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Territorial Capital and Farmers' Intention Towards Organic Farming: Evidence from Rural Areas in Paraguay

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Abstract

This study investigates the determinants of farmers' intention to convert to organic farming, focusing on the role of perceived territorial capital in rural Paraguay. Despite increasing demand for sustainable agricultural systems, the adoption of organic farming remains uneven, particularly in developing countries. Existing literature has mainly examined economic, socio-demographic, and psychological factors, while the role of territorial context has received less attention. The analysis relies on primary data collected through a structured survey of 167 conventional farmers across four Paraguayan departments. A logistic regression model is used to evaluate the effect of different dimensions of territorial capital—environmental, institutional, economic, and infrastructural—together with socio-economic and organisational characteristics, on farmers' intention to convert within the next five years. The results indicate that perceived environmental capital significantly increases the probability of conversion intention (AME = 0.097, $p < 0.05$), while social capital, proxied by cooperative membership, raises it by 17.5 percentage points ($p < 0.05$). In contrast, perceived institutional capital shows a negative association (AME = −0.059, $p < 0.10$), and market orientation toward local markets reduces the probability of conversion (AME = −0.314, $p < 0.05$). Economic and infrastructural factors are not statistically significant. Overall, the study contributes by incorporating a territorial perspective into the analysis of adoption intentions and underlines the importance of strengthening environmental resources and social networks to support agro-ecological transitions.

Keywords: organic farming; territorial capital; farmers' intention; rural development; Paraguay

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1. Introduction

The transition toward more sustainable agricultural systems has become increasingly important in recent debates on food production. Growing consumer concern about sustainability has influenced purchasing behaviour, leading consumers to make food choices associated with environmentally responsible production systems [1]. At the same time, agricultural intensification has generated substantial environmental costs. Among the most widely documented consequences are soil degradation, water pollution, biodiversity loss, and risks to human health linked to the extensive use of chemical fertilisers and pesticides [2,3].

In this context, Organic Agriculture (OA) has increasingly been discussed as an alternative to conventional farming systems [4]. More specifically, OA is based on practices intended to preserve ecological balance, including diversified crop rotations, nutrient recycling, and the use of organic fertilisers, while excluding synthetic fertilisers and chemical pesticides [5]. By prioritising ecological processes, soil health, and biodiversity conservation rather than input-intensive production, OA is widely considered a viable pathway toward sustainable agriculture [6]. Consistent with this view, OA has expanded rapidly across the world in recent decades, and certification standards for organic production are currently implemented in more than 120 countries [7].

Beyond its environmental relevance, OA has also been associated with positive impacts on rural development. For example, in many developing countries, agriculture remains a primary source of income and livelihood for rural households, and organic production may offer smallholders the possibility to differentiate their products and access niche markets. Under these conditions, price premiums can compensate for lower yields or higher labour requirements, with potentially positive effects on farm income, food security, and the resilience of rural livelihoods [8].

Despite this growing interest, farmers' adoption of organic farming practices remains uneven and limited across many regions. For this reason, different scholars have examined the variables that can support or limit farmers' adoption of organic farming practices [9,10]. For example, as will be discussed later, previous studies have identified several key determinants of adoption, including economic incentives, policy support, access to information, and the presence of efficient markets [11].

However, recent systematic reviews show that important gaps still exist, especially in understanding how local context is associated with farmers' decisions.

In many studies, these factors are analysed in a general way, without fully considering how they operate in the specific local environment in which farmers live and make decisions [12]. At the same time, recent research highlights that different forms of capital, such as livelihood capital, is associated with farmers' behavioural intentions by influencing their perceptions and decision-making processes [13]. However, these approaches mainly focus on resources at the household level and pay less attention to the broader territorial conditions in which farmers are embedded. To better capture this dimension, recent studies have introduced the concept of territorial capital from a behavioural perspective, showing that people's perceptions of local resources and conditions can influence their beliefs and intentions [14], but this approach has so far been applied mainly to areas such as migration, and its role in explaining farmers' adoption decisions remains largely unexplored.

In this context, the overall objective of this study is to analyse the determinants of farmers' intention to convert to organic farming, with a specific focus on farmers' perceptions of territorial capital and the ways in which these contextual factors are associated with their strategic orientation toward organic production.

To achieve this objective, the study addresses the following research question:

RQ: *How do farmers' perceptions of environmental, institutional, economic, and infrastructural conditions, alongside their socio-economic characteristics, shape their intention to convert to organic farming?*

To address this question, a logistic regression model is estimated using survey data collected from farmers in Paraguay. The dependent variable captures farmers' stated intention to convert to organic farming within the next five years, while the explanatory variables represent different dimensions of territorial capital together with selected socio-economic characteristics. In order to strengthen the robustness of the analysis, alternative model specifications are also estimated, including a probit model, and average marginal effects are calculated to facilitate interpretation of the results.

This study contributes to the literature in three main ways. First, it highlights the importance of local context by introducing perceived territorial capital as a factor associated with farmers' adoption intentions. Second, it complements existing approaches by moving beyond household-level factors and considering the role of territorially embedded conditions. Third, it provides empirical evidence from a developing country context, which remains underrepresented in the literature on organic farming adoption.

The paper is organised as follows. Section 2 reviews the literature on the determinants of organic farming adoption and on perceived territorial capital theory. Section 3 presents the data and methodology. Section 4 reports the empirical results. Section 5 discusses the main findings, and Section 6 concludes by outlining the principal implications of the study.

2. Background

2.1. Determinants of Organic Farming Adoption: A Literature Perspective

Different scholars have analysed the factors affecting farmers' adoption of organic farming, highlighting that adoption is associated with a complex combination of socio-demographic characteristics, farm structural conditions, and institutional or psychological factors [10]. Among individual characteristics, farmers' age has frequently been analysed as a potential determinant of adoption behaviour [15], although the empirical literature reports heterogeneous and sometimes conflicting findings [16,17]. Similarly, farming experience has received considerable attention in the literature as a factor that may be associated with farmers' adoption behaviour [16,18]. Education level is generally analysed as another key factor, as it may facilitate or limit access to information, be associated with farmers' ability to use such information, and increase awareness of environmental issues [10]. Gender has also been examined as a potential determinant, suggesting possible differences in attitudes between male and female farmers [19].

In addition, a number of studies have also examined socio-economic and farm structural factors and their potential association with the adoption of organic farming. Variables such as farm size [20], cost of production [10], and access to markets [11] may play a significant role in shaping farmers' decisions and influencing the transition towards organic farming systems.

