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CONSTRAINTS FACED BY SARPANCHES: INSIGHTS, SUGGESTIONS AND EXTENSION STRATEGIES FOR IMPROVEMENT

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ABSTRACT

This study investigates the challenges encountered by Sarpanches in local governance and proposes extension strategies to address them. Conducted in seven districts of South Gujarat, the research utilized a random sampling technique to select 210 Sarpanches. The relationship between Sarpanches' profiles and their knowledge levels was analyzed, highlighting key determinants such as education, management efficiency, and group cohesiveness. Constraints were identified, quantified, and ranked based on frequency and percentage, revealing political interference as the primary challenge, followed by financial constraints and delays in technical approvals. Sarpanches suggested measures to overcome these constraints, including reducing political interference and enhancing funding sources. Tailored extension strategies were formulated through a participatory approach, emphasizing transparent decision-making and sustainable revenue generation. These findings underscore the importance of empowering Sarpanches to foster effective local governance and sustainable rural development. Policymakers should consider implementing these strategies to address the identified challenges comprehensively.

Keywords: *constraints, suggestions, sarpanch, panchayati raj system, extension strategy*

INTRODUCTION

In 1950-51, India's population stood at 359.0 million, with 55.00 per cent engaged in agriculture for livelihood. Post-independence, recognizing the need for comprehensive rural development, India embarked on Democratic Decentralization, culminating in the establishment of the Panchayati Raj system on October 2, 1959. This three-tiered structure aimed to foster local self-governance at the district, taluka/block, and village levels.

Central to the Panchayati Raj system is the pivotal role of the Sarpanch, elected through democratic processes, in facilitating community-driven progress. The Constitution Act (73rd Amendment) of 1992 further empowered local governments, with provisions for regular elections, reserved seats for marginalized groups, including SC, ST, OBCs, and women, and the devolution of powers and revenues from state to local bodies.

Empowered with diverse responsibilities, Sarpanches play a critical role in village development, spanning agriculture, healthcare, education, water access, sanitation, and social justice. Amidst these duties, they face challenges that demand intelligence and knowledge of the Panchayati Raj system. Sarpanches' understanding of the system is shaped by factors like education, experience, training, and exposure to local governance. They comprehend legal frameworks, mandated roles, and decision-making processes within Panchayats, including development planning, fund allocation, and project implementation. Administrative functions, such as record-keeping, financial management, and ensuring transparency, are also within their purview. Recognizing the importance of community engagement and dialogue, Sarpanches navigate challenges in grassroots governance, prioritizing legal compliance and accountability. Their knowledge extends to fostering social and economic development, supporting initiatives for education, healthcare, infrastructure, and livelihoods. In essence, Sarpanches embody the bridge between local communities and governance structures, leveraging their knowledge to drive inclusive and sustainable development in rural India.

OBJECTIVE

To know the constraints faced by sarpanches : insights, suggestions and extension strategies for imporovement.

METHODOLOGY

This study was conducted across seven districts within the South Gujarat region, employing an ex-post-facto research design. To ensure a representative sample, a simple random sampling technique was utilized to select Sarpanches as respondents. A total of 210 Sarpanches, comprising 105 males and 105 females, were randomly chosen for participation.

The relation between profile of Sarpanches and their knowledge was found by using the correlation coefficient (r). Constraints, denoting the difficulties faced by Sarpanches in executing local governance activities at their panchayat level, were identified through rapport-building. These constraints were then quantified and ranked based on frequency and percentage. Additionally, Sarpanches were invited to provide suggestions to overcome these constraints, which were also quantified, ranked, and analyzed.

To devise an effective extension strategy for prospective Sarpanches within the study area, insights from their constraints and experiences were combined with technical recommendations from competent experts. Through a participatory approach employing triangulation methodology, a tailored extension strategy was formulated. This approach ensured that the strategy is rooted in the primary constraints and suggestions provided by both the Sarpanches and the experts, effectively addressing the pertinent issues at hand.

