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## Article

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RESEARCH

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# Evaluating agripreneurs' satisfaction: exploring the effect of demographics and emporographics

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## Abstract

This paper attempts to gauge the satisfaction of agripreneurs and seeks to explore the effect of demographics and emporographics on the agripreneurs' satisfaction. This study proposes a seven-dimension survey instrument, called *AprenSAT*, for measuring agripreneurs' satisfaction. Responses from 784 agripreneurs are analyzed by applying exploratory and confirmatory factor analysis and multiple linear regression. The extraction of seven factors confirms that agripreneurs' satisfaction is influenced by material availability, government support, farm growth, farm income, market performance, cultivation & production and perceived farm image. The linear regression result delineates that demographic factors such as age, education level and farming experience significantly influence the agripreneurs' satisfaction. Similarly, variables of emporographics such as farm age, farm size, annual income, land ownership, sources of funds, and intercropping have a substantial influence on agripreneurs' satisfaction. We recommend information dissemination, hands-on training, the creation of adequate infrastructure and technology adoption to enhance agripreneurs' satisfaction and rural development.

**Keywords:** Agricultural entrepreneurship, Agripreneurs, Agripreneurship, Agri-business, Demographics, Emporographics, Rural Farmers

## Introduction

Entrepreneurship is widely recognized as one of the key drivers of economic growth and development of emerging economies in the globe (Spring, 2009). It is best described as the pursuit of economic affluence through the individual's innovative ideas while functioning in an uncertain environment with limited resources (Austin et al., 2006). Entrepreneurs launch new business ventures to lift their wealth and elevate the prosperity of their country through faster economic growth (Smit, 2004). In emerging economies, a plethora of research works primarily focused on entrepreneurship and entrepreneurial behaviour among small business units (Adom et al., 2018; Obeng et al., 2014). Although mainstream entrepreneurship research had previously ignored agriculture and its allied sectors, this scenario has changed in recent years with new studies on diverse phenomena in many sectors across the world (Afreh et al., 2019; Boer, 2013). Still, those studies are inadequate to address the burning issues of entrepreneurs in agriculture and allied

sectors. We observe a marked difference among urban and rural populations in which poverty incidence is higher among rural poor in developing nations, especially in India. Obviously, there is an expectation that entrepreneurship development in the agricultural sector would play a critical role in the mitigation of poverty and wealth generation (Smit, 2004).

At the time of independence, the economy of India was predominantly an agrarian economy. During 1950–51, the contribution of agriculture, in terms of real gross value added, to the real total gross value addition was 53.7%. Since then, the contribution of agriculture to the GDP has been slowly drifting lower every year and in terms of percentage, the values stand at 33% and 19.9% for the year 1990–91 and 2020–21, respectively (GOI, 2021). At the same time, captivately, the number of people employed in agriculture and allied sectors declined only moderately from 70% during the 1950s to around 58% during 2020 (IBEF, 2021). This paradoxical phenomenon provides the answer to two pertinent questions. One answer is that agriculture is slowly losing out to other sectors such as industry and services in their contribution to GDP. Another point of explanation that worth attention is that, still, more people completely rely on agriculture for their livelihood. This translates into more people sharing lesser income from agriculture which ultimately resulted in disguised unemployment, a lower standard of living and, poverty for those dependent on agriculture. India being the second most populated nation having 17.5% of the world population has only 2.4% of world land to feed its people (World Bank, 2016).

Even though agriculture is seen as a low-tech industry, it is also considered as a critical sector contributing hugely to the industry and service sector in the form of raw material and other inputs (Bairwa et al., 2014; Lans et al., 2013). The changing political, economic, social and natural environmental factors necessitate the need to revisit the agriculture sector with new vigour for the sustainable development of other sectors and the survival of humankind. At this juncture, it is highly desired that the farmers are donned with entrepreneurial skill sets. Originally, during the eighteenth century, the term entrepreneurship was associated with agriculture by French physiocrats, but apparently, it is used the least to relate an agricultural activity (Anand Singh & Krishna, 1994; Hazarika & Goswami, 2018; Singh, 2013). Agricultural entrepreneurship refers to the establishment of an innovative economic enterprise for the purpose of growth or gains under situations of risk and uncertainty in agriculture (Pindado & Sánchez, 2017). The term agricultural entrepreneur is synonymously used with many evolving terms, such as agropreneur, agripreneur, flowerpreneur, farmerpreneur, horti-preneurs, apipreneur, fishpreneurs, and aquapreneurs. We propose to define *Agripreneurs as entrepreneurial people in agriculture and allied sector who either create or run either formal or informal agriventures*.