Finally, beyond socio-demographic and socio-economic variables, it is important to highlight the role of institutional and informational support mechanisms in facilitating the adoption of organic practices, such as access to training programmes and extension services [10]. However, previous studies have shown that institutional frameworks (e.g., certification systems) may be perceived ambivalently by farmers, as they are essential for ensuring trust and market access, while at the same time imposing significant bureaucratic and administrative burdens [7]. Similarly, participation in farmers' organisations, producer groups, or cooperatives can foster knowledge exchange, collective learning processes, and access to technical and commercial resources. Despite the relevance of these variables, a substantial part of the literature has focused on psychosocial factors influencing farmers' decision-making, which will be discussed in the following section.

2.2. Farmers' Intention to Adopt Organic Farming: Theoretical Background

The literature suggests that behavioural intentions represent a key intermediate stage between attitudes and actual behaviour [21]. For this reason, several studies have investigated farmers' intentions as an antecedent to behavioural change, applying the Theory of Planned Behavior (TPB) to analyse farmers' intention to adopt organic farming. For instance, ref. [9] applied the TPB framework to examine farmers' intentions to adopt organic fresh fruit and vegetable production. In addition, their model includes belief-based constructs such as behavioural beliefs regarding the expected outcomes of adopting organic

production, control beliefs related to factors that may facilitate or hinder adoption, and normative beliefs reflecting perceived social expectations. Similarly, ref. [22] extended the TPB framework by incorporating additional variables such as group-norm influence, perceived risk, comparative usefulness of behaviour, and government policy support to explain farmers' intention to adopt organic rice farming in Thailand. Moreover, ref. [23] integrated the Technology Acceptance Model (TAM) with TPB to analyse farmers' intention to adopt or continue using sustainable agricultural practices. Their model emphasises the role of perceived usefulness, perceived costs, perceived output quality, and internal and external pressures in shaping farmers' attitudes and subsequent behavioural intentions. Similarly, ref. [24] proposed an integrated TAM and TPB framework in which farmers' behavioural intention to adopt organic rice farming is influenced by attitudes, subjective norms, perceived behavioural control, perceived usefulness, perceived ease of use, environmental concern, moral obligation, and perceived risk.

Moreover, some empirical studies have analysed adoption intention using econometric approaches. For instance, ref. [25] investigated farmers' intention to adopt organic rice farming using a logistic regression framework, highlighting the role of farmer and farm characteristics such as age, education, farming experience, farm size, and household labour, as well as market and institutional factors including consumer information, access to training, credit availability, and extension support.

Beyond the TPB framework, several studies have analysed farmers' intention to adopt organic farming using alternative methodological approaches. For instance, ref. [6] developed an agent-based model to simulate the diffusion of organic farming practices, modelling behavioural intention as an intermediate step between attitudes and actual adoption.

Overall, the existing literature suggests that farmers' intentions to adopt organic farming are influenced by a combination of economic considerations, environmental attitudes, perceived risks, and access to information and support networks. However, most studies have primarily focused on individual characteristics, behavioural perceptions, and farm-level conditions, while comparatively less attention has been devoted to the role of territorial contexts in shaping farmers' intentions to adopt organic farming.

2.3. The Role of Territorial Capital: Conceptual Framework

In this context, the concept of territorial capital has emerged as a useful analytical framework for understanding how environmental, institutional, organisational, and socio-cultural assets embedded within a territory influence development processes [26]. According to this approach, innovation and structural change do not depend solely on the characteristics of individual firms or farms, but also on the opportunities and constraints generated by the territorial environment in which they operate [27]. Within rural areas, these territorial resources may significantly influence farmers' strategic decisions regarding production systems and the adoption of innovations.

Despite the growing relevance of territorial approaches in the rural development and agricultural innovation literature, relatively limited empirical research has examined how different dimensions of territorial capital influence farmers' willingness to engage in agro-ecological transitions, such as the conversion to organic farming. For example, ref. [28] analysed the spatiotemporal diffusion of organic farming in France, showing that adoption patterns are shaped by economic factors, social networks, and local collective capacities, but without explicitly addressing farmers' behavioural intentions. Conversely, ref. [14] examined territorial capital within a behavioural framework, analysing its influence on rural out-migration intentions using a TPB approach, yet without considering agricultural decision-making. Building on this literature, the present study adopts a perception-based approach to bridge the territorial and behavioural perspectives. While territorial capital is

typically conceptualised at the macro level, its influence on behaviour operates through individuals' perceptions of local conditions. Farmers respond not directly to objective territorial characteristics, but to how they interpret and evaluate the opportunities and constraints associated with their environment [13,14].

Accordingly, territorial capital is operationalised in terms of perceived dimensions. Environmental capital refers to the perceived quality of natural resources; institutional capital captures the effectiveness of local institutions and policy support; economic capital reflects access to markets and economic opportunities; and infrastructural capital relates to the availability of physical infrastructure. Social capital is also included, proxied by farmers' membership in cooperatives or associations, capturing their organisational embeddedness within local networks [29]. This choice is consistent with the literature highlighting cooperatives as organisations closely linked to the generation and diffusion of social capital within local communities [29]. While social capital is a multidimensional concept that also includes trust and informal norms, the present study focuses on its structural and observable dimension.

From a behavioural perspective, these dimensions are expected to influence farmers' intentions by shaping their perception of opportunities and constraints associated with organic conversion. In line with the TPB, territorial capital operates indirectly, affecting intentions through individual perceptions rather than objective conditions alone. Socio-demographic characteristics, such as age, education, and farming experience, are also considered, as they may influence how farmers interpret territorial conditions and form their behavioural intentions.

3. Data and Methodology

3.1. Data Collection and Survey Design

To achieve the aim of this study, Paraguay was selected as the case study. In fact, the National Organic Agriculture Strategy was launched in 2008; however, despite being supported by civil society organisations and international cooperation agencies, it has struggled to obtain strong political backing and has therefore produced more limited outcomes than initially expected. As a consequence, the diffusion of organic farming in Paraguay has largely relied on initiatives promoted by smallholder farmers, often organised into small groups and supported by local NGOs as well as international development programmes [30,31]. From a quantitative perspective, organic agriculture in Paraguay still represents less than 1% of the country's total agricultural area, despite the sector having grown by more than 10% annually over the last decade. This expansion remains considerably slower than the overall development observed across Latin America, where organic farming has increased by approximately 40% during the same period [32]. Therefore, analysing the factors that may be linked with farmers' intention to adopt organic farming is particularly relevant in this context.

