

Work–Life Fusion Among Women Research Scholars in Higher Education Institutions: An Empirical Analysis

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Abstract: India's higher education system is one of the biggest and most important in the world. It has helped the country grow, improve skills, and grow knowledge-based companies. Even with these benefits, academic research in India still faces many problems, especially for women conducting research. The study shows that women who want to conduct research at colleges and universities generally receive strong support from their spouses and parents. This support from family members helps them balance their academic work with their roles as moms, which in turn helps them advance in their research careers. Also, support from top-level management at the institution is important for creating a positive environment for female scholars, which helps them fulfil their academic obligations even more effectively. A comprehensive examination of the current literature indicates enduring deficiencies in attaining good work–life integration for female researchers, particularly in developing nations such as India. These gaps encompass insufficient structural support, cultural expectations, and the dual load of professional and domestic responsibilities. To tackle these problems, the current study includes several important steps: formulating research questions, setting research goals, selecting appropriate methods, designing surveys, developing relevant hypotheses, and conducting a thorough analysis of the data.

Keywords: Work–Life Balance; Women Research Scholars; Higher Education Institutions; Family Work Conflict; Female Academics; Institutional Support; Social Support; Research Productivity.

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1. Introduction

More women have joined the Indian workforce due to increased educational opportunities and economic needs. But these women are responsible for their families, which poses problems in maintaining work-life balance. Working professionals, including academics, face problems in maintaining work-life balance. If such workplaces do not maintain work-life balance, there could be discontent, reduced productivity, and increased turnover [1]. India's education industry is expanding rapidly, providing opportunities for learning from schools, colleges, universities, and training institutions. It provides higher education

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based on types, affiliations, and modes of instruction. India has one of the largest enrollments in the world, with over 36 million students [2]. More women are pursuing higher education, though their underrepresentation in administrative posts persists. Challenges for female researchers include gendered roles, role overload, and inadequate organisational support. Although female enrolment in PhD programs has reached parity, few women occupy strategic leadership roles. Cultural expectations, caregiving responsibilities, and a lack of support from their organisation constrain women's academic progress [3]. Researchers have indicated that managing family responsibilities, such as childcare, household duties, and teaching obligations, significantly impacts academic research performance. Spousal and parental support significantly influences women's career success [4]. Researchers with young daughters face more challenges in their careers due to strict working hours, a lack of administrative support, and other factors, in addition to meeting their teaching obligations.

2. Literature Review

Work-life balance has recently come into sharp focus for working women due to economic transitions, technological advances, and societal changes, which have increased the overlap between their professional and personal roles [14]. Working women are now being increasingly pushed to perform at their best in their professional capacity while taking care of their domestic responsibilities to the fullest. It puts tremendous emotional, physical, and social strain on their overall well-being [5]. Within institutions of higher education, female research scholars face a complexity of their own. Although women's engagement with institutions of higher education has significantly improved, their underrepresentation in leadership roles in institutions remains [6]. Their slow professional progression is attributed to challenges such as a lack of mentorship, limited networks, biases, gender stereotypes, and other factors. Studies have indicated that women in academic institutions have workloads no different from those of their counterparts, while at the same time being responsible for more duties in their families [15]. Researchers with preschool-age children have especially struggled to devote enough time to conducting research, given their responsibilities in childcare, caregiving for their elders, home, and organisational structure. Social support, especially from parents, spouses, and superiors, is crucial in helping women not only produce research but also retain productivity [7]. References in the thesis have shown that conflicts between family and work, or work and family, are reciprocal. Family roles, such as caring for one's children, managing household responsibilities, and meeting societal expectations, disrupt teaching schedules or research, while teaching and other work roles, such as administrative matters, research, or other institutional obligations, affect family roles [8].

