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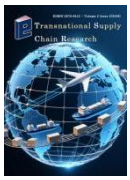

Research Article

The Leadership Pipeline Revisited: Gender Roles and Women's Careers in Uganda's Logistics Industry

Nabiira Nantongo[1*], Shafiq Mugerwa[2], Thurayya Namugerwa[3], Jamila Nansimbe[4]

[1] *Department of Transport and Logistics Management, Makerere University Business School, Kampala, Uganda*

[2] *Management Information Systems, Makerere University Business School, Kampala, Uganda*

[3] *Department of Law, Makerere University Business School, Kampala, Uganda*

[4] *Department of Procurement and Supply Chain Management, Makerere University Business School, Kampala, Uganda*

KEYWORDS

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ABSTRACT

Background: Women remain underrepresented in leadership and decision-making roles within the logistics sector, particularly in developing countries where gendered caregiving expectations remain deeply entrenched. This study examines how gender roles and responsibilities influence women's progression through leadership pipelines in Uganda's logistics sector and investigates the mediating role of work-life balance. **Methods:** A quantitative cross-sectional survey design was adopted, using data collected from 298 logistics professionals in Uganda. Data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM). Reliability, convergent validity, discriminant validity, and structural relationships were assessed prior to hypothesis testing. **Results:** The findings indicate that gender roles and responsibilities were not significantly associated with women's leadership progression through a direct pathway. However, work-life balance was found to be positively and significantly associated with the women's leadership pipeline and fully mediated the relationship between gender roles and responsibilities and leadership progression. The results suggest that gendered responsibilities influence women's leadership outcomes indirectly through their impact on work-life balance. These findings highlight the importance of work-life integration as a key mechanism supporting women's participation and continuity within leadership pathways in Uganda's logistics sector. **Conclusions:** The study concludes that gender roles and responsibilities do not directly predict women's progression through leadership pathways in Uganda's logistics sector. Instead, work-life balance emerged as a significant factor in women's leadership progression and a key mechanism by which gendered responsibilities influence leadership outcomes. The findings highlight the importance of organisational practices that support work-life integration, flexibility, and leadership sustainability in operational environments characterised by demanding work schedules and mobility requirements. **Significance:** By providing evidence from Uganda's male-dominated logistics sector, the study contributes to the growing literature on women's leadership in underrepresented African contexts. The findings advance understanding of how work-life balance shapes women's leadership progression and offer practical, organisational, and policy insights for promoting gender-inclusive leadership pathways within operational and logistics-intensive industries.

*CORRESPONDING AUTHOR
Nabiira Nantongo; Department of Transport and Logistics Management, Makerere University Business School, Kampala, Uganda;
Email: nnabiira@mubs.ac.ug

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1. Introduction

Women's participation in leadership and decision-making has become central to global discussions on gender equality, organisational performance, and sustainable development [1-5]. Despite policy reforms and organisational diversity initiatives, women remain underrepresented in senior leadership positions, particularly within male-dominated industries such as logistics and transport [6-8]. Structural inequalities, cultural expectations, and workplace barriers continue to shape women's career trajectories and restrict access to leadership opportunities [9-12].

Gender Role Theory explains that societies assign men and women different behavioural expectations, with women commonly associated with caregiving and domestic responsibilities, while men are associated with leadership and professional authority [13,14]. These expectations influence labour-market participation and leadership advancement by constraining women's access to professional opportunities, mobility, and career continuity. Globally, women perform the majority of unpaid care work, limiting their ability to engage fully in career-enhancing activities [15,16].

In Uganda, women remain significantly underrepresented in management and leadership positions despite increased educational attainment and labour-force participation [17,18]. Within the logistics sector, leadership progression is particularly challenging because operational environments often require long working hours, geographical mobility, and continuous availability. Such expectations frequently conflict with caregiving responsibilities that are still socially assigned to women.

The leadership pipeline metaphor provides an additional explanation for women's underrepresentation in leadership. The framework suggests that women progressively exit organisational hierarchies due to systemic barriers embedded within organisational cultures, promotion systems, and gender norms [19,20]. Pipeline leakage is intensified in male-dominated industries where women experience biased promotion practices, limited mentorship opportunities, and exclusion from leadership networks.

Work-life balance has emerged as a critical mechanism influencing women's leadership continuity. Women balancing professional advancement with caregiving responsibilities often experience work-family conflict that undermines career progression and participation in leadership [21-23]. Organisational environments lacking flexibility and family-friendly policies intensify these pressures, whereas supportive work arrangements improve retention and the sustainability of leadership.

Although research on gender and leadership has expanded globally, empirical evidence remains limited on how gender roles and work-life balance interact to shape women's leadership progression in African logistics sectors. This study addresses this gap by examining the relationship between gender roles and responsibilities, work-life balance, and women's leadership progression in Uganda's logistics industry. The study was guided by the following research questions:

① How do gender roles and responsibilities influence women's leadership progression in Uganda's logistics sector?

② To what extent does work-life balance influence women's leadership progression?

③ Does work-life balance mediate the relationship between gender roles and women's leadership progression?

2. Literature Review

2.1. Theoretical Review

Gender Role Theory explains that societies assign men and women distinct behavioural expectations that shape perceptions of competence, suitability, and leadership potential [24,25]. Women are commonly associated with communal attributes such as empathy, caregiving, and emotional support, whereas men are linked to agentic traits such as assertiveness, authority, and leadership orientation [26,27]. These socially constructed expectations influence how individuals internalise and perform gender roles within organisational settings [28,29]. Consequently, women's career trajectories often reflect tension between societal expectations and organisational demands, where deviation from traditional feminine roles may attract social penalties or reduce access to leadership opportunities [30]. In male-dominated sectors such as logistics in Uganda, these expectations reinforce occupational segregation and constrain women's advancement into decision-making positions [31,32].

Work-life balance (WLB) further shapes women's leadership progression within this gendered framework. Greenhaus and Beutell [33] argue that work-family conflict emerges when professional and domestic role demands compete for limited time and energy. In line with Gender Role Theory, women's disproportionate responsibility for caregiving and domestic labour creates structural barriers to career-enhancing activities such as leadership networking, training, mobility, and strategic participation [34,35]. Poor work-life balance not only restricts career continuity but also contributes to perceptions that women are less committed to organisational goals, thereby weakening leadership progression [36]. Conversely, supportive organisational practices, including flexible work arrangements, maternity protections, and family-friendly leadership cultures, can reduce work-family strain and improve women's retention and advancement within leadership pathways.

