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Perceived Sustainability of Contract Goat Farming in Odisha

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Authors' contributions

This work was carried out in collaboration between all authors. Author CKS designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author RT managed the analyses of the study. Author RR managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Contract farming is gaining popularity among the resource poor farmers in Odisha nowadays. But, Sustainability of a farming practice is always a major concern for any new types of venture. Therefore, the present study has been done with the objective to assess the perceived sustainability of contract goat farming (CGF) in Odisha. Data were collected through personal interview from randomly selected 60 contract goat farmers and 30 contractors associated with these contract farmers. The perceived sustainability of the contract goat farming was calculated in terms of productivity, economic viability, risk involved, trustworthiness, equity and equality, autonomy and social and cultural adoptability. The study revealed that the mean score obtained for productivity, economic viability, risk involved, trustworthiness, equity and equality, autonomy, social and cultural adoptability was between 75-100 percent of the maximum score both in case of contract goat farmers and contractors. It implies that CGF have higher sustainability in terms of

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productivity, economic viability, risk involved, trustworthiness, equity and equality, autonomy, social and cultural adaptability and therefore it can be also recommended to landless and marginal farmers of other region.

Keywords: Contractor; contract goat farming; Odisha; sustainability.

1. INTRODUCTION

Contract farming (also called production contract) can be defined as a fixed-term arrangement between a farmer and a contractor, entered into before production begins, under which the farmer agrees to sell or deliver to the contractor a designated crop on identified acres in a specified manner, and the contractor agrees to pay the farmer a price according to a specified method and at an agreed time [1]. Contract farming is establishment of farm-firm linkages for not only about providing assured markets, reducing risk, and ensuring 'remunerative' prices, but also providing critical services such as credit, insurance, grading and inspection, technology extension, and market information [2]. Hence, they are attracted towards the lucrativeness of contract farming.

In livestock sector, the contract farming has been successfully implemented in poultry, dairy and hog farming. In spite of high demand of goat meat, no such contract farming has yet been noticed in goatery sector except some commercial goat farms which rear broiler type goats and provide consultancy to the large farms on a business mode. Recently, goat farming on contract basis is emerging in the state of Odisha, India where the farmers involved in this sort of contract farming rear their own flock of goat along with the goats provided through contract [3]. But, sustainability of this type of farming practice should always be a major concern. Contract goat farming is multifunctional; thus their economic and social roles needs to be considered in any strategy or policy aimed at the sustainable contract goat farming. Hence, an attempt was undertaken to analyze the perceived sustainability of this contract goat farming in the study area.

2. MATERIALS AND METHODS

2.1 Study Design

The study was purposively conducted in the western part of Odisha. This region is basically a rainfed in nature where about half of the total land area is covered under forest and people are highly engaged in animal husbandry. Contract farming in livestock especially in goat has come up for quite sometimes in this area. Balangir district was randomly selected among top 5 goat populated districts from western part of Odisha. Again, 5 blocks namely Titilagarh, Turakela, Saintala, Muribahal and Bangomunda were randomly selected for data collection. In all, 60 contract goat farmers (CGF) and 30 contractors associated with these contract farmers were randomly selected for the study.

2.2 Methods

2.2.1 Investigation implemented

The perceived sustainability of the contract goat farming was calculated in terms of economic viability, risk involved, trustworthiness, social and cultural adoptability, equity and equality, autonomy and productivity. The study was conducted during December, 2013 to March 2014. A pilot study was carried out in the five selected blocks before data collection. A draft of interview schedule for the purpose of data collection was developed by incorporating the tools and techniques of measurement of different indicators. It was then modified and data were collected from the respondent directly by the researcher. In pre-testing, care was taken not to include those respondents who were selected as sample for final data collection. The schedule developed contains statements for each indicator and score assigned for the opinion of the contract farmers and contractors were noted as fully agree (3), moderately agree (2), disagree (1) and can't say (0). Maximum score for each statement was 3 against which the mean score obtained was calculated and compared. Accordingly the sustainability maximum score for contract farmers and contractors were calculated and compared with the total mean score obtained for farmer and contractor separately.