RESULTS AND DISCUSSION

Relationship between profile of Sarpanches and their knowledge

The profile of Sarpanches was determined based on 20 independent variables, including age, education, caste, annual income, land holding, social participation, training, management efficiency, group cohesiveness, experience, innovativeness, communication ability, decision-making ability, aspiration, leadership ability, mass media exposure, group motivation, political affiliation, empathy, and personality trait. The correlation coefficients were computed to analyze the relationship between these variables and the knowledge level of Sarpanches, and the results are presented in the table 1.

Table 1: Relationship between the profile of Sarpanches and their knowledge about panchayati raj system (n=120)

Sr. No.	Independent variables	Male Sarpanches (n=105)	Female Sarpanches (n=105)	Pooled (n-210)
1	**Age**	0.1294 NS	0.3066**	0.0756 NS
2	**Education**	0.5089**	0.1069 NS	0.2997**
3	**Caste**	-0.1874 NS	0.0799 NS	-0.0348 NS
4	**Annual income**	0.3795**	-0.0226 NS	0.1686*
5	**Land holding**	0.2551**	0.3036**	0.1989**
6	**Social participation**	0.2408*	0.2772**	0.3135**
7	**Training**	0.1850 NS	0.0276 NS	0.0339 NS
8	**Management efficiency**	0.5875**	0.4731**	0.5893**
9	**Group cohesiveness**	0.5905**	0.6181**	0.6649**
10	**Experience**	0.2709**	0.3346**	0.2093**
11	**Innovativeness**	0.3739**	0.0276 NS	0.2950**
12	**Communication ability**	0.4197**	0.1917 NS	0.4112**
13	**Decision making ability**	0.4275**	0.3808**	0.4868**
14	**Aspiration**	0.0362 NS	0.4317**	0.2968**
15	**Leadership ability**	0.2667**	0.3683**	0.3760**
16	**Mass media exposure**	0.2471*	0.3826**	0.4355**
17	**Group motivation**	0.3439**	0.2050*	0.3590**
18	**Political affiliation**	0.1169 NS	0.3094**	0.1987**
19	**Empathy**	0.4948**	0.1672 NS	0.3628**
20	Personality trait	0.3397**	0.2179*	0.3050**

(* Significant at 0.05 level, ** Significant at 0.01 level, NS Non-significant)

The table 1 illustrates the association between various independent variables characterizing Sarpanches and their knowledge of the Panchayati Raj system. In the analysis, the correlation coefficients (r) were computed to examine the relationship between each variable and the knowledge level, categorized by gender and pooled data.

Among male Sarpanches, noteworthy positive significant correlations were observed for several variables.

Education (0.5089**), annual income (0.3795**), land holding (0.2551**), social participation (0.2408*), management efficiency (0.5875**), group cohesiveness (0.5905**), experience (0.2709**), innovativeness (0.3739**), communication ability (0.4197**), decision-making ability (0.4275**), leadership ability (0.2667**), mass media exposure (0.2471*), group motivation (0.3439**), empathy (0.4948**), and personality trait (0.3397**) demonstrated significant positive correlations with knowledge level. Conversely, age (0.1294), training (0.1850), aspiration (0.0362), and political affiliation (0.1169) exhibited positive but non-significant correlations, while caste (-0.1874) displayed a negative non-significant correlation with knowledge level.

Significant positive correlations were evident among various variables for female Sarpanches. Age (0.3066**), land holding (0.3036**), social participation (0.2772**), management efficiency (0.4731**), group cohesiveness (0.6181**), experience (0.3346**), decision-making ability (0.3808**), aspiration (0.4317**), leadership ability (0.3683**), mass media exposure (0.3826**), group motivation (0.2050*), political affiliation (0.3094**), and personality trait (0.2179*) demonstrated significant positive correlations with the knowledge level. Conversely, education (0.1069), caste (0.0799), training (0.0276), innovativeness (0.0276), communication ability (0.1917), and empathy (0.1672) exhibited positive but non-significant correlations, while annual income (-0.0226) showed a negative non-significant correlation.