The mediating role of work-life balance in the relationship between gender roles and leadership progression can also be understood through Gender Role Theory and Role Congruity Theory [9]. Strong adherence to traditional gender roles increases women's domestic responsibilities, intensifying work-family conflict and limiting opportunities for leadership advancement. Over time, these pressures contribute to the gradual attrition of women from organisational leadership pathways, commonly described as the "leaky pipeline" phenomenon [20]. In male-dominated industries, leadership cultures often reflect the expectation of the "ideal worker," who is continuously available and free from caregiving responsibilities. Such expectations disproportionately disadvantage women and intensify leadership exclusion. Work-life balance therefore functions as a critical mediating mechanism linking gendered role expectations to women's leadership outcomes. The theory suggests that organisations seeking to strengthen women's participation in leadership must address structural inequalities through supportive policies and inclusive organisational cultures.

2.2. Gender Roles and Responsibilities and Women's Leadership Pipeline

Gender roles and responsibilities represent culturally embedded expectations regarding appropriate behaviours, responsibilities and occupational identities assigned to men and women [37,38]. Across societies, women continue to carry a disproportionate share of unpaid caregiving and domestic labour, which directly constrains their labour-market participation and career continuity [15]. These responsibilities are not merely

personal arrangements but structural conditions that shape professional behaviour, career expectations, and leadership trajectories [39,40].

Empirical evidence demonstrates that caregiving responsibilities significantly disrupt women's career progression [41-43]. Women are more likely than men to experience career interruptions, reduced working hours, and slower promotion trajectories following childbirth and caregiving transitions [44,45]. Such interruptions reduce women's access to professional development, exposure to senior leadership, and participation in strategic projects, which are critical components for advancement into leadership positions. In male-dominated sectors such as logistics, where career progression is often associated with long hours, geographical mobility, and continuous employment, caregiving duties serve as a powerful mechanism of exclusion.

The leadership pipeline framework describes the sequential advancement of individuals through organisational hierarchies toward senior management. However, women's representation declines sharply at successive stages of progression, producing what is commonly described as the "leaky pipeline" [19]. Attrition is not random but systematic, reflecting structural barriers embedded within organisational norms and career evaluation systems. Böhmer and Schinnenburg [46] argue that pipeline leakage is determined not only by entry barriers but by organisational cultures that privilege uninterrupted career trajectories and devalue work-family integration. Gender socialisation plays a foundational role in shaping leadership ambition even before entering the workplace. Shapiro et al. [47] show that girls internalise social expectations emphasising caregiving and relational roles at an early age, which subsequently undermines leadership aspiration and career confidence [45]. These early influences cascade into adulthood, influencing occupational choices, leadership self-perception, and risk-taking behaviour in professional contexts.

According to Eagly and Karau [9], leadership roles are socially associated with agentic traits such as authority, assertiveness and decisiveness, characteristics culturally attributed to men. Women are therefore perceived as less suitable leaders because of a misalignment between feminine role expectations and leadership prototypes. Surawicz [48] documents that women leaders face heightened expectations and credibility challenges, often needing to outperform male peers to receive recognition equal to that of their male peers. These credibility deficits further undermine pipeline sustainability, as women encounter invisible professional ceilings long before formal promotion thresholds are reached.

Furthermore, organisational environments that fail to acknowledge caregiving as a legitimate responsibility inadvertently institutionalise inequality. Sandberg [49] argues that workplaces structured around uninterrupted availability disadvantage women regardless of competence or ambition. By contrast, Mbatha and Ruiters [50]highlight that women's leadership trajectories are shaped by deeply embedded structural and identity constraints that intersect with caregiving intensity, organisational culture, and career sponsorship. The literature demonstrates that gender roles operate as a structural determinant of leadership access and continuity. Care responsibilities restrict professional development, leadership visibility, and career progression; leadership stereotypes undermine legitimacy; and organisational norms perpetuate leadership exclusion. In logistics, where leadership pathways are closely tied to availability and mobility, gender roles significantly accelerate pipeline leakage, leading to persistent underrepresentation of women in decision-making roles. Based on the reviewed literature, gender roles and caregiving responsibilities operate as structural constraints that reduce women's ability to advance in organisational pipelines, thus supporting the hypothesis.

H1: Gender roles and responsibilities are associated with women's leadership pipeline in the logistics sector.

2.3. Work-life Balance and Women's Leadership Pipeline

Work-life balance (WLB) remains a central determinant in shaping women's leadership trajectories, particularly in regions where institutional support is limited and cultural expectations regarding caregiving

remain gendered [51-53]. In Sub-Saharan Africa, women's professional advancement is constrained not only by organisational conditions but also by social structures that position caregiving as a primarily female responsibility [22]. These realities intensify leadership attrition by narrowing women's availability for professional development, strategic engagement, and leadership readiness. Sectoral dynamics further reinforce work-life imbalance. In logistics and related operational industries, leadership is associated with extended work schedules, geographic mobility, informal overtime, and crisis responsiveness. These expectations are incompatible with caregiving structures that remain largely unsupported by formal childcare systems or flexible work arrangements in African labour markets. The absence of institutional buffers such as parental leave enforcement, remote work systems, and organisational childcare disproportionately excludes women from leadership tracks [22].

Empirical research from other sectors with operational demands similar to logistics confirms that poor work-life balance strongly predicts leadership discontinuity. In STEM leadership, Brue [53] demonstrates that women leaders leave leadership pathways due to organisational failure to accommodate caregiving, work overload, and work-family conflict. These findings mirror contexts in logistics, where presenteeism and endurance norms dominate leadership cultures. The consequence of work-life imbalance is not reduced ambition but constrained feasibility. Kerri [54] and Smith and Hatmaker [55] expressed that women leaders experience identity strain when leadership roles conflict with caregiving expectations, resulting in emotional exhaustion, disengagement, and career withdrawal. These experiences are not random but reflect systemic leadership structures built around male life-course models that assume unrestricted labour availability [56].

Further supporting this argument, Essandoh et al. [57] find that women's promotion rates are directly affected by work-life tension. Their study demonstrates that women experiencing persistent work-family conflict are significantly less likely to remain on leadership tracks and more likely to stagnate professionally. These findings align with Polkowska's [58] analysis of scientific career systems, which concludes that pipeline failure persists not because of a lack of aspiration but because of structural incompatibility between organisational expectations and caregiving realities.