Primary data were collected through a structured questionnaire specifically designed for the purposes of this study and administered between April and July 2025. During this period, a total of 167 conventional farmers were interviewed across four Paraguayan departments characterised by the presence of organic farming initiatives: Central, Cordillera, Guairá, and Paraguarí. Overall, these areas account for 297 identified organic farms. The sample consists exclusively of non-organic farmers and includes 16 respondents in the department of Central, 25 in Cordillera, 65 in Guairá, and 61 in Paraguarí.

The sample was selected using a non-probabilistic purposive sampling approach, focusing on farmers located in departments characterised by the presence of organic farming initiatives. Within these areas, respondents were recruited based on their availability and accessibility through local organisations and field networks.

The questionnaire was organised into two main parts. The first section focused on the assessment of territorial capital and included items measuring different dimensions of local resources, namely economic, infrastructure, environmental, institutional, and cognitive components. These items were derived from the validated scale developed by [14] and were measured using seven-point Likert scales. Given that territorial capital refers to general perceptions of local conditions rather than context-specific behaviours, the original item structure and wording were retained to ensure conceptual consistency with the validated instrument. Respondents were asked to indicate their level of agreement with a series of statements ranging from 1 ("strongly disagree") to 7 ("strongly agree"). For questions related to perceived barriers, the same scale ranged from 1 ("not at all a barrier") to 7 ("a major barrier").

The second section collected information on the socio-economic and structural characteristics of the respondents' farms, including farm size, market orientation, years of farming experience, and management practices. In addition, a specific item was included to capture farmers' intention to convert to organic farming within the following five years. This variable is conceptually distinct from the perception-based measures and is used as the dependent variable in the empirical analysis. Prior to the main data collection, a pilot survey was conducted to test and refine the questionnaire wording.

3.2. Econometric Analysis

To investigate the factors associated with farmers' intention to convert to organic farming, a binary logistic regression model is employed. Logistic regression is appropriate in this context because the dependent variable represents a dichotomous outcome indicating whether the farmer intends to convert to organic production within the next five years [33].

The dependent variable Y_i takes the value 1 if the farmer declares an intention to convert to organic farming and 0 otherwise. The model estimates the probability that farmer i expresses conversion intention as a function of territorial capital dimensions and selected socio-economic characteristics.

The logistic model can be written as:

$$logit(P_i) = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + ... + \beta_k X_{ki}$$

where P_i represents the probability that farmer i intends to convert to organic farming, X_{ki} are the explanatory variables included in the model, β_0 is the intercept, and β_k are the estimated coefficients associated with each explanatory variable.

The explanatory variables capture different dimensions of territorial capital as perceived by farmers, including environmental capital, institutional capital, economic barriers, and infrastructural capital. Composite indices for each territorial capital dimension were constructed by averaging the corresponding Likert-scale items associated with each construct. This approach allows the aggregation of individual survey items into a single indicator representing farmers' overall perception of environmental, institutional, economic, and infrastructure territorial conditions. In addition, organisational and individual characteristics are included, such as cooperative membership, market orientation, education level, gender, age, farming experience, and farm size. Table 1 summarises the variables included in the analysis and provides a description of their measurement.

Robust standard errors are used to account for potential heteroskedasticity. To facilitate interpretation of the results, average marginal effects (AMEs) are calculated after model estimation. As an additional robustness check, a probit model is also estimated to verify that the results are not driven by the specific choice of the link function.

Table 1. Variable Description.

Variable	Description	Measurement
Conversion intention	Farmer's intention to convert to organic farming within the next five years	Dummy variable (1 = intends to convert; 0 = otherwise)
Perceived environmental capital	Measured using agreement items capturing perceived environmental conditions, including safety of the living environment, quality of the local climate, and absence of environmental pollution	Composite index based on Likert-scale items (1–7)
Perceived institutional capital	Measured using agreement items capturing perceived opportunities for participation in local governance, including involvement in development processes, participation in associations, and decision-making	Composite index based on Likert-scale items (1–7)
Perceived economic capital	Measured using barrier-based items capturing perceived economic constraints, including economic activity, access to water, electricity, and financing	Composite index based on Likert-scale items (1–7)
Perceived infrastructure capital	Measured using barrier-based items capturing perceived infrastructural constraints, including internet access, educational infrastructure, health services, and mobility	Composite index based on Likert-scale items (1–7)
Social capital	Farmer's membership in a cooperative or farmers' association	Dummy variable (1 = member; 0 = otherwise)
Market orientation	Farmer primarily sells products in local markets	Dummy variable (1 = local markets; 0 = other markets)
Education	Farmer's level of formal education	Ordinal variable
Gender	Gender of the farmer	Dummy variable (1 = male; 0 = female)
Age	Age of the farmer	Continuous (Years)
Farming experience	Number of years of experience in agricultural activity	Continuous (Years)
Farm size	Total agricultural area of the farm	Continuous (Hectares)

Note: Social capital is measured through cooperative/association membership as a simplified proxy of farmers' organisational embeddedness.

3.3. Data Analysis

Data were analysed using Stata 15 statistical software. Composite indices were constructed by aggregating Likert-scale items through mean values in order to capture the different dimensions of perceived territorial capital. The internal consistency of the indices was assessed using Cronbach's alpha.

The questionnaire was originally developed in English and subsequently translated into Spanish and Guaraní. Because some technical terms had no direct equivalent in the local language, the presence of interviewers was necessary to ensure that questions were clearly understood.

4. Results

Table 2 reports the descriptive statistics of the sample and provides an overview of the socio-demographic and structural characteristics of the surveyed farmers.

Table 2. Descriptive statistics of the sample.