In the pooled data, significant positive correlations were found for several variables. Education (0.2997**), annual income (0.1686*), land holding (0.1989**), social participation (0.3135**), management efficiency (0.5893**), group cohesiveness (0.6649**), experience (0.2093**), innovativeness (0.2950**), communication ability (0.4112**), decision-making ability (0.4868**), aspiration (0.2968**), leadership ability (0.3760**), mass media exposure (0.4355**), group motivation (0.3590**), political affiliation (0.1987**), empathy (0.3628**), and personality trait (0.3050**) all exhibited significant positive correlations with the knowledge level. Conversely, age (0.0756) and training (0.0339) showed positive but non-significant correlations, while caste (-0.0348) exhibited a negative non-significant correlation with the knowledge level.

Table 1 displays that for male Sarpanches and the pooled data age doesn't show a significant correlation with knowledge, while for female Sarpanches, there's a positive and highly significant correlation. This could be attributed to the increasing active participation of women in local governance, contrasting with the pre-existing involvement of male Sarpanches. In case of caste both male and female Sarpanches and pooled data shows a non-significant correlation with knowledge. Regardless of caste, Sarpanches are leaders who attained their positions due to their existing abilities and knowledge within their leadership domain. Same as in case of training both male and female Sarpanches and pooled data doesn't exhibit a significant correlation with knowledge regarding training. This could be because a majority of them are educated elected leaders who acquire knowledge primarily through hands-on experience. While in case of innovativeness male Sarpanches and pooled data indicates a highly significant positive correlation between innovativeness and knowledge. However, for female Sarpanches, innovativeness does not show a significant correlation with knowledge. This might suggest that the innovativeness of female Sarpanches could indirectly influence knowledge acquisition or utilization, as their natural inclination towards innovation may not directly determine their level of knowledge. Same as in communication ability male Sarpanches and pooled data shows there is a highly significant positive correlation between communication ability and knowledge. However, for female Sarpanches, communication ability does not show a significant correlation with knowledge. This could be attributed to the tendency of male Sarpanches to gather and disseminate knowledge through communication, whereas women may naturally enjoy communication without it directly influencing their knowledge acquisition. In case of aspiration female Sarpanches and pooled data there is a highly significant positive correlation between aspiration and knowledge. However, for male Sarpanches, aspiration does not show a significant correlation with knowledge. This could be because the vast majority of male Sarpanches in this study belong to the middle to old age category. Same as in case of political affiliation female Sarpanches and pooled data shows a highly significant positive correlation between political affiliation and knowledge. However, for male Sarpanches, political affiliation does not show a significant correlation with knowledge. This difference might be attributed to the predominant presence of male Sarpanches in local-level governance, while female Sarpanches are now increasingly able to actively participate in local governance. In case of empathy male Sarpanches and pooled data shows a highly significant positive correlation between empathy and knowledge. However, for female Sarpanches, empathy does not show a significant correlation with knowledge. This could be because females are often naturally more emotional and empathetic, potentially influencing their behaviour and decisions regardless of their level of knowledge.

This finding has been supported by findings of Chander (1997) and Shrivas (2001), Purnima *et al.* (2023).

Constraints experienced by the sarpanches

Constraints refer to factors or circumstances that limit or regulate the ability to carry out certain actions. In the context of local governance, both male and female Sarpanches may encounter various constraints that impede their effectiveness in their roles. These constraints were identified through open-ended questions, where Sarpanches shared their experiences. The constraints reported by each Sarpanch were categorized, the responses were tallied, percentages were calculated, and the findings were ranked. The results of this analysis are presented in the table 2.

Table 2: Constraints experienced by the Sarpanches

(n=120)

Sr. No.	Constraints	*f*	%	Rank
1	Pressure to demonstrate assertive leadership.	139	66.19	VIII
2	Political interference in decision-making.	187	89.05	I
3	Financial problems in implementing projects.	172	81.90	II
4	Limited access to resources and training opportunities.	158	75.24	V
5	Social and cultural barriers.	130	61.90	X
6	Delay in developmental works due to technical approval from higher level.	167	79.52	III
7	Lack of local level supports in developmental works.	148	70.48	VII
8	Low revenue generation at village level.	165	78.57	IV
9	Educated Sarpanch faces some problems due to other uneducated members.	135	64.29	IX
10	Lack of infrastructural and other facilities at village.	151	71.90	VI
11	Difficulties to go attend meetings outside the village.	120	57.14	XI

