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Factors Promoting Women's Empowerment in Cattle Farming

Factores que promueven el empoderamiento de las mujeres en la ganadería bovina

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Abstract: The objective of this study was to analyze how various factors contribute to the empowerment of women cattle farmers in different municipalities of the states of Oaxaca and Veracruz. A structural equation model was used, defining three latent variables: economic empowerment, personal empowerment and empowerment in livestock farming, along with two indicators: the power to make important decisions and the position they hold. Each latent variable was explained by five indicators. The results show a 78% model fit, indicating that the empowerment of women cattle farmers is explained by the latent variables, with personal empowerment being the most significant. It is concluded that since empowerment is a multidimensional concept, the generation of quantitative measures that strengthen the qualitative analysis becomes pertinent.

Keywords: women, livestock empowerment, personal empowerment, economic empowerment, cattle farming.

Resumen: El objetivo de este trabajo fue analizar cómo diferentes factores se relacionan con el empoderamiento de las mujeres ganaderas en diversos municipios de los estados de Oaxaca y Veracruz. Para ello, se utilizó un modelo de ecuaciones estructurales, en el que se establecieron tres variables latentes: empoderamiento económico, empoderamiento personal y empoderamiento ganadero, y dos indicadores: el poder tomar decisiones importantes y el puesto que desempeñan. Cada variable latente fue explicada por cinco indicadores. Los resultados muestran un ajuste del modelo de 78%, lo cual indica que el empoderamiento de las mujeres ganaderas se explica por las variables latentes, siendo la más significativa el empoderamiento personal. Se concluye que al ser

el empoderamiento un concepto multidimensional, se vuelve pertinente la generación de medidas cuantitativas que fortalezcan el análisis cualitativo.

Palabras clave: mujeres, empoderamiento ganadero, empoderamiento personal, empoderamiento económico, ganadería bovina.

Introduction

Women's empowerment has been defined as the ability of women to make important decisions concerning various aspects of their daily lives. This concept entails the degree of control a woman can exercise in different domains, economic, political, or ideological (Ruiz *et al.,* 2018; Galiè *et al*., 2022; Ley General para la Igualdad entre Mujeres y Hombres, 2023). It has been one of the goals of Mexican public policy since 2013 (Plan Nacional de Desarrollo, 2013–2018: 101) and has remained a priority in subsequent development plans to the present day. Specifically, in support of rural women, several public programs have been implemented, such as the Support Program for the Productivity of Women Entrepreneurs (PROMETE, 2014); the regional program Expanding Economic Opportunities for Rural Women Entrepreneurs in Latin America (2013–2015), which aimed to promote the economic empowerment of rural women entrepreneurs in Mexico (UN Women, 2015); and the INSPIRA Program 2019–2024 (Senado de la República, 2024), to name a few of the most recent initiatives.

It is worth noting that support for rural women is not new. Since 1972, groups have been organized with the aim of securing resources for productive projects led by rural women, giving rise to the Agricultural Industrial Units for Women (Unidades Agrícolas Industriales de la Mujer, UAIM) (Inter-American Institute for Cooperation on Agriculture [IICA], 1998). However, the recognition of the importance of empowering women in the agricultural sector has only gained momentum in recent years.

Fregidou (2004: 154) argued that rural women have played a fundamental role in the creation of organizations with social impact; four years later, Rico and Gómez (2009: 288) highlighted their participation in economic organizations. By 2012, the Food and Agriculture Organization of the United Nations (2012: 5) recognized women as "the invisible guardians of livestock diversity".

While this type of research emphasizes the role of women in ensuring family nutrition and food security, the IICA (2021) asserts that they have not only transmitted ancestral agricultural practices across generations, but have also actively worked to improve them, thus significantly contributing to the development of agricultural activities and production units (IICA, 2021: 4). The United Nations even affirms that in small-scale production, it is women who predominate and contribute most to environmental stewardship and the preservation of natural capital (UN Women, 2022).

Despite this growing recognition and the existence of support programs for rural women, they continue to face significant challenges that hinder their productive development, especially those involved in the primary sector (Bain *et al*., 2020; Galiè *et al*., 2022). On this matter, Pérez (2018) states that Mexican rural women entrepreneurs operate in a patriarchal environment, where their rights and work, both within and beyond productive activities, receive little to no recognition. This view is shared by Núñez (2017), who argues that gender ideology remains deeply rooted in rural Mexico.