2.3 Data Analysis

Simple statistical tools were applied such as frequency, percentage and mean using Statistical Package for the Social Sciences (SPSS) 20.

3. RESULTS AND DISCUSSION

Sustainability of CGF according to the perception of contract goat farmers and contracts in terms of the various indicators are described as follows.

3.1 Productivity

Mean productivity score in case of contract farmers for satisfactory production, satisfactory twinning rate and less morbidity and mortality were 2.58, 2.53 and 2.23 respectively which were 86%, 84.4% and 74.4% to the maximum scores of the concerned indicators. The total means obtained score for productivity was 7.35 (81.66%) which was very close to the maximum score and hence it can be concluded that CGF had a high productivity (Table 1).

The study further shows that the mean productivity score of contractors for satisfactory production, satisfactory twinning rate and less morbidity and mortality were 2.30, 2.13 and 2.33 respectively which are 76.66%, 71% and 77.66% of the maximum score for the concerned indicators. Hence, total mean score obtained for productivity is 6.77 (75.22%) out of the maximum score and hence it can be concluded that CGF had a high productivity (Table 1).

3.2 Economic Viability

Mean economic viability score of contract farmers for the cost of rearing, satisfactory income, good employment opportunity and better liquidity were 3, 2.02, 1.55 and 2.78 respectively which were 100%, 67.3%, 51.66% and 92.66% to the maximum scores for the concerned indicators. The total means score obtained is 9.32 (77.66%) out of maximum score (Table 2).

The study further indicates that the mean economic viability score of contractors for guaranteed recovery of investment, satisfactory income, good employment opportunity and better liquidity are 3, 2.67, 3 and 2.37 respectively against the maximum score. The total mean score for the economic viability is 11 (91.66%) out of the maximum score (Table 2). Hence it can be said that CGF is economically viable for both contract farmers and contractors.

3.3 Trustworthiness

Table 3 indicates that mean trustworthiness score of contract farmers for loyal behavior of contractor, no betrayal by contractor at any time of contract and no violation of agreement by the contractor were 2.93, 2.77 and 2.58 respectively which were 97.66%, 92.33% and 86.00% to the maximum scores for the concerned indicators. The total means score obtained is about 8.28 (92%) out of the maximum score.

The result further shows that mean trustworthiness scores of the contractors for loyal behavior of the farmers, no betrayal by the farmers at any time of contract, no violation of agreement by the farmers and care of the contract goat properly by the farmers were 2.43, 2.13, 2.33 and 2.37 which are 81%, 71%, 77.66% and 79% of the maximum score. The total means score obtained for trustworthiness is about 9.27 (77.25%) of the total maximum score (Table 3). Thus, it implies that the trustworthiness among the contract farmers and the contractors was very high and was the basis of sustainability of the informal mode of contract goatery business. In case of formal contract dairy farming, the major constraints expressed by the contracting agencies in expanding contract farming include violation of terms and conditions by farmers [4]. Further, it reported that important constraints ranked by contracting firm were difficulty in maintaining communication with farmers, difficulty in arranging quality inputs, violation of terms and conditions by farmers, selling of milk to other firms by farmers, extra contractual marketing, poor service delivery by health specialists, non-availability of extension staff [5] which indicated that they had less trustworthiness towards the farmers.

3.4 Risk Reduction

Mean risk reduction score of contract farmers for less disease outbreak, no exploitation of selling goats through contractor and sharing of death of goats by the contractor were 2.23, 1.72, 3.0 respectively which are 74.33%, 57.33% and 100% to the maximum scores for the concerned indicators which shows that the scores are higher except exploitation by the contractors as perceived by the farmers. The total mean score obtained is 6.95 (77.22%) out of the maximum score (Table 4).