The constraints experienced by Sarpanches, as outlined in table 2 Political interference in decision-making emerges as the foremost challenge confronted by Sarpanches, constituting 89.05 per cent of the reported constraints, securing the top rank. Financial constraints closely follow, with 81.90 per cent of respondents citing challenges in implementing projects, earning the second position. Delays in developmental works due to technical approval hold the third spot, with 79.52 per cent of Sarpanches experiencing this constraint. Low revenue generation at the village level ranks fourth, with 78.57 per cent of respondents facing this challenge. Limited access to resources and training opportunities occupies the fifth position, affecting 75.24 per cent of Sarpanches. The lack of infrastructural and other facilities at the village level follows closely behind, with 71.90 per cent of respondents highlighting this constraint. Subsequently, the absence of local-level support in developmental works holds the seventh position, affecting 70.48 per cent of Sarpanches. Pressure to demonstrate assertive leadership stands at the eighth spot, with 66.19 per cent of respondents experiencing this constraint. Educated Sarpanches facing issues due to other uneducated members secure the ninth position, with 64.29 per cent reporting this challenge. Social and cultural barriers rank tenth, affecting 61.90 per cent of Sarpanches, while difficulties in attending meetings outside the village conclude the list, with 57.14 per cent of respondents citing this constraint.

Suggestions to overcome the constraints

The suggestions provided by Sarpanches offer valuable insights into potential solutions to overcome or minimize the constraints they face. To develop a comprehensive extension strategy, it is crucial to consider these opinions. Constraints experienced by Sarpanches may stem from perceived barriers or a lack of coordination at various levels of governance. Therefore, in this study, all Sarpanches were invited to offer their suggestions to address the constraints they identified. These suggestions were categorized, aggregated, converted into percentages, and ranked to prioritize the most commonly recommended solutions. The results of this analysis are presented in the table 3.

To address the constraints faced by Sarpanches, they have proposed various suggestions in the table 3. Foremost among these is the call to reduce political interference and grant more decision-making power to Sarpanches, garnering 85.24 per cent of support and securing the top rank. Following closely behind, with 79.52 per cent of respondents advocating for it, is the suggestion to provide more grants from the government and increase alternative funding sources, placing it in the second position. Improving the coordination between local and higher-level officials to facilitate faster technical solutions holds the third spot, with 77.14 per cent of Sarpanches supporting this idea. Meanwhile, promoting agro-based small-scale industries and value addition, along with providing training on resource efficiency, garners 71.43

per cent of support and ranks fourth. Enhancing leadership skills through development programs emerges as the fifth suggestion, with 61.90 per cent of respondents favouring it. Establishing community development committees and increasing public-private partnerships follows closely, securing 69.05 per cent of support and placing seventh.

Table 3: Suggestions offered by the Sarpanches to overcome constraints (n=120)

Sr. No.	Constraints	f	per cent	Rank
1	Leadership development programme should be organised.	130	61.90	VIII
2	Reduce the political interference and give more power to Sarpanch for taking decisions.	179	85.24	I
3	More grants should be given by government & increase alternative funding sources.	167	79.52	II
4	Promote agro based small scale industries, value addition; provide training about efficient use of resources.	150	71.43	V
5	Conduct awareness programme, provide training and empower Sarpanches to work with traditional leader / traditionality.	118	56.19	X
6	Improve the coordination between local and higher level officials and make efforts for fast technical solution.	162	77.14	III
7	Establish community development committees and increase public private partnership.	145	69.05	VII
8	Explore alternative revenue sources, increase awareness about regularly pay of taxes, rent and revenue etc.	160	76.19	IV
9	Minimum education criteria should be there for entry in politics.	120	57.14	IX
10	Good infrastructure and all other facilities should be given by government.	147	70.00	VI
11	Sarpanches should be called for only important meetings.	110	52.38	XI

Exploring alternative revenue sources and increasing awareness about tax compliance earns the support of 76.19 per cent of Sarpanches, landing it in the fourth position. Additionally, the proposal to set minimum education criteria for political entry ranks ninth, with 57.14 per cent of respondents endorsing it. Ensuring good infrastructure and other government-provided facilities follows, with 70.00 per cent of Sarpanches supporting the idea, securing the sixth position. Lastly, the suggestion to limit Sarpanches' attendance to only important meetings concludes the list, garnering 52.38 per cent of support and ranking eleventh. These suggestions reflect the proactive approach Sarpanches are advocating for to overcome the challenges they face in their roles.

