Magbondé *et al.*
Agricultural and Food Economics (2023) 11:11
https://doi.org/10.1186/s40100-023-00250-1

Agricultural and Food Economics

RESEARCH Open Access

Impact of informal institutions on youth agribusiness participation in Southern Benin

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Abstract

The agribusiness sector development is often portrayed as an essential component of economic development. Though Benin is a country with inestimable agricultural potential, the agribusiness sector appears unappealing to the local youths. Prior investigations diagnosed the impeding factors as a paucity of financial resource and a dearth of land and technical knowledge. This article departs from past studies by considering the importance of informal institutions for youth participation in the agribusiness sector. Exploring a rich data set of 478 youths aged 15 to 35, collected in Southern Benin based on the stratified random sampling technique, the article uses propensity score matching to address selection bias and logistic regression on the matched sample to link informal institutions to youth participation in agribusiness. Results highlight that agribusiness-unfriendly informal institutions discourage youth participation in the agribusiness sector. Though easing access to finance is crucial for the youths to initiate agribusiness activities, findings make a case for long-term policies that aim to increase the societal levels of trust and desirability for the agribusiness sector.

Keywords: Entrepreneurship, Youths, Institutions, Propensity score matching

JEL Classification: Q13, O17, Q180

Introduction

The agribusiness sector has been described as an avenue for sustainable development (United Nations Industrial Development Organisation [UNIDO] 2011; World Bank 2007) because it holds promise for job creation, particularly for women and the youths, and has the potential for income generation and improvement in the poor's welfare (Adenle et al. 2017; Osabohien et al. 2021; Saridakis et al. 2021; White 2012; Yami et al. 2019). The livelihood of the poor improves as the agribusiness sector allows them to integrate commercial agricultural value chains and to access inputs and markets. Yet, agribusiness sector fosters innovation and technological progress (Nguyen et al. 2019; Ozaralli and Rivenburgh, 2016) and therefore projects itself as a promoter of economic growth more than pure agriculture does (Wilkinson and Rocha 2009). Furthermore, a developed agribusiness sector leads to food security (van Westen et al. 2019). Based on these attributes, the agribusiness sector represents a critical pathway to achieving the

Sustainable Development Goals (SDGs) by reducing poverty (SDG1), lowering hunger (SDG2), and promoting economic growth and decent work (SDG8).

African countries are in a convenient position to harness advantages from a developed agribusiness sector, in terms of youth employment particularly. For instance, in Sub-Saharan Africa (SSA), the livelihood of more than 600 million people depends on agriculture which employs 80 per cent of rural populations and represents 25 per cent of the Gross Domestic Product (GDP) (Mukasa et al. 2017). In the Benin context where youth unemployment is a preoccupying issue (Afrobarometer, 2019), almost 70 per cent of the population secures their employment and livelihood from agri-related activities (Adjimoti 2018; Akrong and Kotu 2022). As agriculture features the country's leading economic sector, a thriving agribusiness sector would absorb a great portion of the youth, curbing the rate of unemployment. Defined as all activities and services along the agricultural value chains, the agribusiness sector is regarded as a nest of job opportunities (Roepstorff et al. 2011). Therefore, above pure agriculture, agribusiness sector can provide a buffer against youth unemployment as it involves production, commercial, and manufacturing activities along agricultural value chains. Featuring an employment niche, the agribusiness sector has raised awareness among Beninese policymakers whose rhetoric then espouses its development.

Despite the potential of agricultural sector in job creation, hurdles still hamper the youth participation in the agribusiness sector. The youths' overall sentiment towards the agribusiness sector leans on a disinterest (Magagula and Tsvakirai 2020; Mulema et al. 2021). Mounting evidence suggests that most youths identify agricultural activities as laborious work with low productivity and earnings (Sumberg and Okali 2013; Yami et al. 2019). Furthermore, the dependence of the agriculture on rainfall and its low adherence to technology and capital (Akrong and Kotu 2022) make agri-related activities unappealing and unattractive to the youths. From White's (2012) perspective, the youths are driven away from agricultural livelihoods in rural areas due to their experience of deskilling, the downgrading of rural life and the lack of infrastructure. More interested in off-farm occupations, rural youths are more likely to migrate to urban areas, worsening the already-high urban unemployment rate. Empirical evidence suggests that limited access to financial services, plots of land, technical knowledge and the youths' negative perception of agribusiness sector are critical factors that hamper the youths from fully participating in the agribusiness sector (Akrong and Kotu 2022; Fox and Thomas 2016; Magagula and Tsvakirai 2020; Senou and Manda 2022; Sumberg and Okali 2013; Twumasi et al. 2019; Yami et al. 2019; Magagula and Tsvakirai 2020; Mulema et al. 2021).

The current paper takes a new perspective in explaining the disenchantment of the youths towards the agribusiness sector. In a departure from previous empirical studies, this paper aims to evaluate the importance of informal institutions on youth participation in the agribusiness sector. The argument remains that the provisions of financial support, plots of land and agribusiness-based training sessions may be insufficient in driving the youths into the agribusiness sector. Therefore, inspecting the institutional environment that shapes the entire life of the youths and the choice of their careers is critical to obtaining ample broad insights. Institutions are indeed important for youth participation in the agribusiness sector as they are meant to reduce transaction costs and uncertainties. As such, institutions inform entrepreneurial decisions and provide

incentives for productive activities (Baumol 1990; North 1990). As the behaviours and intentions of individuals develop and grow within a given institutional environment (Jack and Anderson 2002), institutions can predict participation in existing entrepreneurial opportunities (Muralidharan and Pathak 2017). Furthermore, the youths may desert the agribusiness sector if it is not socially valued and supported (Ephrem et al. 2021). Social desirability, self-expression and societal-level performance are critical for youths to venture into entrepreneurship (Dimitratos et al. 2004; Muralidharan and Pathak 2017; Stephan and Uhlaner 2010). Likewise, societal trust is a critical informal institution that could shape youth participation in the agribusiness sector. For instance, in a low-trust society, higher transaction costs and monitoring expenses restrict engagement in productive occupations.

This paper contributes to the existing body of literature in two ways. First, though a growing body of empirical findings has linked institutions to entrepreneurial activities (Bouncken et al. 2009; Calza et al. 2020; Elert et al. 2017; Fuentelsaz et al. 2019; Muralidharan and Pathak 2017; Samadi 2019), the impact of informal institutions on youth agribusiness participation remains unexplored, to the best our knowledge. This paper bridges that gap by exploring the extent to which informal institutions affect the youths' decision to venture into the agribusiness sector.

Second, the research conducted so far in Benin to explain the youth participation in the agribusiness sector remains limited. For instance, the existing evidence that explored the hampering factors to youth participation in the agribusiness sector has mainly highlighted low access to funding (Akrong and Kotu 2022; Senou and Manda 2022). This paper goes beyond financial development and non-institutional factors, delving into informal institutions. Even though the importance of factors such as access to credit, land, and technical knowledge in triggering youth participation in the agribusiness sector should not be underestimated, the argument is that the quality of the institutions is instrumental to these factors and participation in the agribusiness sector. Therefore, ignoring institutions while researching the determinants of youth participation in the agribusiness sector would lead to omission variable bias. To avoid such bias in the estimates, the current paper positions itself at the interface of informal institutions and participation in the agribusiness sector. By reflecting on the impacts of informal institutions on youth participation in the agribusiness sector, this paper expands the frontier of the existing empirical findings in Benin.

To stimulate youth participation in the agribusiness sector, policymakers continue to focus on access to credit and formal institutions at the expense of informal institutions. While setting more formal rules is relevant to unleashing entrepreneurial potentials, formal institutions may not be sufficient, as underlined by Muralidharan and Pathak (2017). Furthermore, while financial resources are prerequisites for participation in the agribusiness sector, proving financial means to the youths with low desirability to be involved in the agribusiness sector would prove inefficient and unable to guarantee stable and sustainable participation. Therefore, findings from this paper would be insightful for policymakers in undertaking measures that enhance pro-agribusiness informal institutions.

