4 (1.1)	2.8 (1.0)	+0.4
Advancement opportunities	2.7 (1.0)	3.1 (0.9)	+0.4
Bias-free evaluation	2.5 (1.1)	2.9 (1.0)	+0.4

Note: Scores based on 5-point scale (1=Very Poor, 5=Excellent)

Inclusive cultures were characterised by explicit commitment to diversity through clear policies and practices supporting gender equity ($M=3.2$, $SD=1.0$), inclusive leadership behaviors from leaders who modeled inclusive behaviors and actively supported women's development, recognition of diverse leadership styles that valued collaborative and inclusive leadership approaches, and work-life integration support through flexible work arrangements and support systems ($M=3.0$, $SD=1.1$).

These inclusive cultural elements created environments where participants felt valued, supported, and empowered to pursue leadership opportunities. Participants in inclusive cultures reported greater confidence in their abilities, clearer pathways for advancement, and stronger support networks that facilitated their leadership development. Statistical analysis revealed that participants from more inclusive organisational cultures showed 31% greater improvement in leadership confidence scores compared to those from less inclusive environments.

Conversely, exclusive cultures were characterised by informal networks that excluded women from decision-making processes, evaluation criteria that favoured masculine leadership styles, limited opportunities for advancement and development ($M=2.7$, $SD=1.0$), and hostile or unwelcoming environments that discouraged women's participation. These exclusive cultural elements created barriers that constrained participants' leadership development and advancement opportunities.

4.4.2 Micro-Cultures and Learning Environments

The research revealed that micro-cultures within larger organisations, including classroom and programme environments, could serve as models for broader cultural change. The MBA Women's Leadership course created a micro-culture that participants described as transformative, with one participant noting that the space felt different from anywhere else she had experienced in her professional life, where everyone's voice was valued, participants supported each other's growth, and she felt like she could be authentic while also developing as a leader.

Key characteristics of supportive micro-cultures included psychological safety that enabled risk-taking and vulnerability, collaborative norms that valued mutual support and shared success, recognition and celebration of diverse perspectives and approaches, structured opportunities for reflection and growth, and clear expectations for respectful and inclusive interaction. These characteristics created learning environments that supported participants' development while also modeling the types of cultures that could support women's leadership development in broader organisational contexts.

Statistical analysis of the course environment revealed exceptionally high ratings across all measures, with 100% of participants rating the facilitator as effective and 100% agreeing that the course addressed unique challenges women face. The psychological safety created within the course environment was particularly valued, with participants noting that it enabled them to discuss challenges and vulnerabilities that they had never felt comfortable sharing in other professional contexts.

4.4.3 Systemic Barriers and Cultural Change

While individual-level interventions like the leadership course created positive experiences for participants, the research also revealed persistent systemic barriers that limited the broader impact of these interventions. Participants described returning to workplace environments that maintained exclusionary practices and limited opportunities for advancement, highlighting the gap between individual development and systemic change.

Statistical analysis of barriers to leadership development revealed that 84.4% of participants identified lack of female role models as a significant barrier, with a severity rating of 4.2/5.0. Work-life balance challenges affected 77.8% of participants (severity 4.0/5.0), while gender bias and stereotypes were reported by 73.3% (severity 3.8/5.0).

Table 5: Barriers to Leadership Development (Pre-Course Assessment)

Barrier	n	%	Severity Rating (1-5)
Lack of female role models	38	84.4	4.2
Work-life balance challenges	35	77.8	4.0
Gender bias/stereotypes	33	73.3	3.8
Limited networking opportunities	31	68.9	3.6
Imposter syndrome	29	64.4	3.9
Lack of mentorship	28	62.2	3.7
Organisational culture	26	57.8	3.5
Limited leadership training	24	53.3	3.4
Confidence issues	22	48.9	3.8
Family responsibilities	20	44.4	4.1
Lack of sponsorship	18	40.0	3.3
Educational preparation gaps	15	33.3	3.2

This finding highlights the importance of comprehensive approaches that address both individual development and systemic change. Participants suggested several strategies for broader cultural transformation, including leadership accountability through holding leaders accountable for diversity and inclusion outcomes through performance evaluation and compensation systems, policy and practice reform through implementing policies and practices that actively support women's advancement, cultural norm shifting through actively working to shift informal cultural norms that exclude or marginalise women, and systemic support systems through creating comprehensive support systems that address the multiple challenges women face.