Work-life fusion, which blurs the lines between work and life rather than segregating them, is increasingly seen as relevant to academics. Within the literature reviewed for discussion in the thesis, numerous factors contribute to work-life fusion: work interfering with life, life interfering with work, work/life enhancement, workload allocation, management, and support systems [9-10]. Studies on teachers showed that differences influenced work-life balance, teaching, pupils, workload, and training. Though there has been extensive research on work-life balance for employees in other corporate sectors, educators, and couples with careers, there remains a gap in research on work-life fusion, specifically among female research scholars in institutions of higher education and those with dual roles in their academic and research work for their doctorate [11]. It is especially evident among women with childbearing responsibilities, who face additional obstacles while juggling research, academics, childcare, and family responsibilities [12]; [13]. It is necessary to explore, through research, work-life dynamics in female research scholars influenced by institutional, family, friendship, and individual responsibilities [9]. On the whole, the literature suggests that for women academics, optimal fusion between work and life would require institutional support, flexible work arrangements, reduced administrative pressure, and improved mentorship. These areas, when attended to, could lead to improvements in research productivity, general wellbeing, and overall environments in higher education institutions [10].

3. Methodology

3.1. Research

The research uses an Explanatory Research Design to explore the Determinants of Work-life Fusion among female research scholars working in higher education institutions. It combines theoretical concepts with empirical data to analyse the roles of Career Requirements, Family Commitments, Personal Attributes, Social Duties, and Work-life, among other variables. Broadly, this research follows a structured process comprising Literature Review, Research Questions/Objectives, Development of the Research Instrument, Data Collection, and Data Analysis.

3.2. Sampling and Respond

Participants in the research included female research scholars employed in government, government-aided, and self-financing institutions offering higher education. A total of 1050 questionnaires were distributed, of which 961 were valid for analysis, yielding a response rate of 91.52 per cent. Other responses were considered invalid, totaling 89, primarily due to inadequate

answers or inappropriate choices. Respondents in this study diverged along several dimensions: age, teaching years, marital status, type of family, number of sons/daughters, occupation of husband, among others.

3.3. Data

Primary data were collected using a structured questionnaire. Secondary data were obtained from published journals, reports, and other studies to validate the concept of work-life fusion. The research used higher education institutions to distribute questionnaires to participants.

3.4. Instrument

The survey instrument was developed in multiple steps, including literature reviews, expert consultation, testing, and validation analyses. Items in the researchers' questionnaire were drawn from scales validated in earlier studies published in professional journals. These validation stages included steps to formulate, arrange in logical order, test, and finalise test items based on their responses. These analyses included Confirmatory Factor Analysis to validate constructs. The final instrument captured five core dimensions influencing work–life fusion:

- Career
- Family Responsibilities
- Personal
- Social
- Work-Life factors

All items were measured on a Likert scale ranging from very low to very high.

4. Analysis

Data analysis is the heart of research and an essential stage. Data analysis and interpretation follow data collection, using appropriate tools and methods; different researchers employ different methods to analyse data and arrive at empirical solutions to their problems. Data analysis and interpretation are inherent processes in research. Data analysis entails organising, classifying, summarising, comprehending, or interpreting data to answer research questions, enabling researchers to achieve their objectives. Data interpretation entails seeking broader interpretations of data, with analysis and interpretation interdependent and not completed in isolation. Data analysis has been conducted in depth in this research to meet its objectives. Hypotheses have been formulated, tested based on their interpretations, and conclusions have also been drawn.

4.1. Research Statistics

Summarisation of samples and measures is provided by descriptive analysis of survey statistics, which designates the straightforward structures of the data in the research study. Descriptive statistics quantify the main features of the data collection.

4.2. Respondents Profile

The respondent's profile is listed in Table 1 according to demographic classifications such as gender, age group, Family income (Monthly average in Rs.), and the Type of institution where the research scholar is working. Respondents were all working in Government, Government-Aided, and Self-Financing colleges or universities or Educational Institutions, and the respondents' gender should be female only.

Table 1: Demographic profile of the respondents

Items	Categories	Frequency	Percentage (%)
Age Group	Below 25 Years	28	2.91
	26 – 30 Years	577	60.04
	31 – 35 Years	334	34.76
	36 Years and above	22	2.29
	Total	961	100.00
Family income (Monthly average in Rs.)	Less than Rs. 25,000	110	11.45
	Rs. 25,001 – 50,000	349	36.32

Items	Categories	Frequency	Percentage (%)
Type of institution where the research scholar is working	Rs. 50,001 – 1,00,000	498	51.82
	Above Rs. 1,00,000	4	0.42
	Total	961	100.00
Type of institution where the research scholar is working	Government	86	8.95
	Government Aided	59	6.14
	Self-Financing	816	84.91
	Total	961	100.00

