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Assessment of DAESI course in terms of knowledge level of input dealers from some socio-economic and management factors

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Abstract

The Diploma in Agricultural Extension Services for Input Dealers (DAESI) program aims to provide scientific knowledge and skills to input dealers to serve village community. The study was conducted in the Birbhum and Purba Bardhaman focusing on the knowledge of DAESI input dealers. The research involved 120 agricultural input dealers, holding DAESI diplomas the objectives were to study socio-economic profile of DAESI trained input dealers; to find the knowledge level of DAESI trained input dealers from different socioeconomic and management aspects; A score of dependent variables i.e. knowledge level and 20 independent variables have been executed to study their multilevel interaction to predict and isolate the dominant for DAESI trained respondents. Statistical analysis like coefficient of correlation, stepwise regression analysis was done. The research highlighted that for DAESI trained input dealers, there is a significant correlation between knowledge level and different independent variables like education, business experience, and risk orientation, mass media exposure, cosmopolitaness. From stepwise regression analysis it has been found that out of 20 independent variables 11 variables exert more than 65% of total effects on knowledge level of DAESI trained input dealers.

Keywords: DAESI, input dealers, knowledge level, socioeconomic, management, factors

Introduction

Over the past 60 years, Agriculture in India has undergone a remarkable change, moving from a food-deficit country to one that is self-reliant and now boasts surpluses targeted at increasing exports. Marketable surplus for most non-perishable crops has reached 80–90%. Farming in India has gradually become more commercialized, mechanized, diversified, and globalized (Joshi *et al.*, 2022) ^[9]. To sustain this growth rate and achieve the necessary food grain production, a multifaceted strategy that includes an effective and efficient farm information delivery system is essential. Farmers often lack awareness of the appropriate types and dosages of agrochemicals for various crops and the latest technologies. The ratio of agricultural extension agents and farmers has reduced below the recommended ratio i.e. 1:750 (Ravi, 2019) ^[11], leading to a disparity between the ideal situation and the current reality.

Agricultural input dealers are a primary and highly trusted source of information for the farming community. Darade (2010) ^[3] indicated that a majority of agri input dealers (69.17%) exhibited a medium level of cosmopolitaness. This is also supported by Shrihari (2014) ^[12] who reported that 70.83% of agri-input dealer had moderate level of cosmopolitaness. (Argadeet *et al.*, 2015) ^[1] opined that in addition to supply inputs and credit, their significant contribution to the transfer of agricultural technology is widely recognized and appreciated by farmers for their accessibility and reliability. Approximately 2.82 lakh

agricultural input dealers serve as the primary source of agricultural information for the farmers in India, often being the first point of contact for many farmers. When purchasing various inputs for farming operations, farmers naturally seek advice from these dealers regarding the appropriate use of inputs. Banerjee (2021) ^[2] reported that 41.66% of DAESI holders had a strong management orientation, with 51.67% falling into the medium category. Jaiswal (2022) ^[6] observed that the most (62.00%) of DAESI agricultural input dealers had a moderate level of administration orientation. However, many of these agri-input dealers lack formal education pertaining to agriculture and may not fully understand the legal implications of handling agricultural inputs. Primarily businessmen, they are well-versed in market dynamics. Jhansi *et al.* (2022) ^[8] found that nearly half (48.40%) of dealers made decisions at a high level, Jally (2018) ^[7] discovered that most DAESI trained input dealers (66.67%) had medium self-confidence. Hazarika (2023) ^[5] found that beyond half (63.85%) of agricultural input dealers had moderate self-confidence. Manohari and Kareem (2007) ^[10] reported that 30.42% of input sellers handled up to five types of agricultural inputs. Fowler (2015) ^[4] described that dealer typically sold four main types of agro-inputs: seeds, fertilizers, pesticides, and agricultural implements inputs, including seeds, fertilizers, pesticides, bio-fertilizers, and bio-pesticides. Darade (2010) ^[3] indicated that a majority of agri input dealers (69.17%) exhibited a medium level of cosmopolitaness. Shrihari

(2014) ^[12] reported that over three-fifths (60.84%) of the agri-input dealers had moderate level of profitable motivation.

The National Institute of Agriculture Extension Management (MANAGE), Hyderabad, introduced the Diploma in Agricultural Extension Services for Input Dealers (DAESI) program in 2003. The DAESI program is a location-specific agricultural education initiative designed to equip input dealers across the country with sufficient knowledge, enabling them to deal with the day-to-day challenges faced by farmers at the field level as para-extension professionals. The DAESI program is structured to allow agri-input dealers to participate without disrupting their daily business activities. The program extends over 48 weeks, comprising 40 classroom sessions and 8 field visits to different institutions and farmers' fields. These sessions and visits are scheduled on Sundays or during local market holidays to accommodate the dealers' schedules. Visit to field are designed to familiarize agri-input dealers with local field challenges and introducing them to applicable technologies, including training in pest, disease, and nutritional disorder identification. Study materials are provided in the local language, and multimedia instructional tools are used during classroom sessions.