Location specific and research based extension strategies

Before devising any strategy for the target users in the study area, it is essential to gather experience-based suggestions from respondents and technical insights from competent experts.

Recognizing constraints as limiting factors for development, extension educationists recommend employing the Situation-Based Extension Approach (SBEA) to effectively overcome these constraints and develop suitable strategies. To achieve this, various faculties and experts were consulted to determine constraints and potential solutions. These were compiled separately based on the opinions of technical experts. Due to the wide scope of the study area, input was sought from the Student Advisory Committee members, and with their approval, the primary constraint and suggestions offered by each Sarpanch were considered. A situation-based extension strategy was then devised separately for each, using a triangulation method of a participatory approach. The proposed strategy was divided into five columns, covering aspects such as major constraints and suggestions from respondents, technical options from faculty/experts, and the proposed strategy with its executing agency or individual. The information about this process is presented in the table 4.

Table 4 : Proposed extension strategy to overcome the constraints (n=120)

Sr. No.	Constraints	Suggestion from Sarpanches	Opinion of experts	Proposed strategy based on triangulation	Who will execute
1	Low revenue generation	Regularity in paying the revenue	Explore alternative funding sources	Provide training for sustainable revenue strategies.	Panchayat, Rural housing and Rural development Department
Sr. No.	**Constraints**	**Suggestion from Sarpanches**	**Opinion of experts**	**Proposed strategy based on triangulation**	**Who will execute**
2	Delay in technical approval for developmental works	Higher authorities should cooperate at give technical sanction	Advocate for streamlined bureaucratic process and clear approval protocols	Improve coordination between local and higher level authorities	Panchayat, Rural housing and Rural development Department
3	Political interference in decision making	Stop the interference of politicians	Promote transparent decision-making processes and samras panchayat	Enhance the autonomy of local governance structures.	Panchayat, Rural housing and Rural development Department
4	Financial Problems in implementing projects	Enough fund should be provided by government	Prioritize high-impact, sustainable projects for budget allocation	Implement a rigorous project evaluation and selection process that assesses potential projects based on their expected impact and sustainability.	Panchayat, Rural housing and Rural development Department
5	Lack of infrastructural problems and other facilities	Good infrastructure and all facilities should be given by government	Prioritize to give all basic facilities at panchayat office	Well furnished panchayat house, road, internet and computer should be allocated in budget.	Panchayat, Rural housing and Rural development Department

CONCLUSION

This study unveils the significant relationship between Sarpanches' profiles and their knowledge levels, emphasizing education, management efficiency, and group cohesiveness as key determinants. Moreover it identifies constraints faced by Sarpanches, including political interference in decision-making ranking highest, followed by financial constraints and delays in technical approvals. Sarpanches advocate for reduced political interference, increased funding sources, and streamlined bureaucratic processes. To address these challenges, tailored extension strategies are proposed, emphasizing transparent decision-making, sustainable revenue generation, and improved coordination between local and higher authorities. Future perspectives entail implementing these strategies to empower Sarpanches and enhance grassroots governance. Policymakers should heed these insights to foster effective local governance and sustainable rural development.

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CONFLICT OF INTEREST

The authors affirm that they do not have any conflicts of interest. It is noteworthy to mention that the authors are employed by the funding agency, a governmental organization.