Likewise, the National Institute for Women (Inmujeres, 2023: 3) affirms that rural women face greater difficulties than men in accessing financial resources, training, and even property and productive assets. In a study on the feminization of agriculture, Cruz *et al*. (2023: 39) report dynamics of disempowerment experienced by rural women, especially the wives of migrants, who are left with full responsibility for farming but have very limited decision-making power. It is often the absent husband who continues to make decisions about planting and marketing, with strict demands for accountability from afar.

These realities call for an analysis that helps clarify the relationships and patterns involved, in order to promote processes that enable the empowerment of women engaged in agricultural and cattle farming activities. Specifically, the aim of this paper is to develop a model that analyzes the relationships among the factors influencing empowerment and the overall empowerment of female cattle farmers in the southern region of the country.

Development

Variables Related to Empowerment

According to García *et al.* (2021: 7), women's empowerment should be understood as a process aimed at gaining control and enhancing capacities; but above all, as a formative multidimensional construct. Following this conception, the present study addresses the empowerment of female cattle farmers through three dimensions that together can explain some of its mechanisms. It is acknowledged that these are not the only dimensions and that other aspects related to sociocultural factors or networks may also contribute significantly. However, the hypothesis of this work posits that empowerment can be explained by more than 50% based on the three selected dimensions: economic, personal, and work-related (cattle farming).

The economic dimension involves not only the development of skills and professional training that enable women to generate their own income, but also the ability to use these resources, rights, and opportunities to make strategic decisions that improve their well-being through access to material goods and services (UN Women, 2021: 9). A lack of such capacity increases women's vulnerability, deepening their dependence on a resource essential for survival: money (Swiss Agency for Development and Cooperation, 2007: 6; Durán, 2023).

Economic empowerment requires the promotion of various conditions: a) Earning personal income. Money enables women to meet their basic needs and improve their quality of life; economic security fosters autonomy (Martínez-Torres *et al*., 2019: 29); b) Financial management. The ability to decide how to use financial resources is essential to fostering economic development (Saavedra & Camarena Adame, 2021: 225); c) Saving. The ability to delay consumption and allocate income for emergencies or crises is a necessary component (Durán, 2023); d) Economic independence. The ability to cover expenses without relying on a partner's financial contribution is key to achieving independence, a critical factor in empowerment (García *et al*., 2021:15); e) Spending decisions. According to UN Women (2021: 31), women who control how money is spent enjoy greater food security.

The personal dimension refers to self-worth and personal recognition, which foster individual autonomy. A sense of usefulness enhances women's self-esteem and allows them to take control over

everyday decisions. In short, this type of empowerment shapes how women define themselves in the world based on their personal significance (Romero-Echeverría, 2020: 86). This analysis explores personal empowerment in relation to: a) Freedom of movement. Women's confidence grows as they gain control over their free time and can decide when and where to go out (Ruiz *et al*., 2018: 23); b) Unpaid work. When women bear sole responsibility for household chores without family support, they have less time to engage in other activities that support personal development (Inmujeres, 2023: 12); c) Achievement capacity. When a person feels capable of fulfilling their goals, it reflects self-confidence and trust in the tools acquired for everyday decision-making (UN-OHCHR, 2023); d) Domestic violence. According to the European Court of Auditors (2023), domestic violence is the most common form of violence against women and girls. These acts cause physical, sexual, or psychological harm that can lead to submission; e) Fear. Fear is a natural response to violence or perceived danger. When women feel unsafe in their homes or afraid of their partners, this becomes a major obstacle to empowerment (National Institute for Social Development, 2020:18).