The DAESI program was initiated in Eastern India as a pilot project in September 2013, starting in the South 24 Parganas district. However, there has been no significant effort to assess the program's effectiveness and its relation to

different socioeconomic and management factors related to DAESI diploma holders. The results of such a study would be valuable for stakeholders, helping them refine strategic action plans by addressing the identified challenges at the grassroots level. With a view to this ground level fact, the present study was conducted from November, 2021 to December, 2023 with the following objectives:

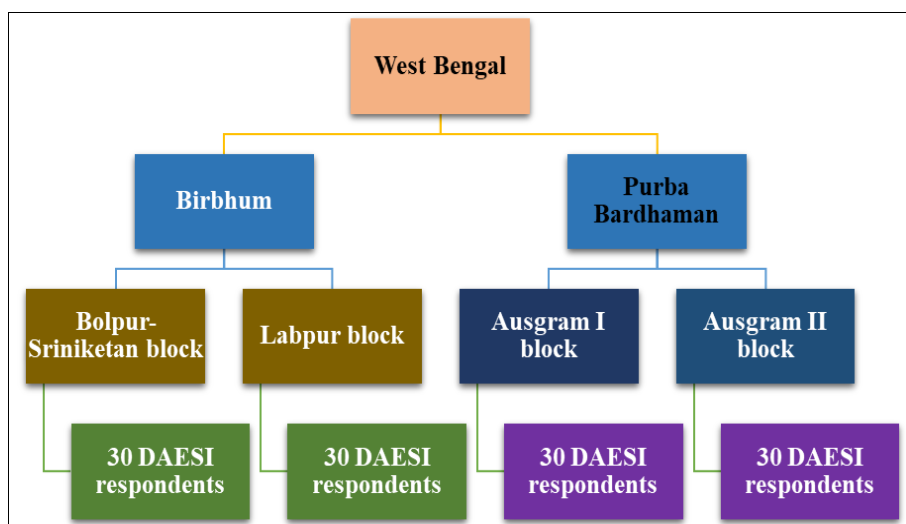
1. To study the socio-economic profile of selected DAESI trained input dealers.
2. To find the level of knowledge of DAESI trained input dealers on different socioeconomic and management aspects.

Materials and Methods

Two districts in West Bengal were purposively selected for this study namely Birbhum and Purba Bardhaman. Respondents from Bolpur-Sriniketan and Labpur block in Birbhum district and from Ausgram I and Ausgram II block in Purba Bardhaman district were purposively selected to conduct the study.

Selection of respondents

For this study, a total of 120 DAESI trained input dealers were selected. A random sampling method was used to select 120 input dealers from each of the two selected districts, with 30 input dealers chosen from each block. This ensured a balanced representation, with an equal number of diploma holders from each selected block.



Variables

Independent variables: Age (x_1), Education (x_2), Family size (x_3), Size of land holding (x_4), Land under irrigation (x_5), Types of agri-inputs (x_6), Business experience (x_7), Distance from local market (x_8), Annual income from agri-input business (x_9), Total annual income (x_{10}), Economic motivation (x_{11}), Risk orientation (x_{12}), Planning orientation (x_{13}), Profit orientation (x_{14}), Marketing orientation (x_{15}), Decision making (x_{16}), Mass media contact (x_{17}), Cosmo politeness (x_{18}), Self-esteem (x_{19}), Self-confidence (x_{20}).

Dependent variable: Knowledge level(y) assessment involved 25 questions formulated in consultation with officials from the state Department of Agriculture (ADAs), KVK subject matter specialists, and DAESI course facilitators. Each respondent answered the same set of questions, with each response scored. The final knowledge score was calculated out of a possible 10 points from the 25 questions.

Statistical tools used: Coefficient of Correlation, Stepwise Regression Analysis.

Results and Discussion

Table 1: Correlation coefficient of impact of DAESI program in terms of Knowledge level (y) with 20 independent variables (x_1 - x_{20}) (n=120)

Sl. No.	Independent Variables	'r' Value	Remarks
1	Age (x_1)	-.401	**
2	Education (x_2)	.426	**
3	Family size (x_3)	0.038	
4	Size of land holding (x_4)	0.013	
5	Land under irrigation (x_5)	-0.081	
6	Types of agri-inputs (x_6)	-0.053	
7	Business experience (x_7)	0.243	**
8	Distance from local market (x_8)	-0.011	
9	Annual income from agri-input business (x_9)	0.278	**
10	Total annual income (x_{10})	0.376	**
11	Economic motivation (x_{11})	0.367	**
12	Risk orientation (x_{12})	0.338	**
13	Planning orientation (x_{13})	0.071	
14	Profit orientation (x_{14})	0.387	**
15	Marketing orientation (x_{15})	0.425	**
16	Decision making (x_{16})	0.135	
17	Mass media contact (x_{17})	0.336	**
18	Cosmo politeness (x_{18})	0.372	**
19	Self-esteem (x_{19})	0.190	*
20	Self-confidence (x_{20})	-0.024	