Table 1. Perceived productivity in sustainability of CGF bycontract farmers and contractor

Productivity	CGF farmers (N=60)				Contractor (N=30)			
	Indicators			Total	Indicator			Total
	Satisfactory production	Satisfactory twining rate	Less Morbidity & Morbidity		Satisfactory production	Satisfactory twining rate	Less Morbidity & Morbidity	
FA	40 (66.7)	46(76.6)	26(43.3)	**112(62.2)**	16(53.3)	13(43.3)	16(53.3)	**45(50)**
MA	15(25)	0(0)	22(36.7)	**38(21.11)**	7(23.3)	8(26.7)	8(26.7)	**23(25.5)**
DA	5(8.3)	14(23.3)	12(20)	**31(17.22)**	7(23.3)	9(30)	6(20)	**22(24.5)**
CS	0(0)	0(0)	0(0)	**0(0)**	0(0)	0(0)	0(0)	**0(0)**
Max Score	**3**	**3**	**3**	**9**	**3**	**3**	**3**	**9**
Mean score	2.583	2.533	2.233	**7.35**	2.30	2.13	2.33	**6.77**
% to Max Score	86.11	84.43	74.43	**81.66**	76.66	71.00	77.66	**75.22**

FA= Fully Agree, MA= Moderately agree, DA= Disagree, CS= Can't say; Figures in parenthesis indicate percentage

Table 2. Perceived economic viability in sustainability of CGF by contract farmers and contractor

Economic Viability	CGF farmers (N=60)					Contractor (N=30)				
	Indicators				Total	Indicator				Total
	Cost of rearing is low	Income is satisfactory	Provide good employment	Better liquidity in need		Guarantee recovery of investment	Income is satisfactory	Provide good employment	Better liquidity in need	
FA	60(100)	19(31.7)	24(40)	49(81.77)	**152(63.33)**	30(100)	20(6.66	30(100)	16(53.3)	**86(71.6)**
MA	0(0)	23(38.3)	4(6.7)	9(15)	**36(15)**	0(0)	10(33.3)	0(0)	9(30)	**29(24.1)**
DA	0(0)	18(30)	13(21.7)	2(3.3)	**33(13.75)**	0(0)	0(0)	0(0)	5(16.7)	**5(4.1)**
CS	0(0)	0(0)	19(31.7)	0(0)	**19(7.91)**	0(0)	0(0)	0(0)	0(0)	0(0)
Max Score	**3**	**3**	**3**	**3**	**12**	**3**	**3**	**3**	**3**	**12**
Mean score	**3**	2.02	1.55	2.78	**9.32**	3.00	2.67	3.00	2.37	**11.00**
% to Max Score	100	67.33	51.66	92.66	**77.66**	100	89	100	79	**91.66**

FA= Fully Agree, MA= Moderately agree, DA= Disagree, CS= Can't say; Figures in parenthesis indicate percentage

Table 3. Perceived trustworthiness in sustainability of CGF by contract farmers and contractor

Trustworthiness	CGF farmers (N=60)				Contractor (N=30)				
	Indicators			Total	Indicator				Total
	Contractor behaves with loyalty	Contractor never betrayed	Contractor never violate agreement		Contract farmer behaves with loyalty	Contract farmer never betrayed	Contract farmer never violated agreement	Contract farmers take care of contract goat properly	
FA	57(95)	46(76.7)	35(58.3)	**138 (76.6)**	17(56.7)	12(40)	14(46.7)	17(56.7)	**17 (56.7)**
MA	2(3.3)	14(23.3)	25(41.7)	**39 (21.6)**	9(30)	10(33.3)	12(40)	7(23.3)	**7 (23.3)**
DA	1(1.7)	0(0)	0(0)	**1(0.56)**	4(133)	8(26.7)	4(13.3)	6(20)	**6 (20)**
CS	0(0)	0(0)	0(0)	**0(0)**	0(0)	0(0)	0(0)	0(0)	**0(0)**
Max Score	**3**	**3**	**3**	**9**	**3**	**3**	**3**	**3**	**12**
Mean score	2.93	2.77	2.58	**8.28**	2.43	2.13	2.33	2.37	**9.27**
% to Max Score	97.66	92.33	86.00	**92.00**	81.00	71.00	77.66	79.00	**77.25**