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INSTAILITY ANALAYSIS OF GROUNDNUT CROP IN GUJARAT: BEFORE AND AFTER *Bt*-COTTON

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ABSTRACT

The time series data on area, production and productivity of groundnut crop for 31 years were collected for major groundnut growing districts and Gujarat state for the period 1985-86 to 2015-16 from Directorate of Agriculture, Gandhinagar, Gujarat State. The entire study period was divided into two sub-periods on the basis of introduction of Bt- cotton as pre Bt-cottoni.e.period I (1985-1986 to 2001-2002) and post Bt- cottoni.e.period II (2002-2003 to 2015-2016).Instability in the area, production and productivity of groundnut was analyzed using the Cuddy Della Valle Index (CDVI).The results revealed that the majority of the districts showed medium level of variability for area except Ahmedabad, Banaskantha, Kheda and Surat (High variability), Rajkot (Low variability), all the districts showed high level of variability for production and high level of variability for productivity except Kheda, Surat and Surendranagar which showed medium level of variability.

Keyword:*Coefficient of Variation and Cuddy Della Valle Index (CDVI)*

Introduction

Groundnut (*ArachisHypogaea* L.) is one of the important oilseed crops among the major oilseed crops. India is one of the world's largest producer of groundnut. India has the largest area under groundnut in the world. Area under groundnut in India was 4596.33 thousand hectare, production was 6733.33 thousand metric tonnes and productivity was 1465 kg/ha during 2016-17. Gujarat is the largest producer of groundnut contributing 43 per cent of the total production during 2016-17. (Anon., 2017c). Japanese biologist, ShigetaneIshiwatariwas first discovered Bacillus thuringiensis (*Bt*-cotton) in 1901.*Bt*-cotton was approved in India in March 2002 after stringent assessment for biosafety and profitability. The *Bt*-cotton area increased from 0.4% to 40% of the cotton area in India, in a short period of four years. India became a leading global exporter of raw cotton with exports averaging at 53 lakh bales over nine years from 2003-2011 compared to an average of 1.18 lakh bales during the years 1997 to 2002 prior to the introduction of *Bt*-cotton. (Anon., 2016)

A major increase in cotton area was observed in Gujarat, replacing by groundnut in the Saurashtra region. Cotton priced increased because of quality *Bt*-cotton produced increased. For example in the year 2014, the market price per quintal of cotton varied from Rs. 3800 to 4200 whereas price of groundnut ranged from Rs. 2800 to Rs. 3300 per quintal. Introduction of *Bt*-cotton has larger impact on groundnut area replaced by cotton area that's why production and productivity also decreased. In India area under cotton was about 1634800 hectares, production was 1684600 bales and yield was 175 Kg per hectare during the year 2002-03 which increased to 3010000 hectares, 11089000 bales and 627 Kg per hectare respectively during the year 2014-15. It shows 84.12 per cent, 558.25 per cent and 258.28 per cent increment in area, production and yield respectively (Anon., 2016; Bhimani et al., 2022; Gajera et al., 2022).

Instability in agricultural production is also important for agricultural product management. Hence, a critical analysis of instability of groundnut production has its own significant importance. Besides instability, Indian agriculture is also known for sharp variations in agricultural productivity across space which results in various types of disparities (Jalu et al., 2023; Patel et al., 2023; Jalu et al., 2022). Such regional variations are partly due to disparities in resource endowments, climate and topography and also due to historical, institutional and socio-economic factors. Adoption of green revolution technology, which is considered a landmark event in the post independent India, has attracted special interest of researchers in terms of its impact on agricultural instability in farm output.

METHODOLOGY

The time series data on area, production and productivity of groundnut crop for 31 years were collected for major groundnut growing districts and Gujarat state for the

period 1985-86 to 2015-16 from Directorate of Agriculture, Gandhinagar, Gujarat State.The entire study period was divided into two sub-periods on the basis of introduction of *Bt*- cotton as pre *Bt*-cotton and post *Bt*- cotton.