**Correlation is significant at the 0.01 level

*Correlation is significant at the 0.05 level

Table 1 presents the correlation coefficient of consequent variable, impact of DAESI program in terms of knowledge (y) with 20 agro economic and socio personal independent variables (x_1 - x_{20}). It has been observed that the following variables have recorded significant correlation with age (x_1), education (x_2), business experience (x_7), annual income from agri-input business (x_9), total annual income (x_{10}), economic motivation (x_{11}), risk orientation (x_{12}), profit orientation (x_{14}), marketing orientation (x_{15}), mass media contact (x_{17}), cosmo politeness (x_{18}) at 1% level of significance and self-esteem (x_{19}) at 5% level of significance.

Revelation

Age has recorded a significant and negative correlation with impact of DAESI program in terms of knowledge (y) which

implies that young age DAESI trained respondents are more informed about the course curriculum being imparted to them. The positive and significant correlation between education and knowledge implies that education of DAESI trained respondents has gone positively with higher acquisition of knowledge regarding objective and text of DAESI program. Higher business experiences (x_7), annual income from agri-input business (x_9), total annual income (x_{10}), economic motivation (x_{11}), risk orientation (x_{12}), profit orientation (x_{14}), marketing orientation (x_{15}), mass media contact (x_{17}), cosmo politeness (x_{18}) all have come out with positive contribution to the DAESI trained respondents for augmentation of their knowledge level. Self-esteem (x_{19}) reflects self-confidence and self-prophecy in a person. That's why it has contributed positively to the knowledge level of the respondent.

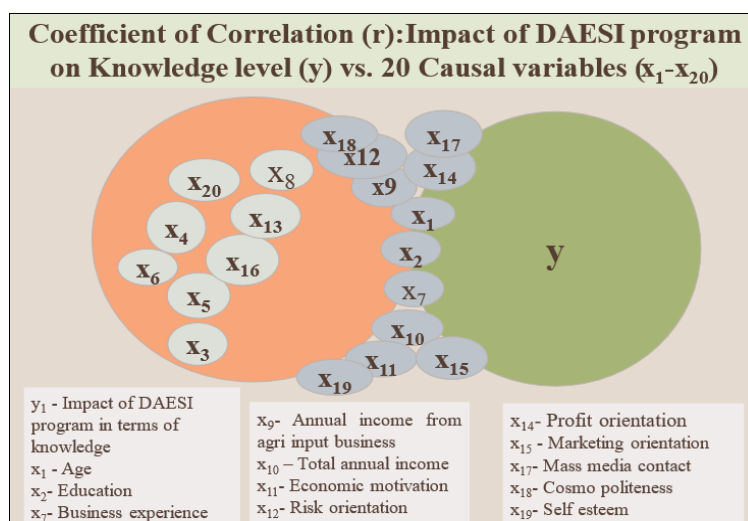


Fig 1: Impact of DAESI program in terms of knowledge level (y) with 20 independent variables

Table 2: Multiple Regression Analysis: Impact of DAESI program in terms of knowledge level (y) Vs. 20 Causal Variables (x_1 - x_{20}) (n=120)

Sl. No.	Variables	Reg. Coef. B	S.E. B	Beta	t Value
1	Age (x_1)	-0.204	0.061	-0.204	-3.364
2	Education (x_2)	0.081	0.070	0.081	1.154
3	Family size (x_3)	0.023	0.061	0.023	0.381
4	Size of land holding (x_4)	-0.061	0.063	-0.061	-0.973
5	Land under irrigation (x_5)	-0.106	0.062	-0.106	-1.704
6	Types of agri-inputs (x_6)	0.047	0.063	0.047	0.750
7	Business experience (x_7)	0.205	0.062	0.205	3.292
8	Distance from local market (x_8)	0.018	0.058	0.018	0.300
9	Annual income from agri-input business (x_9)	-0.616	0.186	-0.616	-3.315
10	Total annual income (x_{10})	0.818	0.189	0.818	4.323
11	Economic motivation (x_{11})	0.191	0.064	0.191	2.991
12	Risk orientation (x_{12})	0.163	0.065	0.163	2.512
13	Planning orientation (x_{13})	0.037	0.065	0.037	0.560
14	Profit orientation (x_{14})	0.177	0.071	0.177	2.495
15	Marketing orientation (x_{15})	0.163	0.075	0.163	2.177
16	Decision making (x_{16})	0.102	0.061	0.102	1.671
17	Mass media contact (x_{17})	0.065	0.067	0.065	0.982
18	Cosmo politeness (x_{18})	0.192	0.064	0.192	3.009
19	Self-esteem (x_{19})	0.113	0.060	0.113	1.875
20	Self-confidence (x_{20})	-0.034	0.065	-0.034	-0.527

R square: 70.40%

The standard error of the estimate: 0.597

Table no. 2 presents the multiple regression analysis to estimate the functional contribution of 20 causal variable on the consequent variable impact of DAESI program in terms of knowledge level (y).