Furthermore, Ajani [22] illustrates that women in educational leadership across Africa are disproportionately burdened by domestic responsibilities while simultaneously facing leadership cultures that undervalue caregiving. As a result, women's leadership sustainability is threatened at mid-career stages, where professional demands and family obligations converge most sharply. Findings from healthcare environments in the Global South further validate these patterns. James-McCarthy et al. [59] demonstrate that women in academic medicine experience leadership disengagement primarily due to unresolved work-family conflict rather than capability deficits. Their findings underscore that pipeline attrition results from organisational design flaws rather than individual shortcomings. Ali et al. [11], in their systematic review of work-life balance and career motivation, conclude that prolonged imbalance significantly weakens women's leadership ambition, occupational identity, and professional persistence. The review highlights that leadership ambition remains high among women; however, sustained imbalance erodes the feasibility of leadership participation over time. Crucially, organisational policies shape career intentions. Fritz and Van Knippenberg [60] show that access to work-life initiatives significantly increases women's leadership aspirations. Where organisations visibly endorse flexibility and caregiving accommodation, leadership ambition rises. In contrast, leadership intent diminishes in organisational cultures structured around inflexible schedules and excessive workload expectations. Böhmer and Schinnenburg [45] argue that stabilising leadership pipelines requires institutional interventions that address work-life pressures as part of leadership development itself. Career planning and leadership preparedness programs should therefore explicitly incorporate work-life integration strategies, rather than assuming that women will privately manage structural constraints.

In the Ugandan logistics context, the intersection between work-life balance and leadership advancement is particularly under-researched. However, the convergence of demanding operational schedules, limited alternative childcare infrastructure, high informal labour burdens, and culturally reinforced domestic roles positions Ugandan women at heightened vulnerability to leadership exclusion. Thus, work-life balance emerges not as a lifestyle concept but as a governance issue in organisational design. Based on the reviewed evidence, work-life balance operates as a critical determinant of leadership sustainability, particularly in environments characterised by limited institutional support and strong gendered role expectations. Thus, the hypothesis,

H2: Work–life balance is associated with women's leadership pipeline in the logistics sector.

2.4. Mediating Role of Work-Life Balance in the Relationship Between Gender Roles and Responsibilities, and the Women's Leadership Pipeline

Gender roles and responsibilities shape women's careers primarily through the unequal distribution of unpaid work. Globally, women undertake a disproportionate share of domestic and caregiving labour, which constrains their time, energy, and availability for career-enhancing activities such as training, networking, and high-visibility assignments [15,44]. In male-dominated, time-intensive sectors such as logistics, these gendered expectations are especially consequential because leadership advancement is closely tied to long, irregular hours, mobility, and continuous presence in operational spaces. As a result, gender roles exert a powerful negative influence on women's progression through the leadership pipeline [19,50].

Work-life balance (WLB) is a key mechanism through which these gendered responsibilities translate into leadership outcomes. When women carry the bulk of unpaid care work, they are more likely to experience work -family conflict, role overload, and strain, core indicators of poor work-life balance [53,11]. Studies across different professional contexts show that women's subjective sense of imbalance leads to withdrawal from stretch assignments, reduced willingness to pursue promotions, and, in some cases, exit from leadership tracks altogether [54,57].

At the same time, work-life balance functions as an enabling resource that can buffer the negative effects of gendered responsibilities. Organisational environments that provide flexible work arrangements, supportive supervisors, and visible work-life policies tend to enhance women's leadership aspirations and retention [60,49]. Fritz and Van Knippenberg [60] demonstrate that the availability of work-life initiatives increases women's leadership aspirations, suggesting that when women perceive leadership as compatible with a meaningful personal and family life, they are more likely to invest in leadership pathways. In educational leadership in African contexts, Ajani [22] similarly reports that women leaders who experience greater balance between work and family are more likely to remain in leadership roles and pursue further advancement.

Conceptually, this positions work-life balance as a mediator in the relationship between gender roles and the leadership pipeline. Gendered expectations around caregiving and domestic responsibilities first shape women's experience of work-life balance, often negatively, by increasing the intensity and complexity of non-work demands [15,44]. In turn, this compromised balance influences whether women enter, stay in, or advance through the leadership pipeline. When work-family conflict is persistent, women are more likely to decline promotion opportunities, avoid visibility-enhancing roles, or step back from leadership altogether [53,57,59]. Conversely, when organisations take explicit steps to support women in managing work and non-work roles, they help to stabilise the pipeline by making leadership roles more sustainable [45,11].

Role Congruity Theory suggests that women experience tension when the expectations of the "ideal worker" role conflict with normative expectations of the "ideal mother" or caregiver [9]. Work-life balance captures how women navigate this tension in practice. Where balance is unattainable, women may resolve the conflict

by stepping off leadership trajectories, thereby contributing to pipeline leakage [19,58]. Where structural support is in place, women are better able to maintain leadership aspirations and continuity [60,22,53].

Therefore, the literature suggests that gender roles and responsibilities influence women's leadership outcomes primarily by shaping work-life balance. In other words, gendered care burdens do not automatically force women out of the leadership pipeline; instead, they undermine work-life balance, and it is this imbalance that directly triggers withdrawal, stalled progression, or exit. Thus, the hypothesis.

H3: Work-life balance mediates the relationship between gender roles and responsibilities and the women's leadership pipeline.

2.5. Conceptual Model

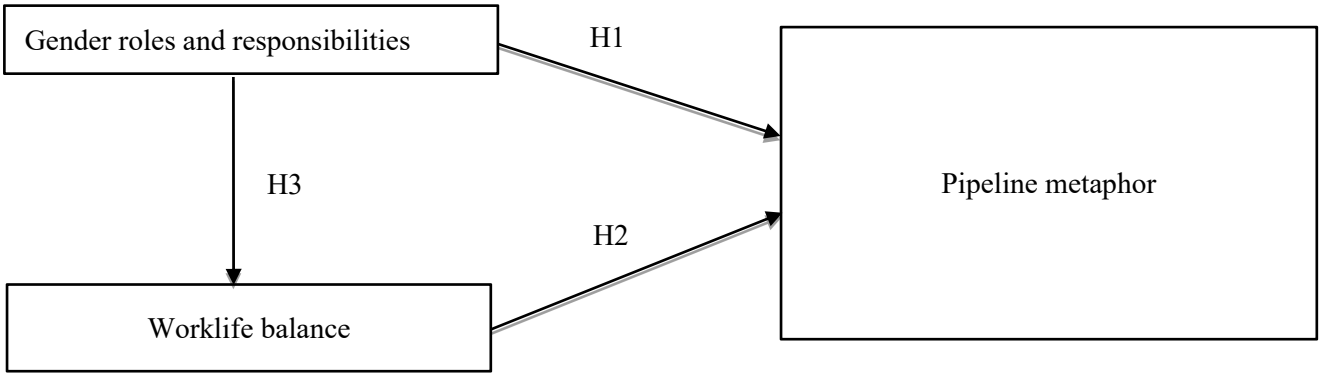

Figure 1. Conceptual model

Figure 1 illustrates the conceptual model: H1: Gender roles and responsibilities directly influence the women's leadership pipeline; H2: Work-life balance directly influences the women's leadership pipeline; and H3: Work–life balance mediates the relationship between gender roles and responsibilities and the leadership pipeline. The model proposes that gendered caregiving expectations shape women's leadership trajectories both directly and indirectly through work-life balance.

