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Reconstructing the Concept of Sustainability in the Agroverse: The Cultural Dimension as a Structural Foundation

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ABSTRACT

In agribusiness companies, as in other sectors, sustainability includes environmental, economic, and social aspects. However, such a concept of sustainability often does not explain why, in practice, sustainable and beneficial solutions are often not implemented. This article analyzes the cultural aspect, the role of which is very important in implementing sustainable solutions. The aim of the study is to investigate how the cultural element is related to the successful implementation of sustainable solutions. The empirical part analyzes 20 Lithuanian agribusiness companies: 10 successfully applying sustainable solutions and characterized by better economic indicators, and 10 that have difficulty transitioning to sustainable solutions. The groups were selected based on the results; therefore, the study reveals connections but not causal relationships. A generalized cultural index was also compiled. Insights from agribusiness company managers allowed for a better understanding of their approach to sustainable solutions. Theoretical arguments are presented that can prove the importance of the cultural dimension in the concept of sustainability, and the results of the empirical study show that more successful agribusiness companies are characterized by higher indicators of cultural orientation. The insights of managers suggest that in them sustainability is more often perceived as an internal value, while in less successful ones—as an external requirement. The results obtained allow for generalizing or defining conclusions, and they create conditions for considering culture as an important direction for further research, analyzing the implementation of sustainable solutions in agribusiness.

Keywords: Culture Aspect; Agribusiness; Sustainability

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ARTICLE INFO

Received: 18 March 2026 | Revised: 27 May 2026 | Accepted: 3 June 2026 | Published Online: 23 June 2026

DOI: <https://doi.org/10.30564/re.v8i3.13311>

CITATION

Drejeris, R., Benesevičienė, K., 2026. Reconstructing the Concept of Sustainability in the Agroverse: The Cultural Dimension as a Structural Foundation. *Research in Ecology*. 8(3): 328–344. DOI: <https://doi.org/10.30564/re.v8i3.13311>

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1. Introduction

In recent decades, sustainability has become one of the most important challenges for the agricultural sector, in order to accommodate production efficiency with the long-term well-being of the environment and communities. Agribusiness inevitably operates in a complex social and ecological system, where decisions have a direct impact on the condition of the soil, biodiversity, the social structure of local communities, and economic stability^[1]. Agribusiness encompasses all activities related to the production, processing, distribution, and marketing of agricultural products. It integrates agriculture with various scientific and technological achievements, thus increasing the productivity and sustainability of farming^[2]. The need to implement sustainable processes in the agricultural sector is manifest not only in the expression of technological innovations or financial solutions, but also in a deeper understanding of the cultural context of these activities. Sustainable solutions for agribusiness—environmentally friendly, economically efficient, and socially responsible farming and business solutions that ensure long-term resource conservation and profitability

This article analyzes the cultural dimension as a primary equivalent of values, norms, and meanings, the application of which sets the conditions for compliance with fair farming practices in agribusiness, expresses the need for purposeful change, and attitudes toward risky decisions. Culture acts as a decision-making factor that determines whether sustainability will be acceptable as a necessary long-term norm or rejected as a temporary external requirement. Although the benefits of sustainability for agribusiness are widely recognised as helping to achieve greater resilience to climate change and more efficient use of resources. The practical implementation of sustainability actions in this sector often encounters resistance. This resistance arises not so much from technological or economic constraints, but from deep-rooted agricultural traditions, value systems, and social relations that shape attitudes toward change^[3]. In order to create an effective, sustainable agribusiness system, it is necessary to understand local customs, values, beliefs, and attitudes toward farming. Involving local communities in the development and dissemination of sustainable practices can help bridge the gap between technological advancements and traditional values, creating a more conducive environment for sustainable methodologies^[4]. Agribusiness in many re-

gions is still passed down from generation to generation, and such a culture of continuity leads to a greater attachment to traditional practices and a cautious attitude towards new methods^[5]. The cultural element becomes a crucial factor in the implementation of sustainability. Culture includes not only values, norms, and customs, but also the identity of farmers, their connection with the land, community, and mutual trust. Therefore, sustainability innovations—be it environmentally friendly seed preparation technologies, soil conservation solutions, or advanced farming methods—can be successfully implemented only when they are compatible with local cultural processes. The lack of research on the concept of sustainability in examining the cultural aspect prompts us to examine this issue and its importance in agribusiness in more detail. The purpose of the article: to analyze and justify the need for a cultural dimension in sustainable agribusiness models.

Culture is analyzed as a necessary and key component in creating sustainable agribusiness models. The article proves that ignoring culture can lead to the rejection of innovations, while its integration can create the prerequisites for effective change acceptance, long-term sustainability, and community engagement. In other words, the cultural element in agribusiness is not additional or secondary, but one of the most important factors determining the success of sustainable transformation.

2. Materials and Methods

Until now, in the scientific literature, culture has occupied a minor position within the social environment, thus receiving less recognition than its contributions deserve^[6]. The role of culture in the social dimension of sustainability is undervalued, which may hinder the exploration of its potential and practical significance. The need for the autonomy of the cultural dimension must not only be based on theoretical scientific arguments but also on practical evidence.

2.1. Conceptual Separation of Cultural and Social Dimensions in the Concept of Sustainability

Insufficient assessment of the cultural element is not just a theoretical problem. When culture is reduced to a part of social relations, the opportunity to explain the main obsta-

cle to the implementation of sustainability is lost: the value filter of decisions, on which the acceptance or rejection of innovations depends. A new approach to the cultural aspect is based on the assumption that culture is the fundamental, systemic basis of sustainable agribusiness, and not just a part of the social aspect. Culture, in this case, becomes not a consequence of sustainability but a condition—a structural basis without which other sustainability principles cannot be successfully implemented. Culture acts as a regulator of collective behavior, determining how decisions are made, how innovations are perceived, what priorities are established, and what compromises are accepted. It shapes not only values but also behavioral norms, communication patterns, and decision-making styles. Therefore, in agribusiness, the cultural dimension should be understood as an equivalent component of sustainability rather than a secondary contextual factor, because it directly influences whether sustainable principles are translated into real practices or remain only declarative intentions. This is the first reason justifying the need for a cultural dimension in the concept of sustainability as an independent one, separate from the social dimension of sustainability. Therefore, when it comes to implementing sustainable solutions in agribusiness models, it is necessary to recognize that even the best-designed economic or technological model can fail if it contradicts values, established practical norms, or the level of mutual trust.