Finally, work-related empowerment is connected to the type of economic activity carried out by women, in this case, cattle farming; therefore, it has been termed livestock empowerment. Inequality in labor conditions has increased with the development of capitalism, making it necessary to promote equality in wages, occupations, and rights (Villanueva and Tapia, 2019: 2). In rural areas, although still to a limited extent, migration has led women to become heads of households and entrepreneurs (López and Rojas, 2017: 316). The indicators comprising this dimension are: a) resource control. Resources represent the means to carry out work; the extent to which female cattle farmers can access them will be reflected in their productive efficiency. Thus, resource control can be perceived as an achievement indicator (UN Women, 2021); b) personnel management. Business empowerment is linked to the productivity of the economic activity being conducted, where human resource management is particularly relevant. Therefore, hiring or dismissing staff should result from the implementation of a sound strategy (UN Women, 2016: 18); c) decision-making over income. Any enterprise requires decisions regarding the allocation of money, debt, or savings, as the success or failure of the enterprise depends on these choices (IICA, 2021: 13). In this regard,

the Spanish Network for Rural Development (2020: 66) states that rural women, despite working long hours in the field, lack the power to make such financial decisions; d) negotiation. The ability to negotiate with peers, suppliers, or clients is essential, especially in commercial agreements. It is desirable that women have the opportunity to establish strong relationships or reach agreements (Economic Commission for Latin America and the Caribbean, ECLAC, 2020: 16); e) emergency management. Emergencies arise in all enterprises, some of which cannot be prevented, thus requiring a swift response capacity to minimize damage. Providing the opportunity to manage emergencies fosters the recognition of achievement (Fondo para el Financiamiento del Sector Agropecuario, FINAGRO, 2020).

Method

Study Population

Beef cattle production in Mexico is so significant that it ranks the country seventh worldwide (Magaña *et al*., 2020: 1). Total beef production in the state of Oaxaca in 2023 reached 123,880 tons, while Veracruz produced 526,610 tons in the same year; this positions Veracruz as the leading producer and Oaxaca as the 13th among Mexico's federal entities (SIAP, 2023). However, this activity has been predominantly carried out by men. According to the 2022 Agricultural Census, there are 4.6 million production units engaged in agricultural activities nationwide, of which only about 19% are managed by women (INEGI, 2022). Therefore, conducting an analysis from a gender perspective is crucial.

The women who participated in this study are involved in all stages of the cattle production process. Their roles range from laborers performing basic farm tasks (7), to those responsible for data recording and accounting (9), to individuals managing and selling products (5), to those exclusively engaged in milking and cleaning (15). The sample also includes women who own and operate the entire ranch (11), as well as those who own the ranch and receive reports from workers regarding its operations (3).

Due to the lack of records on women engaged in the activity within the study area, a convenience sampling technique was employed. This non-probabilistic method consists of selecting respondents based

on their accessibility and availability (Otzen & Manterola, 2017). Initially, ejidal representatives were contacted, and subsequently, the snowball sampling technique was used, whereby the women themselves provided information about other women. In total, 50 women working in cattle ranching were surveyed across the states of Oaxaca (Mixtan, Loma Bonita, El Roble, San Felipe la Reforma, El Mirador, Jobal, La Soledad, Paraíso, and Paraíso Zacatal) and Veracruz (Rodríguez Clara, María Lombardo, Cd. Isla, Villa Azueta, and Dobladero).

Structural Equation Modeling

Structural equation modeling is a statistical tool based on covariance analysis, allowing for the identification of relationships between observed and latent variables. The former are measured directly, whereas the latter are assessed indirectly through observed variables (Manzano, 2018: 68). This analytical method assumes that the covariance structure reflects the underlying relationship among latent variables, inferred from the manifest relationships between observed variables. As such, it presumes that the theoretical constructs emerge from measurable indicators. The model is formulated through a system of similar linear equations and is graphically represented using a path diagram (Manzano, 2018: 68). In gender studies, the model has proven useful for analyzing the empowerment of rural women by relating, for example, land ownership and other productive resources to reducing vulnerability (Aziz *et al*., 2021), environmental conservation (Ghasemi *et al*., 2021), food security (Wei *et al*., 2021), and contraceptive use (Muluneh *et al*., 2021), among others, illustrating the wide range of topics that rely on this statistical measure.

The method allows for the formulation of models based on two approaches: reflective and formative. In a formative model, the indicators constitute the latent variable, with each indicator representing a specific dimension of it. Conversely, in a reflective model, the latent variable is expressed through the indicators. The key difference lies in the direction of the causal relationship: in formative models, the relationship flows from the indicators to the latent variable, whereas in reflective models it flows in the opposite direction. This direction is typically represented in path diagrams by the orientation of the arrows (Martínez, 2020: 4).