3. Methodology

3.1. Design, Population, Sample and Data Collection

This study adopted a quantitative cross-sectional survey design, collecting data at a single point in time to test hypothesised relationships within a deductive framework. This approach was appropriate for the Ugandan logistics context, which is characterised by decentralised operations, rapid growth, and limited digitised personnel data, making longitudinal designs impractical.

The study population comprised 4,730 logistics officers drawn from three key segments of Uganda's logistics system: industry associations (700), government regulatory bodies (350), and private logistics firms (3,500). Using Krejcie and Morgan's (1970) sampling guidelines, a proportional sample of 369 respondents was selected from major logistics corridors. A total of 298 usable questionnaires were returned, yielding a response rate of 81%.

Data were collected using a structured questionnaire comprising five-point Likert-scale items. Three constructs were measured: (1) Gender Roles and Responsibilities, (2) Work-Life Balance, and (3) the Pipeline Metaphor. Consistent with leadership pipeline literature, the Pipeline Metaphor construct was measured using indicators related to women's progression through organisational leadership pathways, including promotion

opportunities, career aspirations, work progression, and professional development opportunities. These indicators provide a cross-sectional assessment of women's perceived advancement and continuity within leadership trajectories in Uganda's logistics sector.

A drop-and-pick-up survey method was employed due to limited email responsiveness and preferences for face-to-face engagement in Uganda. Respondents were given 4 weeks to complete the questionnaire, after which non-responders were treated as non-participants. The unit of analysis was the individual logistics officer, with up to three respondents drawn per organisation (top, middle, and lower management) to reflect operational, tactical, and strategic perspectives.

Data were initially collected from both male and female logistics professionals working in logistics companies, industry associations, and regulatory bodies in Uganda. The inclusion of both groups was intended to capture a broad understanding of organisational practices and leadership dynamics within the logistics sector. However, the primary objective of the study was to examine factors associated with women's leadership progression. Therefore, prior to hypothesis testing, a comparative analysis was conducted to determine whether significant differences existed between male and female respondents regarding the study variables (ANOVA). The analysis revealed no statistically significant differences in responses across the two groups. Consistent with the study's focus on women's leadership experiences and progression, the final analysis was restricted to female respondents. Accordingly, the unit of analysis for the final study consisted of female logistics professionals whose responses formed the basis for examining the relationships among gender roles and responsibilities, work-life balance, and the pipeline metaphor.

3.2. Data Analysis

Both descriptive and inferential statistics were employed. Descriptive analysis summarised respondents' demographic characteristics, while inferential analysis examined relationships among the study variables. Data were analysed using SmartPLS following a two-stage approach consistent with PLS-SEM guidelines [61].

First, the measurement model was assessed for indicator reliability, internal consistency, convergent validity, discriminant validity, and collinearity. Indicator loadings were required to exceed 0.70. Internal consistency was evaluated using Composite Reliability (CR), with values of 0.70 or higher considered acceptable [62,63]. Average Variance Extracted (AVE) was used to assess convergent validity; values of 0.50 or higher indicate adequate construct validity [64]. Discriminant validity was established using the Heterotrait–Monotrait (HTMT) ratio, with values below 0.85 [65,66] considered acceptable. Collinearity among indicators and constructs was examined using the Variance Inflation Factor (VIF), with values below 3.3 indicating no multicollinearity concerns [67].

Second, the structural model was evaluated by examining path coefficients, bootstrapped t-values and p-values. Partial Least Squares Structural Equation Modelling (PLS-SEM) was adopted due to the complexity of the conceptual framework and the inclusion of higher-order constructs with both formative and reflective indicators [68]. This approach is particularly suitable for predictive analysis and theory testing in models with mixed measurement specifications.

Validity and reliability

Table 1. Reliability, Convergent validity (AVE), multicollinearity (VIF)

Construct	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)	VIF
Gender Roles and Responsibilities	0.700	0.704	0.805	0.556	1.204

Pipeline Metaphor	0.764	0.790	0.847	0.584	1.000
Work-Life Balance	0.703	0.715	0.800	0.546	1.204

Table 2. Discriminant validity

Construct	Gender roles and responsibilities	Pipeline metaphor	Work-life balance
Gender roles and responsibilities			
Pipeline metaphor	0.513		
Work-life balance	0.497	0.499	

Internal consistency reliability was assessed using Cronbach's alpha based on the inter-item correlation method [63]. As reported in Table I, all constructs recorded alpha values above the recommended threshold of 0.70, indicating satisfactory reliability [69]. Content validity was established through expert review by both academics and industry practitioners, whose feedback informed refinement of the instrument. The resulting Content Validity Index (CVI) values were all above 0.8, exceeding recommended minimum thresholds [70].

Convergent validity was evaluated using Composite Reliability (CR) and Average Variance Extracted (AVE) [71,72]. As shown in Table I, CR values for all constructs exceeded 0.70, and AVE values exceeded 0.50, confirming adequate convergent validity [71,72]. Discriminant validity was assessed using the Heterotrait-Monotrait (HTMT) ratio. Additionally, the study investigated multicollinearity utilising the Variance Inflation Factor (VIF). The VIF values for all constructs remained below 3.3, well within the recommended threshold of 3.3 [67], suggesting that multicollinearity was not an issue, as presented in Table 1. As presented in Table 2, all HTMT values were below the recommended threshold of 0.90, providing evidence of discriminant validity [65,73]. The results indicate that the measurement instrument demonstrates strong reliability and validity and is suitable for empirical analysis.

To minimise the risk of Common Method Bias (CMB), this study implemented several procedural remedies during the instrument design phase, in line with established best practices in behavioural research. Initially, the questionnaire items were meticulously crafted to be straightforward, concise, specific, and easy to understand for the target respondents. Secondly, respondents were assured of anonymity and confidentiality; participation was voluntary. Care was taken to avoid double-barreled items that address more than one construct simultaneously, as these can introduce ambiguity and heighten the likelihood of measurement error.