Agribusiness has a strong traditional and local cultural foundation^[7]. Family farms, long-standing agricultural traditions, inherited knowledge, and social ties form a strong internal identity, which often becomes an obstacle to change^[8]. However, this cultural inertia is not only a negative phenomenon. It can transform into a catalyst for sustainability if culture is consciously oriented toward values that combine tradition with innovation, responsibility with competitiveness, and economic profitability with nature conservation. In other words, the speed of sustainable solutions in agribusiness depends on the direction of culture: when culture supports continuity without renewal—it slows down, but when culture gives meaning to renewal, as responsible continuity—it accelerates. This mechanism serves a structural role; therefore, culture cannot be considered secondary. The speed of implementation of sustainable innovations is identified as the second reason justifying the need for a cultural element as an independent element in the concept of sustainability,

since the success of innovations largely depends on the speed of implementation^[9].

Culture becomes a key element also because it connects the individual aspects of sustainability into a single system. The economic aspect of sustainability without culture is technical, social, and fragmented^[10]. Culture brings an element of meaning—it provides sustainability actions with a value basis that people need to accept not as a forced innovation, but as part of their own behavior^[11]. In other words, culture helps to turn sustainability not into projects, but into habits. The essence of the new approach: to recognize that culture is not a neutral medium but an active driver of sustainability. In the context of agribusiness, this means that cultural change must become the first step in implementing sustainability plans. Not technologies or financial instruments, but value transformation is the essential criterion for success. The need for value transformation in implementing sustainable decisions can be considerable as the third reason justifying the importance of an independent cultural element in the concept of sustainability. If culture is not integrated, the sustainability model in agribusiness becomes just a formality because it fails to achieve the main result: stable, repeatable, and socially acceptable behavior.

This new approach to the cultural dimension requires a critical redefinition of the relationship between the social and the cultural dimensions. When examining the social dimension, it is observed that the social element traditionally includes the well-being of communities, social capital, inclusion, and the quality of farmers' lives, but culture usually becomes only an additional aspect within it^[12]. Such a limited approach cannot ensure a sufficiently deep analysis, because culture in agribusiness is not only part of the social environment, since culture in the concept of sustainability is a systemic structure that independently shapes behavior, values, and decision-making in all areas of sustainability. Culture is a value, tradition, normative, and semantic system that forms the logic of behavior and determines what organizations and communities consider right, acceptable, or desirable^[13]. It is the ontological basis of behavior, determining how individuals, groups, and institutions perceive nature, risk, technology, innovation, responsibility, and change. Culture is not social interaction, but its premise; it provides a meaningful basis for why social structures exist in the way they do. Only culture determines what is considered normal

behavior in agribusiness, legitimizes or rejects innovations, shapes the acceptability of knowledge, and defines collective identity. In the context of agribusiness, culture directly affects attitudes toward sustainability, because it is precisely values, beliefs, and traditions that determine whether sustainability is perceived as an economic burden, as a marketing element, or as an essential condition for long-term competitiveness.

Meanwhile, the social dimension is the institutional, structural, and relational level. It includes social relations,

employment models, community inclusion, social welfare, equality, and institutional rules^[14]. The social dimension does not shape values, but only implements them; it is a derived structure dependent on cultural attitudes. Administrative instruments could change the social dimension, but without a cultural basis, their impact is usually short-lived and fragmented. This is why the cultural dimension must be clearly distinguished from the social: the ontology, function, and mechanisms of influence are different. **Table 1** below systematically identifies these differences:

Table 1. Delimitation of Cultural and Social Dimensions in Agribusiness, Compiled by the Authors of the Work.

Aspect	Culture Aspect	Social Aspect
Ontological nature	The primary, normative, and value structure that shapes the logic of behavior and the origin of social phenomena.	A derived structure that emerges based on cultural attitudes and their consolidation in institutions.
Main item	Values, norms, symbols, identity, traditions, and collective beliefs.	Social relations, institutions, working conditions, well-being, equality, and community inclusion.
Main function	Forms attitudes toward nature, technology, innovation, risk, and responsibility; sets priorities	Organizes social processes, implements values through structures, rules, and institutions.
Operating level	Value, cognitive, symbolic.	Institutional, structural, administrative.
Connection with sustainability	Determines whether sustainability is generally perceived as a value and what its content is.	Determines how sustainability is practically implemented in social systems.
Relationship with innovation	Determines the acceptability of innovations, the legitimacy of technologies, and the perception of risk.	Regulates how innovations are integrated into work and community structures.
Dynamics of change	Slow, long-term; changes through value transformations.	Faster, dependent on policies and programs, but often short-lived.
Analytical role	Explains why society behaves in one way or another.	Explains how this behavior is organized at the social level.
The main risk of shaking	The opportunity to understand value barriers and reasons for rejecting innovations is lost.	Social analysis becomes superficial and devoid of value.

The information presented in the table reveals a clear hierarchical relationship: culture is the cause of the social aspect, not a part of it. Culture creates the logic of behavior, and the social aspect structures this behavior at the institutional level. The cultural aspect is deeper, more stable, and changing more slowly, but shaping the entire logic of sustainability^[15]. The social aspect is more superficial, more dependent on political and administrative decisions^[16]. This difference is of fundamental importance for agribusiness sustainability research: without culture, the creation of eco-friendly models in agribusiness becomes superficial, because it does not have a value basis, long-term motivation, and organizational meaning^[17].