The paper relies on the propensity score matching (PSM) technique to isolate the causal impact of informal institutions on youth participation in the agribusiness sector. The PSM, which is widely cited in the literature, has been useful to account for

non-randomness in the treatment and therefore to extricate selection bias based on observables. In the baseline estimations, the standardised PSM estimates have been computed based on the nearest-neighbour and Kernel density matching algorithms. In the main estimation, a logistic regression analysis based on the matched sample has been utilised. For robustness checks, gender, access to credit, land and technical knowledge have been controlled for.

The remainder of the article unfolds as follows: 'Institutions and entrepreneurship: literature review' section provides a brief literature review. 'Method and data' section outlines the methods and describes the data used. 'Results' section presents the results, and 'Discussion of the main findings' section discusses findings. 'Conclusion and policy implications' section concludes the paper and draws some policy implications.

Institutions and entrepreneurship: literature review

The term 'institutions' has been assigned to various definitions within the literature. It is an equivocal concept that denotes either rules and constraints (North 1990; North et al. 2005), instruments of governance (Coase 1960; Williamson 2000) or a game balancer (North 1990). Among these streams of definitions, the one from North (1990) has gained substantial attention from researchers' ecosystems. North (1990) defines institutions as humanly devised constraints that shape life in society. Furthermore, he distinguishes *formal institutions* from *informal institutions*. While *formal institutions* include constitutions, laws, contracts and property rights, *informal institutions* encompass traditions, taboos, codes of conduct and ethics (North 1990). From a broader angle, *informal institutions* allude to culturally shared beliefs and understandings that draw their essence from values, social expectations and acceptable actions based on the foremost practices in the society (Muralidharan and Pathak 2017).

Reflections on institutions and entrepreneurship subsume overall into the dynamic link between institutions and economic development (North 1990; North et al. 2005; Acemoglu et al. 2001; Acemoglu et al. 2014; Acemoglu and Robinson 2012). According to North (1990) institutions are instrumental to economic development. The quality of institutions operates as a driver of incentives in societies. *Formal institutions* shape economic incentives; meanwhile, *informal institutions* affect how formal institutions evolve (Estrin et al. 2013). Institutions are vital to productive activities for they affect transaction and production costs. Poor institutions, for instance, weaken property rights, and trigger the rise of opportunistic behaviours which expand uncertainty and, ultimately, expand both production and transaction costs. In that regard, adequate institutions meant to protect property rights lead to reduced transaction costs and uncertainties.

North (1990), Baumol (1990) and Williamson's (2000) institutional theory clarify the link between *institutions* and *entrepreneurship*. Baumol (1990) and North (1990) argued that institutions inform entrepreneurial decisions. From North's (1990) perspective, organisations created by entrepreneurs adapt their activities to the existing institutional framework. Baumol (1990) argued that entrepreneurial activities could take either *productive*, *non-productive*, or *destructive* forms. Poor institutions stir unproductive and destructive activities such as rent-seeking and corruption to thrive, curbing productive entrepreneurial activities. Unproductive activities develop because, in a poor institutional environment, the reward of such occupations outweighs their costs (Aidis et al.

2008). In a destitute institutional framework, the guarantee that returns on investment and profits would accrue to the entrepreneur ceases to exist, so entrepreneurs get disincentivised from entering the market (Samadi 2019).

The contribution of Williamson (2000) lies in that his theory of institutions adds *resource allocation* as a fourth level of institutions, after formal institutions, informal institutions, and governance. This fourth institutional level, influenced by the first three institutional levels, includes occupational choices such as entrepreneurship. However, Williamson (2000) places informal institutions at the top of the hierarchy since these are the deepest rooted and the slowest changing institutions (Estrin et al. 2013).

In the growing body of empirical evidence devoted to the effect of institutions on entrepreneurship, three strands have emerged in the literature. The first branch relates institutions to the level of entrepreneurship (Elert et al. 2017; Estrin et al. 2013; Majbouri 2016; Samadi 2019; Stenholm et al. 2013; Williams and Vorley 2015). The second branch links institutions to the type and nature of entrepreneurship (Fuentelsaz et al. 2019; Muralidharan and Pathak 2017; Sambharya and Musteen 2014; Stenholm et al. 2013; Troilo 2011). The third strand strives to disentangle the effects of formal institutions on entrepreneurship (Autio and Acs 2010; Estrin et al. 2013; Majbouri 2016; Stephan et al. 2015) from that of informal institutions (Autio et al. 2013; Baughn and Neupert 2003; Hechavarria and Reynolds 2009; Muralidharan and Pathak 2017; Wennberg et al. 2013).

This current article is mostly focussed on informal institutions which set the standards to which members of the society conform and predict participation in entrepreneurial opportunities (Muralidharan and Pathak 2017). Studies that address the impact of informal institutions on entrepreneurship have explored cultural aspects (Bouncken et al. 2009; Bruton et al. 2010; Mitchell et al. 2000; Schlaegel et al. 2013; Turró et al. 2014). These studies highlight that entrepreneurial behaviours are contingent on national cultural practices (Wennberg et al. 2013). Culture determines individuals' traits, motivations and proactivity to venture into business (Calza et al. 2020). Cultural norms and practices also affect entrepreneurial reasoning (Cornelissen and Clarke 2010), ability to detect entrepreneurial opportunities (Grégoire et al. 2010) and individuals' entrepreneurial behaviours (De Clercq et al. 2010). Wennberg et al. (2013) inspect the effects of national culture—that is, institutional collectivism, performance orientation and uncertainty avoidance—on entry to entrepreneurship. It is concluded that national cultural traits affect the decision to become an entrepreneur. In addition, institutional collectivism, performance orientation and uncertainty avoidance modulate entrepreneurial self-efficacy and fear of failure. Entrepreneurial self-efficacy stands as the belief an individual has that he/she will succeed in entrepreneurship. While entrepreneurial self-efficacy promotes entrepreneurship entry, fear of failure inhibits it.

Recent studies explored the importance of societal-level self-expression values, performance orientation and social desirability as instruments of entrepreneurship (Muralidharan and Pathak 2017). These investigations find that, by instilling uncertainty and hostility in the entrepreneurial environment (Muralidharan and Pathak 2017), low social desirability of entrepreneurship constrains and discourages individuals with higher entrepreneurial intention (Dimitratos et al. 2004). The societal-level performance orientation captures the extent to which individuals within a typical society are invigorated to venture for performance and be rewarded based on performance and innovativeness.

Societal performance orientation eases entrepreneurial adventure (Stephan and Uhlaner 2010). Self-expression captures the extent to which individuals weigh personal choices over survival needs (Inglehart 2006); such individuals are more likely to take higher risks and engage in creative activities.

It emerges that empirical evidence regarding the effects of institutions on youth participation in the agribusiness sector is scant. Much of the existing studies which reflected on institutions and entrepreneurship, are more inclined towards entrepreneurship overall and less preoccupied with the agribusiness sector. Past investigations seem to have not considered the extent to which informal institutions shape the youths' choice to venture into the agribusiness sector. This current paper fills the gap by examining the impact of informal institutions on youth participation in the agribusiness sector in Southern Benin.

Method and data

This section discusses the data, describes the variables employed and the empirical strategies.

Data

The data used in this paper were collected in Southern Benin, particularly in the seventh agricultural development pole (ADP), from August to September 2019. Among the seven ADP of the country, the seventh ADP covers three departments—departments being the highest administrative divisions in the country—the Ouémé, Atlantique, and Mono. The seventh ADP was chosen because in the year the survey was conducted, it accounted for 6 per cent of the entire Southern population and agribusiness activities surrounding pineapple and market gardening attracts a large portion of the youth population. Conventional agricultural sectors such as rice, maize, cassava, and fishery are promising and thriving sectors for agribusiness development of the area.

The sampling relied on a stratified random sampling technique, municipalities being the strata considered. First, 10 municipalities out of the 22 municipalities in the seventh ADP were randomly selected; four municipalities were selected from Atlantique (Abomey-Calavi, Allada, Ouidah, and Zè); three from Mono (Comé, Grand-Popo and Athémé); and three from Ouémé (Semè-Kpodji, Porto-Novo and Adjara). Second, out of these ten municipalities, 576 youths were randomly selected from a population of 16 500 youths aged 15 to 40, whose contacts were obtained from non-governmental organisations (NGO) and non-profit organisations (NPO) that support the youths with off-farm and farm occupations; and from informal groups such as groups of rotational saving (*tontine*) and youth organisations. The focus has been led on the youths because they are the most fragile cohort of the population towards unemployment and represent a potential for a Nation's prosperity if well exploited (Ephrem et al. 2021).