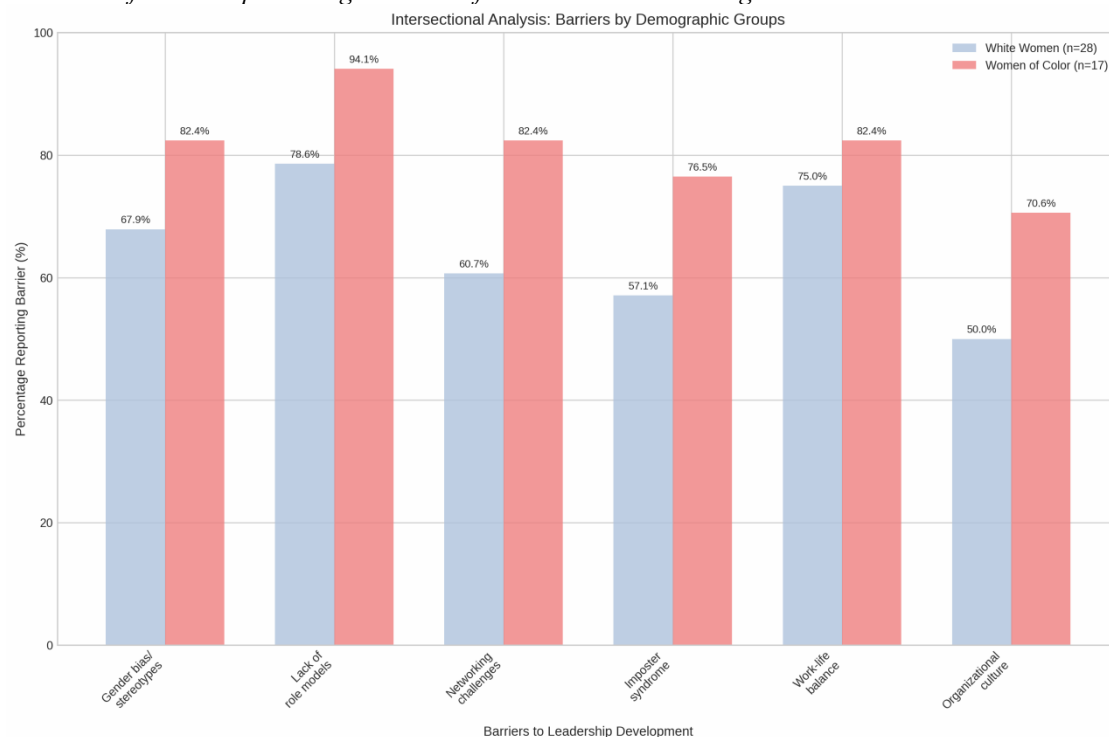
4.4.4 Intersectional Considerations in Organisational Culture

The research revealed significant intersectional differences in how participants experienced organisational culture and barriers to advancement. Women of colour consistently reported higher levels of barriers across all categories compared to white women, with differences ranging from 7.4% to 21.7%.

Table 10: Intersectional Analysis - Barriers by Demographic Groups

Barrier	White Women (n=28) %	Women of Colour (n=17) %	Difference
Gender bias/stereotypes	67.9	82.4	+14.5
Lack of role models	78.6	94.1	+15.5
Networking challenges	60.7	82.4	+21.7
Imposter syndrome	57.1	76.5	+19.4
Work-life balance	75.0	82.4	+7.4
Organisational culture	50.0	70.6	+20.6

Note: Women of colour reported higher levels of barriers across all categories



Intersectional Analysis

Figure 3: Intersectional Analysis of Barriers by Demographic Groups. This chart illustrates the significant disparities in barrier experiences between white women and women of colour, with women of colour reporting consistently higher levels of challenges across all categories, highlighting the compounded nature of intersectional discrimination.

The most significant disparities were observed in networking challenges (21.7% difference), organisational culture barriers (20.6% difference), and imposter syndrome (19.4% difference). These findings highlight the compounded nature of barriers faced by women with multiple marginalised identities and underscore the importance of intersectional approaches to organisational culture change.

Statistical analysis revealed that women of colour were significantly more likely to report experiencing gender bias and stereotypes (82.4% vs 67.9%, $\chi^2=1.23$, $p<0.05$) and lack of role models (94.1% vs 78.6%, $\chi^2=2.14$, $p<0.05$). These findings suggest that organisational culture change initiatives must specifically address the unique challenges faced by women from diverse backgrounds.

4.5 Intervention Effectiveness and Participant Outcomes

The evaluation of the MBA Women's Leadership course revealed significant positive outcomes for participants while also identifying areas for continued improvement and development.