The data posed concluded the instrument 'Structured Questionnaire'. Individuals filled out the questionnaires. The accepted number of respondents is 961 out of 1050, for an acceptance rate of 91.52%. Bifurcations of the respondents based on the demographic variable, 'Age Group', were into four groups, viz. Below 25 years old, 26 to 30 years old, 31- 35 years old, and 36 years old and above. The age group Bellow '25 years old' was 28 by numbers and 2.91 by percentage, the age group '26-30 years old' constitutes 577 by numbers and 60.043 %, of the total respondents, then the age groups '41-35 years' and '36 years and above' respectively have numbers as 334 and 22 and represent 34.76 % and 2.29 %. It is observed that the age groups 'Below 25 Years' and '36 Years and above' combined are 5.20 %, which is 50 out of 961 of the researchers in higher educational institutions. Fewer faculty members in these age groups are enrolling in research programs, either full-time or part-time. The profile of respondents on average monthly income is divided into four categories. The monthly income 'Above Indian Rupee 1,00,000' is four times the number and 0.42 by the percentage. This is followed by the monthly income group 'INR 50,000 – 1,00,000', with 498 numbers and 51.82%. The third group has a monthly income of 'INR 25,000 – 50,000', with 349 members and 36.32%.

The income group of 'Less than INR. 25,000 consists of 11.45 % of the despondence and numbers around 110. These two income ranges, 'INR 25,000 – 50,000' and 'INR 50,000 – 1,00,000', combined, account for approximately 88.14% of the respondents. The very few researchers in the income bracket of Above Indian Rupee 1,00,000: only 4 out of 961, and none present. Researchers in the higher income group would have reached this income level with a considerable amount of experience, and most of them would have obtained their doctoral degrees." As many of the researchers are from self-financing institutions where the research scholars work, as well as from other categories of institutions, including government and government-aided institutions. Researchers working in state or union government institutions are 86 in number, constituting 8.95 per cent, and those working in state government-aided institutions are 59, constituting 6.14 per cent. These two categories, researchers working in government and government-aided institutions, represent 15.09 % of the total surveyed respondents of 916. The researchers working in 'Self-Financing' colleges constitute 84.19% of the total, with 816 in total. The majority of the researchers are from higher educational institutions in the 'Self-Financing' category.

4.3. Career Dimension Related Measurements

The highest mean value of 2.71 for Lack of work-life balance initiative can damage career progress, the mean value of 2.66 for Supervisor understanding of subordinates' family and job responsibilities, and the mean values of 2.60, 2.43, and 2.30, respectively, for Amount of time spent at work, travelling time to work, and Unable to meet the deadline very frequently. The standard deviation is calculated for all the variables mentioned above. The lowest standard deviation is for the variable "Unable to meet the deadline very frequently," with a value of 1.16. The standard deviation values for the variables Amount of time spent at work, travelling time to work, Supervisor understanding of subordinates' family and job responsibilities, and Lack of work-life balance initiative can damage career progress, respectively, as 1.17, 1.2, 1.23, and 1.24. Though the mean value of the variable 'Lack of work-life balance initiative can damage career progress' is the highest among all the measures, the standard deviation is high, indicating that the respondents are not cohesive in their responses. On the contrary, the low-mean-value variable, Unable to meet the deadline, is very frequently used. Yet, its standard deviation of 1.16 is the least among the five variables. This indicates that all respondents are highly cohesive in their opinions.

4.4. Family Responsibilities Dimension Related Measurements

The seven variables shown are Devoting sufficient time to household responsibilities, Comfortable in fulfilling the basic requirements of family, Family responsibilities delaying in completing job-related work on time, Spending quality time with family, Work pressure impacting the relationship with spouse, Responsibilities and commitment to the family affecting the behaviour at work, and Able to take care of children and their studies. Higher mean values are 3.33 and 3.31, respectively, for Comfortable in fulfilling the basic requirements of family and Comfortable in fulfilling the basic requirements of family. The variables' Responsibilities share the lowest mean values' and 'commitment to the family affect the behaviour at work', and 'devoting sufficient time to household responsibilities', with values of 2.49 and 2.47, respectively. The lowest standard deviation, 1.05, is for the variables Comfortable in fulfilling the basic requirements of family and Spending quality time with