For this study, a formative model was developed using SmartPLS4 software. According to Ringle *et al*. (2024: 3), the evaluation of formative

models should consider the following criteria: a) Convergent validity, which involves assessing the model's consistency. This is determined by examining the path coefficient, which should exceed the recommended threshold of 0.70. b) Indicator collinearity, which is essential for establishing the model's internal validity. To detect multicollinearity issues, the software employs regression to calculate the variance inflation factor (VIF). Pedraza Sánchez and Araiza Vázquez (2020: 8) suggest that the VIF should be below 10, while Ringle *et al*. (2024: 15) recommend a threshold below 5. c) Bootstrapping procedure, a non-parametric inference technique involving the random generation of a large number of subsamples, each modeled individually to assess parameter stability. According to Chin (1998: 305), statistical significance may be evaluated using p-values of <0.1, <0.05, or <0.01, depending on the nature of the research. d) Construct validity, assessed through Cronbach's alpha coefficient, composite reliability, and the average variance extracted. Values above 0.70 are acceptable for the first two, while the AVE should exceed 0.50 (Martínez, 2020: 6). e) Structural model evaluation, which traditionally involves assessing the R^2, indicator. Ranging from 0 to 1, values closer to 1 indicate better model fit. However, some authors (Martínez, 2020: 7; Ringle *et al*., 2024: 18) argue that a value slightly above 0.5 may be considered a moderate fit. It is therefore recommended that R^2, be analyzed alongside the SRMR (Standardized Root Mean Square Residual), which should be below 0.085.

In summary, the formulation and evaluation of formative models using SmartPLS4 requires a thorough and detailed assessment of multiple criteria to ensure the model's validity and reliability, thereby yielding robust and meaningful results in data analysis.

Results

Model Definition

The structural equation model is formulated as a formative model aimed at identifying the patterns and relationships that determine the empowerment of women in cattle farming (Figure 1[1]). Among the assumptions supporting the model, empowerment is considered to be explained by two indicators: 1) the ability to make important decisions

1 This figure and all tables are located in the Appendix at the end of this article (Editor's note).

in general, which represents the broader aspect of empowerment and not specifically empowerment derived from being a cattle farmer (ET); and 2) the position held within the unit (PUESTO), which is directly related to the activity. Additionally, three latent factors were considered: Cattle Farming Empowerment (EG), Personal Empowerment (EP), and Economic Empowerment (EE).

Five indicators were selected for each of these latent factors, resulting in a greater number of arrows pointing toward each construct in the model. Following the rule of ten cases per variable, the minimum required sample size of 50 (5*10) is met. The independent variables are presented in Table 1.

Model Feasibility and Reliability

Convergent Validity of the Model

To assess the model's convergent validity, the results of the redundancy analysis were examined based on the path coefficients. All coefficients exceeded 0.70, which supports the construct and allows us to conclude that convergent validity was achieved (see Table 2).

Model Feasibility and Reliability

To determine the feasibility and reliability of the model, the variance inflation factor (VIF) was calculated. The results are presented in Table 3. It is worth noting that all indicators have values below 5, ruling out the presence of multicollinearity among the variables and highlighting the relevance of the indicators in assessing the empowerment of women livestock farmers.

Bootstrapping Analysis

Table 4 presents the results of the bootstrapping analysis, which show the external weights of the indicators. Upon examining the significance levels, the lowest external loading was 0.608, corresponding to the capacity to accomplish personal goals. However, based on the p-value indicators, the formative indicators are significant at the 10% level, and 11 out of 17 indicators are significant at the 5% level. This underscores the relevance of the indicators in determining the

empowerment of women livestock farmers. Specifically, the indicators with the greatest contribution to the economic variable are savings and decision-making power over their own money. Regarding livestock-related empowerment, the ability to access productive resources and the capacity to hire or dismiss personnel are the most influential factors. Lastly, on a personal level, the absence of violence or fear within the household, particularly in relation to one's partner, is essential.