Period-I	1985-1986 to 2001-2002 (Pre *Bt*- cotton)
Period – II	2002-2003 to 2015-2016 (Post *Bt*- cotton)
Overall Period	1985-1986 to 2015-2016

Instability index (Sihmar, 2014)

The extent of variation *i.e.* instability in area, production and productivity of groundnut was analyzed by instability by estimating coefficient of variation (CV %) with the following formula

$$CV\ \% = \frac{SD}{Mean} \times 100$$

Where, CV% = Coefficients of variation and SD = Standard deviation

The use of coefficient of variation as a measure to show the instability in any time series data has some limitation as the time series data exhibit trend behaviour then variation measured by C.V. can be overestimated Cuddy Dell Valle Index (CDVI) is used to overcome this limitation of C.V. As it detrends the C.V. by using coefficient of determination (R^2). Hence C.V. adjusts with R^2 to detrend the series. Thus it is a better measure to capture instability in agriculture. A low value of this index indicates the low instability and vice versa.

$$CDVI = C.V. * \sqrt{(1 - \bar{R}^2)}$$

Where, C.V. = Coefficient of variation =Coefficient of determination from a time trend regression adjusted by the number of degrees of freedom.

The ranges of instability are as follows:

Instability	Category
Low	between 0 to 15
Median	greater than 15 and lower than 30
High	greater than 30

RESULT AND DISCUSSION

Study the instability of major groundnut growing districts of Gujarat

Area

The result showed that the higher instability for area under groundnut was observed in Ahmedabad (96.40), Banaskantha (76.29), Kheda (49.64) and Surat (31.99) districts while medium instability was observed in Amreli (23.48), Bhavnagar (19.23), Jamnagar (23.50), Junagadh (18.66), Sabarkantha (23.86) and Surendranagar (23.55) districts whereas lower instability was observed in Rajkot (14.33) district.

Majority of the districts showed the medium level of instability for area under groundnut.

Production

The result showed the higher instability for production of groundnut in Ahmedabad (245.15), Amreli (74.70), Banaskantha (104.27), Bhavnagar (50.50), Jamnagar (75.31), Junagadh (51.12), Kheda (62.45), Rajkot (58.38),Sabarkantha (46.90), Surat (33.41) and Surendranagar (40.83) districts.

The results showed the high instability in all districts though area is showing medium level of instability

Table 1: C. V. and instability of groundnut area, production and productivity of different districts of Gujarat

Districts	Area			Production			Productivity		
	CV	CDVI	Instability	CV	CDVI	Instability	CV	CDVI	Instability
Ahmedabad	99.96	96.40	High	262.83	245.15	High	41.99	36.85	High
Amreli	29.35	23.48	Medium	74.70	74.70	High	79.94	77.92	High
Banaskantha	132.81	76.29	High	157.18	104.27	High	75.93	62.61	High
Bhavnagar	32.98	19.23	Medium	50.50	50.50	High	62.69	49.36	High
Jamnagar	23.86	23.50	Medium	85.27	75.31	High	82.99	65.87	High
Junagadh	18.66	18.66	Medium	53.88	51.12	High	55.77	50.51	High
Kheda	101.33	49.64	High	107.10	62.45	High	29.69	29.69	Medium
Rajkot	14.78	14.33	Low	58.38	58.38	High	89.06	80.65	High
Sabarkantha	29.59	23.86	Medium	54.89	46.90	High	53.32	42.66	High
Surat	52.59	31.99	High	33.93	33.41	High	20.10	19.49	Medium
Surendranagar	32.35	23.55	Medium	44.28	40.83	High	52.25	26.12	Medium

Productivity

The result showed higher instability for productivity of groundnut in Ahmedabad (36.85), Amreli (77.92), Banaskantha (62.61), Bhavnagar (49.36), Jamnagar (65.87), Junagadh (50.51), Rajkot (80.65) and Sabarkantha (42.66) districts while medium instability was observed in Kheda (29.69), Surat (19.49) and Surendranagar (26.12) districts.

The higher instability for productivity of groundnut in majority of the districts might be responsible for higher instability in the production of groundnut.

CONCLUSION

Majority of the districts showed medium level of variability for area except Ahmedabad, Banaskantha, Kheda and Surat (High variability), Rajkot (Low variability).All of the districts showed high level of variability for production. Majority of the districts showed high level of variability for productivity except Kheda, Surat and Surendranagar which showed medium level of variability.

CONFLICT OF INTEREST

All authors declare that they have no conflict of interest

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