The term 'youth' is an elusive concept with an unstable definition. The United Nations (UN) considers a youth to be any person aged 14 to 24. For the International Labor Organisation (ILO 2009), any person aged 15 to 29 is considered a youth regardless of his/her gender. The African Youth Charter sets the youth's age interval from 15 to 35 years (INSAE [*Institut National de la Statistique et de l'Analyse Economique]* 2016). Yet, the term 'youth' remains unclear in Benin. However, the National Institute of

Statistics and Economic Analysis (INSAE) has adopted the definitions of youth proposed by the aforementioned international institutions and collected data on people aged 15 to 29 years when observing their transition from school to the labour market (INSAE 2016, p.11). Given that most intervention initiatives in Benin in the agricultural sector and entrepreneurship consider youths to be aged 15 to 40, a sample of youths aged 15 to 40 years, regardless of gender was considered in the data collection.

The sample size of 576 youths was determined based on Cochran (1977), widely cited in the literature (Adjimoti 2018). With this approach, the sample size has been determined based on the following equation: $n = z^2 p.(1-p)/e^2$, where n stands for the sample size, z is the standard error corresponding to a given confidence level, p is the percentage of the youth in the agribusiness sector, and e represents the error margin. As the percentage of the youths in the agribusiness sector was not known at the outset of the research project, it has been assumed to be $p = 50$ per cent. The confidence level of 95 per cent which corresponds to $z = 1.96$ and the error margin of 5 per cent were adequately chosen to get a reasonable sample size of 384 units and comply with the budget constraint. Following Adjimoti (2018), the initial sample size was increased by 50 per cent (576=384*1.5) to account for contingencies such as non-response or recording error.

The data were collected with a structured questionnaire approved by the International Institute of Tropical Agriculture (IITA)'s ethics committee. The questionnaire is structured according to seven sections, including personal characteristics of the respondents (geographical location, age, marital status, language, and religion); professional occupation; education; professional mobility; reasons to (or not to) participate in the agribusiness sector (access to land, credit, technical knowledge, formal and informal institutions); respondents' income; and information on the respondents' parents (education, occupation and income).

When drafting the questionnaire, focus groups were conducted in each municipality of the study area to get more insight on factors hampering the youths' participation in the agribusiness sector. Overall, the ten focus groups conducted have contributed to the improvement in the questionnaire. After the questionnaire was drafted, its reliability and feasibility were tested through mock interviews with 20 youths—two per municipality. Inconsistencies were properly addressed. Finally, once consent had been obtained from the participants, the questionnaire was administered to the 576 respondents through face-to-face interviews. Among the 576 respondents interviewed, 17.01 per cent are aged 36 to 40 years. To comply with the African Youth Charter's definition of youth that most African countries adopted, the units aged 36 to 40 years were dropped and the sample size reduces to 478 youths aged 15 to 35, on which the subsequent analyses are performed.

Main variables and their descriptions

Table 1 displays the variables employed in this analysis. They are classified into four categories, namely the status of the respondents—participating or not—in the agribusiness sector; the socio-economic characteristics of the respondents; the measures of informal and formal institutions (refer to Table A5 in the Appendix); and the newly generated variables. In the raw data from the questionnaire, most of the variables were measured with

Table 1 Definition of variables. *Source*: authors, 2022

Variables	Definition	The nature of variables in the database	The nature of variable after transformation
Dependent variable: participation in the agribusiness sector			
PART	Participation in the agribusiness sector	Binary (1 = yes; 0 = No)	Binary (1 = yes; 0 = No)
Socio-economic characteristics			
AGE	Age of the respondent (in years)	Continuous	Continuous
GENDER	Gender of the respondent	Binary (0 = female, 1 = male)	Binary (0 = female, 1 = male)
MATR	Marital status	Categorical*	Binary (0 = single, 1 = married and other)
LOCAT	Residential area	Categorical**	Binary (0 = rural area; 1 = urban and suburban area)
FATHEDU	Father's educational level	Ordinal variable[1]	Ordinal variable[1]
RESPEDU	Respondent's educational level	Ordinal variable[1]	Ordinal variable[1]
FATHERINCOM	Father's income	Interval variable[2]	Interval variable[2]
RESPINCOM	Respondent's income	Interval variable[2]	Interval variable[2]
LAND	Access to land	Seven-point Likert scale[3]	Binary (0 = Low; 1 = High)
CREDIT	Access to credit	Seven-point Likert scale[3]	Binary (0 = Low; 1 = High)
TECHN	Access to technical knowledge	Seven-point Likert scale[3]	Binary (0 = Low; 1 = High)
Informal institutions			
TRUST	Trust in people around	Seven-point Likert scale[3]	Binary (0 = Low; 1 = High)
OBED	Obedience is not a shared societal value	Seven-point Likert scale[3]	Binary (0 = Low; 1 = High)
CONTR	Have control over their life	Seven-point Likert scale[3]	Binary (0 = Low; 1 = High)
WOM	Women's participation in the agribusiness sector is a shared societal value	Seven-point Likert scale[3]	Binary (0 = Low; 1 = High)
YOUTH	Youth participation in the agribusiness sector is a shared societal value	Seven-point Likert scale[3]	Binary (0 = Low; 1 = High)
Generated variables			
INST_1	Index of informal institutions	–	Index computed with principal component analysis
INFINST	Informal institutions	–	Binary (0 if Inst1 $\leq$ itsmean; 1 if Inst1 > itsmean)
FORINST	Formal institutions	Seven-point Likert scale[3]	Binary (0 = Low judiciary system quality; 1 = good judiciary system)

[1] 1 = Illiterate; 2 = Primary school, 3 = Secondary school 1; 4 = Secondary school 2; 5 = Bachelor; 6 = Master and 7 = Doctorate

[2] 1 = No income; 2 = Earn less than 50.000 F CFA, 3 = Earn between 50.000 F CFA to 100.000 F CFA; 4 = Earn between 100.000 F CFA and 150.000 and 5 = earn above 150.000 F CFA. F CFA is the unit of account of the local currency. At the time the survey was carried over, 1F CFA is worth 0.0017 dollar American

[3] 1 = Not at all; 2 = Very weakly; 3 = Weakly; 4 = Moderately; 5 = Strongly; 6 = Very strongly; 7 = Extremely. The Likert scale captures the extent to which the respondent agrees on the assertions measuring the variables

*1 = Single; 2 = Married; 3 = Divorced; 4 = Widow; 5 = Separated

**1 = Urban area, 2 = Suburban area and 3 = Rural area

a seven-point Likert scale. Those variables include informal institutions, formal institutions, and access to inputs such as land, credit, and technical knowledge. Respondents' personal characteristic such as marital status and geographical areas of the respondents were categorical variables; marital status has been converted into binary variable. The education level of respondents and their fathers are ordinal variables, the income of the

respondents' fathers, and income of respondents are interval variables, while the age of the respondents is continuous. As a binary variable, youth participation in the agribusiness sector (the outcome variable) takes a value of 1 if the respondent has an agribusiness occupation and 0 otherwise.

Variables initially measured with a seven-point Likert scale such as informal institutions' attributes were transformed into binary variables to facilitate their interpretation and ease the computation of the index of informal institutions with principal component analysis (PCA). Based on the seven-point Likert scale variables from the raw database, the attributes of informal institutions have been transformed into binary variables before computing the index of informal institutions with PCA. The resulted variable that captures informal institutions takes a value of 1 if the index of informal institutions is above its mean and 0 otherwise. Yet, among generated variables is the measure of formal institutions. Formal institutions are also measured by a binary variable which equals to 1 if the Likert's scale associated with the quality of the judiciary is above its mean and 0 otherwise. A value of 1 denotes that the judiciary is impartial, while a value of 0 indicates that the judiciary is partial, based on the respondents' viewpoint.