The distinction between culture and the social dimension is not a terminological clarification—it is a necessary analytical condition, without which sustainability models in agribusiness become inaccurate. The social dimension includes the organization of relationships and the interaction of workers and communities (e.g., inclusion, well-being,

working conditions), but it does not explain the value choices that determine the direction of decisions^[14]. In other words, the social dimension usually answers the question of how relationships are organized, while the cultural dimension answers the question of why such relationships and such decisions are considered acceptable. In agribusiness, this difference is particularly noticeable; because social measures (programs, training, consulting) can be implemented formally, but they will not produce results if the cultural logic does not consider the change meaningful. The cultural aspect includes attitudes toward the environment, land, risk, responsibility, and the continuity of traditions, and therefore it can be decisive and even more important than social structures: it determines whether sustainability is perceived as a value or only as external pressure^[13]. As a result, culture is not a synonym for employee relations—a normative basis that determines decision-making and the legitimization of innovations. This paper concludes that the social aspect can be adjusted by administrative measures, but without culture,

sustainability results remain short-term, because behavioral changes do not occur. Therefore, culture is an independent, primary, and casual category; while social is a derivative and implementing one.

In conclusion, culture is what determines whether the implementation of sustainable solutions in agribusiness will be acceptable as an option. The social element can only help implement sustainable solutions at a structural level. Therefore, culture, in the context of sustainable agribusiness, must be assessed as a separate, independent, and primary category, without which the transformation of sustainability is impossible.

2.2. Developing an Ability of Paradigm Based on Culture

Sustainability implementation in the agribusiness sector is often analyzed based on economic, social, and environmental aspects, but this traditional approach is inherently limited and does not cover the full scope of sustainable development^[18]. The concept of sustainability is dynamic—its evolution reflects changing economic, technological, and institutional challenges. However, even an expanded multidimensional framework does not sufficiently explain the disparities in the commercial effectiveness of sustainable initiatives in agribusiness.

According to Nath and Saikia^[3] a comprehensive understanding of sustainability in agribusiness requires exploring other perspectives: agroecological components and sustainability approaches must be viewed through a prism that encompasses a multitude of factors beyond the traditional dimensions. Such integration of cultural considerations into the understanding of sustainability will lead to more interventions that are effective and ultimately help support the resilience and sustainability of agribusiness sectors across geographical areas. In this context, culture is included not because of a broader list of elements, but because of necessity: it explains why traditional three-dimensional schemes (economic-social-environmental) often fail to predict real behavioral change in agribusiness.

The specificity of agribusiness determines that culture influences both internal processes and the speed and direction of sectoral transformation. Traditional agricultural practices, family farm heredity, community commitments, and local knowledge shape not only the specifics of farming but also

the concept of rationality by which changes, risks, and innovations are assessed. For example, indigenous farmers in regions such as the Amazon and the Cordillera region use traditional ecological knowledge to manage resources in a way that is consistent with environmental sustainability and resilience to climate variability^[19]. Research has shown that these practices preserve biodiversity and contribute to food security and climate resilience^[20]. By adhering to traditional methods, communities often express a form of rationality that emphasizes sustainability rather than just technological efficiency, valuing ecological balance alongside agricultural productivity^[21]. Furthermore, family farms play a crucial role in cultivating and transmitting these local knowledge systems. Research shows that family farms foster intergenerational commitments that facilitate the continuity of sustainable practices and local innovations, helping to strengthen community identity and food sovereignty^[22]. These farms embody economic, cultural, and social functions, serving not only as production units but also as vital components of family and community networks that regulate agricultural practices in conjunction with local ecological needs^[23]. Reliance on family structures for farm management can influence decision-making processes related to innovation and adaptation, where decisions are made taking into account shared risks and community values^[24]. Culture in agribusiness is not static; it is dynamic and responsive to the internal and external environment^[25]. Communities and agribusinesses with values focused on responsibility, solidarity and long-term resource conservation; adopt sustainability practices more quickly and stably^[26].

It is also important to note that cultural perspectives help to create an infrastructure of trust, which is essential for innovation. In agribusiness, trust between farmers, between farmers and consultants, and between producers and consumers is one of the key factors for social stability and cooperation^[27]. Building and maintaining trust between farmers, agribusiness consultants, and consumers is essential to foster cooperation and ensure stability in the agribusiness sector. Integrating digital technologies, collaborative structures, and strong social capital mechanisms are key strategies to increase trust in agribusiness enterprises, ultimately promoting greater economic resilience and sustainability. In summary, culture in this context acts as a connecting medium between technological solutions, economic objectives, and social re-

lations in agribusiness. It defines how farmers adopt innovations, trust different actors in the sector, and incorporate sustainability principles into individual decisions. Therefore, a cultural approach becomes an essential condition for sustainability to move from formal initiatives to stably functioning agribusiness practices.

Sustainable agribusiness models are a comprehensive framework that prioritizes ecological integrity, economic stability, and cultural sustainability^[28]. The application of this model aims to ensure that agribusiness activities generate value without compromising natural ecosystems, social justice, and the identity of cultural communities, while maintaining competitiveness and resilience to market, climate, and technological pressures. Sustainable agribusiness has the following essential characteristics:

1. Ecological Sustainability—Rational use of resources, protection of soil and biodiversity, lower pollution levels, and the implementation of climate-resilient technologies^[29].
2. Economic Sustainability—Long-term financial stability, efficient value chains, integration of innovation, risk management, and the ability to adapt to market dynamics.
3. Social Sustainability—Fair working conditions, social protection, community cohesion, ensuring equal opportunities, and transparent social relations^[30].
4. Cultural Sustainability—The preservation of values, traditions, local knowledge, and agrarian identity, and their integration into modern agribusiness practices; the alignment of cultural attitudes with innovation and sustainability changes^[31].
5. Technological Efficiency—The implementation of advanced technologies (e.g., digitalization, precision farming, sustainable seed processing methods, and artificial intelligence) in a way that is consistent with ecological and cultural principles.
6. Long-Term Systemic Approach—Decision-making taking into account generation cycles, risks, climate change scenarios, and the viability of regional development.