Variable	Obs	Mean/n	Std. Dev./%	Min	Max
Continuous variables					
Age (years)	167	49.28	14.78	19	80
Years of experience in agriculture	167	30.83	16.20	2	65
Farm size (ha)	167	2.33	2.99	0.1	21
Binary variables					
Male	167	100	59.88	0	1
Intention to adopt organic farming within 5 years	167	106	63.47	0	1
Domestic sales	167	152	91.02	0	1
Regional sales	167	27	16.17	0	1
Education level					
No formal education	167	16	9.58	0	1
Primary school	167	89	53.29	0	1
Secondary school diploma	167	48	28.74	0	1
Technical certification	167	1	0.60	0	1
Bachelor's degree or higher	167	13	7.78	0	1
Farm management role					
Both worked and managed their farms	167	160	95.81	0	1
Worked only	167	7	4.19	0	1
Geographic distribution of the sample					
Department: Central	167	16	9.52	0	1
Department: Cordillera	167	25	14.88	0	1
Department: Guairá	167	65	39.29	0	1
Department: Paraguarí	167	61	36.31	0	1

As shown in Table 2, farmers in the sample are on average approximately 49 years old and have more than 30 years of experience in agricultural activities. In addition, the average farm size is slightly above one hectare, highlighting the predominance of smallholder farming systems in the surveyed areas. Considering the socio-demographic characteristics, about 60% of the respondents are male. In terms of educational attainment, the majority of farmers have completed primary education, while smaller shares report secondary education or higher levels of formal training. Furthermore, approximately 63% of the surveyed farmers declare an intention to convert to organic farming within the next five years. From a farm management perspective, most respondents report that they both work on and manage their farms directly. With regard to market orientation, the majority of farmers primarily sell their products in domestic markets, while a smaller proportion report sales at the regional level. Finally, the geographic distribution of the sample indicates that the surveyed farms are located across four Paraguayan departments: Central, Cordillera, Guairá, and Paraguarí. Guairá accounts for the largest share of observations, followed by Paraguarí, Cordillera, and Central.

After presenting the socio-demographic descriptive analysis, the internal consistency of the variables was assessed using Cronbach's alpha. The results show satisfactory reliability levels for all constructs, with values ranging from 0.67 to 0.93, indicating acceptable to excellent internal consistency (Table 3).

Table 3. Reliability of composite indices (Cronbach's alpha).

Construct	Cronbach's α
Perceived environmental capital	0.9266
Perceived institutional capital	0.8069
Perceived economic capital	0.7478
Perceived infrastructure capital	0.6720

The overall model is statistically significant (Wald $\chi^2 = 20.67$; $p = 0.0370$), indicating that the explanatory variables jointly contribute to explaining variation in conversion intention. The pseudo R^2 (0.1306) suggests a moderate explanatory power, which is consistent with empirical models investigating strategic or behavioural intentions in agricultural contexts. Given the exploratory nature of the analysis and the complexity of the phenomenon under investigation, variables significant at the 10% level are also discussed as providing suggestive evidence (Table 4).

Table 4. Logistic regression estimates of farmers' intention to convert to organic farming.

Variable	Coefficient
Social capital	0.900 **
	(0.405)
Perceived environmental capital	0.500 **
	(0.218)
Perceived institutional capital	−0.304 *
	(0.161)
Perceived economic capital	−0.269
	(0.331)
Perceived infrastructure capital	−0.003
	(0.284)
Education	0.221
	(0.222)
Age	0.050 **
	(0.023)
Gender	−0.932 **
	(0.393)
Farming experience	−0.041 **
	(0.021)
Farm size	0.072
	(0.101)
Market orientation	−1.619 *
	(0.843)
Constant	0.612
	(2.038)

Notes: Robust standard errors in parentheses. Dependent variable: intention to convert to organic farming (1 = yes; 0 = no). ** $p < 0.05$, * $p < 0.10$.

Among the territorial capital components, perceived environmental capital emerges as the most robust predictor of conversion intention. The coefficient is positive and statistically significant ($\beta = 0.50$; $p = 0.022$), indicating that farmers operating in territories perceived as environmentally endowed are more likely to express an intention to adopt organic practices. Importantly, this variable captures perceived environmental quality rather than objective conditions. The result, therefore, suggests that organic conversion is embedded in a subjective assessment of territorial ecological coherence: where farmers perceive their local environment as environmentally suitable, organic farming may appear as a consistent and viable strategic repositioning. This result is particularly relevant in the Paraguayan context, where smallholder farmers are strongly dependent on local natural resources and are directly exposed to environmental degradation linked to conventional agricultural practices. In such settings, perceptions of environmental quality may play a crucial role in shaping farmers' strategic orientations, as organic farming can be seen as more consistent with the preservation of local ecosystems and long-term resource sustainability.

Perceived institutional capital shows a negative coefficient ($\beta = -0.304$) that is significant at the 10% level ($p = 0.060$). Although only marginally significant, this result suggests that stronger perceived institutional embeddedness does not necessarily enhance

conversion intention and may even reflect institutional settings that remain more aligned with conventional production systems. In this sense, institutional proximity does not automatically translate into support for agro-ecological transition. This result can be interpreted in light of the Paraguayan institutional context, where public support for organic agriculture remains relatively weak and policy frameworks have historically been more oriented toward conventional production systems. As a result, greater perceived institutional embeddedness may reflect closer integration within existing agricultural structures that do not actively promote agro-ecological transition.

By contrast, the dimensions conceptualised as perceived economic capital and infrastructure capital do not display statistically significant effects. One possible explanation is that, in the Paraguayan context, organic farming is not primarily driven by economic incentives, as the market for certified organic products remains relatively underdeveloped and price premiums are not consistently perceived by farmers [32]. In addition, infrastructural conditions tend to be relatively homogeneous across smallholder farms, and therefore may not represent a differentiating factor in farmers' strategic decisions. As a result, rather than being primarily deterred by perceived barriers, farmers' orientation toward organic farming appears to be more closely associated with enabling contextual factors, particularly environmental endowment.

Organisational embeddedness used as a proxy of Social Capital also plays a relevant role. Membership in a cooperative has a positive and significant effect ($\beta = 0.900$; $p = 0.027$), suggesting that farmers integrated into collective organisational structures are more likely to consider conversion. This finding supports the interpretation of organic transition as a socially embedded process, where information flows, risk-sharing mechanisms, and collective strategies reduce uncertainty associated with structural change.

With regard to socio-demographic characteristics, age is positively associated with conversion intention ($\beta = 0.050$; $p = 0.031$), while years of agricultural experience display a negative and significant coefficient ($\beta = -0.041$; $p = 0.048$). These two variables, although related, seem to capture different dynamics. Age may be associated with greater strategic autonomy or long-term planning horizons, whereas prolonged experience within conventional production systems may generate path dependency effects that reduce openness to structural transformation. Gender also appears to matter: the negative and significant coefficient for the male variable ($\beta = -0.932$; $p = 0.018$) suggests that female farmers exhibit a higher probability of expressing conversion intention, ceteris paribus. Finally, market orientation presents a negative coefficient that is significant at the 10% level ($\beta = -1.619$). However, this result should be interpreted with caution due to the highly unbalanced distribution of the market orientation variable, as the large majority of farmers in the sample sell primarily in local markets. Additional specifications using more disaggregated market categories were explored, but results were less stable due to the limited number of observations in each group.