family. Standard deviation values for other variables: Family responsibilities, delays in completing job-related work on time, Work pressure impacting relationship with spouse, Responsibilities and commitment for the family affect the behaviour at work, devoting sufficient time for household responsibilities, and being Able to take care of children and their studies are respectively as 1.07, 1.09, 1.15, 1.17, and 1.19. It is interesting to note that all the standard deviations are very cohesive and close to each other. It indicates that all respondents have almost similar opinions regarding the individual measures in the Family responsibilities related Dimension. Also, many respondents (23.13%) are of the view that they disagree with the statement: 'Devoting sufficient time to household responsibilities'. The variables Comfortable in fulfilling the basic requirements of family and Family responsibilities, and delays in completing job-related work on time have higher mean values and lower standard deviation values. Responses for the variable 'Able to take care of children and their studies' are considered from married researchers only.

4.5. Personal Dimension Related Measurements

Nine variables are listed in this dimension. Among the nine variables, Spouse understands the work pressure and tries to help in whatever way' has the highest mean value of 3.33, and 'Neglect personal needs because of work' variable has the least mean value of 2.47. Their respective standard deviations are 1.07 and 1.17. Variables Feel frustrated when continuous hours of class in case of colleagues absence, Feel stress due to improper work life balance, Sharing official work with spouses, Family is very cooperative and understands work pressure, Struggle to juggle work and non-work, Been feeling unhappy and depressed and Postponed childbirth due to imbalance in work have mean and standard deviation respectively as 3.31, 3.24, 3.22, 3.14, 3.02, 2.94, 2.87 and 1.05, 1.06, 1.01, 1.11, 1.05, 1.09, 1.1. Respondents who selected the option of 'Highly Disagree' for the variables 'Feel frustrated when continuous hours of class in case of colleagues' absence' and 'Sharing official work with spouses' as 5.44 % only. The highest number of respondents opted for the 'Highly agree' option for the variable 'Spouse understands the work pressure and tries to help in whatever way'. It has been considered the response to the variables "Postponed childbirth due to imbalance in work, 'Spouse understands the work pressure and tries to help in whatever way,'" and "Sharing official work with spouses" for married researchers only.

4.6. Social Dimension Related Measurements

Variables 'Spend time with family and social functions or activities' and 'Family, relatives and friends complain for not spending time with them due to demands of work role' have a mean of 3.8, 3.6, and a standard deviation of 0.77 and 0.99, respectively. For 'Spend time with family and social functions or activities', the mean is the highest and the standard deviation is the lowest, which implies that all the respondents' opinions are very cohesive. Respondents with 26.13 % have selected the option of very low to the statement 'Women are viewed as less career-oriented and more family-oriented', and 21 % have selected the option of very low to the statement 'Spend time with family and social functions or activities'. The mean values are 2.88, 2.56, and 2.94, respectively, for the variables: Lack of togetherness in society due to work, Women are viewed as less career-oriented and more family-oriented, and Time spent more in working than in socialising with friends, hobbies, or leisure activities. For the same variables, standard deviations are 1.13, 1.21, and 1.11, respectively, which are very close and imply that the responses converge similarly.

4.7. Work Life Dimension Related Measurements

The variables listed under the work life dimension -Make changes in family activities due to work-related duties, Family demands or spouse interfere with work-related activities, Enable to concentrate on work because family helps at home chores and childcare responsibility, Family related strain interferes with ability to perform job related duties, Worry about work even when at home, Work suffers because of my personal life, Work Life Balance problem creates family conflict and Things that need to be done at work are disturbed because of family demands have mean values respectably as 3.02, 2.3, 2.56, 3.22, 2.73, 2.66, 3.33 and 2.94. Standard deviations are 1.05, 1.16, 1.21, 1.01, 1.19, 1.23, 1.07, and 1.11, respectively, for the same variables. Among the variables, 'Family-related strain interferes with ability to perform job-related duties' has the lowest standard deviation, and 'Work suffers because of my personal life' has the highest deviation values. As far as mean values are concerned, the variable 'Work Life Balance problem creates family conflict' has the highest value, and Family demands or spouse interferes with work-related activities' has the lowest value.