As shown in Table 1, five attributes of informal institutions were considered, including trust (Trust), control (Contr), obedience (Obed), societal perceptions of the youths (Youth), and women's (Wom) participation in the agribusiness sector. Previous studies such as Dobler (2011) and Tabellini (2010) used trust, control, and obedience to measure informal institution. These attributes were also used in this current paper to proxy informal institutions.

The variable 'Trust' measures the extent to which the respondent trusts people within his/her vicinity. In a high-trust society, monitoring expenses and transaction costs are so low that economic agents are incentivised to innovate and participate in productive economic activities (Dobler 2011). Being motivated to take part in productive occupations is driven by the expectation of high returns owing to low transaction costs (Tabellini 2010). Subsequently, individuals from a high-trust society are more likely to become entrepreneurs (Zweynert and Goldschmidt 2006).

The variable 'Contr' measures the extent to which the respondent has full control over his/her life by exercising full freedom of choice and controlling events that happen in his/her life. This variable accounts for destiny. People who think they can influence their destiny are existentialists and work harder to alter their current situation, while people who believe in predetermination are essentialists and lack the incentive to innovate and invest. The former is more likely to participate in productive activities if provided with opportunities while the latter are more reluctant.

'Obed' captures the extent to which '*obedience*' is not a shared societal value. It is used to measure the societal structure—that is, hierarchical or modern societies. Hierarchical societies are characterised by limited morality in which individuals attach value to obedience and only trust within a clan, family, or ethnic group. Contrastingly, modern societies are less hierarchical and are characterised by a low level of obedience and a high level of trust. Furthermore, modern societies are performance-based and celebrate individualism, all features that potentially motivate individuals to be constantly in search of themselves.

'Wom' and 'Youth', respectively, measure the extent to which the participation of women and youth in the agribusiness sector is a shared societal value. In societies where participation of women and youths in the agribusiness sector is not welcomed, shared, valued, and supported, women and the youths get disincentivised from running agribusiness activities. This is typical of societies where a large share of the educated youths—even unemployed—is willing to be employed in the public sector or as government officials and operate outside the agricultural sector (Yami et al. 2019); this disenchantment traces back to everyday discourses, portraying agri-related activities as a 'dirty' occupation reserved for non-educated individuals, as well as individuals in the inferior societal classes (Fox and Thomas 2016; Mulema et al. 2021). Such pessimistic descriptions may discourage the educated youths from participating in the agribusiness sector. Furthermore, in most developing countries (particularly in rural areas) where societal roles are gendered, women are accountable for collecting biomass, water and caring for children, therefore participating less in productive activities (Winter et al. 2021; Devoto et al. 2012; Barron and Torero 2017; Grogan 2018). In such an environment, women's desirability to carry out agribusiness would be low. Therefore, the societal perception of women and youths in the agribusiness sector is used to capture the societal desirability of both the women and the youths to participate in the agribusiness sector.

Principal component analysis (PCA)

The paper uses the PCA technique to generate an index of informal institutions. The PCA is a dimension-reducing technique widely used to construct indexes in economic and social studies (Jolliffe 2011). It is a nonparametric and multivariate method often exploited for its potency to draw relevant information from a set of correlated variables. In this specific case, the PCA uses the orthogonal transformation to alter the set of the five informal institution attributes covering maximum variation, say $I = (I_1; I_2; I_3; I_4; I_5)$ into a set of orthogonal principal components, say $P = (P_1; P_2; P_3; P_4; P_5)$ utilising a weighted linear combinations of the five original informal institution variables. A mathematical formalisation of the model gives Eq. (1) where f_{55} represents the weight of 5^{th} principal component and the 5^{th} informal institution variable.

$$\begin{cases} P_1 = f_{11}I_1 + f_{12}I_2 + f_{13}I_3 + f_{14}I_4 + f_{15}I_5 \\ \qquad\qquad \vdots \\ P_5 = f_{51}I_1 + f_{52}I_2 + f_{53}I_3 + f_{54}I_4 + f_{55}I_5 \end{cases} \tag{1}$$

The weights attributed to each principal component are provided by the eigenvector (V) of the correlation matrix (Ω); and the variance (σ^2) for each principal component is given by eigenvalue (λ_i) of the corresponding eigenvector (V_i). The correlation matrix (Ω) used to compute the principal components is obtained from Eq. (1) which links the correlation matrix (Ω), the eigenvalues (λ), and the eigenvectors (V); F represents the identity matrix.

$$(\Omega - \lambda F)V = 0 \tag{2}$$

The components are ordered so as the first component (P_1) explains a large proportion of the total variation in the set of informal institution variables subject to $\sum_{j=1}^{5} {f_{j1}}^2 = 1$. Uncorrelated with the first principal component, the second principal component explains additional but less variation P_1 under similar constrain. Since $\sum_{i=1}^{5} \lambda_i = 5$, that is the sum of the eigenvalues equal to the number of informal institution variables or attributes, each principal component account for $\Gamma_i = {\sigma^2}_i/5$ in the total variation. The choice of eigenvalues has been the subject of debate in the prior literature. While eigenvalues greater than one are advised to be retained (Kaiser 1961), others recommend retaining the eigenvalues greater than 0.70 (Jolliffe 2011). The latter recommendation has been adopted to compute the index of informal institutions.

Empirical strategy

To evaluate the impact of informal institutions on youth participation in the agribusiness sector ($PART_{i,j}$), the response variable ($PART_{i,j}$) is regressed on informal institutions ($INFINST_{i,j}$), regional heterogeneities (R_j) captured by dummy variables measured at the municipality level and a set of control variables ($X_{i,j}$), including respondents' age, gender, area of residence whether urban or rural, income, education level, and formal institutions. The educational level and income of the respondents' fathers were also controlled for. $\varepsilon_{i,j}$ represents the idiosyncratic error term. The empirical logistic model is presented below.

$$P(PART_{i,j} = 1) = \beta_0 + \beta_1 INFINST_{i,j} + \gamma' X_{i,j} + R_j + \varepsilon_{i,j} \tag{3}$$

The empirical strategy relies on estimating a logistic regression as the outcome variable ($PART_{i,j}$) is a binary variable. Likewise, the treatment variable (INFINST) is binary, obtained from the index of informal institutions (INST_1). It takes a value of 1 when the index of informal institutions is above its mean and a value of 0 otherwise. A value of 1 indicates that informal institutions are agribusiness-friendly, while a value of 0 means that informal institutions are not friendly to the agribusiness sector. Alternatively, INFINST = 1 expresses a favourable perception of informal institutions; otherwise, it means that the youths entertain a negative perception of informal institutions (INFINST = 0). β_1 is expected to be positive and significant. As the odds ratios are reported, β_1 is equivalently expected to be significant and greater than 1.

The main issue with Eq. (3) is that the treatment variable—that is, informal institutions—may not be exogenous. Selection into the group of the youths who perceived informal institutions to be agribusiness-friendly may not be random. For instance, less educated youths are more likely to hold a positive perception of informal institutions than educated ones. Furthermore, confounders such as gender, father's income and educational level may concurrently determine the youths' perception of informal institutions and participation in the agribusiness sector. Formal institutions may jointly determine informal institutions and entrepreneurship: for instance, strengthening the judiciary predicts both the level of trust in society and entrepreneurship intention. Fostering the desirability of the agribusiness sector through formal institutions would activate women and the youths, in general, to take part in the agribusiness sector. Ignoring these issues would result in selection bias on observables.

To account for the non-randomness of the youths' perception of informal institutions in relation to the agribusiness sector, the propensity score matching (PSM) estimator has been used. Resorting to the PSM was useful to deal with selection on observables and isolate the causal impact of informal institutions on youth participation in the agribusiness sector. PSM is widely used in the literature to address endogeneity in non-experimental data (Litzow et al. 2019). Researchers appeal to PSM for it is simple in practice and it requires no equation specification. It is a nonparametric approach which aims at removing any observed heterogeneities between the treated and the control groups.