Among all the listed characteristics, a cultural aspect is also embedded for a complete picture of agribusiness sustainability. In this way, a sustainable agribusiness model is

not just a set of technical solutions or social initiatives. It is a holistic framework of activities in which culture occupies a fundamental place, as it defines value priorities and acts as a prerequisite for social, economic, and ecological practices to function consistently and in the long term.

The success of sustainable solutions in agribusiness increasingly depends on the ability to assess not only technological or economic resources but also cultural factors that determine the behavior of farms and farmers. Traditional approaches to sustainability are usually based on rational decision-making models: it is assumed that farmers will implement more sustainable technologies when they are economically beneficial, easily accessible, or technologically advanced. However, practice shows that even with clear technological and economic benefits, changes in agribusiness occur more slowly than would be expected. This signals that the implementation of sustainable solutions depends on deeper, value-based factors. One of them is cultural attitudes that are formed through long-term agribusiness traditions, family farm inheritance experiences, interpersonal relationships, and social structure in rural communities. Therefore, sustainability innovations, despite their objective advantages, are often evaluated through subjective meanings: their compatibility with conventional practices, cultural acceptance, or impact on the concept of heritage. Consequently, cultural attitudes even influence commercial success, as the speed of implementation of sustainability measures in agribusiness often determines commercial success.

Integrating the cultural dimension into sustainable agribusiness models allows us to identify cultural mechanisms and understand how they shape the adoption of agribusiness innovations. For example, in communities with a strong pattern of traditional knowledge transmission, new technologies are adoptable only when they: are legitimized by local authorities or fit into the existing system of farming practices. Meanwhile, in communities with a more open attitude to experimentation, innovations are implemented more rapidly because they correspond to the dominant cultural norm, constant search and improvement^[32].

The cultural dimension also allows us to see sustainability as a process that depends on trust, collaboration, and knowledge exchange. In agribusiness, these factors determine how quickly and to what extent a community embraces change. If sustainability solutions are not aligned with the

community's identity, they remain isolated initiatives and do not create a systemic impact.

Therefore, the need for culture in sustainable agribusiness models is relatable to the need to understand that sustainable change is not only about implementing technologies but also about a profound value shift. This shift can only happen by incorporating cultural expectations, local knowledge, and community structures that fundamentally shape the logic of agribusiness decisions. Integrating cultural factors into sustainability models opens up the opportunity to create not declarative, but actually effective innovation implementation strategies, the basis of which is compatibility with local identity and social dynamics.

The cultural dimension helps to reduce resistance to the implementation of sustainable agribusiness activities. Aligning practices with local values, cultivating an inclusive internal culture, and respecting cultural sustainability are essential elements that encourage the acceptance and successful implementation of sustainability initiatives. The cultural dimension in agribusiness is not an additional or secondary instrument. Culture is a fundamental structural process without which the implementation of sustainability remains superficial, fragmented, and easily fails in the face of resistance. The cultural dimension in agribusiness acts as a strategic mediator between sustainability goals and everyday agribusiness practices. It reduces resistance because it transforms not procedures, but the very norms, values, and identities that determine decision-making. In this way, cultural transformation becomes necessary so that sustainability is accepted not as an external requirement but as a natural and meaningful path for agribusiness activities.

Incorporating cultural components into sustainability practices not only helps reduce resistance but also fosters collective ownership of sustainable goals. Culture serves as a catalyst for community engagement as individuals feel a sense of belonging and pride in initiatives that honor their heritage while promoting sustainable development^[33]. Furthermore, Raj et al.^[34] find that firms operating in emerging markets can maintain a dual commitment to sustainability and a market orientation, suggesting that cultural factors substantially facilitate the adoption of sustainable practices in agribusiness.

The sustainable development of agribusiness companies is inseparable from the constant updating of knowledge,

the development of competencies, and the ability to adapt to technological innovations, which determine competitiveness in the global agricultural market^[35]. However, the effectiveness of these processes does not depend solely on external technological or regulatory factors; they are directly determined by the culture rooted in agribusiness, which determines how the company accepts knowledge, how it transforms it into practical solutions, and how it enables learning processes. In agribusiness, which is dominated by traditional business models, seasonal dependence, and a conservative attitude toward change, the underdevelopment of the cultural aspect becomes one of the fundamental barriers to both learning and the implementation of sustainable solutions.

Thus, the connection between the cultural dimension and the need for learning and knowledge in agribusiness is structural and fundamental: culture determines whether knowledge becomes a driving force for sustainability or remains an untapped potential. It acts as a catalyst for sustainable development, without which technological solutions cannot form a long-term sustainable agribusiness model.

2.3. Research Methodology

This study analyzes the role of the cultural aspect in implementing sustainable agribusiness models in Lithuanian agribusiness enterprises. Although the implementation of sustainable agribusiness models in agribusiness is often associated with economic, technological, or environmental factors, the cultural aspect in scientific research often remains secondary or is included as part of the social aspect. Therefore, this study aims to empirically verify the importance of culture as an independent and significant factor in making and implementing sustainability-based decisions in agribusiness enterprises.

The study focuses on advanced Lithuanian agribusiness companies where sustainable solutions are already being applied in practice, with the aim of determining to what extent cultural elements, such as values, traditional knowledge, established attitudes, professional training, and their compatibility with economic rationality, determine the choice of sustainable agribusiness models and their stability. In this way, the aim is to answer the question of whether culture in agribusiness acts only as a background context or as an active decision-making mechanism that can structurally shape the processes of implementing sustainability.

