

Review Article

Advances in Neurology and Neuroscience**Beyond Barriers: Mini Review of Multi-Level Determinants of Female Labour Force Participation in Developing Economies**Sabrina Nurul Afifah^{1*}  and Moses Glorino Rumambo Pandin² ¹Chemistry, Faculty of Science and Technology,
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Airlangga University, Surabaya, Indonesia.**Submitted:** 2026, Jun 12; **Accepted:** 2026, Jul 10; **Published:** 2026, Jul 21**Citation:** Afifah, S. N., Pandin, M. G. R. (2026). Beyond Barriers: Mini Review of Multi-Level Determinants of Female Labour Force Participation in Developing Economies. *Adv Neur Sci*, 9(3), 01-06.**Abstract**

Female labour force participation (FLFP) remains a persistent and multidimensional challenge in developing countries, shaped by a complex interplay of structural, institutional, technological, and sociocultural forces. This mini literature review synthesises eight peer reviewed empirical studies to examine the determinants and dynamics of women's labour market engagement across multiple levels of analysis. Drawing on quantitative, qualitative, and mixed methods research conducted in Indonesia and comparative cross national settings, the review identifies household technology, gender norms, spatial context, family policies, rural development programmes, and digital tools as key factors influencing FLFP. Spatial regression analysis reveals significant provincial heterogeneity in labour force participation rates (LFPR) within Indonesia, while cross national panel data demonstrate that the effects of early childhood education and care (ECEC) spending and paid parental leave on mothers' employment are contingent on earnings inequality and educational attainment. At the micro level, qualitative evidence from urban Indonesia illustrates how married women's employment decisions are constrained by opportunity costs arising from patriarchal norms, inadequate childcare infrastructure, and the burdens of commuting in mega urban environments. At the macro level, community based rural organisations and Indonesia's Village Fund Programme (Dana Desa) demonstrate that targeted fiscal interventions can simultaneously reduce rural poverty and expand women's economic participation. Technology based solutions, including mobile applications designed to promote gender equality, further illustrate the transformative potential of digital innovation in addressing skills deficits and broadening employment access. This review concludes that advancing FLFP requires coordinated, context sensitive policies that simultaneously address structural economic conditions, institutional support systems, and deeply embedded gender norms.

Keywords: Female Labour Force Participation; Gender Equality, Household Technology, Family Policy, Rural Development, Indonesia, Spatial Regression, Gender Norms**1. Introduction**

Gender inequality in the labour market represents one of the most persistent and consequential challenges confronting developing economies. Despite considerable advances in women's educational attainment and the global diffusion of gender equality norms, female labour force participation (FLFP) rates continue to lag substantially behind those of men across much of the Global South. The United Nations has enshrined gender equality as the fifth Sustainable Development Goal (SDG 5), underscoring the centrality of women's economic empowerment to broader developmental objectives [1]. In Indonesia the world's fourth most

populous country and the largest economy in Southeast Asia FLFP rates have exhibited considerable variability across provinces and over time, reflecting the complex interplay of economic structures, cultural norms, and institutional environments.

Understanding why women do or do not participate in the formal labour market requires analysis at multiple levels: macro-level structural conditions such as provincial wages, demographic composition, and policy environments; household-level factors including domestic technology and family responsibilities; and individual-level constraints encompassing educational attainment,

gender norms, and spatial mobility. The literature on FLFP has increasingly recognised that no single explanatory framework suffices and that cross-disciplinary, multi-scale inquiry is essential for generating actionable policy insights.

This mini literature review synthesises eight empirical studies to offer an integrated account of the determinants and dynamics of FLFP in developing economies, with particular attention to the Indonesian context. The selected studies employ a diverse range of methodologies from spatial regression and panel threshold models to qualitative interviews and mobile application prototyping enabling a comprehensive examination of how structural, institutional, technological, and sociocultural factors interact to shape women's labour market outcomes. The review is organised around four thematic clusters: (1) structural and spatial determinants of LFPR; (2) the role of family policies and earnings inequality in shaping mothers' employment; (3) household-level constraints including domestic technology and gendered mobility; and (4) technology-based and community-driven approaches to enhancing women's economic participation.