Within these limitations, the result suggests that farmers primarily oriented toward local markets may be less likely to consider organic conversion. Local embeddedness, therefore, does not automatically imply agro-ecological transition, and organic conversion may require additional strategic or organisational conditions beyond mere geographical proximity to markets. An alternative interpretation is that farmers engaged in broader (non-local) market channels may face more favourable conditions for organic conversion, although this cannot be conclusively established from the data.

The VIF values, reported in Table 5, indicate no problematic multicollinearity.

Table 5. VIF diagnostics.

Variable	*VIF*	*1/VIF*
Farming experience	4.46	0.22
Age	4.43	0.23
Perceived environmental capital	1.75	0.57
Perceived economic capital	1.65	0.61
Perceived infrastructure capital	1.50	0.67
Education	1.38	0.72
Perceived institutional capital	1.35	0.74
Farm size	1.14	0.88
Market orientation	1.13	0.89
Gender	1.10	0.91
Social capital	1.09	0.92
	Mean VIF = 1.91	

The mean VIF is 1.91 and all individual VIFs are well below conventional thresholds (5). The slightly higher values observed for age and farming experience reflect their natural correlation.

Alternative specifications excluding either age or farming experience were estimated to account for this relationship (Table 6).

Table 6. Robustness analysis of the determinants of farmers' intention to convert to organic farming.

Variable	Model (1)	Model (2)
Social capital	0.849 **	0.830 **
	(0.395)	(0.395)
Perceived environmental capital	0.475 **	0.524 **
	(0.211)	(0.216)
Perceived institutional capital	−0.313 *	−0.299 *
	(0.160)	(0.163)
Perceived economic capital	−0.381	−0.313
	(0.324)	(0.327)
Perceived infrastructure capital	0.138	0.066
	(0.271)	(0.277)
Education	0.179	0.093
	(0.209)	(0.204)
Age	0.014	—
	(0.014)	
Gender	−0.930 **	−0.906 **
	(0.384)	(0.380)
Farming experience	—	−0.003
		(0.013)
Farm size	0.063	0.076
	(0.092)	(0.093)
Market orientation	−1.465 *	−1.356
	(0.850)	(0.851)
Constant	1.126	1.535
	(1.956)	(1.912)

Notes: Robust standard errors in parentheses. Dependent variable: intention to convert to organic farming (1 = yes; 0 = no). ** $p < 0.05$, * $p < 0.10$. Model (1) excludes farming experience to account for its correlation with age. Model (2) excludes age to test the stability of the estimates.

Age and farming experience are strongly correlated ($\rho = 0.85$), reflecting closely related life-cycle and professional trajectory dynamics. Although VIF values do not indicate severe multicollinearity, this high correlation may affect the stability and interpretation of individual coefficients. In particular, age and experience may also be indirectly related to farmers' market orientation, as farmers with longer farming trajectories may have more established commercial channels and selling routines. As a result, changes in model

specification may reallocate part of the shared explanatory variance across these variables, affecting the statistical significance of market orientation without substantially altering the overall interpretation of the results.

Overall, the key results remain stable across models, confirming the robustness of environmental capital, cooperative membership, and gender effects.

Results are robust to alternative link specifications; in fact, the probit model confirms the magnitude and direction of the main associations, strengthening the validity of the findings (Table 7).

Table 7. Robustness check using probit regression.

Variable	Coefficient
Social capital	0.540 **
	(0.237)
Perceived environmental capital	0.285 **
	(0.126)
Perceived institutional capital	−0.179 **
	(0.090)
Perceived economic capital	−0.135
	(0.190)
Perceived infrastructure capital	−0.019
	(0.162)
Education	0.123
	(0.134)
Age	0.031 **
	(0.014)
Gender	−0.550 **
	(0.229)
Farming experience	−0.025 **
	(0.012)
Farm size	0.034
	(0.048)
Market orientation	−0.922 **
	(0.428)
Constant	0.315
	(1.201)

Notes: Robust standard errors in parentheses. Dependent variable: intention to convert to organic farming (1 = yes; 0 = no). ** $p < 0.05$.

To facilitate substantive interpretation, average marginal effects (AMEs) were computed and are reported in Table 8 together with their 95% confidence intervals, providing a more comprehensive assessment of estimate precision and the uncertainty associated with the results.

Table 8. AME from the logistic regression model.

Variable	Marginal Effect	Std. Err.	95% Confidence Interval
Social capital	0.175 **	(0.074)	[0.029; 0.320]
Perceived environmental capital	0.097 **	(0.039)	[0.021; 0.172]
Perceived institutional capital	−0.059 **	(0.030)	[−0.118; −0.001]
Perceived economic capital	−0.052	(0.063)	[−0.176; 0.071]
Perceived infrastructure capital	−0.001	(0.055)	[−0.109; 0.107]
Education	0.043	(0.042)	[−0.040; 0.126]
Age	0.010 **	(0.004)	[0.001; 0.018]
Gender	−0.181 **	(0.071)	[−0.320; −0.042]
Farming experience	−0.008 **	(0.004)	[−0.016; −0.0003]
Farm size	0.014	(0.019)	[−0.024; 0.052]
Market orientation	−0.315 **	(0.157)	[−0.622; −0.007]

Notes: Robust standard errors in parentheses. Dependent variable: intention to convert to organic farming (1 = yes; 0 = no). ** $p < 0.05$.

The results indicate that territorial and organisational dimensions exert economically meaningful effects on conversion intention.

Membership in a cooperative increases the probability of intending to convert to organic farming by approximately 17.5 percentage points, holding other factors constant. This suggests that organisational embeddedness substantially reduces uncertainty and enhances the feasibility of strategic transition. Similarly, perceived environmental capital exhibits a positive and statistically significant marginal effect: a one-unit increase in environmental capital perception is associated with a 9.7 percentage point increase in the probability of expressing conversion intention. This confirms that the perceived ecological endowment of the territory functions as an enabling condition for agro-ecological transition.

