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Research Article

The impact of gendered factors on women's participation in employment: Evidence from a multi-country fsQCA and SEM approach

Cinsiyet faktörlerinin kadınların istihdamına katılımı üzerindeki etkisi: Çok ülkeli fsQCA ve SEM yaklaşımından elde edilen kanıtlar

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Abstract

In the context of increasing global gender disparities and the Sustainable Development Goals (SDGs), understanding the structural determinants of female labour force participation has become crucial both theoretically and for policy. Despite the growing body of research on gender and labour markets, cross-country evidence integrating symmetric and asymmetric analytical approaches remains limited. This study aims to analyse the effects of gender-based structural factors on women's labour force participation and to examine country-specific results. Using a sample of 31 countries with shared location and time data and 2022 data, the Gender Social Norms Index (GSNI) (economic), the Inequality-Adjusted Education Index (IAE), the Gender Development Index (GDI), and the Gender Inequality Index (GII) variables on Female Labour Force Participation (FLFP) were examined. The analysis was conducted using a two-stage (symmetric and asymmetric) mixed-methods research design (explanatory sequential), involving structural equation modelling (SEM) with SmartPLS and fuzzy-set qualitative comparative analysis (fsQCA). According to the research findings, GDI has a positive effect on FLFP, whereas GII and GSNI have a negative effect on FLFP. IAE was found to have no direct significant effect but may play an indirect role through interactions with other factors. On the other hand, the importance-performance results revealed that GDI has a strong positive effect on FLFP in the short term. According to FsQCA results, women's labour force participation can be explained by distinct configurations across countries, and these differences necessitate context-specific policies.

Keywords: Female Labour Force, Gender Social Norms, Inequality-Adjusted Education, Gender Development, Gender Inequality

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Öz

Son yıllarda adından sıkça bahsedilen şebeke yoluyla pazarlama sistemi, pazarlama literatüründe Küresel cinsiyet eşitsizliklerinin artması ve Sürdürülebilir Kalkınma Hedefleri (SKH) bağlamında, kadınların işgücüne katılımının yapısal belirleyicilerini anlamak hem teorik hem de politika açısından hayati önem kazanmıştır. Cinsiyet ve işgücü piyasaları üzerine yapılan araştırmaların sayısı giderek artmasına rağmen, simetrik ve asimetrik analitik yaklaşımları birleştiren ülkeler arası kanıtlar hala sınırlıdır. Bu çalışma, cinsiyete dayalı yapısal faktörlerin kadınların işgücüne katılımı üzerindeki etkilerini ve ülkeye özgü sonuçları analiz etmeyi amaçlamaktadır. Ortak yer ve zaman verileri ile 2022 verilerini içeren 31 ülkeden oluşan bir örneklem kullanılarak, Cinsiyet Sosyal Normlar Endeksi (GSNI) (ekonomik), Eşitsizliğe Göre Düzeltilmiş Eğitim Endeksi (IAE), Cinsiyet Gelişim Endeksi (GDI) ve Cinsiyet Eşitsizliği Endeksi (GII) değişkenlerinin Kadınların İşgücüne Katılımı (FLFP) üzerindeki etkileri incelenmiştir. Yapısal eşitlik modeli (SEM)-SmartPLS'in yanında bulanık küme nitel karşılaştırmalı analiz (fsQCA) içeren iki aşamalı (simetrik ve asimetrik) karma araştırma yöntemleri (açıklayıcı sıralı tasarım) kullanarak analiz etmektedir. Araştırma bulgularına göre, GDI FLFP üzerinde olumlu bir etkiye sahipken, GII ve GSNI FLFP üzerinde olumsuz bir etkiye sahiptir. IAE'nin doğrudan önemli bir etkisi olmadığı, ancak diğer faktörlerle etkileşimde dolaylı bir rol oynayabileceği bulunmuştur. Öte yandan, önem-performans sonuçları, GDI'nin kısa vadede FLFP üzerinde yüksek performans etkisine sahip olduğunu ortaya koymuştur. FsQCA sonuçlarına göre, kadınların işgücüne katılımı, ülkeler arasında farklı yapılandırmalarla açıklanabilir ve bu farklılıklar, bağlama özgü politikaların geliştirilmesini gerektirmektedir.

Anahtar Kelimeler: Kadın İşgücü, Toplumsal Cinsiyet Normları, Eşitsizliğe Göre Düzeltilmiş Eğitim, Toplumsal Cinsiyet Gelişimi, Toplumsal Cinsiyet Eşitsizliği

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Introduction

Women's participation in the labour force is considered a fundamental determinant of factors beyond its impact on prosperity, including national development, social development, economic growth, and social welfare (World Bank, 2022). Women's economic productivity plays an effective role in the full and efficient use of countries' human capital gains and acts as an intermediary in ensuring fairness in income distribution (Verick, 2018). Especially in light of today's global economic competition, women's labour is seen as one of the most important factors with the potential to create added value in economic development. However, women's labour force participation rates are significantly lower than men's globally. According to a report by the International Labour Organisation (ILO) (2022), the average labour force participation rate for women worldwide is close to 50%, while that for men exceeds 75%. This difference varies across countries, and the factors influencing this variation include economic development, culture, norms, education, income inequality, gender-related factors, etc. (Jayachandran, 2020).

Gender-based norms in society are shaped by expectations regarding women's social roles and responsibilities. These norms mostly limit women's primary responsibility to the home, relegating their professional lives to the back seat. Accordingly, gender-based judgments in society can directly affect women's participation in the workforce, their job security, advancement, and working conditions (Chakrabartty, 2024). For example, in 2022, it was known that 88% of individuals worldwide held at least one prejudice against women taking on leadership roles or even participating in the labour market (UNDP, 2023). On the other hand, one factor affecting women's workforce participation is educational and income inequality. Women are underrepresented in the education system compared to men and, as a result, experience unequal income distribution and employment outcomes (Yavuz, 2016). A study covering Brazil over 64 years found that unequal education expenditures between women and men result in human capital differences, thereby reducing women's opportunities to participate in the labour market and accelerating income inequality (Edwards, 2024). To achieve sustainable development for social welfare and peace, women and men should be encouraged to enter the labour market by providing equal opportunities and eliminating differences in working conditions (Nasir et al., 2020). On the other hand, indicators such as gender development and gender inequality are widely recognised as crucial determinants of women's participation in healthcare, education, and economic activities.

Women's participation in the labour force is among the key determinants that influence economic growth, income distribution, social welfare, and other conditions (Klasen & Lamanna, 2009). A general review of the academic literature shows that gender is not only a social issue but also plays a binding role in shaping and limiting macroeconomic performance (Cuberes & Teignier, 2016). However, it is emphasised that the factors affecting female employment are not homogeneous across countries; they vary by context, at the social, cultural, institutional, normative, and economic levels (Thévenon, 2013; Seguino, 2010). However, the majority of existing empirical studies focus on linear and clear effects and do not sufficiently examine the configurational structures created by the variables together. This study aims to contribute to the literature, methodologically and theoretically, by evaluating women's labour force participation using both symmetric and asymmetric analytical techniques. Thus, a more comprehensive perspective is developed, suggesting that FLFP should be understood within the framework of multiple condition combinations rather than as a single factor.

Considering these factors, it is easier to create policies and incentive systems that encourage women to work more effectively. This study provides a comprehensive analysis of gender-related factors affecting women's employment. Using the latest data from 31 countries (2022), the study examines the impact of gender-based social norms (economic), education, income, gender development, and gender inequality indicators on women's labour force participation. The analysis uses structural equation modelling (PLS-SEM) in SmartPLS to provide a comprehensive assessment of the interactions among cultural norms, inequality indices, and development levels, thereby yielding robust evidence on the strength and direction of the observed relationships. Additionally, fsQCA is formulated using a set-theoretic approach to facilitate the emergence of matching. The remaining sections of the article are structured as follows: The next section reviews the relevant literature and develops research hypotheses. The methodology section then details the data set, variables, and analysis process. The findings section presents the results of the PLS-SEM and fsQCA analyses. The final section discusses the findings, evaluates the policy implications, addresses the study's limitations and offers suggestions for future research.