It is important to highlight that the highest-scoring indicator refers to the position held by the woman within the livestock activity. This indicator shows a direct relationship with overall empowerment, namely, the higher the rank or position, the greater the empowerment exhibited by the woman.

Construct Validity

Table 5 presents the construct validity. The Cronbach's alpha and Composite Reliability coefficients exceed 0.7, indicating the model's internal consistency. Convergent validity is also demonstrated through the Average Variance Extracted (AVE), with values greater than 0.5.

Structural Model Evaluation

The structural model evaluation is presented in Table 6. The adjusted R^2 exceeds the 0.78 threshold, indicating a substantial model fit. The R^2 values for economic empowerment (0.329), personal empowerment (0.694), and livestock-related empowerment (0.345) suggest that personal empowerment has the greatest influence on the overall empowerment of women livestock farmers. Together, the three constructs account for 78% of the variance in overall empowerment. The SRMR fit index is below 0.085, indicating that the model fits the data well. These indicators confirm the explanatory power of the model.

Discussion of Findings

As a theoretical concept, women's empowerment has been consistently revisited over the past few decades. In recent years, however, the concept has increasingly been examined through quantitative methods, particularly as an exploratory tool to identify the various factors that sustain empowerment processes and shed light on the dynamics

that strengthen women's agency (Bain *et al.,* 2020). In this regard, we consider it relevant to propose a formative structural equation model with a dual purpose: on the one hand, to contribute to the visibility of women's participation in cattle ranching, a traditionally male-dominated activity (Núñez, 2017), and on the other, to highlight the significance of women's involvement in key decision-making processes in ranch management. This is not only because empowerment itself hinges on such decision-making capacity as a core component, but also because it can be contrasted with the position held by the woman, which serves as a key element in validating the recognition of her authority.

Given the above, it is particularly significant to understand women's empowerment as a formative and multidimensional process that varies depending on the context and the specific economic activity in which women are engaged. For instance, among women involved in cattle ranching in the southern region of the country, empowerment can be explained by 78% of the variance in three latent variables: personal empowerment, economic empowerment, and livestock-related empowerment.

Personal empowerment accounts for the greatest contribution to overall empowerment. This suggests that when women, through their personal development, acquire the knowledge and skills needed to build strong self-esteem and a firm belief in their ability to achieve their goals, this strengthens their empowerment in other dimensions and, in turn, leads to greater overall empowerment. This finding is consistent with previous research (Bain *et al*., 2020; Dohmwirth & Liu, 2020; Galiè *et al*., 2022), which has highlighted the importance of personal empowerment as the foundation of broader empowerment processes, enabling each woman to recognize her own value by becoming aware of her abilities, rights, and capacities.

In addition, the need for income to sustain women's agency processes is underscored, as it may bring about significant changes in power dynamics within the household. This has been affirmed by Qing, Siyu, and Xiangquan (2024), as well as Contreras and Lutz (2024), who argue that the income women contribute to the household enhances their bargaining power, reduces their vulnerability to violence, and strengthens their position in household decision-making.

The relationship between key indicators for each type of empowerment is particularly noteworthy: saving capacity and decision-

making agency regarding money (economic empowerment); agency reflected in ownership of productive resources and social recognition to make key decisions such as hiring or dismissing staff (cattle farming empowerment). These aspects, in turn, have an impact on personal empowerment, with a life free from violence being essential. This last point is especially relevant, as women's empowerment can generate or exacerbate gender-based violence in patriarchal contexts (Aziz *et al*., 2021; Wei *et al*., 2021). Female empowerment challenges traditional gender norms and may therefore provoke violent reactions from those who perceive it as a threat. A study conducted by the United Nations demonstrated an increase in intimate partner violence against women as they achieved economic independence, with such violence used to reassert male dominance (UN Women, 2020). Similarly, Segato (2016) contends that in patriarchal societies shaped by machismo, the idea persists that male authority must be maintained, and any sign of change must be eliminated through violence.