4. Findings

4.1. Demographic and Organisational Characteristics of Respondents

Table 3. Demographic and organisational characteristics of respondents

Variable	Category	Frequency	Percentage
Category of organisation	Industry association	106	35.6
	Logistics company	151	50.7
	Regulatory bodies	41	13.8
Ownership of this institution	Family ownership	22	7.4
	Foreign	64	21.5
	Government	67	22.5
	Local	145	38.7
Length of the institution being in operation	Less than one year	6	2.0
	1-5 years	49	16.4

	6-10 years	91	30.5
	11-15 years	34	11.4
	More than 15 years	118	39.6
Number of employees	Less than 50	94	31.5
	Between 50 – 100	98	32.9
	100 – 500	45	15.1
	Above 500	61	20.5
Age bracket	Below 35 years	157	52.7
	35 - 45 years	115	38.6
	Above 45	26	8.7
Level of qualification attained.	Bachelor's Degree	169	56.7
	Master's Degree	68	22.8
	PhD	6	2.0
	Professional holder	38	12.8
	Other	17	5.7
Current position in this institution	Board member	42	14.1
	Senior management	55	18.5
	Middle management	116	38.9
	Lower management	85	28.5
Service in this institution	1 – 5 years	166	55.7
	6 - 10 years	98	32.9
	10 years and above	34	11.4
Total		298	100

Table 3 summarises the respondents' characteristics. Most participants were from private logistics firms (50.7%), followed by industry associations (35.6%) and regulatory bodies (13.8%), reflecting the sector's structure in Uganda. The majority worked in locally owned organisations (38.7%), with substantial representation from government (22.5%) and foreign firms (21.5%). Most respondents were from established organisations: 39.6% had operated for over 15 years, and 30.5% for 6–10 years. Firm size was balanced across categories, with small and medium firms dominating but large organisations also represented (20.5% employed over 500 staff). The workforce was relatively young, with 52.7% aged below 35 years. Respondents were well qualified, with over half holding a Bachelor's degree. Middle managers formed the largest group (38.9%), followed by lower and senior managers, ensuring coverage of both operational and strategic roles. Most respondents (55.7%) had worked in their organisations for 1–5 years. Although both male and female respondents participated in the survey, only female respondents were retained for the final analysis following preliminary tests that revealed no statistically significant differences between male and female responses

4.2. Structural Model Results

Table 4. The standardised structural model estimates for hypothesised path

Hypothesised path	(β)	Std. Error	T-Value	P Values	25% - 97.5% Bias-corrected confidence intervals	Decision	Effect size
Direct effects							
H1 GRR ⟶ PM	0.058	0.332	0.582	0.560	(-0.238 - 0.200)	Not supported	0.003
H2 WLB ⟶ PM	0.406	0.052	7.871	0.000	(0.277 - 0.487)	Supported	0.119
Indirect effects							
H3 GRR ⟶ WLB ⟶ PM	0.123	0.032	3.690	0.000	(0.056 - 0.181)	Supported	-

Source: Primary data

** Hypothesis is significant at the 0.01 level (2-tailed).

* Hypothesis is significant at the 0.05 level (2-tailed).

Legend: GRR – Gender roles and responsibilities; WLB – Work-life balance; PM – Pipeline metaphor

4.2.1 Hypothesis 1: Gender Roles and Responsibilities are Associated with Women's Leadership Pipeline in the Logistics Sector

The direct effect of Gender Roles and Responsibilities (GRR) on the Women's Leadership Pipeline (PM) is statistically insignificant ($\beta = 0.058$, $t = 0.582$, $p = 0.560$). The confidence interval (-0.238, 0.200) includes zero, further confirming the absence of a significant direct relationship. The effect size ($f^2 = 0.003$) is negligible, indicating that GRR contributes very little to explaining variation in the leadership pipeline. The findings, therefore, do not support Hypothesis 1, suggesting that gendered expectations regarding caregiving and domestic responsibilities significantly shape women's career continuity and advancement in logistics. Effect sizes were interpreted using the benchmarks proposed by Cohen [74] and Hair [61], where f^2 values of 0.02, 0.15, and 0.35 indicate small, medium, and large effects, respectively. These results suggest that gender roles and responsibilities do not directly predict women's progression through leadership pathways in Uganda's logistics sector.

4.2.2. Hypothesis 2: Work ‑ life Balance Is Associated with Women's Leadership Pipeline in the Logistics Sector

The results in Table 4 indicate a strong, positive, and statistically significant relationship between work–life balance and the women's leadership pipeline ($\beta = 0.406$, $t = 7.871$, $p < 0.001$). The bias-corrected confidence interval (25%–97.5%) did not include zero (0.277–0.487), further confirming the robustness of the relationship. The findings therefore support Hypothesis 2, suggesting that women who experience better work-life balance are more likely to remain in leadership tracks and progress into senior roles within the logistics sector. Effect sizes were interpreted using the benchmarks proposed by [74] and [61], where f^2 values of 0.02, 0.15, and 0.35 indicate small, medium, and large effects, respectively. The effect size for Hypothesis 2 exceeded the 0.35 threshold, signifying a large effect. This indicates that work-life balance plays a substantial role in explaining variance in the women's leadership pipeline, beyond mere statistical significance.

4.2.3. Hypothesis 3: Mediating Role of Work-Life Balance in the Relationship Between Gender Roles and Responsibilities, And the Women Leadership Pipeline

The results in Table 4 indicate the indirect effect of Gender Roles and Responsibilities on the Women's Leadership Pipeline through Work-Life Balance is positive and significant ($\beta = 0.123$, $t = 3.690$, $p < 0.001$). Since the direct effect is insignificant while the indirect effect remains significant, the findings suggest full mediation. This means that gender roles and responsibilities influence women's leadership progression indirectly through their association with work-life balance rather than through a direct pathway.

5. Discussion

5.1. Gender Roles and Responsibilities are Associated with Women's Leadership Pipeline in the Logistics Sector

Contrary to expectations, gender roles and responsibilities were not directly associated with the women's leadership pipeline. This suggests that gender-role expectations alone may not explain leadership progression in

Uganda's logistics sector. Rather, their influence appears to operate indirectly through work-life balance. The absence of a significant direct relationship between Gender Roles and Responsibilities and the Women's Leadership Pipeline is noteworthy and warrants further consideration. While existing literature frequently portrays gender roles as direct barriers to women's leadership advancement, the present findings suggest that their influence may be more complex within Uganda's logistics sector.