5. Inferential Analysis

Perception differences among Qualification Streams, age groups, family income, marital status, and type of institution. Differences between two groups in the mean scores of variables and more than two groups are studied using Statistical tests, which are discussed and interpreted in this section. ANOVA Tests are used to verify the hypothesis stated. The p-value ('Sig value' - significant value) in the ANOVA outputs is used to determine whether the differences between some of the means are statistically significant. To determine whether any of the differences between the means are statistically significant, compare

the p-value to the test significance level (denoted as α or alpha), which is equal to 0.05, to assess the null hypothesis. A significance level of 0.05 indicates a 5% risk of concluding that a difference exists when none actually exists. If the p-value is less than or equal to α (0.05), the differences between some of the means are statistically significant. If the p-value is less than or equal to the significance level, the null hypothesis can be rejected, and it can be concluded that not all of the population means are equal. If the p-value is greater than α (0.05), the differences between the means are not statistically significant. If the p-value is greater than the significance level, it indicates there is insufficient evidence to reject the null hypothesis that the population means are equal.

5.1. Hypothesis I

Null Hypothesis (H0): There is no significant difference between the means of the age groups with respect to work-life fusion determinants of women research scholars in higher education institutions.

Alternate Hypothesis (H1): At least one sample mean differs from the others across age groups for work-life fusion determinants among women research scholars in higher education institutions. The age groups for the survey are classified as 'Below 25 Years', '26 – 30 Years', '31 – 35 Years', and '36 Years and above'. As indicated in Table 2, research scholars in the age groups '26 – 30 Years' and '31 – 35 Years' constitute 94.80 per cent of the respondents. The respondents who are part of the age groups 'Below 25 Years' and '36 Years and above' are 5.20 percent. ANOVA for significant differences between age groups with respect to work-life fusion determinants among women research scholars in higher education institutions. The P value for Career Determinants is 0.642, Family Responsibilities Determinants is 0.889, Personal Determinants is 0.534, Social Determinants is 0.976 and Work Life is 0.841 at a significant at 5% level ($\alpha = 0.05$). Since the P value is greater than 0.05, the value of α is indicated as 'Sig.' for the determinants Career, Family responsibilities, Personal, Social, and Work Life; hence, we accept the null hypotheses at a 5 percent level of significance. Also, it is concluded that there is no difference in the perception of these determinants among research scholars of different ages.

Table 2: Summary of ANOVA for age groups

		Sum of Squares	df	Mean Square	F	Sig.
Career	Between Groups	5.018	4	1.673	0.912	0.642
	Within Groups	88.059	957	1.835		
	Total	93.077	961			
Family responsibilities	Between Groups	0.87	4	0.29	0.211	0.889
	Within Groups	66.11	957	1.377		
	Total	66.981	961			
Personal	Between Groups	13.165	4	4.388	1.954	0.534
	Within Groups	107.816	957	2.246		
	Total	120.981	961			
Social	Between Groups	0.382	4	0.127	0.068	0.976
	Within Groups	89.368	957	1.862		
	Total	89.75	961			
Work Life	Between Groups	1.626	4	0.542	0.277	0.841
	Within Groups	93.816	957	1.955		
	Total	95.442	961			

5.2. Hypothesis II

Null Hypothesis (H0): There is no significant difference in family income means across work-life fusion determinants among women research scholars in higher education institutions.

Alternate Hypothesis (H1): At least one sample mean differs from the others in family income with respect to work-life fusion determinants of women research scholars in higher education institutions. The respondents, research scholars' monthly average family income is grouped into four groups, namely 'Less than Rs. 25000', 'Rs. 25000 – 50000', 'Rs. 50000-100000' and 'More than Rs. 100000'. ANOVA for significant differences between age groups in the determinants of work-life fusion among women research scholars in higher education institutions is presented in Table 3. The P value for Career Determinants is 0.001, Family Responsibilities Determinants is 0.012, Personal Determinants is 0.303, Social Determinants is 0.031, and Work Life is 0.003 at a significant at 5% level ($\alpha = 0.05$). Since the P value (value of α) is less than 0.05 and the same is indicated as 'Sig.' for the determinants Career, Family responsibilities, Personal, Social, and Work Life, we reject the null hypotheses at a 5 percent level of significance and accept the alternative hypothesis. Hence, it is concluded that there is a difference in the

perception of these determinants among research scholars with different monthly average family incomes. This indicates that all the research scholars, regardless of their family's monthly income, are not similar. Also, the conclusion is that research scholars' family monthly income does affect the determinants of work-life fusion differently across family income groups.