FA= Fully Agree, MA= Moderately agree, DA= Disagree, CS= Can't say; Figures in parenthesis indicate percentage

Table 4. Perceived risk reduction in sustainability of CGF by contract farmers and contractor

Risk Reduction	CGF farmers (N=60)				Contractor (N=30)			
	Indicators			Total	Indicator			Total
	Disease outbreak affects less	No exploitation when selling goats through contractors	Death of goats shared by contractors		Disease outbreak affects less	No exploitation when selling goats	Death of goats shared by contract farmers	
FA	26(43.3)	14(23.3)	60(100)	**100(55.6)**	14(46.7)	15(50)	30(100)	**59(65.6)**
MA	22(36.7)	15(25)	0(0)	**37(20.6)**	7(23.3)	6(20)	0(0)	**13(14.4)**
DA	12(20)	31(51.7)	0(0)	**43(23.8)**	9(30)	9(30)	0(0)	**18(20)**
CS	0(0)	0(0)	0(0)	**0(0)**	0(0)	0(0)	0(0)	**0(0)**
Max Score	**3**	**3**	**3**	**9**	**3**	**3**	**3**	**9**
Mean score	2.23	1.72	3.00	**6.95**	2.17	2.20	3.00	**7.37**
% to Max Score	74.33	57.33	100	**77.22**	72.33	73.33	100	**81.88**

FA= Fully Agree, MA= Moderately agree, DA= Disagree, CS= Can't say; Figures in parenthesis indicate percentage

The study further shows that mean risk reduction score of contractors for less disease outbreak, no exploitation when selling goats through farmers and sharing of death of goats by the farmers were 2.17, 2.20 and 3 respectively which are 72.33%, 73.33% and 100% of the maximum score. The mean score obtained is 7.37 (81.88%) out of the total maximum score (Table 4). Thus, the study shows that risk reduction in CGF is high in CGF and therefore the farmers and the contractors were adopting the business. But, previous study had reported that contract farming has several disadvantages like poor extension services, low prices to farmers due to haphazard pricing of the produce, inherent higher risk to cultivators, frequent delays in payment, weak bargaining power of farmers, and sole dependence on companies for inputs as also credit [6].

3.5 Equity and Equality

Table 5 depicts that mean equity and equality score of contract farmers for satisfactory income and employment, whole family business, suitable to social and educational background and benefit for farmer and the contractor are 2.17, 1.45, 3.0 and 3.0 respectively which are 72.33%, 48.33%, 100% and 100% to the maximum score respectively. The total mean obtained score is 9.62 (80.16%) out of the maximum score which implies that CGF is highly sustainable in terms of equity and equality.

The study further depicts that mean equity and equality score of contractor for satisfactory income and employment, whole family business, suitable to social and educational background and benefit for farmer and the contractor are 3, 1, 2.4 and 3 which are 100%, 33.3%, 80% and 100% of the maximum score. Total mean score is 9.4 (78.33%) out of the maximum score. Thus, it implies that CGF is highly sustainable in terms of equity and equality according to both contract farmers and contractors. But, past researcher had revealed that contract farming is just another form of exploitation with limited equity impact, increasing socio-economic differences and evidence of some unsuccessful schemes and problems for many out growers [7].