Literature review

In today's world, where globalisation is felt more intensely than ever before, human capital, one of the key factors in socio-economic progress, is crucial in the formation of productive labour. Along with the importance of human capital, the widespread participation of women in the labour market is seen as a necessary mechanism for countries to gain a competitive advantage and for the sustainability of a society within the framework of social welfare and peace. Although women's participation in the labour market has been a topic of discussion for many years, research on it has increased in parallel with its importance in recent years.

Another factor that could influence women's participation in the labour market is the gender-based development of women in the country. In other words, women's prominence in the labour market and their participation in the economy are determined by policies targeting women, which reveals the importance that countries attach to women. Gender development examines how women are better off than men in terms of health, education, and income, all of which are part of human development (UNDP, 2025). The gender-based development factor takes a gender-inclusive view by including not only economic indicators but also social and human factors. Empirical evidence indicates that women's labour force participation and overall development increase significantly in environments characterised by established gender equality and elevated gender-related development levels (Duflo, 2012). Comparative analyses among countries indicate that those with elevated levels of women's labour market participation also demonstrate superior outcomes in gender-related development metrics (ILO, 2022). Setting standards for equality in areas such as health, education, and social conditions—while recognising that development varies from country to country—encourages women to invest in their own skills and makes it easier for them to join the workforce (Dollar & Gatti, 1999). Verick (2014) also shows that women's access to good jobs is closely linked to their education level beyond high school. Improving equal access to living standards boosts women's workforce participation and makes it easier for them to obtain stable, secure jobs (Cuberes & Teignier, 2014). Cuberes et al.'s simulation results show that excluding just 5% of women from the workforce results in a loss of income of about 2.5%. If all women are left out, the loss is almost 10%. Simultaneously, research by Tsani et al. (2015) for the years 2015 to 2030 indicates that removing regional barriers encountered by women significantly fosters economic growth. Overall, progress in closing the gender gap makes it easier for women to find work and boosts the country's productivity and growth potential (Cuberes & Teignier, 2016). Consequently, promoting gender equality through socioeconomic policy mechanisms is considered an essential prerequisite for enhancing women's participation in economic activities (Seguino, 2010). Based on the evidence in the literature, it is reasonable to think that better gender equality leads to more women working.

Gender equality is an important factor in breaking down the socioeconomic barriers that keep women from fully and actively participating in society. The United Nations Development Programme views the Gender Inequality Index as a multidimensional tool that shows how women are at a disadvantage across areas such as health, education, human development, and economic activity. This includes differences in educational attainment and labour force participation (Gutiérrez-Martínez et al., 2021). Structural factors, particularly fertility rates and educational attainment, significantly influence gender inequality and directly affect women's access to equitable economic opportunities (Cooray & Potrafke, 2011). Women's societal status, educational achievement disparities, and substandard working conditions can impede their entry into the labour market, significantly affecting growth rates in certain African and Arab nations (Baliamoune-Lutz & McGillivray, 2009). The gender inequality factor not only limits individuals' opportunities but also impedes socioeconomic development, growth, prosperity, and sustainability (Santos Silva & Klasen, 2021). According to the findings of Akhtar et al. (2023), who conducted research using Malaysian data from 1980 to 2019, greater female labour force participation and gender equality directly contribute to economic growth. According to a study by Castellano and Rocca (2014) on 26 European countries, equal opportunities for women's participation in the labour market are correlated with countries' levels of development. According to a panel data analysis of 125 countries between 1963 and 2018 by Elgin and Yavuz Elveren (2021), gender inequality is one of the fundamental factors determining not only participation rates but also the transition to the formal sector, i.e., job quality. Ultimately, factors related to gender inequality not only negatively affect women's participation in the labour force but also hinder socio-economic sustainable development. For this reason, a hypothesis based on the literature has been formulated regarding gender inequality and women's participation in the labour force.

Social gender norms, which are thought to influence labour market participation, and their direct economic relationship are debated not only in terms of structural indicators but also in terms of socio-

cultural ties. In this way, gender norms in the economic sphere—beliefs and attitudes regarding equal work, equal income, equal employment opportunities for men, and participation in economic decision-making—are considered important determinants of women's labour-market participation (Kabeer, 2012). Reducing gender inequality, ensuring women's fair participation in the labour market, and thereby achieving economic freedom within the context of norms are considered components of socio-economic development (Costagliola, 2021). According to the Gender Social Norms Index (GSNI) data compiled by the United Nations Development Program in 2023, one of the main factors contributing to gender-biased judgments is economic norms, which are a critical component in shaping perceptions of women's participation in the labour force. Globally, one in two people believes that women cannot perform the same economic roles as men (UNDP, 2023). According to the report, data on the origin components are presented as percentages by country, and low percentages indicate that gender equality is approaching. Gender-based norms have historically persisted in a patriarchal manner, and it is thought that economic factors have had a lasting impact on gender norms as a remnant of the physical-based agricultural production model (Alesine et al., 2013). According to Kesler (2018), the most important factors hindering women's participation in the labour force include cultural pressure, the perception that family work is the natural domain of women, and the prominence of gender discrimination in access to economic factors. Chuanchuan and Jingwen (2021), who conducted research using data from the China General Social Survey, found that gender-biased attitudes and gender roles toward women negatively affect women's employment rates and earnings, and that women's economic power has decreased. It is accepted that the exclusion of women from economic decision-making processes creates a supply-side employment barrier and poses a direct risk to women's employment through economic norms (Jayachandran, 2015). Ultimately, the study's hypothesis emerged within the literature on gender-based economic discrimination.

Another factor affecting women's participation in the labour market is their limited access to education compared to men. Women's participation in the labour market is directly proportional to their access to education and equal access to it, taking into account the advantage of human capital. In general, inequalities stemming from factors such as gender, culture, and economics, as well as average educational levels, directly hinder women's integration into economic life (Barro & Lee, 2013). In a study by Angeles et al. (2021) that sampled female workers in India, a direct relationship between education and women's labour-market participation was demonstrated, and it was determined that this affects wage distribution and job opportunities. In Iheonu et al.'s (2020) study, which examined the impact of income inequality on women's participation in the labour market using a West African sample for the period 2004-2016, it was determined that women living in sub-regions had a direct positive relationship between access to education and participation in the labour force. According to Edwards' (2024) study, which used Brazil as a sample and analysed a 64-year dataset on education expenditures, differences in the quality of education during childhood were found to be an important factor in women's entry into the labour market. It has become increasingly emphasised that the long-known link between education level and labour market participation is shaped not only by average indicators but also by inequalities within education (Gaddis & Klasen, 2014). For implications for education systems and, consequently, human capital, inequality-adjusted values are also important for creating more comprehensive indicators based on scores and rankings (el Mahdi, A., & el Khawaga, 2014). Considering the importance of the education factor in labour market participation, the Inequality-Adjusted Education factor, which has advanced to a more detailed stage, provides a more inclusive measurement by accounting not only for the average length of education but also its distributional fairness within the population (UNDP, 2023). This factor allows a clearer definition of the exclusion of women from education and its effects on their labour-market participation. Especially in low- and middle-income countries, low marriage age, socio-cultural factors, and economic problems reinforce women's exclusion from the labour market by placing them in an unequal educational environment (UNESCO, 2021). In conclusion, the hypothesis that education is one of the fundamental determinants of the labour market has been developed and outlined in the academic literature below.

Research conducted on FLFP is shaped by many interactions, including economic, social, and cultural factors (Inglehart & Norris, 2003). The integrated effects of factors related to gender-based education structures, levels of development, and economic infrastructure are decisive for women's employment (UNDP, 2020). There is empirical evidence that comprehensive effects, such as equal educational opportunities, gender equality, and fair distribution of economic opportunities, are decisive for women's employment (Klasen & Lamanna, 2009; Duflo, 2012). However, a holistic perspective undermines the validity of interpretations that focus solely on the high rate of women's labour-force participation. As Ragin (2008) emphasises, causal relationships in social phenomena/events are not linear but emerge in complex combinations. This situation demonstrates that evaluating the conditions

for low FLFP is as vital as interpreting the need for high FLFP. Furthermore, tailoring these results to countries is a critical element in advancing women's employment development, both theoretically and practically. For this reason, a hypothesis has been developed to test the complex, multiple causal relationships for both aspects of the FLFP.