2. Methods

This review employs a narrative synthesis approach to integrate findings from eight peer reviewed articles published between 2020 and 2026. The included studies were retrieved from established academic databases and journals, including IEEE Xplore, *Frontiers in Sociology*, *BAREKENG: Jurnal Ilmu Matematika dan Terapan*, *Journal of Population and Social Studies*, *Journal of Governance and Regulation*, *The Indian Journal of Labour Economics*, *American Sociological Review*, *PLOS ONE*, and *Gender, Work & Organization*. Inclusion criteria required that each study: (i) engaged substantively with female or overall labour force participation; (ii) employed clearly defined empirical methods; and (iii) addressed contexts relevant to developing economies particularly Indonesia or offered cross-national comparative frameworks applicable to such settings. The eight studies encompass a diverse methodological portfolio. Quantitative approaches include: spatial regression models (Spatial Autoregressive [SAR] and Spatial Error [SEM] models) applied to Indonesian provincial-level data fixed-effect panel threshold regression across 51 countries over 34 years, with the Human Development Index (HDI) as the threshold variable multinomial logistic regression using the 2017 Indonesia Demographic and Health Survey multilevel logistic regression applied to cross-national microdata from 21 European countries spanning 1999–2016 and difference-in-differences (DiD) estimation using longitudinal household panel data from Indonesia across four waves [2–6].

Qualitative methods include semi-structured interviews and participant observation with 24 community members in Maros District, South Sulawesi, and in-depth interviews with married women across class backgrounds in Greater Jakarta [7,8]. One study applies Rapid Application Development (RAD) and black-box testing to develop and evaluate a gender equality mobile application prototype [1]. An additional study employs regression analysis, Sobel mediation tests, cointegration analysis,

and impulse response functions to examine macroeconomic relationships using Indonesian quarterly time-series data [9]. Data extraction was conducted thematically, with each article coded according to: research context and scope, key variables and findings, methodological approach, and implications for FLFP. Synthesis proceeded through the identification of convergent and divergent findings across studies, with particular attention to how different scales of analysis (macro, meso, and micro) and different theoretical lenses illuminate distinct facets of women's labour market participation.

3. Results and Discussion

3.1. Structural and Spatial Determinants of Labour Force Participation in Indonesia

A foundational contribution of the reviewed literature is its systematic documentation of spatial heterogeneity in LFPR across Indonesia's provinces. Usali et al. (2021), employing Spatial Autoregressive (SAR) and Spatial Error (SEM) models on 2020 provincial-level data, identify provincial minimum wage, average years of schooling, and population size as the primary determinants of LFPR, and confirm that the SAR model outperforms SEM in capturing spatial dependence [2]. This finding highlights that labour force participation rates do not operate in geographic isolation; rather, they are systematically shaped by the economic and demographic conditions of neighbouring provinces, pointing to the salience of regional spillover effects in labour policy design. The macroeconomic dimension of labour participation is further elaborated by Fadila et al. (2025), whose study of Indonesian sovereign debt markets reveals that while labour force participation and demographic shifts do not directly affect government bond yields at one, five, or ten-year tenors, economic growth operates as a significant mediating variable [9]. This implies that expanding labour market participation including through increased FLFP can stimulate economic growth, which in turn influences sovereign borrowing costs and contributes to financial market stability. The study underscores the indirect but consequential role of labour participation in macroeconomic governance, a dimension frequently overlooked in gender-focused analyses of workforce dynamics.

Cross-national evidence from Palia and Gari (2026), using a fixed-effect panel threshold model across 51 countries over three decades, reveals that the relationship between structural determinants and FLFP is non-linear and fundamentally context-dependent [3]. The HDI functions as a threshold variable, partitioning countries into two distinct analytical regimes with qualitatively different dynamics. In low-HDI countries, urbanisation is associated with reduced FLFP, likely because urban labour markets in such settings remain male-dominated and women encounter heightened barriers to entry. Conversely, in high-HDI countries, urbanisation exerts a positive effect on FLFP, reflecting greater access to services, formal employment opportunities, and enabling institutional environments. The dependency ratio exhibits opposing effects across regimes: a positive association in low-HDI settings (reflecting economic necessity) and a negative association in high-HDI contexts (reflecting income effects and the option of

non-participation). Long working hours consistently discourage FLFP across both regimes, while maternal mortality ratio negatively impacts FLFP predominantly in low-HDI countries, highlighting the critical importance of healthcare infrastructure as an enabling condition for women's economic participation. Taken together, these structural findings demonstrate that FLFP is deeply embedded within broader developmental conditions, and that policies targeting women's labour market engagement must be carefully calibrated to the specific economic, institutional, and demographic context in which they are applied. The convergent salience of minimum wages, educational attainment, and health infrastructure as determinants across both the Indonesian and cross-national evidence underscores the complementarity of economic development and human capital investments as dual prerequisites for sustained growth in FLFP.