To draw a comparable statistical counterfactual, the treatment assignment (selection) equation was first estimated. This equation evaluates the determinants of youth perceptions on informal institutions—the process by which a respondent selects into the group of the youths who hold a positive perception of informal institutions—based on the logit model featured by Eq. (4). $Z_{i,j}$ are observable characteristics that may confound the causal impact of informal institutions.

$$P\left(INFINST_{i,j} = 1|Z\right) = \beta_0 + \beta_1 Z_{i,j} + \varepsilon_{i,j} \tag{4}$$

The Kernel matching algorithm was thus used to match the treated to observationally similar youths in the control group—that is, the youths who entertain negative perceptions of informal institutions—the control group. An alternative matching algorithm, that is the 5-to-1 nearest-neighbour matching was then used to double-check the quality of the matching.

The estimation strategy consists of three main points. First, after matching, the average treatment effect on the treated (ATT) was computed; this represents the baseline estimate. Second, parameters in Eq. (3) were estimated based on the matched sample. Finally, some robustness checks were performed by controlling for other variables such as access to credit, land, technical knowledge, and formal institutions.

Results

Preliminary results

Results of the principal component analysis (PCA)

Results from the PCA indicate that two eigenvalues, with a value of 2.10 and 1.07, are greater than one; both explain 63.7 per cent of the total variance. Drawing on Jolliffe (2011), who suggests retaining any eigenvalue greater than 0.70, the third eigenvalue with a value of 0.78 has been integrated in the computation of the informal institution's index as this allows us to account for greater explained variability. Overall, the three eigenvalues account for 80 per cent of the total variance. The index of the informal institutions (INST_1) is computed as follows:

$$INST_1 = \left(\frac{0.42}{0.80}\right) * P_1 + \left(\frac{0.21}{0.80}\right) * P_2 + \left(\frac{0.15}{0.80}\right) * P_3 \tag{5}$$

Figure 1 presents the plot of the eigenvalues after PCA. The required information used to compute the index of the informal institutions includes the correlation matrix, the descriptive statistics, the eigenvalues, and the eigenvectors, respectively, reported in Tables A1, A2, A3, and A4 in the annexure.

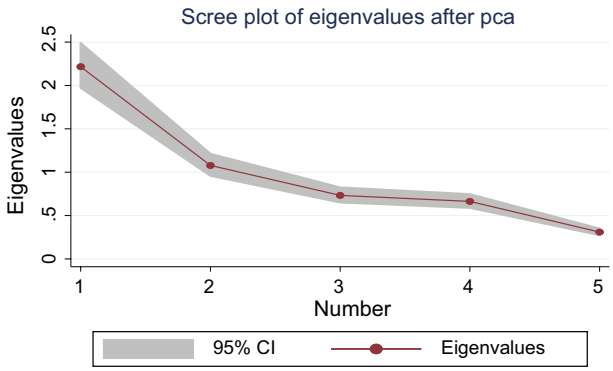

Fig. 1 Scree plot for the principal component analysis (PCA). *Source*: Authors computations, 2022

Table 2 Descriptive statistics of main variables and logit model. *Source*: Authors' computations, 2022

	Mean (standard deviation)			Difference: column (3)–(2)	Propensity score estimation: logit model
	Full sample	Treated	Control		
	(1)	(2)	(3)	(4)	(5)
Outcome variable					
Participation in the agribusiness sector (1 = yes)	0.338 (0.021)	0.545 (0.031)	0.110 (0.020)	0.435*** (0.038)	
Covariates					
Age (Continuous)	26.644 (0.213)	29.79 (0.290)	26.47 (0.314)	0.321 (0.427)	− 0.025 (0.029)
Gender (1 = male)	0.652 (0.021)	0.709 (0.028)	0.590 (0.032)	0.118*** (0.039)	0.625** (0.256)
Marital status (1 = married)	0.546 (0.022)	0.561 (0.031)	0.528 (0.033)	0.033 (0.045)	− 0.088 (0.263)
Location (1 = urban)	0.753 (0.019)	0.709 (0.028)	0.801 (0.026)	− 0.092*** (0.045)	− 0.631** (0.272)
Education (ordinal)	3.684 (0.072)	3.478 (0.099)	3.911 (0.103)	− 0.433*** (0.143)	− 0.230*** (0.078)
Father's educational level (ordinal)	2.351 (0.068)	2.260 (0.095)	2.450 (0.098)	− 0.190* (0.136)	− 0.018 (0.083)
Father's income (interval)	3.175 (0.058)	3.171 (0.077)	3.179 (0.087)	− 0.008 (0.116)	0.141 (0.110)
Income (interval)	2.541 (0.042)	2.617 (0.056)	2.458 (0.064)	0.159** (0.085)	0.316** (0.131)
Formal institutions (1 = good judiciary system)	0.427 (0.023)	0.497 (0.033)	0.348 (0.033)	0.149*** (0.047)	0.608*** (0.222)

*, **, and *** indicate significance at 10%, 5%, and 1% levels, respectively; standard errors are reported in the parentheses

Descriptive statistics

Table 2 displays the descriptive statistics of the main variables including the outcome and covariates. The mean and the standard deviation in the parentheses are, respectively, reported for the full sample, the treated and the control in Column (1) to Column (3). Statistics on the outcome show that 33.8 per cent of the sample participate in the agribusiness sector, while 66.2 per cent of the respondents are in another sector, being public servants, working for private enterprise, occupants of non-governmental positions, self-employed or squarely unemployed. 54.5 per cent of the youths who hold a positive

perception of informal institutions participated in the agribusiness sector, while only 11 per cent of the youths with negative perception of informal institutions are in the agribusiness sector.

Column (4), which reports the difference in mean between the treated and the untreated units, indicates that the difference in the mean outcome, that is participation in the agribusiness sector, is positive and significant at the one per cent level. Therefore, the youths that entertain a positive perception of informal institutions are more likely to be in the agribusiness sector than their counterparts with a negative perception. However, one must be cautious in interpreting these results as a causal impact since both groups may be heterogeneous based on observable characteristics. Indeed, the difference in the mean of covariates between the treated and the control group reveals significant observed heterogeneities between both groups. The differences in the mean of the respondents' gender, area of residence, education, income, father's income, and perception of formal institutions are significant, underscoring perceptible heterogeneities between the treated and the control. Such dissimilarities between the treated and the untreated confirm that the difference in the mean outcome should not have a causal interpretation and, hence, justify resorting to the propensity scores matching technique.

Propensity score matching and balancing test results

Column (5) of Table 2 reports the estimation results of the propensity scores. The results from the logit model identify some determinants of youth perceptions of informal institutions. The selection equation in Column (5) indicates that the youths with a greater income and favourable perception of formal institutions are more likely to hold positive perception of informal institutions, that is to believe that informal institutions are agribusiness-friendly. However, the youths from urban areas and youth with high educational levels are less likely to nurse favourable perceptions of informal institutions. These results confirm that selection into the treated is not random; rather, it is dictated by identified observed characteristics such educational level, income, areas of residence, gender, and youth perception of formal institutions.

Figure 2 depicts the distribution of the estimated propensity scores across the treated and the control groups. A sufficiently large overlapping region between the distributions

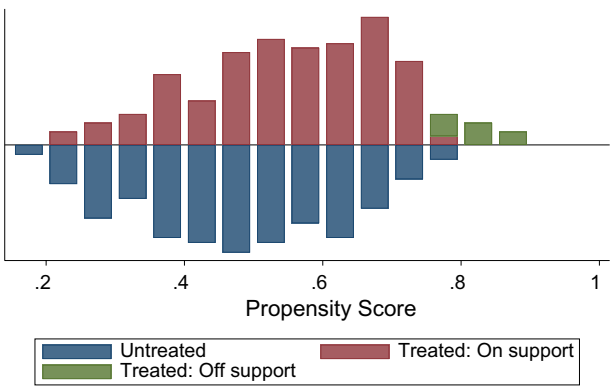

Fig. 2 Distribution of the propensity score for the treated and the control group after five-to-one nearest-neighbour matching. *Notes*: treated units are the youths who think informal institutions are agribusiness-friendly. *Source*: Authors, 2022

of both groups can be observed. Such a result demonstrates that the assumption of common support is satisfied.