One possible explanation is that women who remain and progress within the logistics industry have already developed strategies for navigating traditional gender expectations. Over time, many women may acquire family support systems, coping mechanisms, and professional networks that enable them to manage caregiving responsibilities while pursuing leadership opportunities. As a result, gender-role expectations alone may not be sufficient to directly explain variations in leadership progression among women already participating in the sector. Moreover, it relates to the evolving nature of the logistics industry in Uganda. Increased advocacy for gender inclusion, the growing presence of professional associations supporting women in logistics, and broader policy efforts promoting women's participation in leadership may have reduced the direct impact of traditional gender-role expectations on career advancement. Consequently, women may face fewer direct barriers based solely on gender roles than suggested in earlier studies.

Most importantly, the findings indicate that gender roles exert their influence indirectly through work-life balance. This suggests that the challenge is not necessarily the existence of gender-role expectations themselves, but rather the extent to which those expectations create difficulties in balancing professional and personal responsibilities. In other words, women may be able to progress into leadership positions despite traditional gender expectations when they are able to maintain satisfactory work-life balance. However, when gendered responsibilities generate sustained work-life strain, leadership progression becomes more difficult. These findings therefore suggest that leadership inequality within Uganda's logistics sector may be driven less by gender-role expectations in isolation and more by the interaction between those expectations and the operational demands of logistics work, including long working hours, mobility requirements, and unpredictable schedules. This helps explain why work-life balance emerged as the more influential factor associated with women's leadership progression.

The findings offer a more inclusive perspective than that presented in much of the existing literature, which emphasises gender roles and responsibilities as deeply embedded cultural expectations that shape occupational identities, behaviours, and leadership opportunities for women and men [37,38]. Across many societies, women continue to bear a disproportionate share of unpaid caregiving and domestic responsibilities [15], and numerous studies have linked these responsibilities to career interruptions, reduced working hours, and limited access to high-visibility assignments that support leadership advancement [41-43]. Within the logistics sector, characterised by long working hours, operational unpredictability, and expectations of continuous availability, such responsibilities have traditionally been viewed as barriers to leadership progression. However, the absence of a significant direct relationship in this study suggests that gender roles and responsibilities may not independently determine women's progression through leadership pathways within Uganda's logistics sector. Instead, their influence appears to be more indirect and contingent on other factors shaping women's career experiences.

Similarly, while the leadership pipeline literature argues that women experience progressive attrition from leadership pathways due to organisational norms that favour uninterrupted career trajectories and undervalue work-family integration [19,45], the present findings suggest that pipeline outcomes may not be directly attributable to gender-role expectations alone. Rather, the results indicate that the consequences of gendered responsibilities become more apparent when they affect women's ability to achieve work-life balance. This interpretation is consistent with the significant mediating role of work-life balance observed in the study and

suggests that leadership progression is shaped by the interaction between gendered responsibilities and the operational realities of logistics work rather than by gender roles in isolation.

From a theoretical perspective, the findings refine Social Role Theory [13,9], which argues that gender differences in occupational outcomes emerge from culturally prescribed roles rather than innate ability and Role Congruity Theory [9], by suggesting that gender-role expectations may not directly translate into leadership outcomes. Instead, their influence appears to operate through intermediary mechanisms such as work -life balance. This highlights the importance of examining the processes through which social expectations affect women's leadership experiences rather than assuming a direct relationship between gender roles and leadership progression. This contributes to early career stagnation and limited representation in decision-making roles.

The findings suggest that gender roles and caregiving responsibilities do not directly determine women's progression through leadership pathways in Uganda's logistics sector. Instead, their influence appears to operate through work-life balance, highlighting the importance of women's ability to manage competing professional and personal responsibilities. In a sector characterised by long working hours, operational unpredictability, and mobility requirements, leadership progression is shaped less by gender-role expectations alone and more by the extent to which organisational and personal circumstances support sustainable work-life integration. Consequently, improving women's representation in leadership requires greater attention to organisational conditions that support work-life integration, leadership sustainability, and career continuity within demanding operational environments.

5.2. Work-Life Balance Is Associated with Women’s Leadership Pipeline in the Logistics Sector

The results indicate a strong, positive, and statistically significant relationship between work-life balance and the women’s leadership pipeline. They demonstrate that work-life balance is a critical determinant of women’s leadership continuity and advancement in Uganda’s logistics sector. The significance of work-life balance in this study is particularly important within Uganda's logistics sector. Unlike many professional sectors such as higher education, healthcare, or administrative services, logistics operations are characterised by irregular schedules, long working hours, emergency response requirements, field-based supervision, and frequent travel along national and regional transport corridors. Leadership positions often require continuous availability to manage fleet operations, customs processes, warehousing activities, and supply chain disruptions. These operational realities create unique challenges for women who continue to shoulder a disproportionate share of domestic and caregiving responsibilities.

In Uganda, these challenges are further amplified by limited access to affordable childcare services, inadequate workplace flexibility, and cultural expectations that position women as primary caregivers. Consequently, women seeking leadership roles in logistics must navigate both organisational demands and societal expectations simultaneously. The findings therefore suggest that leadership progression in logistics is shaped less by gender-role perceptions alone and more by women's ability to reconcile the sector's operational demands with family responsibilities.

This finding distinguishes the logistics sector from STEM and healthcare contexts frequently cited in the literature. While women in STEM often encounter barriers related to technical stereotypes and occupational segregation, and women in healthcare face challenges associated with professional hierarchies and clinical workloads, women in logistics encounter additional constraints arising from mobility requirements, shift-based operations, and operational unpredictability. These sector-specific conditions help explain why work-life balance emerged as the most significant factor associated with leadership progression in the present study.

This result is consistent with prior research, which identifies work-life balance as a central determinant of women's leadership outcomes, particularly in contexts characterised by limited institutional support and strong gendered caregiving norms [51,11]. Additionally, Mbatha & Ruiters [50] and James-McCarthy [59] articulated that family responsibilities and societal expectations compound the challenges women face in leadership, as balancing career aspirations with caregiving duties remains a prevalent struggle. In Sub-Saharan Africa, women's leadership progression is shaped not only by organisational constraints but by social structures that assign caregiving primarily to women, thereby restricting time, energy, and availability for leadership development [22]. The strong statistical association observed in this study confirms that leadership exclusion is determined less by individual capability than by structural incompatibilities between work demands and caregiving realities.

Supporting evidence from parallel sectors strengthens this interpretation. In STEM leadership, Brue [53] demonstrates that women exit leadership pipelines primarily due to work overload and unresolved work-family conflict rather than declining ambition. Similarly, Essandoh et al. [57] report that persistent work-family strain significantly reduces promotion likelihood, while Smith and Hatmaker [55] show that identity conflict between leadership and caregiving leads to disengagement and career withdrawal. These patterns reflect systemic organisational designs structured around male life-course assumptions that prioritise uninterrupted availability [56].