Hypothesis development

Increased gender development improves women's relative position compared to men in terms of education, health, and income, thereby reducing the costs of entering the labour market and strengthening human capital accumulation. This mechanism suggests that individual factors do not solely determine women's participation in the labour force, but rather is a process that develops in conjunction with economic transformation, labour market dynamics, and institutional conditions. Indeed, empirical findings from a global sample show that improvements in macro-level development and labour market conditions significantly affect women's labour force participation (Saha & Singh, 2025). Similarly, panel evidence that accounts for asymmetric relationships reports statistical links between gender inequality/gender parity indicators and women's labour force participation, and that these links can be strengthened depending on countries' structural characteristics (Akhtar et al., 2023). Studies examining the relationship between economic growth and female employment worldwide emphasise that women's labour force participation plays a critical role in achieving sustainable development goals (Kuldasheva, 2025). Furthermore, the Global Gender Gap Report 2024 shows that progress toward gender equality is positively correlated with women's labour-market participation and highlights the impact of development levels in this context (World Economic Forum, 2024). Furthermore, comparative macro analyses reveal a systematic positive correlation between gender development and women's labour force participation, particularly across levels of development (Klasen et al., 2021). Within this framework, the following hypothesis is developed:

H_1: *Increased gender development is significantly increasing women's participation in the workforce.*

Global panel evidence shows that the deterioration in gender inequality indicators, such as the GII, has reduced women's labour force participation, demonstrating that reducing inequality provides a supportive framework for FLFP (Elveren, Moghadam, & Dudu, 2022). Similarly, regional macro findings reveal that in contexts of high gender inequality, labour market outcomes diverge against women, and inequality channels that limit women's participation become more pronounced (Sever, 2024). Country-specific detailed analyses, particularly in the case of Türkiye, emphasise that the gap in women's labour force participation must be interpreted alongside structural/conceptual inequality domains, providing an empirical framework suggesting that reducing inequality will broaden participation (Domit & Kesimal, 2024). The panel findings on newly industrialised countries report that the gender inequality index negatively affects women's labour force participation (Alpdoğan & Türkmen, 2025). Furthermore, multi-country micro-macro evidence shows that social/gender-based inequality dynamics are systematically related to women's likelihood of labour force participation (Roll et al., 2024). Based on these reasons, the following hypothesis is developed:

H_2: *A decrease in the Gender Inequality Index (GII) score, i.e., a reduction in gender inequality, significantly increases women's participation in the labour force.*

In recent years, empirical evidence has shown that social institutions and gender attitudes affect women's employment and are constrained by normative pressure (Zawaira & Tabane, 2023). In his study on defining knowledge-based interventions and norm transformations, Halim (2023) reveals that social norms limit women's labour supply. Analyses conducted across European countries reveal that established gender norms weaken women's participation in employment and vary across country contexts (Bredtmann, Otten, & Rulff, 2025). Furthermore, recent econometric studies focusing on gender norms report that the negative relationship between normative pressure and female labour supply is also observable at the macro level (Huynh & Ku, 2025). Evidence from long-term microdata in the Turkish context also shows that traditional norms significantly constrain women's work behaviour (Komuryakan, 2026). For these reasons, the following hypothesis has been developed:

H_3: *The GSNI (Economics) value, i.e., economic gender bias, is inversely proportional to women's labour force participation rates at a significant level.*

According to the panel data analysis by Marjanović et al. (2024), women's access to upper secondary and tertiary education has a significant, positive impact on FLFP. Similarly, regional panel evidence shows that women's gains, particularly at the tertiary level, increase FLFP (Bawazir et al., 2022). Multicountry econometric analyses report that women's education is a key determinant of women's employment in the short and long term (Voumik et al., 2023). Advanced panel findings based on the

BRICS sample also show that education, along with digitalisation, increases women's labour force participation (Shuangshuang et al., 2023). Furthermore, empirical assessments of educational quality and local education investments reveal that educational differentiation significantly affects women's likelihood of paid work (Edwards, 2024). Within this framework, the following hypothesis is developed.

H_4: *The high level of educational opportunities provided, taking into account the inequality factor, significantly increases women's participation in the workforce.*

Comparative analyses conducted using fsQCA across OECD-affiliated countries show that similar results can be obtained with different combinations of conditions and that the paths vary across country clusters (Çizel et al., 2023). Similarly, in the sub-Saharan Africa sample, it has been reported that women's economic outcomes vary according to policy combinations and that country-specific packages take precedence over a single best policy (Adegbile et al., 2024). A recent fsQCA study on job insecurity among young women also shows that outcomes arise not from a single factor but from different combinations of types of discrimination (Guo et al., 2025). In the context of Asian countries, configurational analyses emphasise that country context is decisive for motivation and work outcomes (Abaker et al., 2025). Similarly, configurational findings on patterns of political participation reveal that the pathways to women's public/economic representation vary across countries (Ting & Zhou, 2024). Based on this body of work, the following hypothesis has been developed:

H_5: *The variables predicted to cause high/low FLFP produce country-specific results in the sample based on configurations.*

Research methodology

This section defines the philosophical approaches adopted within the research's general scope, the methods used, the data units, and the analysis techniques. Care has been taken to ensure that the research's philosophy and methodology are explanatory, in line with the research objective.

Research philosophy

To establish research in the social sciences, it is first important to determine the philosophy and paradigm of the research (Günbayı and Sorm, 2018). This study is comprehensive and adopts a pragmatic philosophy within a framework that includes diverse paradigms across two stages. First, in the first stage, the research was conducted within the positivist paradigm, shaped by realism, to construct a sustainable society within the framework of higher intelligence. In the philosophy of realism, it is argued that independently existing reality can be understood objectively through data such as observation, experimentation, and statistics (Archer, 1995). In this context, the research's fundamental hypothesis posits that the causal conditions required for establishing a sustainable society—especially through improving women's employment—can be analysed objectively and quantitatively. Embracing a realist viewpoint enables the recognition of discernible social realities and promotes the examination of the mechanisms that uphold social structures (Sayer, 1999). Simultaneously, the acknowledgement of objective reality, the ability to scrutinise scientific knowledge through empirical methodologies, and the pursuit of elucidating the mechanisms that govern social phenomena to perpetuate the social system correspond with the positivist paradigm (Neuman, 2014). Consequently, the initial phase of the research employed a quantitative methodology, as this approach facilitates the examination of observable, measurable, and causally interpretable relationships, in line with realist philosophy and positivist tenets (Bryman, 2016). During the second phase of the research, an idealist philosophical stance was employed, positing that the principal source of knowledge is not external reality or elevated rationality alone, but rather the intellectual and cognitive processes that shape reality through context-specific experiences (Cohen et al., 2002). This philosophical perspective has influenced the interpretive paradigm, providing significant understanding of the multifaceted characteristics of social phenomena and facilitating the identification of case-specific interpretations (Denzin & Lincoln, 2011). During this phase, qualitative comparative analysis (QCA) was used to identify asymmetric findings and assess outcomes arising distinctly from specific cases. Consequently, this study employs a mixed-method research approach, amalgamating both deductive and inductive findings into a comprehensive framework. In the mixed-methods research approach, an explanatory sequential design is used to initially assess the degree of relational impact through quantitative data analysis, followed by comprehensive (case-specific) research and qualitative analysis. In this way, the underlying reasons, meanings, or patterns of quantitative findings are explained through comparative analysis with qualitative data (Creswell & Plano Clark, 2017). Ultimately, the study adopts an approach aimed at revealing the causal conditions and case-specific outcomes related to women's employment that do not hinder social development.

Research data

Within the scope of the research, an analysis was conducted to test the hypotheses derived from the literature framework regarding the positive/negative impact of factors considered effective in women's labour market participation on female employment. The research data was provided by reputable international organisations such as the World Bank and UNDP, recognising that the data was not generally valid and that data reliability was a priority. The data were obtained from a sample of 31 countries, classified as underdeveloped, developing, and developed, and located in different geographic regions, based on the common data and common years shared by these organisations. In research conducted across countries with diverse socio-economic contexts, women's labour force participation was treated as the dependent variable, and the relationship with variables that could influence this phenomenon was examined. The most recent year, 2022, was adopted as the common year for all variables and countries, and data from that year served as the basis for the study. It is acknowledged that when the common year for the variables is updated, further research will be needed.