Results from the standard t test for each matching variable ascertain that the unconfoundedness assumption is satisfied. This assumption suggests that the potential outcome is orthogonal to the treatment conditional on the propensity scores; it entails that participation in the agribusiness sector is independent of having and not having a positive perception of informal institutions. Table 3 reports the results of the balance test for both Kernel and nearest-neighbour matching. The *p* values for the matching variables are large enough, signifying that those covariates are balanced across the treated and matched control group. The biases due to observable heterogeneities have been considerably reduced after the matching. As shown in Fig. 2, the treated and untreated groups display quite similar distributions as observations with propensity score close to 1 or 0 were excluded. Henceforth, both groups become similar, irrespective of the perception's status after matching (Fig. 3).

Main findings

Table 4 presents the baseline results. Column (1) and Column (2) of Table 4 report the average treatment effect (ATTs) on the treated obtained, respectively, from Kernel matching and 5-to-1 nearest-neighbour matching estimators. Both matching estimators provide consistent results. The ATTs are positive and significant at the one per cent level. Units with a positive perception of informal institutions are 48.6 per cent more likely to participate in the agribusiness sector. The ATT has also been computed with alternative measure of informal institution and results are reported in Table 5 (refer to the note under the table for additional information on the computation of the alternative index

Table 3 Balancing test results. *Source*: Authors' computations, 2022

	5-to-1 nearest-neighbour matching				Kernel matching			
	Mean		Bias reduction (%)	t test (*p* value)	Mean		Bias reduction (%)	t test (*p* value)
	Treated	Untreated			Treated	Untreated		
Age (Continuous)	26.67	26.609	79.7	0.14 (0.892)	26.67	26.58	71.7	0.19 (0.848)
Gender (1 = male)	0.701	0.738	69.3	−0.77 (0.441)	0.701	0.712	91.1	−0.22 (0.826)
Marital status (1 = married)	0.519	0.510	73.3	0.17 (0.867)	0.519	0.518	98.4	0.01 (0.992)
Location (1 = urban)	0.729	0.742	85.7	−0.29 (0.776)	0.729	0.736	92.5	−0.15 (0.882)
Education (ordinal)	3.734	3.833	77.3	−0.61 (0.541)	3.734	3.772	91.2	−0.23 (0.815)
Father's educational level (ordinal)	2.419	2.443	87.8	−0.15 (0.883)	2.419	2.426	96.4	−0.04 (0.965)
Father's income(interval)	3.232	3.240	−6.3	−0.07 (0.942)	3.232	3.240	−156.6	−0.17 (0.862)
Income (interval)	2.591	2.561	81.3	0.30 (0.764)	2.591	2.561	66.8	0.54 (0.590)
Formal institutions (1 = good judiciary system)	0.458	0.477	87.4	−0.36 (0.721)	0.458	0.477	94.8	−0.15 (0.883)

Standard errors are reported in the parentheses

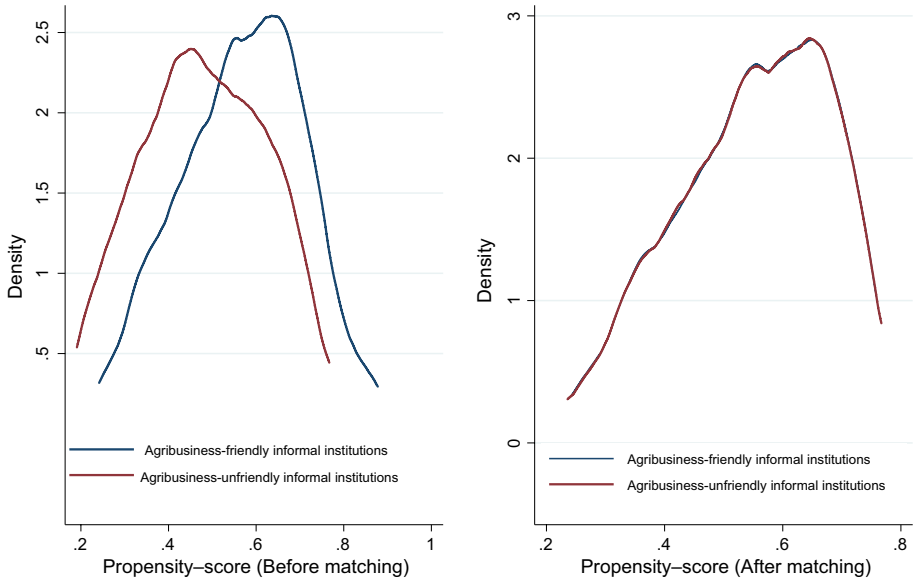

Fig. 3 Distribution of the propensity scores for the treated and the control group before and after five-to-one nearest-neighbour matching. *Source*: Authors, 2022

Table 4 Estimate impacts of informal institutions on youth participation in the agribusiness sector—PSM results. *Source*: Authors' computations, 2022

	Kernel matching estimator	**5-to-1 nearest-neighbour matching estimator**
	(1)	**(2)**
Average treatment effect on the treated (ATT)	0.486*** (0.046)	0.486*** (0.044)
Number of observations (treated)	194	194
Number of observations (untreated)	175	175
Number of observations (total)	369	369
Pseudo R2	0.066	0.009

Numbers in parentheses are standard errors

*, **, and *** indicate significance at 10%, 5%, and 1% levels, respectively. The sample size drops from 478 to 369 because observations off the common support are excluded

of informal institutions). Results from Table 5 are consistent with findings reported in Table 4. The ATT remains positive and significant at one per cent level either with Kernel or 5-to-1 nearest-neighbour matching estimators. Such results presume that agribusiness-friendly informal institutions stimulate youth participation in the agribusiness sector.

Table 6 presents the results from the logistic regression on the matched sample in which the coefficients reported are odds ratios. Results reported in Column (2) incorporate regional differences, while Column (1) does not. In both columns, the odds ratio associated with informal institutions is superior to one. This result suggests that agribusiness-friendly informal institutions have a positive impact on youth participation in the agribusiness sector. The youths who believe that informal institutions are agribusiness-friendly are more likely to participate in the agribusiness sector.

Table 5 Estimate impacts of informal institutions on youth participation in the agribusiness sector—PSM results—alternative measure. *Source*: Authors' computations, 2022

	Kernel matching estimator	**5-to-1 nearest-neighbour matching estimator**
	(1)	**(2)**
Average treatment effect on the treated (ATT)	0.498*** (0.044)	0.475*** (0.043)
Number of observations (treated)	180	189
Number of observations (untreated)	189	180
Number of observations (total)	369	369

Numbers in parentheses are standard errors

*, **, and *** indicate significance at 10%, 5%, and 1% levels, respectively

The binary treatment variable is obtained from the score of informal institutions computed from the Likert-scale values of institutional attributes using the formula score = (observed score-minimum score)/(maximum score-minimum score)

The sample size drops from 478 to 369 because observations off the common support are excluded

For robustness checks, additional variables have been controlled for. These variables include access to credit, access to land, and access to technical knowledge. For each variable, estimation results are, respectively, reported in Columns (3), (4) and (5) of Table 6. Yet, the odds ratio associated with informal institutions remains greater than one. Thus, controlling for additional variables including access to credit, access to land and access to agribusiness-based technical knowledge has not altered the main results.

The coefficients of 'access to land' and 'technical knowledge' are greater than one and significant at the one per cent level; this demonstrates that youths with access to a plot of land and agricultural experience are more likely to run an agribusiness activity. Contrary to access to land and technical knowledge, the odds ratio of access to credit is not significant and is less than one. Thus, access to credit does not stimulate youth to participate in the agribusiness sector. Finally, the extent to which the impact of informal institutions on participation in the agribusiness sector is gender sensitive has been assessed. In this regard, gender of the respondent has been interacted with informal institutions. While the coefficient of informal institutions remains consistent with the main findings, the coefficient of the interaction term is not statistically significant. Therefore, the impact of informal institutions on youth participation in the agribusiness sector is not gender-sensitive.