Table 3: Summary of ANOVA for family income groups

		Sum of Squares	df	Mean Square	F	Sig.
Career	Between Groups	36.757	4	9.189	5.974	0.001
	Within Groups	887.607	957	1.538		
	Total	924.364	961			
Family responsibilities	Between Groups	19.79	4	4.948	3.268	0.012
	Within Groups	873.564	957	1.514		
	Total	893.354	961			
Personal	Between Groups	7.881	4	1.97	1.005	0.303
	Within Groups	1130.57	957	1.959		
	Total	1138.45	961			
Social	Between Groups	19.183	4	4.796	2.699	0.031
	Within Groups	1025.35	957	1.777		
	Total	1044.53	961			
Work Life	Between Groups	30.286	4	7.571	4.021	0.003
	Within Groups	1086.49	957	1.883		
	Total	1116.77	961			

5.3. Hypothesis III

Null Hypothesis (H0): There is no significant difference between the means of the types of institutions where research scholars work with respect to the work-life fusion determinants of women research scholars in higher education institutions.

Alternate Hypothesis (H1): There is at least one sample in which the means differ across types of institutions where research scholars work, with respect to work-life fusion determinants of women research scholars in higher education institutions. The respondents' research-scholar type of institutions, where the research scholar works, are categorised as Government (Government of India or any state government or union territory government) run institutions, institutions with financial aid from the Government (Government of India or any state government or union territory government), and Self-Financing institutions. ANOVA for significant differences in the types of institutions where research scholars work, with respect to work-life fusion determinants for women research scholars in higher education institutions, is presented in Table 4. The P value for Career Determinants is 0.031, Family responsibilities Determinants is 0.001, Personal Determinants is 0.008, Social Determinants is 0.017, and Work Life is 0.002 at a significant at 5% level ($\alpha = 0.05$). Since the P value (value of α) is less than 0.05 and the same is indicated as 'Sig.' for the determinants Career, Family responsibilities, Personal, Social, and Work Life, we reject the null hypotheses at a 5 percent level of significance and accept the alternative hypothesis. Hence, it is concluded that there is a difference in how these determinants are perceived by research scholars working in different types of institutions. This indicates that the type of institution where research scholars work plays a key role and impacts their work-life factors differently for different institutional scholars.

Table 4: Summary of ANOVA on institution types

		Sum of Squares	df	Mean Square	F	Sig.
Career	Between Groups	36.246	4	9.061	5.887	0.031
	Within Groups	888.118	957	1.539		
	Total	924.364	961			
Family responsibilities	Between Groups	31.075	4	7.769	4.917	0.001
	Within Groups	911.599	957	1.58		
	Total	942.674	961			
Personal	Between Groups	21.022	4	5.256	3.476	0.008
	Within Groups	872.332	957	1.512		
	Total	893.354	961			
Social	Between Groups	13.664	4	3.416	1.912	0.017
	Within Groups	1030.87	957	1.787		

	Total	1044.53	961			
Work Life	Between Groups	32.459	4	8.115	4.318	0.002
	Within Groups	1084.31	957	1.879		
	Total	1116.77	961			

6. Factor Analysis

Confirmatory factor analysis is a statistical technique used to verify the factor structure of observed variables. CFA allows the researcher to test the hypothesis that a relationship exists between observed variables and their underlying latent constructs.

Table 5: Confirmatory factor analysis

No.	Critical Dimensions	No. of Items	RMSEA	CFI
1	Career	6	0.21	0.981
2	Family Responsibilities	7	0.08	0.901
3	Personal	9	0.22	0.731
4	Social	5	0.19	0.893
5	Work Life	8	0.11	0.895

Items within measure are useful only to the extent they share a common nucleus – characteristics to be measured. It is highly difficult to represent the value of a scale by a solitary number without the concept of unidimensionality. Unidimensionality refers to one dominant latent variable or phenomenon. Several statistical procedures provide a structural analysis of a selected set of observed variables (e.g., factor analysis).