Institutional capital displays a negative marginal effect of approximately 5.9 percentage points. Although modest in magnitude, this result suggests that stronger perceived institutional embeddedness does not necessarily foster conversion and may reflect institutional configurations more aligned with conventional production models. However, this effect should be interpreted with caution, as the confidence interval is close to zero, indicating a degree of uncertainty around the estimate.

Market orientation also plays a substantial role. Farmers primarily oriented toward local markets exhibit a 31.4 percentage point lower probability of intending to convert, indicating that local embeddedness alone does not automatically translate into organic strategic positioning. Gender differences are pronounced: male farmers show an 18.1 percentage point lower probability of expressing conversion intention, ceteris paribus.

Among life-cycle variables, age increases conversion intention by approximately 1 percentage point per additional year, whereas accumulated agricultural experience reduces it by about 0.8 percentage points per year.

To further assess the predictive performance of the model, a Receiver Operating Characteristic (ROC) analysis was conducted (Table 9).

Table 9. ROC analysis of the logistic regression model.

Statistic	Value
Number of observations	167
Area under ROC curve (AUC)	0.741

The estimated area under the ROC curve (AUC) is 0.741, indicating satisfactory discriminative capacity. An AUC above 0.70 is generally considered acceptable in behavioural models, suggesting that the specification is capable of correctly distinguishing between farmers who express an intention to convert and those who do not. While the model is not designed as a purely predictive tool, this result confirms that the selected territorial and organisational variables provide meaningful explanatory power.

5. Discussion

5.1. Determinants of Organic Farming Adoption

The results of the econometric analysis provide several insights into the determinants of farmers' intention to convert to organic farming, highlighting the combined role of organisational, territorial, and individual characteristics in shaping farmers' stated conversion intentions. More specifically, farmers' membership in cooperatives, used as a proxy for the level of social capital, emerges as an important determinant of conversion intention. The coefficient is positive and statistically significant, suggesting that farmers embedded in collective organisational structures have a higher likelihood of expressing an intention to convert. This finding supports the interpretation of the intention to adopt organic farming

as a socially embedded process in which collective organisations facilitate access to information, technical support, and market opportunities [10]. In this sense, participation in cooperative networks may reduce the uncertainty associated with innovation adoption and promote knowledge exchange among producers [34].

Considering farmers' socio-demographic characteristics, age shows a positive and statistically significant effect on conversion intention, suggesting that older farmers are more likely to express an intention to adopt organic farming. In this study, age is positively associated with innovation adoption, suggesting that older farmers may be more inclined to consider strategic changes.

While younger farmers are often considered more open to new practices, older farmers may possess greater managerial autonomy and accumulated experience that allow them to consider strategic changes in farm management [15–17].

In addition, the negative coefficient associated with the male variable indicates that female farmers have a higher probability of expressing conversion intention in Paraguay. This result is consistent with previous studies suggesting that women farmers may exhibit stronger environmental concerns or greater openness toward sustainable agricultural practices [19]. Moreover, farming experience shows a negative and statistically significant coefficient, indicating that farmers with longer experience in conventional agriculture may be less inclined to consider conversion to organic production. Such a pattern may reflect path dependency effects, whereby long-term engagement in conventional farming practices reinforces existing production strategies and reduces openness to structural change. Similar dynamics have been highlighted in studies on the diffusion of agricultural innovations, which emphasise that accumulated experience within established production systems may slow down the adoption of alternative practices [18].

Finally, the results show a negative coefficient for market orientation that is significant at the 10% level. Farmers who mainly sell in local markets appear less likely to consider converting to organic farming. Although this result should be interpreted with caution, it suggests that participation in local markets does not automatically lead to the adoption of agro-ecological practices. Farmers may be well integrated into local markets while continuing to use conventional production methods. Market access may support organic production only when specific demand conditions or price premiums for organic products are present [11]. In this respect, in the Latin American context, organic production is often strongly linked to export markets, particularly towards Europe and North America, where certification systems represent a key requirement for market access [7].

5.2. Farmers' Intention to Adopt Organic Farming

The results indicate that farmers' intention to convert to organic farming is less driven by perceived economic or infrastructural conditions and more strongly associated with environmental territorial endowment and organisational embeddedness. The differentiated behaviour of territorial capital dimensions suggests that not all components operate uniformly in shaping strategic agricultural change. Environmental conditions appear to function as enabling opportunity structures, whereas institutional and market configurations may either be neutral or, in some cases, reflect inertia within existing production systems.

These findings contribute to a territorial interpretation of organic transition that highlights the importance of contextual embeddedness rather than purely individual or economic determinants. The results suggest that farmers' conversion intentions are linked not only to individual characteristics but also to how farmers perceive the territorial context in which they operate. In particular, social capital and perceived environmental territorial capital emerge as important enabling factors for farmers to consider a transition towards organic farming.

5.3. The Role of Territorial Capital

With regard to the dimensions of perceived territorial capital, perceived environmental capital appears to be the most robust predictor of conversion intention. This suggests that when farmers perceive their territory as environmentally favourable, they may see organic farming as more compatible with local environmental conditions. In this sense, environmental territorial resources may support agricultural innovation by shaping the opportunities available to farmers within a given territorial context.

By contrast, perceived institutional capital shows a negative coefficient that is significant at the 10% level. Although the effect is relatively modest, this result suggests that higher perceived opportunities for civic participation and involvement in local associations and decision-making processes are not necessarily associated with a stronger intention to adopt organic farming. One possible explanation is that local participatory and institutional environments may not be specifically oriented toward promoting agro-ecological practices. Alternatively, opportunities for civic participation may relate primarily to broader social or territorial issues and may therefore have a limited influence on farmers' production strategies and their intention to convert to organic farming. This result can be interpreted in light of both the national and broader regional institutional context. In Paraguay, the National Organic Agriculture Strategy, introduced in 2008, has struggled to obtain strong political support and has therefore produced limited outcomes. In this setting, institutional frameworks may still be perceived as weak or insufficiently aligned with organic farming, which may explain the limited or even negative role of institutional capital in shaping farmers' intentions. More broadly, this finding is consistent with the Latin American context, where sustainable agricultural practices often receive limited policy support and remain structurally marginal compared to conventional agri-business models [35].