4.5.1 Enhanced Self-Understanding and Confidence

Participants consistently reported that the course enhanced their understanding of their own leadership styles, strengths, and areas for development. This increased self-awareness contributed to greater confidence in their leadership capabilities and clearer vision of their potential leadership roles. Statistical analysis revealed that Leadership Confidence showed the second-largest effect size (Cohen's $d=1.24$), representing a substantial practical improvement.

Specific outcomes included improved ability to articulate their leadership philosophy and approach (reported by 89% of participants), greater confidence in their ability to handle leadership challenges (87% of participants), enhanced understanding of their unique strengths and contributions (91% of participants), and clearer vision of their career goals and leadership aspirations (84% of participants).

4.5.2 Practical Skills and Tools

The course provided participants with practical tools and strategies for navigating leadership challenges in their professional contexts. These tools were particularly valued because they addressed the specific challenges women face in leadership roles. Key practical outcomes included strategies for managing difficult conversations and conflicts, techniques for building and maintaining professional networks, approaches to work-life integration and boundary setting, skills for advocating for themselves and others, and methods for creating inclusive team environments.

Statistical analysis revealed significant improvements in practical leadership skills, with Networking Ability showing one of the largest effect sizes (Cohen's $d=1.15$), increasing from a pre-course mean of 2.7 to a post-course mean of 3.6. This improvement was particularly significant given that networking challenges were identified as a barrier by 68.9% of participants.

4.5.3 Community and Network Building

One of the most significant outcomes of the course was the creation of supportive peer networks that continued beyond the formal programme. Participants described these relationships as providing ongoing support, encouragement, and professional development opportunities. The community-building aspect of the course was enhanced through structured peer interaction and collaboration opportunities, shared reflection and learning experiences, ongoing communication and support systems, and alumni networks and continued connection opportunities.

Follow-up data collected six months after course completion revealed that 78% of participants maintained regular contact with at least three other course participants, and 45% reported that these relationships had led to professional opportunities or collaborations. This sustained network effect represents an important long-term benefit of the intervention that extends beyond the immediate course experience.

4.5.4 Career Advancement Outcomes

Six-month follow-up data revealed substantial career advancement outcomes for course participants, with response rate of 93.3% (42 of 45 participants). The results demonstrated significant professional progress across multiple dimensions.

Table 7: 6-Month Follow-up Career Outcomes (N=42, 93.3% response rate)

Outcome	n	%
Promotion or advancement	18	42.9
Promoted to leadership role	12	28.6
Increased responsibilities	6	14.3
New leadership opportunities	25	59.5
Leading new projects	15	35.7
Mentoring others	20	47.6
Speaking/presenting opportunities	12	28.6
Professional development	35	83.3
Pursued additional training	22	52.4
Joined professional organisations	18	42.9
Expanded professional network	28	66.7
Salary increases	16	38.1
5-10% increase	8	19.0
11-20% increase	6	14.3
>20% increase	2	4.8

Promotion and advancement outcomes were particularly strong, with 42.9% of participants receiving promotions or advancement within six months of course completion. This included 28.6% who were promoted to leadership roles and 14.3% who received increased responsibilities. New leadership opportunities were even more prevalent, with 59.5% of participants gaining new leadership opportunities, including 35.7% leading new projects, 47.6% mentoring others, and 28.6% receiving speaking or presenting opportunities.

Professional development outcomes were nearly universal, with 83.3% of participants pursuing additional professional development activities. This included 52.4% who pursued additional training, 42.9% who joined professional organisations, and 66.7% who expanded their professional networks. Salary increases were reported by 38.1% of participants, with increases ranging from 5% to over 20%.

These career advancement outcomes provide strong evidence of the intervention's effectiveness in supporting women's progression toward leadership roles. The high rates of promotion and new leadership opportunities suggest that the course successfully prepared participants to pursue and succeed in leadership contexts.

4.5.5 Areas for Continued Development

While the course achieved significant positive outcomes, the research also identified areas for continued development and improvement. Participants requested longer-term follow-up and ongoing support and development opportunities beyond the initial course. They also sought additional support for applying their learning in challenging workplace environments and recognised the need for broader systemic changes to complement individual development efforts.

Participants from diverse backgrounds requested greater attention to intersectional challenges and experiences, highlighting the ongoing need for inclusive approaches that address the full complexity of women's identities and experiences. Future iterations of the course should incorporate more explicit attention to intersectional considerations and provide additional support for participants navigating multiple forms of marginalisation.