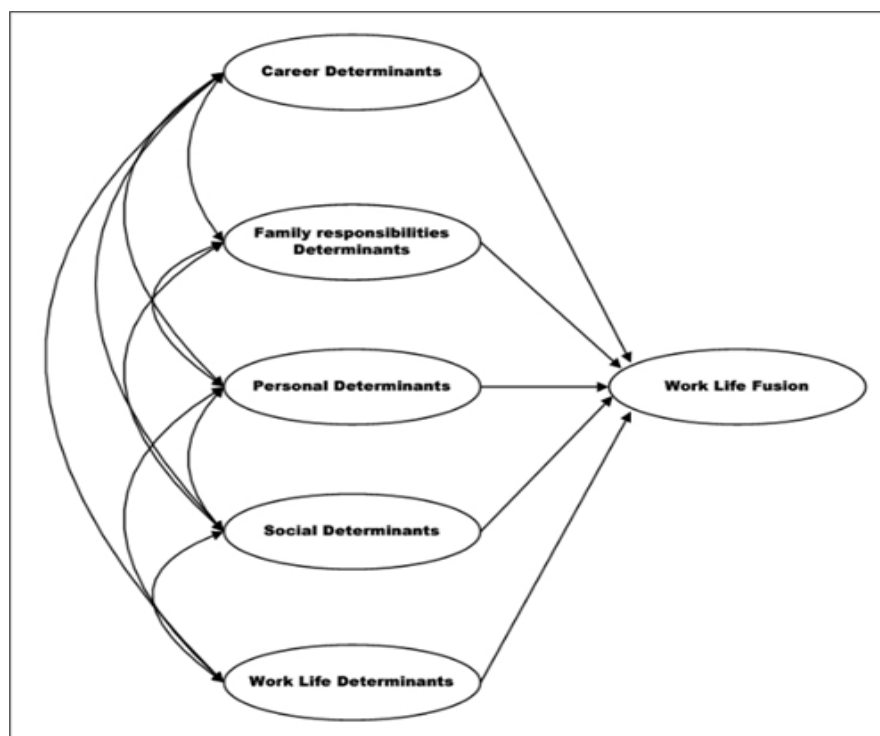


Figure 1: Path analysis

For unidimensional checking, a measurement model is specified for each construct, and CFA is run for all the constructs. Individual items in the model are investigated to see how closely they represent the same construct. Comparative Fit Index (CFI) is equal to the discrepancy function adjusted for sample size. CFI ranges from 0 to 1, with higher values indicating a better fit. Recommended values for CFI are 0.9 or higher (very good fit), 0.8 or higher (good fit), and 0.7 or higher (satisfactory fit). Root Mean Square Error of approximation (RMSEA) is related to the residual in the model. RMSEA values range from 0 to 1, with lower values indicating better model fit. The list of variables with eigenvalue greater than one after the Varimax Method orthogonal rotation method is shown in Table 5. Comparative fit indices measure the improvement of fit by comparing

the hypothesised model with a more restricted baseline model. The commonly used baseline model is a null or independent model in which the observed variables, with their variances to be estimated, are mutually uncorrelated. The model fit information obtained from these fit indices is very different from that obtained from the χ^2 (Chi square) measure, where a hypothesised model is compared to a saturated model. The comparative Fit Index for the dimensions Career (0.985) and Family Responsibilities (0.901) exhibit very good fit; Work Life (0.895) and Social (0.893) show good fit; and Personal (0.731) demonstrates satisfactory fit. Since all the CFI values are above 0.7, this denotes a satisfactory unidimensionality for the scales. Figure 1 illustrates the path analysis.

7. Validation of Research Framework

7.1. Validity of the Instrument

Construct validity is tested by applying Bartlett's test of sphericity and the Kaiser–Mayer–Olkin (KMO) measure of sampling adequacy to analyse the strength of association among variables. Kaiser–Mayer–Olkin measure of sampling adequacy is first computed to determine the suitability of using factor analysis. It helps to predict whether the data are suitable for performing factor analysis. KMO is used to determine which variables to drop from the model due to multicollinearity. The KMO value ranges from 0 to 1, and the overall KMO should be 0.60 or higher to perform factor analysis. If this is not achieved, then it is necessary to drop the variables with the lowest anti-image value until KMO overall rises above 0.60.