3.2. Family Policy, Earnings Inequality, and the Educational Gradient in Mothers' Employment

A pivotal contribution to understanding the institutional determinants of FLFP comes from Hook and Paek (2020), whose cross-national study of 21 European countries over the period 1999-2016 examines how ECEC spending and paid parental leave interact with earnings inequality and mothers' educational attainment to shape employment outcomes [5]. Employing multilevel logistic regression on a sample of approximately 1.2 million individuals, the authors demonstrate that the effects of family policies on mothers' employment are neither uniform nor unidirectional.

Specifically, ECEC spending exerts larger positive effects on the labour force participation of lower-educated mothers than on tertiary-educated mothers, particularly in high-inequality settings. This "pulled-in" effect reflects the mechanism that in high earnings inequality contexts, ECEC provision supplies a material economic incentive for lower-educated mothers who might otherwise face insufficient financial returns from employment to enter or remain in the labour market. By contrast, paid parental leave exceeding six months is negatively associated with employment, with the negative effect being larger and more enduring for tertiary-educated mothers in high-inequality settings, where the opportunity costs of prolonged leave are most acute. These findings substantively challenge simple generalisations about the universally beneficial effects of family-friendly policies and underscore the critical importance of disaggregating policy impacts by educational attainment and the prevailing structure of labour market inequality.

The relevance of these European findings extends to developing economies, including Indonesia. As Palia and Gari (2026) document, long working hours constitute a universal disincentive to FLFP regardless of HDI level, and dependency ratios generate structural pressures that operate differently depending on the developmental context [3]. Taken together, these studies imply that family supportive policies must be designed with explicit reference to the existing structure of earnings inequality and the availability of market or state-provided childcare if they are to effectively and equitably expand women's employment. For Indonesia, where

formal childcare infrastructure remains underdeveloped and earnings inequality is substantial, the European evidence offers both cautionary lessons and potential policy models for targeted, education-stratified interventions.

3.3. Household Technology, Gendered Mobility, and the Urban–Rural Divide

Moving from the institutional to the household level, Rimkute and Sugiharti (2023) provide a fine-grained analysis of how household technology relates to the occupational choices and labour market participation of married women in Indonesia [4]. Using multinomial logistic regression on a nationally representative sample of 32,559 married women from the 2017 Indonesia Demographic and Health Survey, they find that household technology encompassing both domestic appliances and information and communication technology (ICT) exerts differentiated effects across occupational categories. Household technology primarily supports women's entry into pink collar (service sector) employment, while ICT specifically facilitates participation in white collar occupations. Conversely, household technology is negatively associated with participation in blue collar and agricultural work, suggesting that labour saving devices may release women from physically demanding manual labour while channelling them into service roles rather than higher productivity occupations. Critically, the absence of household technology is strongly associated with women remaining full-time homemakers, underscoring material deprivation as a structural barrier to economic participation.

Setyonaluri and Utomo (2024) complement this quantitative portrait with rich qualitative evidence from Greater Jakarta, one of the world's most populous megacities [8]. Drawing on in depth interviews with married women across diverse class backgrounds, their study reveals that women's employment decisions are profoundly shaped by opportunity costs conceived through the intersecting lenses of gender norms, childcare accessibility, and spatial constraints. Participants consistently cited the tension between maternal caregiving norms reinforced by the Indonesian state ideology of *ibuisim* (state maternalism) and the practical demands of formal employment as central to their labour market decisions. Jakarta's notorious traffic congestion further amplifies these constraints by extending women's time away from the home during working hours, thereby intensifying perceived conflicts with caregiving responsibilities and discouraging formal employment.