First, the Gender Social Norms Index (GSNI) is an indicator that reports gender bias against women at the country level as a percentage (0–100), and the value represents the proportion of individuals who hold at least one bias (low value = less bias). The GSNI consists of four sub-dimensions: political, educational, economic, and physical integrity. In this study, the GSNI–Economic, which reflects biases in the economic sphere, was used; the final (aggregate) country scores published by the UNDP were used in the analyses without deriving raw data. The Inequality-Adjusted Education Index (IAE) is an index that reports on the education dimension within the UNDP's composite human development indicators, adjusted for inequality, and takes values between 0 and 1; a high value indicates that a higher level of education is achieved with a more equitable distribution. The IAE is based on the logic of adjusting the indicators of expected years of schooling and average years of schooling, which are the fundamental components of the education dimension, using household survey data that reflects inequalities in the country's distribution. The Gender Development Index (GDI) is an indicator that compares the human development levels of women and men. It is reported as the ratio of the HDI value for women to that for men; a value close to 1 indicates parity, while values below 1 indicate the relative disadvantage of women. The GDI is based on health, education, and income components, and final GDI scores published at the country level were used in this study. The Gender Inequality Index (GII) is a composite indicator that summarises the structural inequalities women face relative to men and ranges from 0 to 1; lower values indicate lower gender inequality, while higher values indicate greater gender inequality. The index is based on three sub-dimensions: reproductive health, empowerment (representation/education), and the labour market. Female Labour Force Participation (FLFP) is a key indicator of the level of female labour market participation. It is reported as a percentage (0–100) of the female population aged 15 and over who are part of the labour force (those employed + actively job-seeking unemployed). Finally, all variables in the study are defined in detail, and their sources are indicated in Table 1.

Table 1: Research Data and Definitions

Indicator	Description	Source
Gender Social Norms Index-Economic (GSNI)	According to the Gender Social Norms Index (GSN), the vast majority of the global population holds prejudices against women, and this situation is commonly observed in both low- and high-developed countries. The economic concept, which is one of the sub-dimensions of the GSN, provides insight into women's equal opportunities in the economy. For this reason, the study used the Gender Social Norms Index-Economic data, expressed as a percentage by country, which is based on responses to questions in the World Values Survey. This reflects the percentage of individuals who hold at least one prejudice.	UNDP[1]
Inequality-Adjusted Education Index (IAE)	Given inequalities in education, it is a better measure of the education dimension of the Human Development Index, reflecting it more equitably and realistically. The Inequality-Adjusted Education Index is calculated by accounting for the unfair distribution of average educational attainment within a society. This index presents education inequalities in a corrected form, using data from household surveys to reflect the true level of education.	UNDP[2]
Gender Development Index (GDI)	The Gender Development Index (GDI) compares the human development levels of women and men. This indicator is calculated by dividing the Human Development Index (HDI) value for women by the value for men. This enables quantitative assessment of gender-based development differences.	UNDP[3]
Gender Inequality Index (GII)	The Gender Inequality Index (GII) is a composite indicator that measures the structural inequalities women face relative to men across health, education, political participation, and labour force participation. It assesses gender differences in three key dimensions: reproductive health, empowerment, and labour force participation. As the index value increases, the depth of gender inequality deepens, indicating that women receive a smaller share of development.	UNDP[4]
Female Labour Force Participation (FLFP)	The Female Labour Force Participation Rate is a key development indicator that shows the extent to which women are included in economic life. This data measures whether women are actively participating in employment or job search processes. It provides a critical reference for assessing progress in many areas, such as gender equality, economic growth, and social development.	World Bank[5]

Analysis of research data

The variables comprising the research data emerge from the findings of various literature reviews. Two-stage analysis techniques were adopted in the study to identify complex causal relationships. A symmetric empirical analysis technique was used in the first stage to identify potential causal factors affecting the emergence of women's employment. The model proposal, evaluated within a theoretical framework, was tested using structural equation modelling to identify latent variables affecting women's labour market participation. Structural equation modelling (SEM) is an analysis technique that allows the simultaneous testing of causal relationships between observed variables and latent variables. It is a preferred unit of analysis for testing complex model structures, especially in social sciences such as sociology and psychology (Hair et al., 2021). Furthermore, the PLS-SEM method was adopted to overcome the limitations of covariance-based SEM and to perform valid modelling with small sample sizes (Hensler et al., 2009). This method provides suitable results for theoretical development, inquiry, and exploration. SmartPLS software was selected as the analytical tool for the study. This is because the application offers advantages such as conducting valid analyses with small sample sizes, testing and visualising model structure, and solving complex models (Ramayah et al., 2018). It was also chosen for its ability to analyse the direct and indirect effects of relationships among variables, as well as its intuitive, user-friendly structure (Sarstedt et al., 2020). To ensure that the PLS-SEM results are interpretable and reliable, the analysis outputs have been reported in accordance with the method's recommended evaluation steps. In this context, VIF values indicate the presence of multicollinearity among the independent variables; low VIF values indicate that the coefficient estimates are not biased by multicollinearity. The statistical strength of the structural relationships was tested using t and p values generated by bootstrapping in SmartPLS; this process supports the significance decision by evaluating the sampling distribution of path coefficients via resampling. Finally, R^2 represents the proportion of variance in the dependent variable explained by the model and serves as a summary

[1] https://hdr.undp.org/content/2023-gender-social-norms-index-gsni#/indicies/GSNI (Access date: 15.04.2025).
[2] https://hdr.undp.org/data-center/documentation-and-downloads (Access date: 15.04.2025).
[3] https://hdr.undp.org/data-center/documentation-and-downloads (Access date: 15.04.2025).
[4] https://hdr.undp.org/data-center/documentation-and-downloads (Access date: 15.04.2025).
[5] https://data.worldbank.org/indicator/SL.TLF.CACT.FE.ZS?end=2022&start=2022 (Access date: 15.04.2025).

indicator of the model's explanatory power. This reporting framework is consistent with recommendations for evaluating structural models in PLS-SEM (Hair and Alamer, 2022).

Furthermore, to obtain asymmetric results beyond symmetric findings, the Fuzzy Set Qualitative Comparative Analysis (fsQCA) technique was used in the study to uncover multiple causal structures underlying social phenomena/events within the context of set theory. Beyond the average effects and linear relationships found in traditional statistical methods, fsQCA enables the identification of how causes interact and the relationship between combinations of situations and outcomes, making it a powerful tool for analysing complex structures such as multiple causality, causal asymmetry, and cyclical effects (Rihoux and Ragin, 2009). FsQCA creates fuzzy sets based on the membership degrees of each variable (presence/high/absence/low) and enables analysis of both small and medium-sized samples, facilitating meaningful inferences in case-based analyses (Schneider and Wagemann, 2012).

Consequently, by incorporating fsQCA into PLS-SEM-based research, both symmetric and asymmetric causal perspectives can be achieved, thereby ensuring methodological complementarity (Woodside, 2013). While PLS-SEM analyses linear relationships between variables, fsQCA has the advantage of generating cluster-theoretic results from multiple combinations and configurations of these relationships (Skarmeas et al., 2014). Their combined use in a methodological context allows for both correlational analyses of average effects and the development of case-specific roadmaps, both theoretical and practical. Causal diversity, contextual sensitivity, and unidirectional relationships, which are frequently encountered in the social sciences, necessitate the combined use of multiple methods. In this context, the combined application of two different analysis techniques can contribute to a more comprehensive understanding of complex social phenomena (Pappas and Woodside, 2021). Along with PLS-SEM, the fsQCA method reveals causal patterns and offers alternative explanations for findings obtained from structural equation modelling. This allows analysis not only of the existence of a particular effect but also of the conditions under which it occurs. This approach contributes to theoretical modelling and supports policy and strategy development processes (Greckhamer et al., 2018).

Structural model findings

The Variance Inflation Factor (VIF) is used to assess whether there is a problem with the internal relationships among latent variables in the predicted potential model before structural findings are formed. The VIF value is used to identify multiple linear relationships and to examine the correlation between the independent variable and other variables. In the preliminary analysis of the structural model, a VIF value below 5 is generally considered acceptable for controlling multicollinearity among variables (Sarstedt et al., 2019). However, for some researchers, a VIF threshold of 10 or lower is considered acceptable in exploratory research, and the variables can be retained in the model (Kutner et al., 2005). On the other hand, another analysis result, the effect size (f2), is used in SEM to evaluate the explanatory power of each independent variable and to reveal the effect sizes of the independent variables in the model on the target variables (Falk & Miller, 1992). Based on Cohen's (2013) classification, small ($0.02 < f^2 < 0.15$), medium ($0.15 < f^2 < 0.35$), and large ($0.35 < f^2$) effect levels are identified.