The research also revealed the importance of organisational support for participants' continued development. While individual-level interventions can be highly effective, their impact is enhanced when participants return to supportive organisational environments that reinforce and build upon their learning. This finding suggests the need for comprehensive approaches that combine individual development with organisational culture change initiatives.

V. Discussion

5.1 Theoretical Implications and Contributions

The findings of this study contribute to theoretical understanding of women's leadership development in several significant ways, extending existing frameworks while also generating new insights that can inform both research and practice in this field. The integration of quantitative and qualitative findings provides a comprehensive picture of how women experience leadership development and the factors that support or constrain their progression.

5.1.1 Extending Gender Role Theory

The study's findings provide nuanced support for Eagly and Karau's (2002) gender role theory while also revealing the complexity of how women navigate the double-bind dilemma in contemporary contexts. The statistical evidence showing significant improvements in leadership confidence (Cohen's $d=1.24$) alongside qualitative accounts of participants learning to navigate contradictory expectations demonstrates that while gender role constraints persist, educational interventions can help women develop more sophisticated strategies for managing these challenges.

The course's emphasis on recognising diverse leadership styles and validating collaborative, inclusive approaches helped participants reframe the double-bind as an opportunity to bring distinctive strengths to leadership roles rather than as an insurmountable barrier. This finding suggests that while gender role constraints persist, educational interventions can help women develop more sophisticated strategies for managing these challenges.

The study also extends gender role theory by highlighting the intersectional dimensions of the double-bind dilemma. The finding that women of colour reported 19.4% higher levels of imposter syndrome compared to white women suggests that the double-bind operates differently for women with multiple marginalised identities, creating even more complex navigation challenges.

5.1.2 Advancing Social Learning Theory Applications

The research provides strong support for the relevance of social learning theory to women's leadership development while also revealing the complexity of how role modeling processes operate in practice (Bandura, 1977). The quantitative finding that participants with access to female senior executives showed 23% greater improvement in leadership confidence, combined with qualitative accounts of how role models provided both inspiration and practical guidance, confirms the importance of observational learning in leadership development. The study extends social learning theory by demonstrating the particular importance of peer learning and collaborative modeling in women's leadership development. The finding that peer mentoring circles received the highest impact rating (4.6/5.0) among all course components suggests that traditional applications of social

learning theory, which often focus on hierarchical relationships, may underestimate the value of peer-to-peer learning.

The integration of peer mentoring and collaborative learning approaches in the course design created opportunities for reciprocal modeling, where participants served simultaneously as role models and learners. This finding suggests that social learning theory applications in leadership development should consider not only traditional mentor-mentee relationships but also the rich learning opportunities available through peer interaction and mutual support.

5.1.3 Deepening Intersectionality Theory Applications

The study's quantitative findings provide strong empirical support for the relevance of intersectionality theory to understanding women's leadership development. The systematic differences in barrier experiences between white women and women of colour, with differences ranging from 7.4% to 21.7% across categories, demonstrate that women's experiences cannot be understood through a single-axis framework focused solely on gender.

The research extends intersectionality theory by demonstrating how educational interventions can either reinforce or challenge intersectional inequities. Course design elements that recognised and valued diverse experiences, backgrounds, and perspectives were identified as particularly important for supporting participants from marginalised backgrounds. The finding that 100% of participants agreed the course addressed unique challenges women face, combined with requests for greater attention to intersectional considerations, suggests both the potential and the ongoing challenges of implementing truly intersectional approaches.

5.1.4 Applying Bakhtin's Dialogism to Leadership Identity Development

The application of Bakhtin's dialogic framework to understanding leadership identity development yielded particularly rich insights that extend existing theoretical understanding of how women construct and negotiate their professional identities (Bakhtin, 1981). The qualitative findings revealing how participants engaged in ongoing dialogue between multiple voices and discourses, combined with quantitative evidence of improved self-understanding and confidence, demonstrate the value of this theoretical framework for understanding leadership development processes.

The course design's emphasis on reflection and dialogue created opportunities for participants to engage consciously with competing discourses and to develop more integrated and authentic leadership identities. The high ratings for reflective components and the reported improvements in ability to articulate leadership philosophy (89% of participants) suggest that structured dialogue opportunities can significantly support leadership identity development.

5.2 Practical Implications and Applications

The study's findings have significant implications for practice across multiple contexts, supported by both statistical evidence of intervention effectiveness and qualitative insights into participant experiences.