The aim of the study is to assess the importance of the cultural aspect in implementing sustainable solutions in Lithuanian agribusiness enterprises, using both quantitative and qualitative research methods. The study included a survey and structured interviews of Lithuanian agribusiness enterprise managers, an analysis of survey data, and a generalization of the structured interview. The study sample was formed through secondary data analysis of data from the Department of Statistics of Lithuania. Since official statistics do not directly reveal the sustainable solutions implemented by agribusiness enterprises, their implementation was assessed through indirect indicators, such as resource efficiency, the development of organic farming, and economic performance. Agribusiness companies were initially grouped according to sustainability implementation characteristics and comparative organizational performance indicators. The first group included agribusinesses with better indicators, the second - with weaker ones. This division was used for the analysis and comparison of groups.

Based on these criteria, two groups of enterprises were selected:

- ✓ 10 agribusiness enterprises with high economic performance and successfully implementing sustainable solutions;
- ✓ 10 agribusiness enterprises for which the implementation of sustainable solutions is more complicated and whose economic results are relatively poorer.

Such sample formation allowed not only to compare different groups of companies, but also to analyze in more depth the possible reasons for success or failure. It is important to note that agribusiness companies were selected based on their commercial performance (information from the Department of Statistics). Therefore, the study allows us to identify relationships between groups, but not causal relationships. The results obtained should be viewed as exploratory insights.

Agribusiness companies were assigned to the two research groups according to predefined sustainability implementation and economic performance indicators. Companies were classified into the “successful sustainability implementation” group when they demonstrated: (1) long-term integration of sustainability practices into operational activities, (2) stable application of environmental and social responsibility

measures, (3) positive managerial evaluation of sustainability integration, and (4) comparatively stronger economic performance indicators, including business stability, investment continuity, and organizational growth.

Companies were assigned to the second group when sustainable solutions were implemented inconsistently, encountered organizational resistance, or remained primarily declarative, and when companies demonstrated relatively weaker economic stability or lower integration of sustainability-oriented management practices. The classification process was based on structured managerial assessment, sustainability implementation characteristics, and comparative organizational performance indicators.

The logic of the study is based on the assumption that cultural factors can act as a differentiating element between companies that successfully and less successfully implement sustainability. Two methods were used to collect empirical data: a survey and a structured interview with managers of agribusiness companies. One manager from each agribusiness company was interviewed, a total of 20 interviews.

Before conducting the survey, the essence of the statements was explained in detail to the respondents in order to ensure their uniform interpretation. The survey presented five statements designed to assess the expression of the cultural aspect in companies: the importance of values, the influence of traditions, the accumulated experience, the role of professional competencies, and the relationship between culture and economic rationality. The answers were assessed on a ten-point Likert scale, where 10 means complete agreement and 1 means complete disagreement. Descriptive statistics (means, variances) were used in the data analysis, and an aggregated cultural orientation indicator was calculated, determined as the average of five statements for each company. This indicator is interpreted as an indicative estimate of cultural expression and not as a fully validated psychometric index. Additionally, the Mann–Whitney U test was used in data analysis to assess differences between two independent groups. Effect sizes were also calculated to assess the strength of differences. These methods enhance the validity of quantitative analysis, but their results should not be interpreted as causal relationships. Additionally, structured interview analysis was conducted to gain a deeper understanding of the context of the quantitative results. During the interviews, it was analyzed how company

managers perceive sustainability, what factors determine decision-making, and what role culture plays in this process. During the interviews, all respondents were asked the same pre-prepared questions. The questions were designed to complement the quantitative analysis and not duplicate the survey statements. The interview data were analyzed to identify recurring decision-making patterns and differences in attitudes between groups.

The following questions were asked to managers:

1. How are important operational changes initiated in your agribusiness?
2. What usually determines decision-making in your com-

pany?

3. What is the role of employees in implementing sustainable solutions?
4. What were the main challenges in implementing sustainable solutions?
5. How do you evaluate long-term sustainable solutions in your agribusiness compared to short-term benefits?
6. How would you describe the general logic of decision-making in your agribusiness?

The following statements were presented to agribusiness companies (**Table 2**) in order to assess the importance of the cultural aspect in implementing sustainable solutions:

Table 2. Research Questionnaire Statements and Justification for Their Need, Compiled by the Authors of the Work.

Nr.	Statement	Justification of the Statement
1.	When implementing new sustainable practices or technologies, decisions in an agribusiness company are usually based on established approaches and experiences.	This statement seeks to determine whether decisions about sustainable solutions are based on the thinking and practical experience already formed in the agribusiness company. If the statement is accepted, it means that sustainability is not a random decision but is integrated with how the company traditionally understands business. Research by Karampela et al. ^[36] supports that established attitudes and practices are important in implementing sustainable solutions in agribusiness.
2.	Sustainable agribusiness practices applied in an agribusiness enterprise correspond to long-term value-cultural attitudes, not just external requirements or incentives.	This statement aims to determine whether sustainability stems from the internal values of the company or only from external requirements. If the statement is accepted, it means that sustainable decisions are a conscious choice and not just a reaction to pressure or support. Research by Eccles et al. ^[37] confirms the importance of values in implementing sustainable decisions.
3.	Traditional farming methods and knowledge accumulated over time influence the sustainable decisions we make.	This question examines whether traditions and accumulated experience play a role in choosing sustainable solutions. If the statement is accepted, it means that culture helps an agribusiness company choose what is right for it. Karambela et al. ^[36] in their study supports the importance of accumulated knowledge in choosing sustainable solutions.
4.	The professional development of employees and managers, as well as their understanding of sustainability, determines whether new sustainable practices are adopted and applied.	This question seeks to determine whether sustainable solutions depend on people's knowledge and understanding. If you agree with the statement, it means that culture includes not only values or traditions, but also the ability to understand and apply sustainable practices. Research by Sanders et al. ^[38] supports that culture can be strengthened through learning, the need for new knowledge, and experience.
5.	Even when there is an economic benefit, solutions that do not conform to the agribusiness approach developed within the company are often not implemented.	This question seeks to determine whether culture can be more important than economic benefits. If this is the case, it means that profitability alone is not enough—decisions must be consistent with the agribusiness company's approach and values. Pham et al. ^[39] agree in their study that economic benefits are not necessarily the determining factor in implementing sustainable solutions, and that attitudes often determine the possibility of implementing sustainable solutions.