3.6 Autonomy

Table 6 shows that mean obtained autonomy score of contract farmers for both the statements are equal to the maximum scores. The total score obtained for the indicator is 6 which is 100% to that of maximum score. The study also shows that the mean obtained autonomy score of contractor for the indicators are 2.67 and 2.57 which are 89% and 85.66% of the maximum score. The total average obtained score is 5.23 (87.16%) out of the maximum score (Table 6). Stability or resilience-trust and autonomy as well as social factors are the strongest points for sustainability of a farm [8] and the ownership in contract farming is held by the farmers [9]. Thus, the farmers were free to maintain the goats according to their own principles but also listened to the suggestions and advices of the concerned contractors for the betterment of the business.

3.7 Social and Cultural Adaptability

Table 7 depicts the mean social and cultural adaptability score of contract farmers for fitting into cultural pattern and values of farmers' society, well accepted by all and never been the cause for jealousy, criticism & non co-operation were equal to the maximum score and also the total mean score obtained for the indicators was same with the maximum score.

The study further depicts mean social and cultural adaptability score of contractor for fitting into cultural pattern and values of contractors' society, well accepted by all and never hampers contractors social prestige were equal to the maximum score. The total mean score is 9 which is equal to 100% to the total maximum score (Table 7). Social issues remain always central to the sustainability of a farm along with productivity and economic aspect [10]. Thus, it implies that CGF was socio-culturally granted and accepted by all in the society giving it a higher sustainability.

3.8 Perceived Sustainability

It is evident from all the sustainability indicators shown in Table 8 that perception of the CGF farmers and contractors had obtained high values. All the indicators have obtained more than 75% out of total maximum scores whereas indicators such as autonomy and social and cultural adaptability had obtained cent percent out of the total score by the contract farmers. Social and cultural adaptability had also obtained cent percent out of the total score by the contractors. The total score obtained was 56.62 (85.63%) out of the maximum score of 66 by the contract farmers. Similarly, the total score obtained is 58.04 (84.11%) against the maximum score of 69 by the contractors. Thus, the study shows that the CGF was highly sustainable in the study area as per the perception of both the contract farmers and the contractors.

Table 5. Perceived equity and equality in sustainability of CGF by contract farmers and contractor

Equity and Equality	CGF farmers (N=60)					Contractor (N=30)				
	Indicators				Total	Indicator				Total
	Provide satisfactory income & employment	Can be taken as a whole family business	Suit to social & educational background	Benefitted to farmers & contractor		Provide satisfactory income & employment	Can be taken as a whole family business	Suit to social & educational background	Benefitted to farmers & contractor	
FA	27(45)	14(23.3)	60(100)	60(100)	**155 (64.58)**	30 (100)	0(0)	15 (50)	30(100)	**75(62.5**
MA	16(26.7)	0(0)	0(0)	0(0)	**18(7.5)**	0(0)	0(0)	12(40)	0(0)	**12(10)**
DA	17(28.3)	45(75)	0(0)	0(0)	**56(23.3)**	0(0)	30(100)	3(10)	0(0)	**33(27.5)**
CS	0(0)	0(0)	0(0)	0(0)	**1 (0.4)**	0(0)	0(0)	0(0)	0(0)	0(0)
Max Score	3	3	3	3	12	3	3	3	3	12
Mean score	2.17	1.45	3.00	3.00	**9.62**	3	1	2.4	3	**9.4**
% to Max Score	72.33	48.33	100	100	**80.16**	100	33.33	80	100	**78.33**

FA= Fully Agree, MA= Moderately agree, DA= Disagree, CS= Can't say; Figures in parenthesis indicate percentage

Table 6. Perceived autonomy in sustainability of CGF bycontract farmers and contractor