According to the results in Table 2, when VIF values are interpreted first, it is determined that the Gender Development Index and Gender Social Norms (Economic) variables do not exhibit multicollinearity, given their VIF values are within acceptable limits. On the other hand, the Gender Inequality Index and Inequality-Adjusted Education Index variables are generally slightly above the recommended value of 5. However, this situation may be due to conceptual overlap and to shared data structures among the variables. Although the value is slightly above 5, which may suggest multiple linear correlation, it does not threaten the validity of the model (O'Brien, 2007). In particular, since all variables are gender-based, it is natural for multi-dimensional composite indices to be closely related to other human development indicators. On the other hand, according to the study's impact-level results, the Gender Inequality Index and Gender Development Index variables have a moderate impact on labour force participation. Gender Social Norms (Economic) produced a small to medium f^2 value. The effect of the inequality-adjusted education index variable is negligible. However, it was determined that the impact levels of all variables in the model did not reach the significance level. Nevertheless, even if the f^2 value is small, the variables can be retained in the model because they have strong theoretical justifications. In fact, this situation depends on the model structure, whereas T and p depend on the sample. Therefore, both significance and effect size should be evaluated together (Cohen, 1988). SmartPLS users, especially in exploratory research, prioritise effect size (f^2) (Hair et al., 2010). Even with an insignificant p-value, a high f^2 value can still be significant for the model. In our study, we observed that the effect sizes for women's labour market participation were at the desired level for all variables

except one. This situation indicates the need to increase the sample size in future studies and reveals that the effect level is acceptable for FLFP. When examining multicollinearity among the model's variables, the VIFs of two variables are below the threshold, while those of the other two are above the threshold but remain at an acceptable level. Although the f^2 values are not statistically significant, the effects of the Gender Development Index and Gender Inequality Index variables in the structural model exhibit moderate explanatory power (partially also Gender Social Norms (Economic)). This indicates that even variables that do not reach the significance level can contribute to the model and that the effect size should be considered in the interpretation.

Table 2: Preliminary Analyses of Variables

Independent Variables → FLFP	VIF (O)	f^2 (Original)
Gender Development Index	3.382	0.207
Gender Inequality Index	6.775	0.290
Gender Social Norms (Economic)	3.358	0.125
Inequality-adjusted education index	5.294	0.007

R^2 (R-square) is a measure that shows what percentage of the total variance in the dependent variable is explained by the independent variables, and a high R^2 value indicates a high degree of accuracy in predicting the dependent variable (Sarstedt and Mooi, 2014). Especially in exploratory models, this value has a probabilistic meaning and can be interpreted context-specifically rather than as an absolute threshold (Rigdon, 2012). Nevertheless, in the social sciences, an R^2 value between 0.25 and 0.75 is considered acceptable, and values above 0.75 indicate a significant level of explanatory power (Hair et al., 2019; Henseler et al., 2009). Within this framework, the R^2 value obtained in the study was considered a measure of the model's explanatory power in FLFP. It was interpreted with the relevant threshold values in mind. Finally, as shown in Figure 1, the explanatory power of the independent variables in our research model was 0.888. This result shows that the explanatory variables explain 88.8% of the variance in women's labour force participation rates. This result not only indicates a high level of explanatory power but also indicates that the model is structurally robust and stable. This situation is based on the model producing consistent results according to PLS-SEM structural evaluation criteria. Indeed, the VIF values for the independent variables indicate that collinearity risk is not eliminated in the model, but it does not reach a level that would render the coefficient estimates meaningless (GDI=3.382; GSNI=3.358; IAE=5.294; GII=6.775). Furthermore, the effect sizes reveal that the explanatory contribution to FLFP is primarily driven by GII (f^2=0.290) and GDI (f^2=0.207); GSNI contributes at a moderate level (f^2=0.125), while IAE contributes at a negligible level (f^2=0.007). This pattern indicates that a few core determinants consistently drive the high explanatory power (R^2=0.888) and that the model's structural results have an interpretable distribution of contributions.

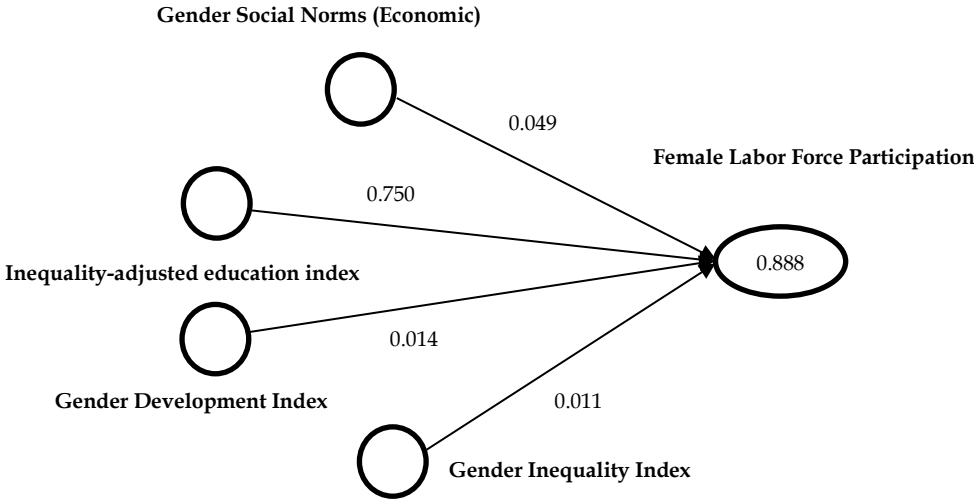

Figure 1: Structural Model

Within the scope of SEM, the existence of a causal relationship and the extent of its effect are evaluated using statistical indicators such as the path coefficient (β), t-value, and p-value. The path coefficient indicates the direction and magnitude of the effect of independent variables on the dependent variable; a negative coefficient indicates an inverse effect, and a positive coefficient indicates a parallel effect (Gefen et al., 2000). The t-value (hypotheses are rejected if it is between -1.960 and 1.960) determines whether causal relationships are statistically significant. At the same time, the p-value ($p < 0.05$) is used to determine whether the relationship is random (Hair et al., 2021). Interpreting these three values together enables the model to be tested.

According to the results from a sample of 31 countries in Table 3, three of the four hypotheses in the model were statistically significant and supported. First, under H1, it was found that GDI had a positive and significant effect on FLFP. This finding shows that, in countries where gender equality has improved, women's labour force participation has also increased. Under H2, a negative and significant relationship was found between GII and FLFP. This situation proves that women's labour force participation rates decrease in countries where gender inequality increases. In fact, the variable with the greatest impact was gender inequality. On the other hand, in H3, the GSNI (Economic) variable was found to have a negative and significant relationship with FLFP. This finding reveals that women's labour force participation is limited by economic gender inequality. However, in H4, it was determined that IAE has no significant effect on FLFP. According to this finding, educational inequality alone does not determine women's labour force participation in the countries included in the sample.

Table 3: Hypothesis Test Findings

Hyp.	Path	β (Original Sample)	t-value	p-value	Sig.	Results
H_1	GDI → FLFP	0.280	2.45	0.014	**Yes**	Supported
H_2	GII → FLFP	-0.468	2.55	0.011	**Yes**	Supported
H_3	GSNI (Economic) → FLFP	-0.216	1.97	0.049	**Yes**	Supported
H_4	IAE Index → FLFP	0.064	0.32	0.750	**No**	Not Supported

GDI = Gender Development Index; GII = Gender Inequality Index; GSNI = Gender Social Norms Index (Economics); IAE = Inequality-adjusted Education Index; FLFP = Female Labour Force Participation.

Importance-performance findings

The Importance-Performance Map (IPMA) goes beyond the path coefficient results of classic PLS-SEM, allowing us to comparatively assess the importance of the factors that cause the dependent variables and the performance levels they affect (Hair et al., 2022). The main contribution of IPMA is that it helps identify the factors with the greatest impact on the dependent variable, beyond simply determining the causal variable with the highest impact. It is particularly effective in measuring the performance of factors that influence managerial practices in strategic decision-making processes (Ali et al., 2018). IPMA results will enable the identification of areas with the greatest potential for managerial improvement, going beyond statistical findings to provide practical insights (Ringle & Sarstedt, 2016). Ultimately, IPMA increases the model's managerial value and is used to determine strategic priorities for the importance and performance of causal factors for the dependent variable. In addition to statistical findings, PLS-SEM helps generate actionable insights.