By evaluating all questions and answers together, it will be possible to determine whether the implementation of sustainability in agribusiness is based on cultural factors: values, traditions, experience, and understanding. The statements are based on scientific literature, and their essence was explained to the respondents. If the estimates are high, it can be reasonably stated that the cultural aspect is one of the most important elements ensuring the successful and long-term

implementation of sustainable solutions in agribusiness.

3. Results

The study involved 20 Lithuanian agribusiness companies, divided into two groups: the first group consisted of companies that successfully implement sustainable solutions and are characterized by high economic results ($n = 10$), and

the second group consisted of companies for which the implementation of sustainable solutions is more complicated and whose economic results are relatively poorer ($n = 10$). Such a sample structure made it possible to conduct a comparative analysis and assess the significance of the cultural aspect in companies with different levels of sustainability implementation. In addition, such a sample selection allows us to analyze the cultural aspect not in the theoretical or early adaptation context, but in mature organizations where sustainable solutions have already been implemented and are working in practice.

Mann Whitney U- test is calculated using Equation (1):

$$U = n_1 + n_2 + \frac{n_1(n_1 + 1)}{2} - R, \quad (1)$$

where:

U: Mann- Whitney U test;

n_1 : sample size of the first group;

n_2 : sample size of the second group;

R: sum of ranks.

The sample mean is calculated using Equation (2):

$$\bar{x} = \frac{1}{n} \sum_{i=1}^n x_i, \quad (2)$$

where:

$\bar{x}$: sample mean;

x_i : each observation (company response);

n : number of observations.

The mean shows the central tendency, i.e., the overall level of responses on the scale. On a Likert scale (1–10), a mean above 7 is interpreted as a high level of agreement, above 8.5 as very high, close to the maximum value.

The sample variance is calculated as follows:

$$s^2 = \frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n - 1}, \quad (3)$$

where:

s^2 : sample variance;

$\bar{x}$: sample mean;

$n - 1$: free number (used when analyzing a sample, not the entire population).

The smaller the variance, the more the responses agree with each other. On a Likert scale of 1–10: variance < 1: very high uniformity of responses; 1–3: medium dispersion, 3: greater diversity of opinions.

The standard deviation is the square root of the variance:

$$s = \sqrt{s^2}. \quad (4)$$

On a 10-point Likert scale: $s < 1$: very strong uniformity of responses; 1–2: moderate dispersion; 2: more significant differences between respondents.

Standard error of the mean.

Since ($n = 10$), an important measure of the reliability of the mean is the standard error:

$$SE = \frac{s}{\sqrt{n}}, \quad (5)$$

where:

SE: standard error of the mean;

s : standard deviation;

n : sample size.

It shows how likely it is that the sample mean differs from the true population value. Since the sample is small ($n = 10$), but the variance is small, the standard error for most questions is very small, which means that the means are statistically stable even with a small sample. The reliability of the results can be assessed in several aspects: high average + low variance. This indicates a high level of agreement between respondents, a clear direction of assessment, and internal stability of the measured phenomenon. The average is high, but the variance is higher. This indicates the importance of the phenomenon under study, but its uneven expression among agribusiness companies. When the average is lower and the variance is higher, it means that the assessments of the companies differ more among themselves. Such a situation is typical for companies that have difficulty implementing sustainable solutions, and indicates that cultural factors are not understood or applied equally in them. The sample size of 20 is not a large sample, but a target group was studied, formed based on the characteristics of the activities and implementation of sustainability in Lithuanian agribusiness companies. Therefore, the results obtained are interpreted as an analysis of a targeted (expert) sample. The sample is small, so the results are interpreted with caution. However, the low level of variance indicates that the responses are consistent. This allows for a reasonable analysis of trends in the studied group. The results obtained do not reflect the entire sector, but they allow us to see possible patterns.

The survey data are summarized in **Table 3**, in which the questions are numbered from 1 to 5, and the companies are labeled from A to K and from L to V. **Table 3** also lists the number of employees in each agribusiness company, and the responses are presented on a Likert scale from 10 to 1 (10 = completely agree, 1 = completely disagree).

Table 3. Results of a Survey of Lithuanian Agribusiness Companies, Compiled by the Authors of the Paper.

	Com- pany A	Com- pany B	Com- pany C	Com- pany D	Com- pany E	Com- pany F	Com- pany G	Com- pany H	Com- pany J	Com- pany K
Number of employees in the company	900	230	108	50	23	139	86	51	38	17
1. Question	8	10	9	10	10	10	10	10	10	5
2. Question	10	10	10	10	10	10	10	10	10	10
3. Question	10	10	10	10	10	10	9	10	10	10
4. Question	10	10	10	10	10	8	9	7	10	5
5. Question	9	8	10	9	10	10	9	8	10	8
	Com- pany L	Com- pany M	Com- pany N	Com- pany O	Com- pany P	Com- pany R	Com- pany S	Com- pany T	Com- pany U	Com- pany V
Number of employees in the company	640	30	77	103	211	79	27	112	53	37
1. Question	5	6	7	8	4	5	6	7	6	5
2. Question	7	2	3	5	4	7	6	8	5	3
3. Question	4	6	4	2	4	5	2	2	3	4
4. Question	6	7	5	3	5	8	4	5	3	6
5. Question	5	4	6	7	2	3	3	4	7	8

When analyzing the survey data, the means, variances, and standard deviations of each statement were calculated to assess not only the level of responses but also the stability of their distribution. In the group of agribusiness companies successfully implementing sustainability, the means of all five statements are high, ranging from 8.9 to 10.0, and the overall cultural orientation indicator is approximately 9.42. The data in this group are characterized by very low variance (approximately 0–0.8) and small standard deviations (approximately 0.3–0.9), indicating a high degree of agreement among respondents and a consistent manifestation of the cultural aspect. The statement regarding the alignment of sustainable decisions with long-term values stands out in particular, with a mean of 10.0 and both variance and standard deviation equal to zero, indicating complete unanimity among respondents.