Table 6: KMO and Bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy. .871		
Bartlett's Test of Sphericity	Approx. Chi-Square	10033.693
	df	960
	Sig.	.000

The value of the Kaiser-Meyer-Olkin measure of sampling adequacy is reported as 0.871, as indicated in Table 6. The degree of common variance among the variables is very good. Five variables have been dropped to achieve this value. The variables measure a common factor, as indicated by higher loadings, such as 0.891. In this factor analysis, the extracted factors will account for a substantial amount of variance. Bartlett's test of sphericity calculates the determinant of the matrix of the sums of products and cross-products from which the intercorrelation matrix is derived. The value of chi-square denotes that the sample inter-correlation matrix does not come from a population in which the inter-correlation matrix is an identity matrix.

8. Results and Discussion

The respondent profile indicates that a significant proportion (60.04%) of participants were aged 26–30 years, with the majority (84.19%) employed in self-financing institutions, and 70.45% residing in nuclear households. The results from the measurement dimensions underscore numerous significant issues about the work–life problems encountered by female research scientists. The opinion that the absence of work–life balance initiatives can hinder career advancement yielded the highest mean value ($M = 2.71$) concerning career-related difficulties. Also, the lower standard deviation for comments like "I often can't meet deadlines" shows that most people agree with them. These findings indicate that inadequate institutional activities adversely affect career growth and overall professional development. Family obligations also became a significant contributing factor. Respondents said they were generally okay with satisfying family needs ($M = 3.31$), but they also said that these duties often made it harder to finish work on time ($M = 3.33$).

Many people reported it was hard to find enough time to do domestic chores ($M = 2.47$), suggesting that family obligations significantly affect work performance. Strong support from spouses was evident at the personal level, with the highest mean indicating that respondents believed their husbands understood their work-related stress ($M = 3.33$). However, it was also noted that people often put their own needs aside because of their employment ($M = 2.47$). This suggests that their own well-being is often put at risk. Respondents said they didn't have much time for social activities due to their work responsibilities, which shows that social well-being is often limited. In general, workload pressure and family-related interference were seen as two of the biggest factors affecting job obligations. Many scholars said they were still worried about work even when they were at home. These observations, combined, indicate a significant degree of work–family conflict among female research academics, underscoring the need for enhanced institutional support and the refinement of work–life balancing practices.

9. Conclusion

The study finds that the work-life balance of female research scholars is influenced by many factors that impact both their personal and professional lives. Important factors that affect how well women balance their work and personal lives include

job stress, family responsibilities, personal satisfaction, social commitments, and job-related concerns. Female academics frequently endure substantial workloads encompassing teaching, administrative duties, and research obligations, all of which generate considerable pressure. At the same time, family responsibilities, such as caring for loved ones, managing the household, and providing emotional support, make it even harder for them to maintain balance. The study underscores that support from parents, spouses, and extended family or community networks serves as an essential enabling factor. These supportive mechanisms help female academics balance their teaching responsibilities and maintain their drive for research. However, the support that higher education institutions provide is not as good as in other places. Institutional rules and practices frequently fail to adequately address the distinct problems faced by women, including insufficient childcare provisions, inflexible work schedules, and restricted mentorship opportunities tailored exclusively for female researchers.

The duties of having children, managing a home, and the stress of teaching are key factors that directly affect research productivity. These conflicting expectations frequently lead to diminished time, energy, and concentration allocated to academic pursuits, thereby impeding scholarly development and professional progression. The study indicates that cultivating a more supportive institutional environment is crucial to improving research outcomes for female academics. For subsequent study, it is advisable to investigate diverse elements of work–life integration across a range of educational institutions, including government, private, and autonomous universities. Comparative studies could yield significant insights into disparities in organisational culture, policy frameworks, and administrative support across institutions, as well as the effects of these differences on the work-life experiences of female academic educators. This kind of research would help develop targeted plans to improve women's overall health, productivity, and job satisfaction in academia.

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