Figure 2 shows the outputs of the four variables that are effective in women's labour force participation, according to their importance and performance in the research model. The funnel chart in Figure 2 summarises the performance indicators of the variables included in the model under the IPMA framework. Performance values represent the average level of each variable in the sample, converted to a 0–100 scale, and are used to describe each variable's current level. In this context, the values 68.737 and 68.239 indicate relatively high performance levels, 51.788 indicates a medium level, and 35.039 indicates a low level. The funnel chart provides a comparative view of the current performance levels in the sample, independent of the variables' importance on FLFP. First, given that GDI focuses on the development of women's socio-economic and health conditions, the research results show that this factor has the greatest impact on increasing women's labour force participation. Although FLFP ranks second in terms of impact/importance among other variables, it is among the conditions expected to have the fastest impact (performance). This indicates that GDI has the potential to affect FLFP in the shortest term. On the other hand, although IAE is the second-highest-performing condition, its impact on FLFP is considered insignificant, making it a low-priority managerial concern. GSNI, which has the third-highest performance, has a negative impact and an inverse relationship with FLFP performance. Finally, GII, despite having a high impact (inverse effect), has been identified as the condition that produces the least performance output for FLFP. This situation reveals GII's capacity to affect FLFP in

the long term. Ultimately, the analysis shows that steps to reduce gender inequality are a priority for increasing women's workforce participation. Focusing on areas with high impact but low performance can yield more effective results in policy development. Therefore, equality-based social policies and awareness-raising practices can provide concrete contributions to practice.

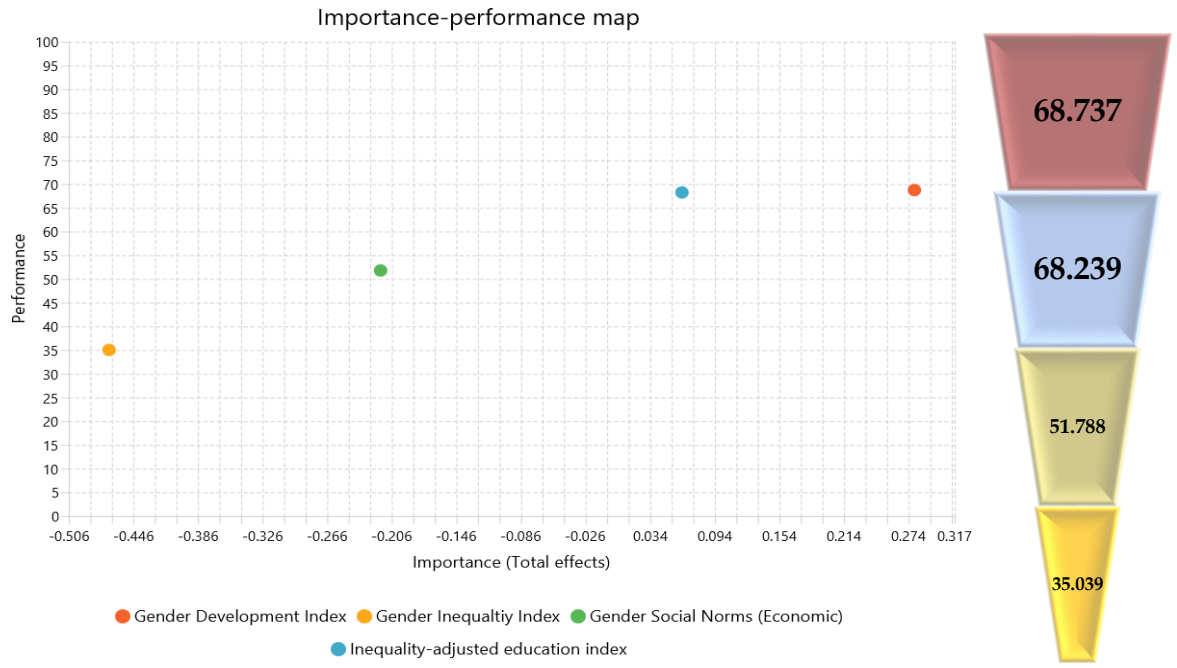

Figure 2: Importance and Performance Findings

Fuzzy-Set qualitative comparative analysis (fsQCA) findings

In fsQCA, raw variable values are not analysed directly; each condition and outcome variable is converted into membership scores between 0.05 and 0.95, representing degrees of membership in conceptually defined clusters. This is the first step in fsQCA, called calibration, and is critical to the method's repeatability and the reliability of its findings. Calibration requires the researcher to explicitly define thresholds for full membership, transition, and non-full membership based on theoretical knowledge and/or data-driven criteria; when these thresholds are not reported, it becomes difficult for independent researchers to reproduce the results (Ragin, 2008; Schneider & Wagemann, 2012). In practice, the direct calibration approach is common and relies on establishing the membership function through three anchors (full membership–transition–non-full membership); thus making the measurement logic transparent and allowing sensitivity analyses to test the effect of threshold changes on the solution (Schneider & Wagemann, 2012; Thiem & Dusa, 2013). Raw scores and calibration thresholds are shared in Table 4. The transformed data were analysed accordingly

Table 4: Configuration Results

Variable	Calibration method	Anchors (0.95 / 0.50 / 0.05)	Rationale	Sensitivity test
Gender Social Norms Index – Economic	Direct	93.80 / 52.42 / 7.96	Scale-based (percentage metric; data-driven Max / Mean / Min)	Re-estimated after small shifts in anchors; solutions remained substantively stable
Inequality-adjusted education index	Direct	0.92 / 0.69 / 0.21	Scale-based (bounded index; data-driven Max / Mean / Min)	Re-estimated after small shifts in anchors; solutions remained substantively stable
Inequality-adjusted income index	Direct	0.85 / 0.66 / 0.43	Scale-based (bounded index; data-driven Max / Mean / Min)	Re-estimated after small shifts in anchors; solutions remained substantively stable
Gender Development Index	Direct	1.03 / 0.95 / 0.79	Scale-based (ratio index; data-driven Max / Mean / Min)	Re-estimated after small shifts in anchors; solutions remained substantively stable
Gender Inequality Index	Direct	0.56 / 0.21 / 0.03	Scale-based (bounded index; data-driven Max / Mean / Min)	Re-estimated after small shifts in anchors; solutions remained substantively stable
Female Labour Force Participation	Direct	66.37 / 44.10 / 10.99	Scale-based (percentage metric; data-driven Max / Mean / Min)	Re-estimated after small shifts in anchors; solutions remained substantively stable

FsQCA is a unique technique for revealing the underlying reasons for social phenomena and events and for providing cluster-specific results. Before a holistic result is produced, the necessity-sufficiency analysis determines whether the condition variables are theoretically absolute or sufficient for the discussion of the result. Necessity analysis determines whether a condition/conditions are necessary for the outcome in all cases; sufficiency analysis, on the other hand, shows the degree to which the condition/conditions are consistent in producing the outcome (Schneider & Wagemann, 2012). In necessity analysis, if the consistency value—the sole factor—meets the ≥ 0.90 criterion, the condition variable/variables are determined to be a theoretical prerequisite for the outcome (Schneider, 2016). On the other hand, sufficiency analysis is considered meaningful when the coverage value meets the criterion of 0.25 or higher, indicating that the condition(s) are sufficient for the outcome (Fiss, 2011). A high coverage value indicates a high level of explainability of the outcome. These two criteria are critical for testing the explanatory power of fsQCA and the fit between theory and variables. Necessity ensures the internal consistency of the model, while sufficiency demonstrates its explanatory power and generalizability (Misangyi et al., 2017).