One of the main limitations of this analysis lies in the exclusion of other dimensions that influence women's empowerment processes, such as the sociocultural sphere and the support networks required in livestock activities, particularly when women enter highly masculinized spaces. According to Inmujeres (2021), solidarity and cooperation among women are essential not only for strengthening the individual capacities of group members, but also for promoting positive social change that benefits communities and supports sustainable development. Previous studies have highlighted the need for learning processes that support the socialization of power and the recognition of women's roles as ranchers. Galiè *et al.* (2022) emphasize the importance of community recognition, as it generates support that directly affects access to resources for livestock activities.

The complementary utility of the model is also worth highlighting. It serves as a useful tool for approaching the processes of women's empowerment and offers a means to identify specific aspects of ranchers' participation in important decision-making. These aspects may be explored in greater depth through the use of qualitative methodologies.

Conclusions

This study presents a formative structural equation model designed to analyze the empowerment of women cattle farmers, based on three main dimensions: personal, economic, and livestock-related empowerment. The results indicate that personal empowerment is the most influential factor, suggesting that self-esteem, confidence in one's abilities, and the absence of domestic violence are key determinants in strengthening women's autonomy in other areas. The model demonstrates validity and reliability through various statistical tests (path coefficients, VIF, bootstrapping, Cronbach's alpha, and AVE). Moreover, the structural fit indicates that the model accounts for 78% of the total empowerment of women cattle farmers. The analysis statistically confirmed five key variables influencing each type of empowerment. The most relevant were saving capacity and decision-making power over money (economic empowerment); access to productive resources and the ability to hire or dismiss personnel (livestock-related empowerment); and the absence of fear or experiences of violence (personal empowerment).

This multidimensional approach provides a more comprehensive understanding of the empowerment of women in livestock farming, highlighting the interconnection between different aspects of their lives and underscoring the importance of supporting their development across multiple fronts to achieve effective and sustainable empowerment.

One of the most significant findings is that, while empowerment can bring benefits in terms of decision-making and economic autonomy, it may also lead to conflict in patriarchal environments, where increased female independence can trigger gender-based violence as a form of resistance to change. Future research could explore the impact of women's empowerment processes on the potential increase in gender-based violence, as well as identify strategies to disrupt such dynamics. Similarly, once specific contributing factors are identified, they could be further examined using tools that provide a deeper understanding of the dynamics that foster or hinder women's participation and empowerment in male-dominated activities.

Finally, this study acknowledges a limitation in that it does not address other dimensions of empowerment, such as the influence of support networks and the sociocultural context within the livestock farming sector, elements that could further strengthen the process of women's empowerment.

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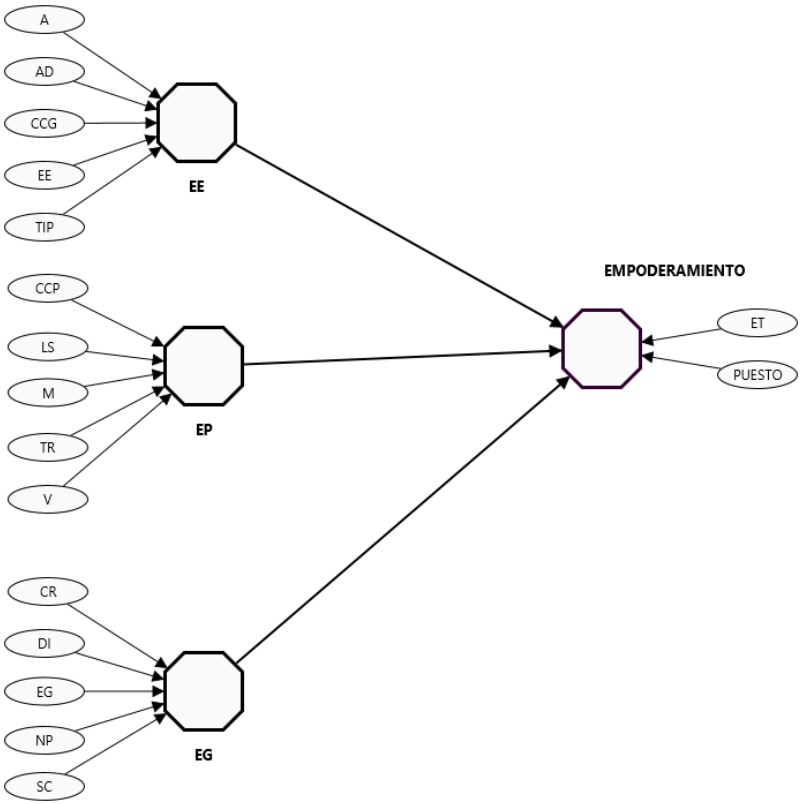
Figure 1

Empowerment Model of Women in Cattle Farming



Source: Compiled by the authors based on Martínez (2020).