Meanwhile, in agribusiness companies experiencing difficulties in implementing sustainable solutions, assessments of the cultural aspect are significantly lower. The overall mean of cultural orientation in this group is approximately 4.92, with individual statement means ranging from 3.6 to 5.9. The data are characterized by higher variance (approximately 2.0–4.5) and greater standard deviation (approximately 1.4–2.1), indicating greater dispersion of responses and lower consistency among companies. The lowest evaluations were observed for the importance of traditions and accumulated experience (mean approximately 3.6), as well as the importance of value-based attitudes (approximately 5.0), suggesting that cultural factors are not fully integrated

into the decision-making processes of these companies.

Differences between groups were additionally tested using the Mann–Whitney U test. The analysis revealed statistically significant differences between the groups ($U = 100.00$, exact $p = 0.000017$). The calculated effect size ($r = 0.846$) indicated a very strong practical significance of the observed differences. These results suggest that companies characterized by stronger cultural orientation also demonstrate a higher level of sustainability implementation and organizational consistency. However, due to the limited sample size, the identified relationships should be interpreted as associative rather than strictly causal.

The comparative analysis reveals clear differences between the two groups across all examined cultural dimensions. The difference in mean values between the groups is approximately 4–5 points, indicating a substantial gap in cultural orientation. In successful companies, cultural factors are characterized not only by high evaluations but also by strong consistency, whereas in less successful companies they are weaker and more fragmented.

The analysis of structured interviews provides additional context for these results. Managers of successful companies (the first group) described sustainability as an integral part of the organization’s values and business logic, emphasizing the importance of long-term experience, established practices, and employee competencies in decision-making. Respondents from the first group said that we have a clearly established value base, so sustainability initiatives are not accidental—they are a natural part of our activities. Deci-

sions are determined not only by financial indicators, but also by the long-term impact on the environment and the community. The biggest challenge in implementing sustainable solutions at the beginning was the change in thinking itself, and it was culture that helped change thinking. Sustainable solutions are primarily made based on values. In contrast, representatives of less successful companies (the second group) more often emphasized external factors, such as regulations or economic motives, and reported difficulties in integrating sustainability principles into daily operations. Respondents from the second group said that we do not have a clear system for integrating sustainable solutions because we face resistance from employees. Sustainable solutions often stop as soon as they start, lacking internal support. Long-term sustainable solutions seem quite risky. Interview data show that the fundamental difference between the groups lies not only in formal decisions but also in different perceptions of organizational culture and its role in agribusiness companies. Interview data help to better understand the context of quantitative results. They show that differences between agribusiness companies are related not only to decisions but also to different approaches to organizing activities. This allows for a deeper interpretation of the identified trends.

In summary, high mean values combined with low variance and standard deviation in successful companies indicate a strong and consistent cultural orientation associated with effective implementation of sustainable solutions and better economic outcomes. Conversely, lower means and greater data dispersion in less successful companies indicate a weaker role of culture in decision-making and challenges in implementing sustainability principles. Although the study does not allow for strict causal conclusions due to the limited sample size ($n = 20$), it reveals a strong empirical relationship between cultural orientation and sustainability implementation outcomes, suggesting that culture is an important prerequisite for the successful application of sustainable solutions in agribusiness companies. Although the research sample is small, it provides a basis for further, larger-scale research in this area.

4. Discussion

The findings suggest that culture plays a fundamental role in sustainability consumption and may operate indepen-

dently within sustainable agribusiness models. Extremely high evaluations of value-based attitudes and traditional knowledge, together with near-zero variances, indicate that these elements, which form the core of culture, support the continuity of sustainability practices. Sustainable decisions in agribusiness enterprises are not perceived as the result of external social or institutional environmental factors but rather as part of the internal identity of the enterprise. This empirically shows the independence of culture from social aspects, which typically include social relations, community pressure, or social responsibility.

A particularly important finding is that even when there are economic benefits, decisions that do not align with the established agribusiness approach are often not implemented. This shows that culture acts as a decision-filtering mechanism that can outweigh economic arguments. Such a conclusion allows us to state that the cultural aspect not only complements the economic or environmental aspects but also structurally shapes them.

The variation in professional training and understanding of sustainability reveals that culture is not static; it can be strengthened through knowledge dissemination, training, and the development of internal competencies. This has important practical implications: to promote the development of sustainable agribusiness models, policymakers and practitioners should focus not only on financial incentives and regulatory instruments but also on strengthening culture, particularly by developing value-based attitudes and professional competencies.

The results of this study show that in Lithuanian agribusinesses, already advanced in implementing sustainability, culture acts as a key mechanism supporting sustainable decision-making. This allows us to reasonably argue that culture should be treated as an independent and priority element of sustainable agribusiness models, rather than as part of the social dimension. The findings also support the view that culturally informed decisions in agriculture increase the effectiveness and responsiveness of sustainability initiatives. Such an approach transforms farmers' mindsets and actively involves them in decision-making processes that take into account local knowledge and traditions, thereby facilitating faster consensus on sustainable practices^[40]. This spirit of collaboration, grounded in community values, fosters an environment in which change can

be accepted more easily than under a purely profit-oriented model that may ignore the insights and contributions of local stakeholders^[41]. When it comes to economic-oriented models, they often do not promote a holistic approach to sustainability, as they prioritize immediate financial outcomes over long-term ecological impacts. Such models can create barriers to the adoption of sustainable practices because they do not account for the complexities of community relationships and ethical considerations important in the context of agribusiness^[42]. When culture is not applied, agribusiness can experience moral silence, which inhibits the identification of ethical dilemmas and influences decision-making in ways that may undermine sustainable development^[42]. Culture therefore becomes a filter through which all sustainability decisions pass, determining whether they are accepted, challenged, or rejected. Furthermore, the results of the study support the importance of a cultural approach in agribusiness to ensure that sustainability principles are not superficial but are integrated into everyday practices. In other words, culture determines whether sustainability actions become habits. This logic is particularly important in agribusiness models, where there is no traditional hierarchical management, and most decisions are made individually, based on experience, beliefs, and the influence of community authorities.