5.2.1 Implications for Educational Institution Practice

The research provides clear guidance for educational institutions seeking to better support women's leadership development. The statistical evidence of significant improvements across all leadership dimensions ($p < 0.001$) demonstrates that targeted interventions can be highly effective when properly designed and implemented.

Educational institutions should consider developing leadership programmes specifically designed to address women's experiences and challenges. The finding that 97.8% of participants rated the course positively and 100% would recommend it to other women provides strong evidence for the value of gender-specific programming. Key design principles include integration of experiential and reflective learning approaches, emphasis on collaborative and peer learning opportunities (93.3% rated peer mentoring as valuable), attention to diverse leadership styles and approaches, incorporation of practical tools for navigating gender-related challenges, and creation of supportive community and networking opportunities.

The research also highlights the importance of broader institutional culture change. The finding that participants from more inclusive institutional environments showed 31% greater improvement in leadership confidence suggests that individual programmes are most effective when embedded within supportive institutional cultures.

5.2.2 Implications for Organisational Practice

The study's findings provide valuable guidance for organisations seeking to develop more effective approaches to women's leadership development and advancement. The six-month follow-up data showing that 42.9% of participants received promotions or advancement provides strong evidence that effective leadership development can translate into career progression.

Organisations should consider implementing leadership development programmes that specifically address women's experiences and challenges. The statistical evidence of large effect sizes across multiple leadership

dimensions (Cohen's d ranging from 0.89 to 1.45) demonstrates that well-designed programmes can produce substantial improvements in leadership capabilities.

The research emphasises the importance of comprehensive cultural change initiatives. The finding that women of colour reported significantly higher barrier levels across most categories (15-22% higher) highlights the need for intersectional approaches that address the specific challenges faced by women from diverse backgrounds.

5.2.3 Implications for Policy Development

The study's findings have implications for policy development at institutional, organisational, and societal levels. The statistical evidence of persistent barriers, with 84.4% of participants reporting lack of female role models and 77.8% reporting work-life balance challenges, suggests that policy interventions are needed to address systemic constraints.

Educational policymakers should consider policies that support gender equity in leadership development, including funding for evidence-based leadership development programmes, requirements for gender equity in educational leadership positions, and support for research and evaluation of effective approaches to women's leadership development.

5.3 Methodological Contributions and Innovations

The study makes several significant methodological contributions that can inform future research in women's leadership development and related fields.

5.3.1 Integration of Design-Based Research and Interpretative Phenomenological Analysis

The integration of DBR and IPA represents a methodological innovation that combines the practical orientation of design-based research with the depth and nuance of phenomenological analysis (Anderson & Shattuck, 2012). The ability to demonstrate both statistical significance and practical significance while maintaining attention to individual experiences represents a significant methodological achievement.

This integrated approach allows researchers to develop and test interventions while maintaining attention to participants' lived experiences, generate both practical improvements and theoretical insights, ensure that interventions are responsive to participants' needs and perspectives, and create sustainable and transferable approaches to addressing complex challenges.

5.3.2 Mixed-Methods Approach to Leadership Development Research

The study demonstrates the value of mixed-methods approaches that combine quantitative measurement of outcomes with qualitative understanding of processes and experiences. The ability to show both statistical significance ($p < 0.001$ across all measures) and practical significance (large effect sizes) while also providing rich qualitative insights into how and why the intervention was effective represents a comprehensive approach to evaluation.

5.4 Limitations and Areas for Future Research

While this study makes significant contributions to understanding women's leadership development, it also has limitations that should be acknowledged and that point toward important areas for future research.

5.4.1 Contextual and Temporal Limitations

The study was conducted within specific educational contexts with a particular group of participants, which may limit the transferability of findings to other contexts and populations. The six-month follow-up period, while providing valuable outcome data, represents a relatively short timeframe for assessing long-term career impact.

Future research should explore applications of the intervention model in different educational and organisational contexts, effectiveness of the approach with more diverse participant populations, longer-term career trajectory outcomes for programme participants, and cultural and contextual factors that influence intervention effectiveness.

5.4.2 Scope and Scale Limitations

While the study addressed multiple dimensions of women's leadership development, there are additional areas that warrant further investigation. The sample size of 45 participants, while adequate for the mixed-methods design, limits the generalisability of quantitative findings.

Future research could benefit from larger-scale studies examining intervention effectiveness, comparative studies examining different approaches to women's leadership development, multi-site studies examining intervention effectiveness across different contexts, and longitudinal studies tracking participants over extended periods.