Table 6 indicates further that the age and gender of respondent, the marital status of the respondent, the educational level of the respondent's father, and the respondents' perception of formal institutions have no significant impact on the youth participation in the agribusiness sector. While the youth income is positively correlated with participation in the agribusiness sector, the youths from urban and suburban areas, with higher educational levels and from high-income families are less likely to run agribusiness activities.

Table 6 Estimate impacts of informal institutions on youth participation in the agribusiness sector from regression's framework. *Source*: Authors' computations, 2022

	Identification strategy: logistic regression on the matched sample					
	Dependent variable: youth participation in the agribusiness sector (1 = yes; 0 = no)					
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Informal institution (1 = agribusiness-friendly)	9.180*** (2.984)	9.119*** (2.966)	9.538*** (0.3161)	9.717*** (3.335)	9.530*** (3.416)	6.624*** (3.788)
Access to credit (1 = yes)			0.831 (0.284)			
Access to land (1 = yes)				4.163*** (1.388)		
Access to technical knowledge (1 = yes)					9.360*** (3.477)	
Informal institution*gender						0.618 (0.434)
Age (Continuous)	0.968 (0.037)	0.971 (0.037)	0.966 (0.037)	0.956 (0.037)	1.003 (0.043)	0.970 (0.037)
Gender (1 = male)	1.149 (0.395)	1.219 (0.430)	1.258 (0.447)	1.134 (0.419)	0.758 (0.304)	1.443 (0.600)
Marital status (1 = married)	0.819 (0.290)	0.846 (0.304)	0.905 (0.328)	1.022 (0.394)	0.531 (0.213)	0.837 (0.302)
Location (1 = urban)	0.413** (0.141)	0.340*** (0.116)	0.359*** (0.123)	0.415** (0.155)	0.314*** (0.122)	0.349*** (0.122)
Education (ordinal)	0.603*** (0.062)	0.595*** (0.063)	0.590*** (0.063)	0.615*** (0.068)	0.606*** (0.070)	0.589*** (0.063)
Father's educational level (ordinal)	0.920 (0.101)	0.960 (0.106)	0.967 (0.108)	0.945 (0.113)	0.922 (0.112)	0.956 (0.107)
Father's income (interval)	0.785* (0.113)	0.678** (0.111)	0.670** (0.109)	0.669** (0.115)	0.748* (0.130)	0.683** (0.113)
Income (interval)	2.116*** (0.374)	2.013*** (0.370)	2.047*** (0.379)	1.878*** (0.355)	2.050*** (0.396)	2.020*** (0.371)
Formal institutions (1 = good judiciary system)	0.921 (0.281)	0.913 (0.282)	0.906 (0.281)	0.839 (0.268)	0.601 (0.208)	0.931 (0.290)
Constant	1.287 (1.476)	3.916 (4.741)	3.978 (4.907)	1.960 (2.550)	0.386 (0.562)	4.786 (6.015)
Regional differences	No	Yes	Yes	Yes	Yes	Yes
Observations	356	356	355	356	355	356
Pseudo R-squared	0.31	0.41	0.42	0.44	0.49	0.41

The coefficients reported in this table are odds ratio obtained from a logistic regression on the matched sample performed with Kernel algorithm

A coefficient greater than unity indicates an increase in youth participation in agribusiness, while a value less than one indicates a decrease

From column (2) to (6), regional differences, capturing municipality heterogeneities, were accounted for; nine out of the ten regional dummies were integrated into the regression to avoid multicollinearity

The sample size drops from 478 to 355/356 due to the exclusion of observations off the common support and missing observations from explanatory variables

*, **, and *** indicate significance at 10%, 5%, and 1% levels, respectively; robust standard errors are reported in the parentheses

Discussion of the main findings

Various factors were pondered over to study the impeding factors to youth participation in the agribusiness sector, among which are limited access to financial services, plots of land, technical knowledge and youths' negative perception of the agribusiness

sector (Akrong and Kotu 2022; Fox and Thomas 2016; Magagula and Tsvakirai 2020; Senou and Manda 2022; Sumberg and Okali 2013; Twumasi et al. 2019; Yami et al. 2019). The current paper takes different approach by examining the extent to which agribusiness-unfriendly informal institutions drive away the youths from the agribusiness sector. Such perspective assigns this current article to the line of research that reflects on the contribution of informal institutions to entrepreneurship development (Autio et al. 2013; Baughn and Neupert 2003; Hechavarria and Reynolds 2009; Muralidharan and Pathak 2017; Wennberg et al. 2013). More to the point, this article is among the first to identify the main implication of informal institutions on youth participation in the agribusiness sector in Benin.

Findings from this paper consistently highlight that culturally shaped informal institutions affect youth participation in the agribusiness sector. This finding is in line with previous findings that link culture, belief, and informal institutions to agribusiness (Baughn et al. 2006; Ephrem et al. 2021; Muralidharan and Pathak 2017; Noguera et al. 2012; Wennberg et al. 2013). Agribusiness-friendly informal institutions promote youth participation in the agribusiness sector, while agribusiness-unfriendly informal institutions fuel the disenchantment of the youths towards agribusiness occupations in Benin.

In this study, informal institutions cover societal trust level, desirability for the agribusiness sector, self-control, and performance orientation. Respondents highlight a low level of trust among the youths within their immediate vicinity, and this may justify their low participation in the agribusiness sector. In low-trust societies, the high level of transaction costs prevents individuals from participating in productive activities (Dobler 2011; Tabellini 2010). The seminal paper by Nunn and Wantchekon (2011) provides a better understanding of the low level of trust in most African countries from a historical perspective. From both authors' perspectives, the mistrust of most African countries originates from the Slave trade and is transmitted from parents to children through values, cultures, norms, and beliefs. Individuals' trust in their friends, relatives, and governments is low if their ancestors were affected by the slave trade. The negative historical shock on trust persists and affects the decisions of individuals today. The low level of trust in Beninese society, and particularly in its southern region that precludes the youths from coming together in cooperatives could be better understood from Nunn and Wantchekon (2011)'s perspective. In that gloomy situation where the youth have limited access to financial resources to engage in entrepreneurship, such groupings may function as moral collaterals to facilitate access to credit. However, setting cooperatives have little chance of success among the youths because of the low level of trust, leading to individual initiatives and much disenchantment towards entrepreneurial initiatives.

Agribusiness-unfriendly informal institutions such as low societal desirability for agri-related activities preclude the youths and women to participate in the agribusiness sector especially when they are educated. Most of the respondents acknowledged that the youths and women participating in the agribusiness sector are not socially shared and valued. These negative social construct against agricultural entrepreneurship is purely cultural and entertained by beliefs. The discourses around the youths through family, school, and media, giving more weight to public sector employment, cause educated youths to aim for off-farm jobs. Low societal desirability of women in the agribusiness sector discourages women through many channels including social norms, families,

religions and ideologies, and gender roles (Giménez and Calabrò 2018). Women are culturally prone to home chores that prevent most of them from developing productive activities; through the socialisation process, they are educated as such. Social norms may affect women through gender stereotypes, which is what society expects them to be or to do and not their aspiration, and through the underrepresentation of women entrepreneurs in media. More research needs to be carried out in Benin for a further understanding of the channels through which agribusiness-unfriendly informal institutions discourage the youth to participate in the agribusiness sector.

These findings emerge with policy implications. The rhetoric on youth participation in the agribusiness sector puts increased emphasis on access to credit. Though such discourses have been echoed by government officials and development partners, findings from this article warn against programmes that seek to attract the youths to the agribusiness sector without any regard for the institutional environment that has shaped and continues to influence their daily lives. In societies with low trust and fear of entrepreneurship, institutional reforms are important to strengthen trust among economic agents. In societies where entrepreneurship is not valued, admired, and legitimised, and in which women's participation in the agribusiness sector is stigmatised, providing financial support to the youths may not increase the number of those entering agribusiness activities as expected. Therefore, it is important that pre-programmes first highlight and inform the youths, regardless of their gender, that the choice to participate in the agribusiness sector should be a lifestyle choice and not a way to become wealthy. The desirability for the agribusiness sector might change if the youths' perception of agribusinesses and agriculture becomes positive. This is possible through education and media. Nonetheless, informal institutions are persistent and deeply rooted in beliefs and cultures. Whence, altering them requires long-term policies rather than short-term therapy. Implicitly, all the key policies mentioned above must ascribe to the long run.