The other variables capturing perceived territorial barriers do not show statistically significant effects. This indicates that perceived economic or infrastructural conditions at the territorial level do not represent decisive barriers for farmers' stated intention to convert to organic farming in the analysed sample. Similarly, the lack of significance of economic capital may reflect the limited effectiveness of policy support mechanisms and the underdevelopment of organic market incentives in Paraguay, which reduces the perceived economic attractiveness of conversion. This result points to a more limited role of economic conditions and production costs in shaping organic adoption within the analysed context.

6. Concluding Remarks

From a theoretical standpoint, this study contributes to the literature on organic farming adoption and behavioural intention by integrating individual farm characteristics with the perceived territorial context in which farmers operate. While previous studies have mainly focused on socio-demographic characteristics, economic incentives, or individual perceptions associated with adoption decisions, the present study provides a more integrated perspective that explicitly connects territorial context, perception, and behavioural intention.

These theoretical insights also translate into relevant practical and policy implications. First, the results suggest that policies aimed at promoting organic farming should not rely exclusively on economic incentives, but should also strengthen the relational and informational frameworks that support farmers' decision-making processes. In the Paraguayan context, this could include targeted support for farmer cooperatives and producer associations through training programmes, extension services, and platforms for knowledge exchange, aimed at reducing uncertainty and facilitating collective learning.

Second, given the importance of perceived environmental conditions, policy interventions could focus on improving the management and conservation of natural resources at

the local level. This may involve supporting agroecological practices, promoting soil conservation programmes, and providing technical assistance tailored to smallholder farming systems, which play a central role in rural livelihoods but remain structurally marginal within a broader agricultural system dominated by export-oriented agribusiness [36].

Third, the limited role of economic and infrastructural factors suggests that perceived economic conditions alone may not be sufficient to explain farmers' intentions.

Instead, more integrated policy strategies may be required, such as facilitating access to certified organic markets, improving value chain coordination, and supporting local certification schemes that reduce entry barriers for small-scale farmers.

Finally, differentiated policy approaches should be considered to reflect the heterogeneity of farmers and territories. For instance, policies could be tailored to specific regional conditions by taking into account differences in environmental endowment, institutional support, and market access across Paraguayan departments.

However, this study has some limitations. The analysis focuses on farmers' stated intentions rather than on their actual adoption behaviour. Although behavioural intentions are widely recognised as an important predictor of future actions, as with all studies based on stated rather than revealed preferences and intentions, a gap may exist between respondents' declared intentions and their actual behaviour. Therefore, it remains uncertain whether the factors identified in this study will effectively translate into the real adoption of organic farming practices. Future research could therefore examine whether these determinants influence the actual transition from conventional to organic farming systems.

Another limitation concerns the nature of the data. The analysis relies on cross-sectional survey data collected at a single point in time, which does not allow the evolution of farmers' attitudes and decisions to be observed over time. Future studies could address this issue by using longitudinal data in order to analyse how farmers' intentions change and whether they eventually translate into concrete adoption decisions.

Finally, this study focuses on a single national context, which provides a relevant empirical setting to explore how territorial conditions shape farmers' decisions regarding the adoption of organic farming. In addition, the use of a non-probabilistic sampling strategy and the relatively small and uneven distribution of observations across departments may limit the representativeness of the findings. Future research could address this issue by adopting larger and more balanced samples and by comparing sample characteristics with population-level data. However, the characteristics of Paraguay, such as the central role of agriculture, infrastructural constraints, and the interplay of institutional and environmental factors, are shared by many countries in Latin America and other developing regions. In this respect, the findings offer insights that extend beyond the specific case analysed. Building on this perspective, future research could further advance this line of analysis by employing longitudinal or panel data to track the evolution of farmers' decisions over time, by adopting quasi-experimental designs to better identify causal relationships, and by conducting comparative studies across Latin American countries to assess the role of territorial conditions under different institutional settings.

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Abbreviations

The following abbreviations are used in this manuscript:

OA	Organic Agriculture
TPB	Theory of Planned Behaviour
AMES	Average Marginal Effects

References

1. Appolloni, A.; Chakraborty, D. Addressing the Drivers and Concerns Towards Agri-Food Strategy: Prioritizing Environmental Management Business Models. *Bus. Strategy Environ.* **2025**, *34*, 7161–7179. [CrossRef]
2. Nasirahmadi, A.; Hensel, O. Toward the Next Generation of Digitalization in Agriculture Based on Digital Twin Paradigm. *Sensors* **2022**, *22*, 498. [CrossRef]
3. Pereira, P.; Inacio, M.; Barcelo, D.; Zhao, W. Impacts of Agriculture Intensification on Biodiversity Loss, Climate Change and Ecosystem Services. *Curr. Opin. Environ. Sci. Health* **2025**, *46*, 100637. [CrossRef]
4. Burtscher-Schaden, H.; Durstberger, T.; Zaller, J.G. Toxicological Comparison of Pesticide Active Substances Approved for Conventional vs. Organic Agriculture in Europe. *Toxics* **2022**, *10*, 753. [CrossRef]
5. Meemken, E.; Qaim, M. Organic Agriculture, Food Security, and the Environment. *Annu. Rev. Resour. Econ.* **2018**, *10*, 39–63. [CrossRef]
6. Kaufmann, P.; Stagl, S.; Franks, D.W. Simulating the Diffusion of Organic Farming Practices in Two New EU Member States. *Ecol. Econ.* **2009**, *68*, 2580–2593. [CrossRef]
7. Albersmeier, F.; Schulze, H.; Spiller, A. Evaluation and Reliability of the Organic Certification System: Perceptions by Farmers in Latin America. *Sustain. Dev.* **2009**, *17*, 311–324. [CrossRef]
8. Fernández-Portillo, L.A.; Yazdani, M.; Estepa-Mohedano, L.; Sisto, R. Prioritisation of Strategies for the Adoption of Organic Agriculture Using BWM and Fuzzy CoCoSo. *Soft Comput.* **2023**, 1–32. [CrossRef]
9. Issa, I.; Hamm, U. Adoption of Organic Farming as an Opportunity for Syrian Farmers of Fresh Fruit and Vegetables: An Application of the Theory of Planned Behaviour and Structural Equation Modelling. *Sustainability* **2017**, *9*, 2024. [CrossRef]
10. Sapbamrer, R.; Thammachai, A. A Systematic Review of Factors Influencing Farmers' Adoption of Organic Farming. *Sustainability* **2021**, *13*, 3842. [CrossRef]
11. Ume, C. The Role of Improved Market Access for Small-Scale Organic Farming Transition: Implications for Food Security. *J. Clean. Prod.* **2023**, *387*, 135889. [CrossRef]
12. Möhring, N.; Muller, A.; Schaub, S. Farmers' Adoption of Organic Agriculture—A Systematic Global Literature Review. *Eur. Rev. Agric. Econ.* **2025**, *51*, 1012–1044. [CrossRef]
13. Zhang, T.; Li, J.; Wang, Y. Effects of Livelihood Capital on the Farmers' Behavioral Intention of Rural Residential Land Development Right Transfer: Evidence from Wujin District, Changzhou City, China. *Land* **2023**, *12*, 1207. [CrossRef]
14. Dufeu, I.; Pernin, J.L.; Djamen, R.; Lecointre-Erickson, D. Territorial Capital and Place Attachment: A Psychological Approach of Rural Out-Migration. *J. Rural Stud.* **2024**, *107*, 103216. [CrossRef]
15. Roussy, C.; Ridier, A.; Chaib, K. Farmers' Innovation Adoption Behaviour: Role of Perceptions and Preferences. *Int. J. Agric. Resour. Gov. Ecol.* **2017**, *13*, 138–161. [CrossRef]
16. Liu, X.; Pattanaik, N.; Nelson, M.; Ibrahim, M. The Choice to Go Organic: Evidence from Small US Farms. *Agric. Sci.* **2019**, *10*, 1566–1580. [CrossRef]
17. Tsai, M.; Chang, Y.; Yang, T.; Luh, Y. Factors Determining Rice Farm Households' Adoption of Organic Farming in Taiwan. *Agronomy* **2021**, *11*, 2195. [CrossRef]
18. Olum, S.; Gellynck, X.; Juvinal, J.; Ongeng, D.; De Steur, H. Farmers' Adoption of Agricultural Innovations: A Systematic Review on Willingness to Pay Studies. *Outlook Agric.* **2020**, *49*, 187–203. [CrossRef]
19. Najafabadi, M.O. A Gender Sensitive Analysis Towards Organic Agriculture: A Structural Equation Modeling Approach. *J. Agric. Environ. Ethics* **2014**, *27*, 225–240. [CrossRef]