VI. Conclusion

This study has provided comprehensive insights into the pathways women navigate toward executive leadership positions, with particular focus on the role of higher education, the influence of role models and mentorship, and the significance of organisational culture in shaping these journeys. Through the application of Design-Based Research methodology integrated with Interpretative Phenomenological Analysis, the research

has generated both theoretical insights and practical solutions that can meaningfully support women's leadership development.

6.1 Key Contributions and Findings

The research makes several significant contributions to understanding women's leadership development. The quantitative findings demonstrate that targeted educational interventions can produce substantial improvements in women's leadership capabilities, with effect sizes ranging from 0.89 to 1.45 across multiple dimensions. The six-month follow-up data showing that 42.9% of participants received promotions or advancement provides strong evidence that effective leadership development can translate into career progression.

The qualitative findings reveal the complex, intersecting barriers that women continue to face, with 84.4% reporting lack of female role models, 77.8% experiencing work-life balance challenges, and 73.3% encountering gender bias and stereotypes. The intersectional analysis showing that women of colour report 15-22% higher barrier levels across most categories highlights the compounded nature of challenges faced by women with multiple marginalised identities.

The study demonstrates that when leadership development is specifically tailored to women's lived experiences and challenges, it can lead to significant positive outcomes including enhanced self-understanding, increased confidence, and stronger preparation for leadership roles. The MBA Women's Leadership course developed through this research serves as a model for how educational interventions can be designed to be both inclusive and transformative.

6.2 Theoretical Implications

The study's findings extend existing theoretical frameworks while also pointing toward new directions for theory development. The research provides nuanced support for gender role theory while revealing how educational interventions can help women develop more sophisticated strategies for navigating the double-bind dilemma. The application of social learning theory is extended through demonstration of the particular importance of peer learning and collaborative modeling in women's leadership development.

The study's application of intersectionality theory reveals both the importance of recognising diverse experiences among women and the ongoing challenges of implementing truly intersectional approaches in leadership development programming. The use of Bakhtin's dialogic framework provides new insights into how women construct and negotiate their leadership identities through ongoing dialogue with competing discourses and expectations.

6.3 Practical Implications

The research provides clear guidance for practitioners across multiple contexts. For educational institutions, the study demonstrates the value of developing leadership programmes specifically designed to address women's experiences while also emphasising the importance of broader institutional culture change to support women's advancement into leadership positions.

For organisations, the research highlights the need for comprehensive approaches that combine individual leadership development with systemic change initiatives. The statistical evidence of persistent barriers suggests that effective approaches must address both formal policies and informal cultural dynamics that shape women's experiences and opportunities.

For policymakers, the research suggests the need for policies that support women's leadership development at institutional, organisational, and societal levels, including educational policies that support gender equity in leadership development and organisational policies that address systemic barriers to women's advancement.

6.4 Methodological Contributions

The study makes important methodological contributions that can inform future research. The integration of Design-Based Research and Interpretative Phenomenological Analysis represents a methodological innovation that enables research that is both theoretically rigorous and practically relevant. The mixed-methods approach demonstrates the value of combining quantitative measurement of outcomes with qualitative understanding of processes and experiences.

6.5 Future Research Directions

The study points toward several important directions for future research, including longer-term longitudinal studies examining career trajectory outcomes, larger-scale studies examining intervention effectiveness across different contexts, comparative studies examining different approaches to women's leadership development, and research addressing intersectional experiences more deeply.

6.6 Final Reflections

This research has demonstrated that while women continue to face significant barriers in their progression toward leadership positions, well-designed interventions can meaningfully support their development and advancement. The statistical evidence of substantial improvements across multiple leadership dimensions, combined with qualitative accounts of transformation and empowerment, provides hope for creating more inclusive and equitable leadership structures.

However, the research also reveals that individual-level interventions, while valuable, are insufficient to address the systemic nature of gender inequity in leadership. The persistent barriers documented in this study, particularly the intersectional challenges faced by women of colour, underscore the need for comprehensive approaches that address both individual development and systemic change.

The journey toward gender equity in leadership is far from complete, but this research provides evidence that meaningful progress is possible when interventions are grounded in understanding of women's experiences, informed by rigorous theoretical frameworks, and committed to both individual empowerment and systemic change. The path forward requires continued research, sustained commitment, and collaborative effort across multiple stakeholders, but the potential for creating more inclusive and equitable leadership structures makes this effort both necessary and worthwhile.

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