This spatial dimension is particularly significant: unlike rural areas, where women often combine agricultural labour with domestic duties in close physical proximity to the household, urban women in Greater Jakarta confront sharp spatial segregation between home and workplace. The paradox of lower FLFP in urban than rural areas in Indonesia documented by Setyonaluri and Utomo (2024) and corroborated by national statistics is thus partly explicable through the distinctive geography of mega cities, which imposes mobility costs that disproportionately burden women. This finding resonates with Palia and Gari's (2026) cross national result that urbanisation in lower HDI settings tends to reduce FLFP, a pattern that Indonesia instantiates within its own

pronounced urban rural divide [3,8]. The interplay between class position and spatial constraint introduces further analytical nuance. Setyonaluri and Utomo (2024) find that women from higher social classes possess greater capacity to negotiate flexible employment arrangements or to commodify domestic labour through paid household assistance, whereas women from lower social classes face more rigid occupational choices and heightened exposure to the spatial frictions of Jakarta's urban environment [8]. This class gradient in employment dynamics parallels the educational gradient documented by Hook and Paek (2020) in the European context, suggesting that structural inequalities within the female population are as analytically significant as gender inequalities between men and women in shaping labour market outcomes [5].

3.4. Rural Development, Community Organisation, and Gender Dynamics

Two studies in the review focus specifically on the rural dimension of women's economic participation in Indonesia. Amandaria et al. (2026), conducting qualitative research through interviews and participant observation in Ampekale Village, Maros District, South Sulawesi, examine how gender dynamics operate within local development organisations (LDOs) and local economic organisations (LEOs) [7]. Their findings reveal that while gender roles within these organisations remain largely complementary rather than egalitarian with men dominating formal governance positions and women concentrated in processing, packaging, and marketing functions women's growing participation in LEOs is beginning to shift household bargaining dynamics and enhance their visibility within the community. Amandaria et al. (2026) further note that spatial variations within the village inflect these dynamics: in areas dominated by fisheries, the gendered division of labour is more pronounced, while community proximity to district administrative services facilitates women's access to markets and support networks [7]. The study argues that although women's participation in rural organisations is predominantly framed as a natural extension of domestic roles, meaningful inclusion in economic activities can constitute a tangible pathway toward expanded agency and empowerment—particularly when complemented by deliberate policy interventions designed to ensure that women's contributions translate into substantive influence rather than symbolic representation.

At a broader scale, Rammohan and Tohari (2023), using a difference in differences design applied to national household panel data covering 2012–2019, evaluate the impact of Indonesia's Dana Desa programme (Village Fund Programme, VFP) on rural poverty and FLFP. Introduced in 2014, the VFP channelled fiscal transfers to approximately 75,000 rural villages with the aim of improving local governance capacity and physical infrastructure [6]. Their results demonstrate that VFP implementation is statistically significantly associated with reduced rural poverty and improved household per capita consumption expenditure, with effects being especially pronounced for agricultural households. Crucially, the authors identify FLFP as a key transmission channel through which the VFP reduced poverty: following programme implementation, rural women's labour market participation hours

increased significantly, indicating that improved village-level infrastructure and expanded economic opportunities lowered barriers to women's entry into and intensification of labour market activity. These rural development findings connect the macro-level structural analyses of Usali et al. (2021) and Fadila et al. (2025) with the community-level dynamics explored by Amandaria et al. (2026), illustrating how national fiscal policy, when implemented through participatory village governance, can generate enabling conditions for women's economic participation at the grassroots level [2,7,9]. The VFP evidence further highlights that rigorous gender-disaggregated analysis of ostensibly gender-neutral development programmes is essential: policies that appear equitable in their design may produce systematically differential impacts on women's and men's labour market participation.

3.5. Technology-Based Solutions for Gender Equality and Skills Development

A distinct but analytically complementary perspective on expanding FLFP is offered by Maryani et al. (2024), who develop and validate a mobile application prototype "FeApps" designed to address gender inequality in the Indonesian labour market through an integrated suite of features: skills training content delivered in video format, interactive peer discussion forums, curated job vacancy listings, psychological counselling services, and gamified knowledge quizzes [1]. Developed using the Rapid Application Development (RAD) methodology and validated through black-box testing, the application directly targets the structural barriers of limited access to occupational training and employment information that disproportionately constrain women particularly in contexts where prevailing cultural norms restrict physical mobility and access to formal institutions.

This technological intervention speaks directly to the constraints identified by Setyonaluri and Utomo (2024) and Rimkute and Sugiharti (2023): where commuting costs and spatial barriers circumscribe women's access to employment and skills development opportunities, mobile technology offers a potentially transformative mechanism for circumventing these structural constraints [4]. The gamification elements and interactive design architecture of FeApps are intended to sustain user engagement, particularly among younger women, echoing broader empirical evidence on the efficacy of digital platforms in maintaining motivation and facilitating active learning [1]. The integration of a dedicated counselling module further addresses psychosocial barriers to employment including workplace harassment and gender based discrimination which Amandaria et al. (2026) identify as persistent impediments to women's substantive participation in community organisations [7].