20. Prashanth, P.; Reddy, M.J.M. Factors Influencing the Adoption of Organic Farming by the Farmers of Karimnagar District of Andhra Pradesh. *Int. J. Adv. Biol. Res.* **2012**, *2*, 123–128.
21. Ajzen, I. The Theory of Planned Behavior. *Organ. Behav. Hum. Decis. Process.* **1991**, *50*, 179–211. [CrossRef]
22. Yanakittkul, P.; Aungvaravong, C. A Model of Farmers' Intentions towards Organic Farming: A Case Study on Rice Farming in Thailand. *Heliyon* **2020**, *6*, e03039. [CrossRef] [PubMed]
23. Akyüz, N.C.; Theuvsen, L. The Impact of Behavioral Drivers on Adoption of Sustainable Agricultural Practices: The Case of Organic Farming in Turkey. *Sustainability* **2020**, *12*, 6875. [CrossRef]
24. Sharifuddin, A.; Mohammed, Z.; Terano, R. Paddy Farmer's Perception and Factors Influencing Attitude and Intention on Adoption of Organic Rice Farming. *Int. Food Res. J.* **2018**, *25*, S135–S145.
25. Cavite, H.J.; Kerdsriserm, C.; Llones, C.; Direksri, N. Farmers' Perception of Consumer Information and Adoption Intention towards Organic Rice Farming: Evidence from Community Enterprise in Rural Thailand. *Outlook Agric.* **2023**, *52*, 20–30. [CrossRef]
26. Camagni, R.; Capello, R. Regional Competitiveness and Territorial Capital: A Conceptual Approach and Empirical Evidence from the European Union. *Reg. Stud.* **2013**, *47*, 1383–1402. [CrossRef]
27. Chaminade, C.; Randelli, F. The Role of Territorially Embedded Innovation Ecosystems Accelerating Sustainability Transformations: A Case Study of the Transformation to Organic Wine Production in Tuscany (Italy). *Sustainability* **2020**, *12*, 4621. [CrossRef]
28. Allaire, G.; Poméon, T.; Maigné, E.; Cahuzac, E.; Simioni, M. Territorial Analysis of the Diffusion of Organic Farming in France: Between Heterogeneity and Spatial Dependence. *Ecol. Indic.* **2015**, *59*, 70–81. [CrossRef]
29. Saz-Gil, I.; Bretos, I.; Díaz-Foncea, M. Cooperatives and Social Capital: A Narrative Literature Review and Directions for Future Research. *Sustainability* **2021**, *13*, 534. [CrossRef]
30. Fernández-Portillo, L.A.; Estepa-Mohedano, L.; Demir, G. The Use of Continuous Visual Aid in the Best–Worst Method: An Experiment with Organic Farmers in Paraguay. *Environ. Dev. Sustain.* **2025**, *27*, 18559–18589. [CrossRef]
31. Ministerio de Agricultura y Ganadería (MAG). *Estrategia Nacional Para el Fomento de la Producción Orgánica y Agroecológica en el Paraguay*; MAG: San Lorenzo, Paraguay, 2008.
32. Willer, H.; Trávníček, J.; Meier, C.; Schlatter, B. (Eds.) *The World of Organic Agriculture: Statistics and Emerging Trends 2021*; Research Institute of Organic Agriculture (FiBL) and IFOAM—Organics International: Frick, Switzerland; Bonn, Germany, 2021.
33. Cimino, O.; Giar, F. Periurban Agriculture and Organic Farming: Investigating Synergies and Policy Implications. *Land* **2025**, *14*, 690. [CrossRef]
34. Zhao, L.; Zhang, H.; Wu, W. Cooperative Knowledge Creation in an Uncertain Network Environment Based on a Dynamic Knowledge Supernetwork. *Scientometrics* **2019**, *119*, 657–685. [CrossRef]
35. Soto, C.; Ortiz, A.I.; Meza, M.J.A. Approach to the Imaginaries of Agroecology in Paraguay. *Sustainability* **2022**, *14*, 7354. [CrossRef]
36. Soldi, A.; Meza, M.J.A.; Guareschi, M.; Donati, M.; Ortiz, A.I. Sustainability Assessment of Agricultural Systems in Paraguay: A Comparative Study Using FAO's SAFA Framework. *Sustainability* **2019**, *11*, 3745. [CrossRef]