One can agree with the authors who illustrate in scientific sources the complex relationship between culture and sustainability in agribusiness.

First, culture has a significant impact on the interpretation and adoption of sustainability innovations. Without cultural alignment, even the most advanced technological innovations may not be implemented. Lianu et al.^[43] studies highlight the important role of local cultural factors in the adoption of sustainable agroecological practices, indicating that the cultural dimension is essential for the successful implementation of sustainable agricultural systems. Furthermore, understanding local values is crucial for the implementation of such sustainable practices, highlighting the need for a culture-led approach^[44]. Thus, culture acts as a mediator in how technological advances are perceived and used in agricultural communities.

Second, culture serves as a connecting medium, connecting the economic, social and environmental pillars of sustainability. It provides a framework that transforms ab-

stract sustainability principles into everyday practices. As Salam et al.^[45] emphasize, sustainable agribusiness models need to integrate cultural attitudes that encourage community participation and collective action, further stabilizing sustainability initiatives. This holistic perspective suggests that culture enriches the sustainability narrative, providing relevance and recognition in the local context.

Third, culture fosters social resilience and cohesion, which are crucial for promoting sustainable transformations. Hinojosa-Rodríguez et al.^[46] highlighted the need for farmers to undertake cultural change in order to adopt new agribusiness practices that offer environmental and social benefits. Community-based approaches emphasize local knowledge and practices, effectively reducing the uncertainty surrounding risks associated with sustainability initiatives^[47]. For example, local knowledge systems have been shown to strengthen sustainable agricultural practices by aligning innovations with traditional values and local customs, thereby enabling community participation^[48]. Community engagement can alleviate the fear of the unknown that often accompanies new agricultural methodologies^[49].

Culture is not just an additional element of the sustainability discourse—it is a key aspect that shapes the trajectory of agribusiness transition to sustainability. Without culture, the implementation of sustainability in agribusiness becomes fragmented, unstable, and often unsuccessful. Only by overcoming cultural barriers and using cultural resources can sustainability initiatives become a long-term part of agribusiness development. Thus, sustainable agribusiness models are impossible without the concept of culture.

The study concluded that culture appeared to be the most important factor in implementing sustainable solutions in agribusiness companies.

5. Conclusions

Despite the intensifying academic debate on sustainability, the multidimensional structure of this concept remains theoretically debatable, especially in sector-specific contexts such as agribusiness. The dominant three-dimensional model (economic, social, and environmental) provides an analytical framework, but it does not sufficiently explain the normative, values-based, and identity-shaping mechanisms that actually shape decision-making and the practical implementation of

sustainability. This suggests that the concept of agribusiness sustainability requires conceptual expansion to include a dimension that would explain the role of value orientations and traditions in transformation processes.

Theoretical analysis demonstrates the need for a cultural dimension as an independent component of sustainability for several fundamental reasons. The classical model of dimensions does not include the value and identity structure through which sustainability in agribusiness is interpreted. In addition, the cultural dimension cannot be reduced to a subset of the social dimension, because the social dimension includes aspects of relationships and institutional structures, while the cultural dimension forms the normative basis—traditions, attitudes toward risk, continuity, and the acceptability of innovations. The results also indicate that culture directly shapes the pace of innovation adoption and implementation, which are critical success factors in agribusiness. This approach can be considered effective because cultural compatibility reduces resistance to sustainable initiatives and practices and increases their legitimacy. Culture is also inseparable from the constant updating of knowledge and the development of competencies, as it shapes perceptions of learning and adaptation.

Empirical research in Lithuanian agribusinesses may enhance confirmed the theoretical assumptions: the small differences in assessments and dispersion indicators suggest not the insignificance of cultural factors, but their consistent and pervasive influence across companies. This indicates that culture operates as a structural condition shaping similar approaches to sustainability priorities and innovation implementation, thereby reinforcing its role as an integral dimension of sustainability rather than an additional one.

The results of theoretical and empirical analysis suggest that, in the context of sustainability consumption in agribusiness, the cultural dimension may operate relatively independently and conceptually distinct yet equal to other sustainability dimensions. As it determines their practical effectiveness and the long-term stability of transformation.

In future research, it would be appropriate to empirically investigate the mechanisms of interaction between culture and technological innovation and to analyze how cultural factors affect the long-term stability of sustainability indicators.

Author Contributions

Conceptualization, R.D. and K.B.; methodology, R.D. and K.B.; validation, R.D. and K.B.; formal analysis, R.D. and K.B.; investigation, R.D. and K.B.; resources, R.D. and K.B.; data curation, R.D. and K.B.; writing—original draft preparation, R.D. and K.B.; writing—review and editing, R.D. and K.B.; visualization, R.D. and K.B.; supervision, R.D. All authors have read and agreed to the published version of the manuscript.

Funding

This research received no external funding.

Institutional Review Board Statement

Ethical review and approval were not required for this study under the applicable legislation of the Republic of Lithuania. Participation in the survey was voluntary, and no sensitive personal data were collected.

Informed Consent Statement

Written informed consent was obtained from all participants prior to data collection and participation in the study.

Data Availability Statement

All data used in the study are available from the authors upon request.

Conflicts of Interest

The authors declare no conflict of interest.

AI Use Statement

During the preparation of this manuscript, the authors used Writefull solely for language refinement. No AI tools were used for data analysis, interpretation, or generation of scientific content. All outputs were critically reviewed and edited by the authors. The authors take full responsibility for the integrity and accuracy of the work.

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