The efficacy of technology-based interventions is, however, contingent upon prevailing levels of digital infrastructure and digital literacy, which vary markedly across Indonesia's highly heterogeneous provinces and urban–rural landscape. As Usali et al. (2021) demonstrate, inter provincial disparities in average years of schooling a widely used proxy for digital literacy are substantial, suggesting that mobile applications deployed without

accompanying investments in digital skills and connectivity may inadvertently exacerbate rather than attenuate existing participation gaps [2]. Notwithstanding these limitations, the convergent evidence across the reviewed studies positions digital and mobile tools as a promising complementary mechanism for broadening FLFP, provided they are embedded within comprehensive structural and institutional reform rather than deployed as standalone solutions.

3.6. Synthesis: A Multi-Level Framework for Understanding FLFP

Considered in aggregate, the eight reviewed studies cohere around a multi level analytical framework in which FLFP is simultaneously constituted by macro structural conditions (economic development trajectories, provincial wages, healthcare systems, fiscal policy architecture), institutional arrangements (family policies, village governance, community based organisations), household and individual factors (domestic technology, educational attainment, class position), and sociocultural norms (gender ideologies, caregiving expectations, spatial mobility norms). No single level is determinative in isolation; rather, the studies consistently reveal that constraints and opportunities operative at one level are mediated or moderated by conditions at other levels, producing context-specific outcomes that defy simple generalisation.

A particularly robust and consistent finding across the literature is the centrality of opportunity costs broadly and multidimensionally defined in women's labour market decisions. Whether this refers to the financial opportunity cost of extended parental leave for tertiary educated mothers, the temporal cost of commuting in a mega-urban environment characterised by severe traffic congestion, or the social cost of transgressing patriarchal caregiving norms in rural community organisations, women's labour market decisions are consistently structured by tensions between employment participation and competing obligations, structural constraints, and socially sanctioned aspirations [5,7,9]. Policies that reduce these multidimensional opportunity costs through the provision of affordable ECEC, flexible work arrangements, improved urban transport infrastructure, and community-based social support structures are therefore most likely to effectively and equitably expand FLFP across diverse contextual settings.

4. Conclusion

This mini literature review has synthesised eight empirical studies to develop a comprehensive, multi-level account of the determinants of female labour force participation in developing economies, with sustained attention to the Indonesian context. The evidence converges on several substantive conclusions. First, structural and spatial factors including provincial wages, educational attainment, population size, healthcare infrastructure, and HDI level constitute the macro level conditions within which women's labour market participation is embedded, and these conditions exhibit significant heterogeneity across regions and developmental stages. Second, family policies such as ECEC provision and paid parental leave produce differential effects depending on the prevailing structure of earnings inequality and mothers' educational attainment,

highlighting the indispensability of context sensitive policy design. Third, household-level factors including domestic appliances and ICT access shape women's occupational choices in ways that tend to reinforce existing class and sectoral inequalities rather than transcend them. Fourth, sociocultural norms governing caregiving and gendered spatial mobility particularly acute in dense urban mega-cities constitute powerful structural constraints on married women's employment decisions that macroeconomic policies alone are insufficient to dismantle.

Fifth, targeted rural development programmes such as Indonesia's Dana Desa and community-based economic organisations can serve as effective levers for expanding women's economic participation, provided that they are designed with explicit attention to women's roles, contributions, and constraints rather than treating gender as a secondary consideration. Finally, digital and mobile technology-based solutions offer promising but inherently context dependent mechanisms for enhancing women's skills and broadening employment access, particularly where spatial barriers and caregiving obligations impede participation in conventional face to face training and job markets. These findings carry clear and actionable implications for policy. Advancing FLFP in Indonesia and comparable developing economies requires coordinated interventions across multiple domains simultaneously expanding access to affordable childcare and flexible formal employment arrangements; investing in rural infrastructure and village level governance that explicitly incorporates women's economic roles and agency; challenging gender norms through sustained education, community engagement, and institutional reform; and leveraging digital technology as an instrument of inclusive empowerment rather than a potential source of further stratification. Future research should prioritise longitudinal study designs that track the combined and interactive effects of these interventions over time, and should systematically disaggregate impacts by region, class, and urban–rural location in order to generate evidence that is both theoretically robust and practically actionable for policymakers in heterogeneous developing country contexts.

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