According to Table 5, IAE theoretically requires a high level of FLFP. This shows that women's workforce participation increases when equal educational opportunities are provided. Beyond the integrated results presented in the symmetric findings, the asymmetric findings concluded that IAE is necessary for FLFP. Another necessary variable, GII, was also found to be theoretically necessary for FLFP. This situation confirms the finding that women's employment is high in countries with low gender inequality, even after accounting for the individual relationships among the variables. Although not theoretically necessary, the GDI result, which is very close to necessity, indicates a strong relationship between increases in women's development and their labour-market participation. Finally, it has been determined that the model relationship, designed in a symmetrical context and with the greatest effect on necessity, has a very strong theoretical necessity for FLFP, confirming the study's suggestion that it will affect the model form. All other variables are sufficient for the interpretation of FLFP. For cases of absence/low FLFP, it was concluded that GSNI is necessary, revealing that economic gender-based norms negatively affect women's participation in the labour force. On the other hand, while GII and ~IAE were found to have a strong effect on low FLFP, they do not carry theoretical necessity. This shows that gender inequality and inequality of opportunity in education are related to the low rate of women's participation in the labour force. All other variables are considered sufficient for interpreting the low FLFP. Finally, it is concluded that the inverse relationship model, based on symmetric modelling for the existence of FLFP, is necessary for the absence of FLFP, and that the relationship is appropriate.

Table 5: Results of Necessity and Sufficiency Analysis

Conditions	Outcome Variable: FLFP	Consistency	Coverage	Outcome Variable: ~FLFP	Consistency	Coverage
GSNI		0.481	0.523		0.930	0.761
~GSNI		0.781	0.936		0.418	0.377
IAE		0.932	0.880		0.489	0.347
~IAE		0.308	0.444		0.830	0.902
GDI		0.879	0.845		0.540	0.390
~GDI		0.366	0.514		0.786	0.830
GII		0.336	0.460		0.861	0.886
~GII		0.916	0.898		0.475	0.350
GDI+~GII+~GSNI+IAE		0.981	0.797			
~GDI+GII+GSNI+~IAE					0.985	0.706

In fQCA, a fuzzy set extension for qualitative research, a reduction process must first be performed to define the complexity of the underlying causes of social phenomena/events, i.e., their causal relationships. In the truth table analysis that constitutes the logical minimisation process, logical simplification is performed to create the skeleton of the algorithmic structure and provide inferences about the extent to which condition combinations are consistent with the result (Thiem, 2017). When the model contains n condition variables, it is assumed that all necessary conditions are calculated using the 2^n formula, as specified by the theory (Pappas & Woodside, 2021). According to this calculation, the possible combination of condition variables for the result is 24, and a total of 32 possible combinations emerge for the presence/absence of FLFP. Since defining these combinations is quite difficult and complex, they undergo various simplification steps, leading to logical minimisation. As reported by Chen and Tian (2022), the simplification process was performed by deleting rows with fewer than 1 row width in the fsQCA application and setting all remaining row widths to the recommended value of 0.8 or higher. For the configuration results, combinations based on simplified logic emerge. Among the three separate results (stingy, intermediate, and complex solutions), the intermediate solution findings are considered appropriate for gaining a more comprehensive and deeper insight into the causal conditions of the outcome variable (Ragin and Davey, 2014). A solution consistency value of ≥ 0.75 in the resulting outcome indicates that the model is valid, reliable, and well-designed (Ragin, 2006). On the other hand, a coverage value of ≥ 0.25 indicates that the conditions have sufficient explanatory power for the outcome (Emmenegger et al., 2014). According to Table 6, both coverage and consistency for high and low FLFP are well above the threshold. According to the consistency value result, the model is valid and well-designed in both stages. On the other hand, according to the coverage value, the configuration results explain 84.11% of the FLFP height, which is a very high rate. For the FLFP low, it is proven that the configurations have a very high explanatory power of 87.37%. Ultimately, given that the predicted configuration modelling is consistent and comprehensive across both high and low FLFP, the preliminary analysis findings are highly acceptable.

Table 6 shows that, in general terms, low and neutral GII values, as well as high or neutral values for all other variables, are associated with high FLFP values. This result suggests that reducing gender inequality positively affects female employment. When specifically evaluated, in the first configuration, for countries such as South Korea, Russia, Slovakia, Ukraine, and Armenia, despite high levels of gender-biased social norms in economic terms, women's labour-market participation increases as general gender inequality declines. Educational opportunities are high, given the inequality factor. In the second configuration, which includes countries such as Russia, Slovakia, China, Ukraine, and Armenia, women's labour-market participation increases when gender development is high and gender inequality is low, despite the high levels of gender-based social norms in these economies. In the third configuration, which includes more developed countries such as Canada, the Czech Republic, Singapore, and Australia, women's labour-market participation increases when gender-based development and educational opportunities are expanded, while taking inequality into account, and overall gender inequality decreases. In the last configuration, which includes countries such as Russia, Armenia, Slovakia, Ukraine, and Romania, despite the high level of gender-based social norms in economic terms, the increase in gender-based development and the high level of educational opportunities organised with consideration for the inequality factor have led to an increase in women's participation in the labour market. On the other hand, countries with low FLFP have lower levels of

development than other countries. In general, high economic gender-based social norms are a valid condition for low FLFP in all configurations. When interpreted specifically, the reasons for the low FLFP in countries such as Pakistan, Iraq, Jordan, Iran (Islamic Republic of), Egypt, Lebanon, Morocco, Libya, Tajikistan, Türkiye, Tunisia, and Romania, which are in the first configuration, are the high level of gender-based social norms and gender inequality in economic terms. In the second configuration, countries such as Türkiye and Korea offer high educational opportunities that consider inequality. Still, women's labour-market participation remains low due to low gender-based development and economically gendered social norms. In the final configuration, for countries like Libya and China, despite the high level of educational opportunities tailored to consider gender-based development and the inequality factor, women's participation in the labour market declines when economically gendered social norms are high.

Table 6: Configuration Findings

Conf	**Outcome Variable: FLFP**	**1**	**2**	**3**	**4**
GSNI		●	●		●
IAE		●		●	●
GDI			●	●	●
GII		⊗	⊗	⊗	
		Korea, Russian Federation, Slovakia, Ukraine, Armenia	Russian Federation, Slovakia, China, Ukraine, Armenia	Canada, Czechia, Singapore, Australia, United Kingdom, Hong Kong.China, New Zealand, Greece, Japan, Germany, Serbia, Russian Federation, United States, Slovakia, Netherlands, Ukraine, Armenia	Russian Federation, Armenia, Slovakia, Ukraine, Romania
solution coverage: 0.841153					
solution consistency: 0.919654					
Conf	**Outcome Variable: ~FLFP**	**1**	**2**	**3**	
GSNI		●	●	●	
IAE			●	⊗	
GDI			⊗	●	
GII		●			
		Pakistan, Iraq, Jordan, Iran (Islamic Republic of), Egypt, Lebanon, Morocco, Libya, Tajikistan, Türkiye, Tunisia, Romania	Türkiye, Korea (Republic of)	Libya, China	
solution coverage: 0.873779					
solution consistency: 0.851391					

"●" indicates that the condition exists/is high, "⊗" indicates that the condition does not exist/is low, and blank spaces indicate that the presence or absence is not important.

Conclusion and discussion

In today's global context, women's workforce participation not only has a positive impact on prosperity but also contributes significantly to social development, economic growth, and the construction of sustainable societies. For this reason, identifying the conditions that can disrupt sustainable socio-economic structures is important for the building blocks of society within a functionalist approach. The main objective of the research is to reveal how the conditions that determine women's participation in the labour force are shaped not only by individual effects but also by various configurations. This study focuses on structural and normative factors related to gender-based inequality that may influence women's labour force participation. It has concentrated on case-based/specific theoretical and practical results by revealing these causal relationships. To assess this causal complexity, it integrates both symmetric and asymmetric findings by applying PLS-SEM and fsQCA techniques to a sample of 31 countries. According to the study's general results, preliminary analysis findings were first presented. It was determined that there were no problems in the internal relationships (VIF) for all variables, including the Gender Social Norms Index-Economic (GSNI), Inequality-Adjusted Education Index (IAE), Gender Development Index (GDI), Gender Inequality Index (GII), and Female Labour Force Participation (FLFP). On the other hand, the effect size/explanatory power (f^2) of the variables other than IAE was at appropriate levels. Therefore, it was observed that the variables met the prerequisite, and the model was accepted as suitable for the analysis stage. According to the model results, FLFP was

explained at a very high rate of 88.8% across all variables. This means that the structural model was well designed. On the other hand, the necessity and sufficiency analysis was conducted based on the asymmetric general preliminary analysis findings. According to the results, the high FLFP within the main cluster is necessary in the context of cluster theory, given the inequality factor, the high level of educational opportunities, the high level of gender-based development, and the low level of gender-based inequality. When the model is evaluated as a whole within the framework of the relationships derived from the structural model, it is found to have reached a very high level of absolute necessity in the cluster-theoretical context for high FLFP, indicating that the model is well designed for FLFP. For the low level of FLFP, the high level of gender-based social norms and, to some extent, gender inequality emerge as necessary conditions in economic terms. On the other hand, when the structural model relationship is reversed to include the low FLFP, the structural model proposal for the existence of FLFP performs slightly better (which is necessary in a cluster-theoretical context). This once again proves the importance of asymmetric findings that cannot be achieved in a symmetric context.