Findings from the Global South further validate this conclusion. Women in healthcare and education experience leadership attrition, directly linked to institutional failures to accommodate caregiving [59,22]. Ali et al. [11] conclude that leadership ambition remains high among women, but sustained imbalance progressively erodes motivation, professional identity, and persistence. Importantly, organisations that implement supportive policies see improved leadership aspirations [60], underscoring that leadership outcomes are shaped by organisational conditions rather than personal limitations.

The findings provide strong support for Social Role Theory [13], which holds that gender differences in occupational outcomes arise from socially constructed role expectations rather than inherent differences in capability. The significant effect of work-life balance on the leadership pipeline reflects the structural consequences of gender role socialisation, which assigns caregiving primarily to women. These expectations restrict women's time, energy, and career availability, reducing their capacity to participate in the intensive leadership model embedded in logistics organisations. Consistent with Role Congruity Theory [9], leadership in logistics is culturally defined by masculine norms such as constant availability, physical mobility, and endurance. Women who attempt to balance leadership and caregiving are therefore evaluated against standardised ideals built on male life-course assumptions.

By showing that work-life balance strongly predicts leadership outcomes, this study extends Social Role Theory into the Ugandan logistics context. It demonstrates that unequal role expectations are institutionally reproduced through work schedules, performance metrics, and promotion criteria, resulting in systematic leadership attrition. The findings thus reinforce the view that leadership inequality is not an individual-choice problem but a role-structure and organisational-design problem shaped by cultural expectations.

5.3. Mediating Role of Work-Life Balance in the Relationship Between Gender Roles and Responsibilities, and the Women's Leadership Pipeline

The results suggest that Work-Life Balance is an important mechanism linking gender roles and responsibilities to women's leadership progression. Although Gender Roles and Responsibilities did not demonstrate a significant direct relationship with the Women's Leadership Pipeline, they were significantly related to leadership outcomes through Work-Life Balance. This pattern is consistent with full mediation,

indicating that the influence of gender-role expectations on leadership progression operates primarily through their impact on women's ability to balance professional and personal responsibilities. These findings support the proposition that gender roles do not directly limit women's progression in leadership. Rather, their influence becomes evident in how they affect women's work-life balance, which in turn shapes leadership participation and continuity. Consequently, interventions aimed at improving work-life balance may be more effective in supporting women's leadership advancement than interventions that focus solely on gender-role perceptions.

The mediation findings are particularly relevant within Uganda's logistics environment because the sector relies heavily on operational responsiveness and uninterrupted service delivery. Leadership roles frequently involve oversight of transport movements, inventory management, customs coordination, and emergency problem-solving, often outside standard working hours. As a result, women who experience difficulties balancing professional and caregiving responsibilities may find leadership roles less sustainable over time. The findings therefore suggest that the challenge is not necessarily gender-role expectations themselves but the interaction between those expectations and the operational realities of logistics work. This helps explain why work-life balance emerged as the primary mechanism linking gender roles and leadership progression.

This result aligns closely with prior research showing that women's careers are shaped by the unequal allocation of unpaid care work [15,44]. In time-intensive and male-dominated sectors such as logistics, where advancement is tied to uninterrupted availability, irregular working hours, and geographical mobility, these caregiving burdens become particularly restrictive [19,50]. The mediation effect observed here confirms that gender roles undermine leadership progression, essentially by creating persistent work-life strain that discourages women from pursuing or sustaining leadership roles.

The finding also supports international evidence that sustained work-family conflict predicts reduced leadership participation. Studies across different contexts demonstrate that poor work-life balance leads to disengagement from leadership tracks through role overload, emotional exhaustion, and identity strain [54,53,57,59]. The present results extend these insights into Uganda's logistics sector, showing that leadership attrition is not attributable to ability constraints but to structural incompatibility between leadership design and caregiving realities.

Notably, the literature also highlights that work-life balance can function as a protective resource where organisations provide supportive policies. Access to flexible schedules, caregiving support, and family-friendly leadership cultures increases women's leadership aspirations and retention [49,22]. This reinforces the interpretation that the indirect effect does not imply the inevitability of leadership exit, but rather shows that organisational design mediates the translation of gender roles into leadership outcomes.

From a theoretical perspective, the mediation effect is consistent with Social Role Theory and Role Congruity Theory [9]. Social Role Theory explains that women's career outcomes are produced by culturally assigned caregiving roles rather than ability differences. The results show that these roles reshape women's experience of work-life balance, which, in turn, shapes leadership participation. Role Congruity Theory further explains that leadership expectations in logistics reflect masculine norms of constant availability and endurance, creating conflict with caregiving roles socially attributed to women. Work-life balance, therefore, becomes the site where this role conflict is experienced and managed, often through withdrawal from leadership paths.

Therefore, the findings provide strong evidence that gender role pressures operate through work-life balance to accelerate leakage from the leadership pipeline. Gendered care burdens do not automatically compel women to exit leadership; instead, they erode work-life balance, and it is this erosion that directly undermines leadership continuity. This insight reframes work-life balance as a governance issue within leadership systems, rather than a private lifestyle concern, and emphasises the need for structural intervention rather than individual adaptation.

Although the mediation analysis provides evidence that work-life balance statistically explains part of the relationship between gender roles and the leadership pipeline, the cross-sectional design limits the ability to verify the temporal sequence implied by mediation. Consequently, the mediation results should be interpreted as evidence of a plausible explanatory mechanism consistent with Social Role Theory and Role Congruity Theory rather than proof of a causal process. Longitudinal research would be required to establish whether changes in gender-role expectations precede changes in work-life balance and subsequent leadership outcomes.

6. Conclusion

This study examined the relationships among gender roles and responsibilities, work-life balance, and the women's leadership pipeline within Uganda's logistics sector. The findings indicate that gender roles and responsibilities were not significantly associated with women's leadership progression through a direct pathway. Consequently, the study does not provide evidence that gender-role expectations alone directly determine women's advancement within leadership structures in the logistics sector. In contrast, work-life balance emerged as a significant factor associated with women's leadership progression. Women who reported better work-life balance also reported stronger participation and continuity within leadership pathways. The findings therefore highlight the importance of organisational and personal conditions that enable women to effectively manage professional and non-professional responsibilities while pursuing leadership opportunities. Importantly, the study found that work-life balance significantly mediates the relationship between gender roles and responsibilities and the women's leadership pipeline. This suggests that the influence of gender-role expectations is mediated by women's experiences of balancing work and personal responsibilities, rather than by a direct relationship with leadership progression. The findings therefore identify work-life balance as a key mechanism linking gendered responsibilities to women's leadership outcomes.