Autonomy	CGF farmers (N=60)			Contractor (N=30)		
	Indicators		Total	Indicator		Total
	Contractor is less rigid and listens to farmer's advice	Complete freedom is given in management & marketing		Contract farmer is less rigid and listens to contractor's advice	Contract farmer always market his own share, no interference from farmer	
FA	60 (100)	60 (100)	**120 (100)**	20(66.6)	17(56.7)	37 (61.7)
MA	0(0)	0(0)	**0(0)**	10(33.3)	13(43.3)	23 (38.3)
DA	0(0)	0(0)	**0(0)**	0(0)	0(0)	0(0)
CS	0(0)	0(0)	**0(0)**	0(0)	0(0)	0(0)
Max Score	**3**	**3**	**6**	**3**	**3**	6
Mean score	3.00	3.00	**6.00**	2.67	2.57	5.23
% to Max Score	100	100	**100**	89.00	85.66	87.16

FA= Fully Agree, MA= Moderately agree, DA= Disagree, CS= Can't say; Figures in parenthesis indicate percentage

Table 7. Perceived social and cultural adaptability in sustainability of CGF by contract farmers and contractor

Social and cultural adaptability	CGF farmers (N=60)				Contractor (N=30)			
	Indicators			Total	Indicator			Total
	Fits into cultural pattern & values of farmer's society	Well accepted by all & not resisted by anyone	It has never been the cause for jealousy, criticism & non-co-operation		Fits into cultural pattern & values of contractor's society	Well accepted by all & not resisted by anyone	Never hampered contractor's social prestige	
FA	60 (100)	60 (100)	60 (100)	**180 (100)**	30 (100)	30 (100)	30 (100)	**90 (100)**
MA	0(0)	0(0)	0(0)	**0(0)**	0(0)	0(0)	0(0)	**0(0)**
DA	0(0)	0(0)	0(0)	**0(0)**	0(0)	0(0)	0(0)	**0(0)**
CS	0(0)	0(0)	0(0)	**0(0)**	0(0)	0(0)	0(0)	**0(0)**
Max Score	**3**	**3**	**3**	**9**	**3**	**3**	**3**	**9**
Mean score	3.00	3.00	3.00	**9.00**	3.00	3.00	3.00	**9.00**
% to Max Score	100	100	100	100	100	100	100	100

FA= Fully Agree, MA= Moderately agree, DA= Disagree, CS= Can't say; Figures in parenthesis indicate percentage

Table 8. Perceived sustainability of CGF according to contract farmers and contractors perception

Sl.	Indicators	CGF farmers (N=60)			Contractor (N=30)		
		Max. score	Mean Score	% to Max. score	Max. score	Mean Score	% to Max. score
1.	Productivity	9	7.35	81.66	9	6.77	75.22
2.	Economic Viability	12	9.32	77.66	12	11	91.66
3.	Trustworthiness	9	8.28	92.00	12	9.27	77.25
4.	Risk reduction	9	6.95	77.22	9	7.37	81.88
5.	Equity & Equality	12	9.62	80.16	12	9.4	78.33
6.	Autonomy	6	6	100	6	5.23	81.16
7.	Social and Cultural adaptability	9	9	100	9	9	100
Total Score		**66**	**56.52**	**85.63**	**69**	**58.04**	**84.11**

4. CONCLUSION

Promoting contract farming may be a cultural, customary belief and religious issue. In communities where custom and tradition play an important role, difficulties may arise when innovative farming system is introduced. Therefore, before introducing a new pattern of farming system, sponsors must consider the social and cultural attitudes and the traditional farming procedures of the community and decide how a new farming system can be introduced. Here, the study has clearly shown that contract goat farming can be a new trend of livestock farming in near future for the resource poor farmers and this kind of farming can reduce the demand for bank loan to initiate livestock farming. It has also high potential to create employment for the poor. Contract goat farming can also be a new avenue for the educated unemployed youth in the rural areas to set up small enterprise with low investment in goat farming and earn profit. Perceived sustainability of contract goat farming by the contract farmers and contractors in terms of productivity, economic viability, risk involved, trustworthiness, equity and equality, autonomy, social and cultural adoptability were very high from both contract goat farmers and contractor. Therefore, it can be concluded that CGF had a high sustainability and it can be recommended to landless and marginal farmers of other region also.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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