According to the specific results, hypothesis 1, which is primarily symmetrical in context, has been accepted, and it has been determined that gender-based development significantly and positively increases women's workforce participation. At the same time, according to the importance-performance map, gender-based development is expected to increase women's labour-market participation rapidly and in the short term. These results are consistent with the literature, indicating that women's access to social development in terms of education, health, and economic opportunities enables more effective participation in the socio-economic context (Klasen & Lamanna, 2009; Duflo, 2012). High levels of gender-based development not only expand women's access to education and health services but also strengthen their involvement in economic decision-making processes (Ferrant et al., 2014). In this regard, gender-based development functions as an effective short-term mechanism for accelerating women's employment (UN Women, 2022). These findings indicate that sustainable employment outcomes emerge when structural indicators of equality complement individual capabilities.

The study's hypothesis 2 was also supported, demonstrating that reductions in gender inequality exert a significant and negative effect—with the strongest magnitude—on barriers to women's labour market participation. This result supports existing research indicating that gender inequality acts as a major constraint on women's employment, and that its reduction advances women's economic empowerment (Bandiera & Natraj, 2013). For example, the strong representation of women in the labour force in Scandinavian countries, where gender inequality levels are considerably lower, contrasts sharply with the considerably lower participation rates in regions such as the Middle East, where inequality remains high (UNDP, 2022). Further evidence shows that equitable distribution of opportunities contributes to women's access to stable, secure employment (ILO, 2017). In societies where gender inequality declines, women not only secure employment but also increasingly participate in decision-making (Kabeer & Natali, 2013). Thus, a decrease in the Gender Inequality Index (GII) serves not only as an economic lever but also as a driver of political and social inclusion.

Hypothesis 3, which argues that high levels of economic gender bias reduce women's labour force participation, was likewise confirmed. As prejudicial beliefs about women's roles in the economy spread, women's employment rates decline significantly, reinforcing the view that social norms strongly influence economic participation (Marcus, 2021; Teso, 2019). Women's integration into the labour market is shaped not only by institutional regulations but also by the degree of societal acceptance that underlies them. When economic roles are culturally framed as male-dominated, women face constraints in both the supply and demand sides of the labour market (Jabeen et al., 2020). Norms and values upheld within society function as indirect filters that shape women's decisions regarding labour market entry, occupational preferences, and employment continuity (Jayachandran, 2020). Social judgments produce internalised biases at the individual level and construct invisible yet powerful barriers that restrict women's participation in economic life. For this reason, normative transformation policies that support egalitarian legal frameworks play a critical role in increasing women's employment.

On the other hand, hypothesis 4, which states that high educational opportunities, organised with consideration of the inequality factor, positively affect labour force participation rates, was not supported as expected. This result indicates that structural inequalities in education alone may have a limited effect on women's employment. While it is widely stated in the literature that an increase in the level of education plays a positive role in women's labour force participation (Psacharopoulos & Patrinos, 2018; Osundina, 2020), the fact that equal opportunities in education do not directly translate into employment growth can be explained by the existence of normative, institutional, and economic barriers.

Hypothesis 5 has been accepted, and the fsQCA results show that women's participation in the labour force (FLFP) is explained not only by individual variables but also by the coexistence of specific sets of conditions. According to the theoretical results, the cluster with high FLFP includes countries in the first configuration, which includes the post-Soviet and Eastern European bloc, where gender equality, equal education, and low gender inequality support women's employment. In the second configuration, which includes Asian-Eurasian modernising states, women's employment is high despite the presence of biases, thanks to strong gender-based development and low structural inequalities. In the third configuration, which includes developed welfare economies, social norms do not exist, and other conditions are in place that encourage women's employment. In the fourth configuration, which includes countries with resilient female labour force structures under high inequality, women's employment is ensured through high educational attainment and support for gender development, despite strong gender norms. According to theoretical results from the cluster with low FLFP, the first configuration, which includes patrimonial and authoritarian welfare regimes, shows that the combination of high social gender bias and high gender inequality leads to low female labour force participation. In the second configuration, which includes East Asian and semi-peripheral welfare regimes, although educational opportunities for women are high, gender-based development is low and patriarchal social norms remain strong. In these countries, where modern infrastructure clashes with traditional norms, women's employment is limited by social acceptance. For the last configuration of countries with authoritarian welfare regimes, even though gender-based development indicators are high, social biases and educational inequalities have a limiting effect on women's full participation in the labour force.

This study has some limitations. First, because the analyses used cross-sectional country-level data from 2022, the findings do not capture changes over time, and interpretations of causality are limited to the theoretical framework. Second, the sample is limited to 31 countries, which limits the generalizability of the findings to the extent of the country coverage and data availability. Third, since the variables were constructed using the final scores of composite indices reported by the UNDP and the World Bank, the separate effects of the sub-components were not directly tested. Finally, because the analyses were conducted at the country level, they do not reflect individual behaviours or the details of institutional practices at the micro level. These limitations could be addressed in the future with designs that include broader country sets, multi-year panel data, and sub-components.

Directives for the future with theoretical and practical outcomes

Firstly, the combined use of fsQCA and PLS-SEM techniques in the study has provided theoretical innovations in understanding causal heterogeneity, context sensitivity, and constructive relationships in the social sciences. The combination of these two techniques has enabled a more comprehensive testing of the validity of theoretical hypotheses. Furthermore, in addition to testing the relational results for FLFP, case-specific (country-specific) cluster-theoretical findings were also obtained. In light of symmetrical and asymmetrical findings, variables such as gender-based development and gender inequality were examined together, revealing that women's participation in the labour force is a multidimensional process, thereby adding new theoretical perspectives to existing gender equality models. This study shows that social prejudices against women's employment, shaped by gender norms in an economic context, are a critical factor in determining women's labour force participation rates. Thus, social norms have been incorporated into the theoretical literature as a structural cause of economic inequality. On the other hand, while symmetric findings on equal educational opportunities yielded no meaningful results, asymmetric findings underscored the importance of the education factor. The cluster-theoretical structure clearly revealed how educational opportunities affect women's labour force participation.

Based on practical conclusions, research should focus on policy initiatives based on gender developments to promote women's employment, and strategies should be developed in line with socio-economic community goals. In addition, the fair distribution of resources to eliminate educational inequalities and the inclusion of egalitarian approaches in education policies are valuable for promoting women's employment. For policymakers, the study provides clear evidence of the importance of combating norms that minimise social prejudices to achieve economic equality. Policies that include social campaigns and awareness-raising to promote women's employment will be important. Finally, it has been concluded that encouraging policies that support women's participation in the labour market in new business models based on technological developments is important for them to gain economic independence and have a say in the socio-economic context.

The study also includes various recommendations for the future. Firstly, within the context of the research findings, it is recommended that monitoring and evaluation systems grounded in gender

norms and economic inequality indices be established to support gender-based development policies. Given the cross-sectional nature of the research, it will be important to conduct long-term panel data analyses that track changes over time in the normative and structural factors affecting women's labour force participation. This would enable long-term evaluation of policy effectiveness. Comprehensive qualitative and quantitative studies should be increased to thoroughly determine the effects of digitalisation on gender equality, particularly in the labour market, where it is most intensively experienced. In this context, examining the effects of artificial intelligence in new sectors such as health tourism will be important for future research. Finally, it is recommended that the validity of the fsQCA and PLS-SEM methods be considered, and that they be used in conjunction with other social and economic variables to increase the dominance of the literature through comparative analysis across a broader scope and different country groups. This will enable the identification of different variables with the potential to influence FLFP, thereby facilitating the development of policies that are more responsive and specific to the needs of different countries and regions.

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