7. Implications

7.1. Theoretical Implications

This study contributes to the literature on women's leadership by providing evidence from Uganda's logistics sector, a context that remains underrepresented in leadership and gender studies. The findings extend existing theoretical understanding by demonstrating that gender roles and responsibilities do not directly predict women's progression through leadership pathways. Instead, their influence operates indirectly through work-life balance.

The findings offer important insights for Social Role Theory. While the theory suggests that socially prescribed gender roles shape women's occupational experiences and leadership opportunities, the present study indicates that these effects may not occur through direct exclusion from leadership pathways. Rather, gender-role expectations appear to exert influence through women's ability to balance professional responsibilities with domestic and caregiving obligations. This suggests that work-life balance serves as a critical mechanism by which social role expectations are translated into leadership outcomes.

The study also contributes to Role Congruity Theory by demonstrating that the tension between leadership expectations and socially prescribed caregiving responsibilities manifests in work-life balance rather than in a direct relationship with leadership progression. The findings suggest that women may be able to navigate traditional gender expectations and remain engaged in leadership pathways when effective work-life balance is achieved. Consequently, work-life balance emerges as an important explanatory construct linking role expectations to leadership experiences.

Furthermore, the findings refine the leadership pipeline perspective. Traditional pipeline arguments often assume that gender-related barriers directly contribute to women's attrition from leadership pathways. However, the results suggest that pipeline outcomes are influenced less by gender-role expectations alone and more by the extent to which women can manage competing work and non-work demands. This highlights the importance of considering intermediary mechanisms when examining women's leadership progression.

The significant mediating role of work-life balance contributes to the growing body of literature advocating for more nuanced and process-oriented explanations of women's leadership outcomes. Rather than viewing gender roles as direct barriers to advancement, the findings suggest that their effects are conditional upon how they shape women's work-life experiences. This advances leadership scholarship by identifying work-life balance as a central theoretical mechanism linking gendered social expectations to leadership participation.

Finally, the study responds to calls for greater contextualisation of leadership theories in developing-country settings. Much of the existing evidence on women's leadership originates from Western contexts. By providing empirical evidence from Uganda's logistics sector, the study demonstrates that theoretical relationships may operate differently across institutional and cultural environments. The findings therefore contribute to the refinement and contextual extension of Social Role Theory, Role Congruity Theory, and leadership pipeline models within African and logistics-sector contexts.

7.2. Practical Implications

For logistics firms and managers, leadership practices should be restructured around realistic work patterns. Organisations should introduce flexible scheduling, predictable shift systems, and remote work options where operationally feasible. Promotion criteria should explicitly recognise performance outcomes rather than physical presence or extended working hours, which currently disadvantage employees with caregiving responsibilities. Senior managers should also be trained to recognise unconscious bias in leadership evaluation and mentoring.

For industry associations and regulators, gender inclusion should become a sector-wide performance standard. Associations such as CILT and WiLAT should provide leadership training that integrates caregiving realities and hold companies accountable through benchmarking and recognition schemes. Regulators should enforce parental leave provisions and encourage family-friendly workplace certification within the logistics sector.

7.3. Policy Implications

Government agencies should strengthen enforcement of family-friendly labour regulations, including parental leave provisions, flexible work entitlements, and protection against career penalties associated with caregiving. Labour inspection mechanisms should explicitly evaluate work-life balance practices within logistics firms, with compliance linked to licensing, certification, or procurement eligibility.

Regulatory bodies and professional associations should institutionalise gender reporting requirements, including sex-disaggregated promotion data and leadership composition metrics. Sector performance audits should include indicators on leadership diversity and on the adoption of work-life balance.

The findings support Uganda Vision 2040 and NDP III priorities on gender equality, productivity, and institutional reform. Regulators should strengthen enforcement of parental leave, flexible work provisions, and non-discriminatory promotion practices across logistics firms. Gender performance indicators should be integrated into licensing, procurement, and sector audits to accelerate compliance. These reforms directly advance SDG 5 (Gender Equality) and reinforce SDG 8.

7.4. Social Implications

The findings highlight that women's limited participation in leadership within the logistics sector reflects wider societal inequalities in the distribution of unpaid care work. Persistent gender role expectations continue to confine women to primary caregiving responsibilities, reducing their access to leadership opportunities and economic empowerment. This reinforces cycles of income inequality and limits women's influence in strategic decision-making beyond the workplace. The study also underscores how leadership exclusion perpetuates social norms that associate authority and decision-making with men. When women remain underrepresented in leadership roles, young girls and early-career women lack visible role models, which weakens leadership aspirations and sustains occupational segregation.

At the community level, constrained leadership participation reduces household welfare, as women's limited career progression directly affects family income, educational outcomes, and health security. Conversely, improving women's access to leadership strengthens household resilience and enhances community development. Addressing gender role irregularities in leadership contributes to SDG 5 and supports SDG 10 (Reduced Inequalities) by improving social mobility, intergenerational outcomes, and institutional trust.

8. Limitations and Areas of Further Study

This study employed a cross-sectional survey design, which captures respondents' perceptions at a single point in time and therefore limits the ability to establish temporal ordering and causal relationships among the study variables. While the findings demonstrate significant associations between gender roles and responsibilities, work-life balance, and women's leadership progression, the design does not permit definitive conclusions about causality or the direction of these relationships. The leadership pipeline is inherently dynamic and evolves over time; therefore, longitudinal studies are needed to examine how gender roles and work-life balance influence women's leadership trajectories across different career stages. Future research should adopt longitudinal or panel designs to provide stronger evidence regarding causal mechanisms and leadership progression processes.

The study focused on Uganda's logistics sector, which may limit generalisability to other industries and country contexts; comparative studies across sectors and regions are recommended. Further research should explore intersectional influences such as marital status, number of dependants, organisational ownership, and rural-urban differences. Qualitative studies could also deepen understanding of informal norms and decision-making dynamics that shape women's leadership experiences.

Author's Contributions

Nabiira Nantongo conceptualised the study, developed the theoretical framework, designed the methodology, conducted the data analysis, interpreted the findings, and prepared the original manuscript draft. Shafik Mugerwa supported the field data collection process and contributed to data management and validation. Thurayya Namugerwa contributed to the literature review, manuscript editing, and the intellectual refinement of the theoretical arguments. Jamila Nansimbe contributed to the interpretation of findings, manuscript review, and overall scholarly improvement of the paper. All authors reviewed and approved the final version of the manuscript for publication.

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Data Availability

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare no conflict of interest.

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