It has been found that the 20 causal variables have explained

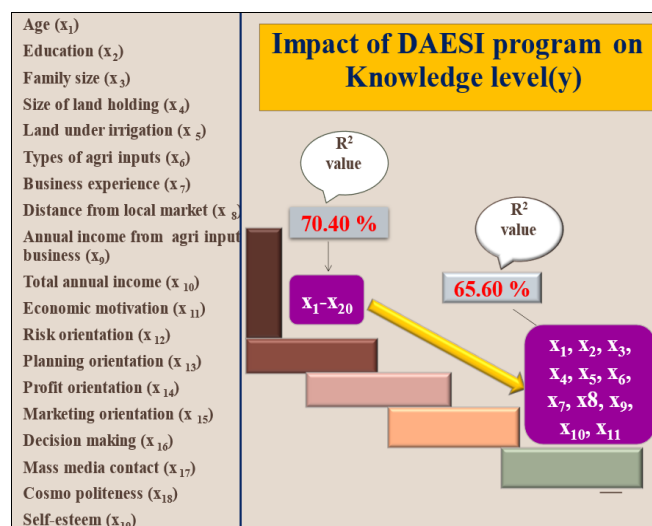
70.40% variance in the consequent variable impact of DAESI program in terms of knowledge level(y). For the screening out of significant causal variables out of a pool of 20, we need to move for stepwise regression analysis

Table 3: Stepwise regression analysis of impact of DAESI program in terms of knowledge level(y) with 20 causal variables (x_1 - x_{20}) (n=120)

Sl. No	Variables	Reg. coef. B	S.E. B	Beta	t value
1	Age (x_1)	0.236	0.068	0.236	3.469
2	Education (x_2)	0.213	0.059	0.213	3.617
3	Family size (x_3)	0.202	0.059	0.202	3.426
4	Size of land holding (x_4)	0.223	0.059	0.223	3.765
5	Land under irrigation (x_5)	-0.206	0.059	-0.206	-3.513
6	Types of agri-inputs (x_6)	0.851	0.179	0.851	4.761
7	Business experience (x_7)	-0.651	0.179	-0.651	-3.644
8	Distance from local market (x_8)	0.194	0.058	0.194	3.340
9	Annual income from agri-input business (x_9)	0.149	0.068	0.149	2.201
10	Total annual income (x_{10})	0.236	0.068	0.236	3.469
11	Economic motivation (x_{11})	0.213	0.059	0.213	3.617

R square: 65.60%

The standard error of the estimate: 0.610



Contribution made by 11 causal variables =

$$\frac{65.60}{70.40} \times 100 = 93.18\%$$

Table no. 3 presents the stepwise regression analysis for extraction of significant functional variables out of 20 causal variables. The variables age (x_1), education (x_2), family size (x_3), size of land holding (x_4), land under irrigation (x_5), types of agri inputs (x_6), business experience (x_7), distance from local market (x_8), annual income from agri input business (x_9), total annual income (x_{10}), economic motivation (x_{11}) have been identified to be retained for last stage of stepwise regression analysis. The R^2 value being 0.656, reveals that these eleven variables together explain 65.60 percent of the variance embedded in impact of DAESI program in terms of knowledge level (y).

Age indicates both experiential learning and chronological maturity. It has been extracted as one of the significant functional variables. With enhancement of experiential learning, better management of land, water, business experiences have become an isochronous phenomenon. Income and economic motivation have been identified to contribute significantly to the higher acquisition of knowledge. Perhaps, higher income & better knowledge have furnished a clandestine binary.

Conclusion

In conclusion, the DAESI program has proven to be a valuable tool for enhancing the competencies of input dealers, directly benefiting farmers through improved access to timely and accurate agricultural advice. The program's success in improving agricultural input knowledge among dealers emphasizes its potential as a model for similar initiatives aimed at empowering the grassroots of agricultural advisory systems. If expanded and improved, the DAESI program could play a pivotal role in transforming Indian agriculture, improving productivity, and ensuring long-term sustainability for the farming community. The different socioeconomic and management factors play important roles for better bringing performance of DAESI trained input dealers.

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