Table 1

Independent Variables

Economic Empowerment (EE)	I know how to manage expenses and stretch the budget as much as possible (AD)
	If my partner is absent, I can cover household expenses (CCG)
	I have my own source of income (TIP)
	I can set aside money for savings (A)
	I decide how to spend the money (EE)
Cattle Farming Empowerment (EG)	I have control over the resources I work with (CR)
	I can hire or dismiss workers (SC)
	I can decide how the ranch income will be used (DI)
	I am able to negotiate with other producers (NP)
	Capable of taking appropriate measures in emergencies (EG)
Personal Empowerment (EP)	I have the freedom to go wherever I want, whenever I want (LS)
	I feel capable of achieving what I set out to do (CCP)
	My partner's insults or violence limit my ability to act (V)
	Household chores are shared by the whole family (TR)
	I have felt afraid of my partner at some point (M)

Source: Compiled by the authors based on various sources.

Table 2

Path Coefficients

	Path coefficients
EE -> EMPOWERMENT	0.794
EG -> EMPOWERMENT	0.745
EP-> EMPOWERMENT	0.829

Source: Compiled by the authors based on field data.

Table 3

Variance Inflation Factor (VIF)

Variable	VIF		VIF
A	1.130	LS	1.033
AD	2.261	M	3.187
CCG	3.121	NP	1.555
CCP	1.178	PUESTO	1.313
CR	2.009	SC	1.477
DI	1.405	TIP	2.867
EE	2.118	TR	1.022
EG	1.407	V	3.368
ET	1.313		

Source: Compiled by the authors based on field data.

Table 4

Bootstrapping Results for Indicator Outer Weights in the Model

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/ STDEV|)	P values
A -> EE	0.750	0.748	0.261	1.721	0.005
CCP -> EP	0.608	0.463	0.271	2.241	0.025
SC -> EG	0.645	0.591	0.300	0.817	0.004
CCG -> EE	0.697	0.582	0.216	3.230	0.001
CR -> EG	0.923	0.699	0.204	4.521	0.000
DI -> EG	0.643	0.472	0.295	1.842	0.025
EG -> EG	0.704	0.533	0.238	2.957	0.003
ET -> EMPOWERMENT	0.846	0.720	0.250	4.305	0.001
PUESTO -> EMPOWERMENT	0.941	0.845	0.241	4.520	0.000
EE -> EE	0.907	0.757	0.168	5.404	0.000
LS -> EP	0.641	0.478	0.268	2.389	0.017
M -> EP	-0.932	-0.678	0.252	3.703	0.000
NP -> EG	0.669	0.541	0.350	0.770	0.012
AD -> EE	0.724	0.588	0.223	3.247	0.001
TIP-> EE	0.712	0.650	0.240	1.714	0.007
TR -> EP	0.681	0.566	0.278	1.732	0.003
V -> EP	-0.818	-0.604	0.280	2.924	0.003

Source: Compiled by the authors based on field data.

Table 5

Construct Validity

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
EE	0.755	0.797	0.839	0.520
EG	0.776	0.827	0.861	0.610
ET	0.908	0.864	0.903	0.743
EP	0.876	0.767	0.762	0.587

Source: Compiled by the authors based on field data.

Table 6

Model Evaluation

	R-square	Adjusted R-square
EMPOWERMENT	0.809	0.785
	Saturated model	Estimated model
SRMR	0.056	0.056
d_ULS	1.212	1.212
d_G	0.397	0.397
NFI	0.872	0.872

Source: Compiled by the authors based on field data.

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Note

The acronyms used for the variables (e.g., A, AD, TIP, etc.) correspond to the original labels in Spanish as presented in the source data and tables. These abbreviations have been maintained in their original form to ensure consistency with the original instrument and facilitate cross-reference with the source material.