Findings from this paper also highlight that the limited access to land and technical knowledge impedes youth participation in the agribusiness sector. Contrary to Akrong and Kotu (2022), who report a negative correlation between training and participation in the agribusiness sector, findings in this article are supportive of agricultural technical knowledge being a crucial input for youth participation in the agribusiness sector in Benin. Findings also underscore a negative correlation between educational level and participation in the agribusiness sector. This implies that educated youths are less likely to venture into agribusinesses. Contrary to Nguyen et al. (2019) and Muralidharan and Pathak (2017), who find a positive relationship between entrepreneurship and education, findings of the paper are in line with Akrong and Kotu (2022) and Ephrem et al. (2021).

Conclusion and policy implications

Given the importance of the agricultural sector in the Beninese economy and the increasing youth unemployment rate, the rhetoric of the government and its development partners includes motivating the youths to develop *agri*-related activities and participate in the agribusiness sector. However, the lack of research evidence to service policy design delays policymakers' capacity. To fill in the gap, this paper contributes to the debate around the impediments hurdling the youths to participate in the

agribusiness sector. It differs from the previous research conducted in Benin by evaluating the impact of informal institutions on youth participation in the agribusiness sector.

Using a rich data set of 478 youths aged 15 to 35, collected on youths in Southern Benin, this paper relies on the propensity score matching technique to eliminate any selection bias that may arise from observable characteristics. In the baseline estimates, the standard treatment effect on the treated was computed. Based on the matched sample, a logistic regression approach was used to isolate the causal impact of informal institutions. For robustness checks, additional variables such as access to credit, land, technical knowledge, formal institutions, and gender were also controlled for.

The findings consistently suggest that agribusiness-friendly informal institutions are essential to youth participation in the agribusiness sector. High-trust environments, high societal desirability for agribusiness and self-confidence promote youth participation in the agribusiness sector. Therefore, there is a need for institutional reforms that strengthen agribusiness-friendly informal institutions. For instance, by reducing corruption practices and strengthening the judiciary, policymakers could reset a high level of societal trust. For the agribusiness sector to appeal to the youths and women, policymakers ought to inform the relevant group of the untapped opportunities available in the agricultural sector. A further step to increase societal desirability for agribusinesses remain to inform the youths that occupation in the agribusiness sector is a lifestyle choice. Increasing the desirability for the agribusiness sector among the educated youths must involve providing them with technical training on how to run agribusinesses and integrating agribusinesses into secondary schools' curricula. In addition to a well-tailored agribusiness-based education, media must play a significant role in the promotion and valorisation of the youths, especially women in the agribusiness sector. All these policies must aim at evolving the youths' mindset. However, caution remains that those policies ought to be ascribed in the long run since informal institutions are rooted in beliefs and cultures and therefore hard to alter. Moreover, a one-shot policy may not yield desirable effects. The re-orientation of informal institutions requires constant policy determination.

As findings from this article support that the lack of technical knowledge impedes youth participation in the agribusiness sector, implementing capacity development programmes to improve the youths' knowledge of agribusinesses is crucial. Short-term policies such as easing access to land and capacity development implementation are more likely to yield short-term effects. Yet, combining long-term and short-term policies is critical for the sustainable participation of the youths in the agribusiness sector. A critical finding suggests that access to credit does not steer the youths towards the agribusiness sector. These results highlight that relying only on the provision of funding to stimulate the youths into the agribusiness sector may fail to yield a desirable effect even though financial resources are crucial instrument for successful agribusinesses. To avoid low loan repayment among the youths, policy oriented to financial support must be informed on youth desirability for agri-related activities.

This article does not claim to have exhausted all aspects of youth participation in the agribusiness sector in Benin. For instance, it has not differentiated the types of agribusinesses in which the youths participate. As the agribusiness sector incorporates various agricultural value chains including commercial, production, and transformation, future

research is needed to evaluate the extent to which informal institutions affect the selection of the youths into each value chain of the agribusiness sector. As this article has relied on cross-sectional data, due to a lack of panel data, time-varying heterogeneities have not been controlled for. Future research may explore panel data and use an instrumental variable approach whenever relevant instruments for informal institutions are available. Another limitation remains that the paper was not able to further explore the cultural aspects that drive or impede the youths in participation in the agribusiness sector in Benin. As Benin is a multicultural and multilinguistic country, such analysis would provide better insight into cultural impediments.

Appendix

See Tables 7, 8, 9, 10, and 11.

Table 7 Correlation between informal institutions' variables. *Source*: Authors computations, 2022

Variables	TRUST	OBED	CONTR	WOM	YOUTH
TRUST	1.000				
OBED	0.207*	1.000			
CONTR	0.145*	0.205*	1.000		
WOM	0.04	0.245*	0.280*	1.000	
YOUTH	0.04	0.316*	0.323*	0.678*	1.000

* indicates significance at the 5% level

Table 8 Descriptive statistics. *Source*: Authors computations, 2022

Variables	Observations	Mean	Standard deviation	Minimum	Maximum
TRUST	478	0.476	0.499	0	1
OBED	478	0.518	0.500	0	1
CONTR	478	0.592	0.491	0	1
WOM	478	0.439	0.496	0	1
YOUTH	478	0.562	0.496	0	1

Table 9 Eigenvectors. *Source*: Authors computations, 2022

Variable	Comp1	Comp2	Comp3	Comp4	Comp5
TRUST	0.175	0.823	0.348	0.410	-0.037
OBED	0.386	0.437	-0.640	-0.490	0.092
CONTR	0.442	-0.080	0.665	-0.595	-0.023
WOM	0.554	-0.261	-0.035	0.379	0.691
YOUTH	0.563	0.236	-0.157	0.302	-0.714

Table 10 Eigenvalues. *Source*: Authors computations, 2022

Component	Eigenvalue	Difference	Proportion	Cumulative
Component 1	2.106	1.027	0.421	0.421
Component 2	1.079	0.289	0.215	0.637
Component 3	0.789	0.079	0.157	0.800
Component 4	0.709	0.393	0.141	0.942
Component 5	0.315		0.063	1.000

Table 11 Sample questions on informal and formal institutions related to participation in the agribusiness sector. *Source*: Authors, 2022

Informal institutions	Likert scale
Trust, control, and obedience	1 = Not at all; 2 = Very weakly; 3 = Weakly; 4 = Moderately; 5 = Strongly; 6 = Very strongly; 7 = Extremely
To what extent do you trust people around you?	
To what extent do you have full control over your life?	
To what extent do you think obedience should not be a shared societal value?	
Societal desirability of women and youth in the agribusiness sector	
To what extent do you think that youth participation in the agribusiness sector is a share societal value in your region?	
To what extent do you think that woman's participation in the agribusiness sector is a share societal value in your region?	
Formal institutions	
To what extent do you think the judiciary is effective?	1 = Not at all; 2 = Very weakly; 3 = Weakly; 4 = Moderately; 5 = Strongly; 6 = Very strongly; 7 = Extremely
To what extent do you think property right is protected?	
How effective is the fight against corruption?	
To what extent do you think the quality of the business environment improved?	
To what extent the administrative procedures to run a business have improved?	

Acknowledgements
We are grateful to the International Fund for Agricultural Development (IFAD) and the International Institute of Tropical Agriculture (IITA) for the provision of funding and capacity building. We would further like to thank the anonymous reviewers for their comments.

Author contributions
The authors of the manuscript have all contributed to the research design, data collection and analysis, and write-up of the manuscript. They agreed to publish the approved version of the manuscript. All authors read and approved the final manuscript.

Funding
This research was funded by the International Fund for Agricultural Development (IFAD) under the grant 2000001374: Enhancing Capacity to Apply Research Evidence (CARE) in Policy for Youth Engagement in Agribusiness and Rural Economic Activities in Africa.

Availability of data and materials
Data used in this study are available and can be supplied upon request.

Declarations

Competing interests
The authors report no potential conflict of interest.

Received: 15 August 2022 Revised: 12 March 2023 Accepted: 13 March 2023
Published online: 28 March 2023

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