Farmers and those who perform agri-related activities are entrepreneurs in that they run businesses (McElwee, 2008). There is a general trend suggesting farmers need to become entrepreneurs (Frans et al., 2011). The ever-changing environmental factors invite the farmer entrepreneurs to acquire new sets of relevant entrepreneurial skills that need not be the same as industrial and service sector entrepreneurs (Pyysiäinen et al., 2006; Subagyo & Ernestivita, 2020). The globalization and economic reforms around the globe have compelled agripreneurs to take up higher responsibility to run their

farm-oriented businesses (Alex, 2011). Agripreneurs have to find ways and means of carrying out their farm businesses innovatively yet, profitably. As agriculture in India is the largest employer, innovation and creativity in the agriculture sector by agripreneurs will provide new impetus to the decaying farming sector and, consequently, create more high-income jobs (Ashoka et al., 2017; Noltea & Ostermeierab, 2017). There is a slow but steady trend of enterprising agripreneurs going all out for technology adoption in their farming and related activities. Application of artificial intelligence and smart technologies in cultivation, crop management, harvesting to post-harvest management, usage of agribots, precision farming, greenhouse farming and organic farming are some of the emerging themes preferred by modern tech-savvy agripreneurs (Ajili et al., 2012; Caro & Cavallo, 2019).

As ingenious agripreneurs in India start to look beyond their domestic market to market their produce, technology adoption and innovation are the means through which they can ensure world-class quality while increasing both farm productivity and profitability. Highly educated youth will be inclined to agripreneurship as a career option once; it becomes socially acceptable and highly profitable. Carefully crafted agripreneurship programmes will mend youth's ways in favour of either agripreneurship or managerial workforce to serve the agricultural sector across the globe (Bairwa et al., 2014). Based on these assessments, this study seeks to gauge the satisfaction of agripreneurs and explore the effect of demographic and emporographics on agripreneurs' satisfaction by taking farmer entrepreneurs in India as the respondent unit.

## **Literature review**

### **Agripreneurs' satisfaction**

Assessing the satisfaction of agripreneurs who are in the business of cultivation and marketing agricultural products is essential for developing suitable policy initiatives that will address the needs and demands of agripreneurs (Kassem et al., 2021). Many factors that determine the overall satisfaction of farming entrepreneurs include agricultural credit usage (Gunes et al., 2016), the supports provided by the government for maintaining the financial structure and livestock (Demirtas, 2021) and cognitive and emotional factors (Higuchi et al., 2020). Sharma (2014) revealed that satisfaction was greatly influenced by information sources and services among the farmer entrepreneurs as reliable sources of information were relatively inaccessible to them. Agripreneurs expect the availability of timely information, since most of their produce is perishable in nature. Ao et al. (2017) found that the rural infrastructure, including access roads and uninterrupted electricity supply, plays an undiminished role in the agripreneurs' satisfaction. Relationship marketing, logistics (Acar, 2020), and communication technology play a vital role in enhancing farmers' satisfaction (Elias et al., 2017).

### **Demographic characteristics and agripreneurs' satisfaction**

Demographic factors describe the characteristics of study participants. It is essential to determine whether the sample respondents in a study are a representative sample of the target population for the generalization of results. In general, they are considered as independent variables, because they cannot be changed. Demographic factors include age, gender, education, marital status, family type, professional experience,

etc. They play a considerable role in the satisfaction of agripreneurs (Ali et al., 2018). Lauwere (2005) found that personal characteristics had negatively affected agripreneurs.

Age is a vital demographic variable. Bradley and Roberts (2004) and Gazioglu and Tansel (2006) identified a U-shaped connection between age and satisfaction. Indeed, young entrepreneurs have a high level of confidence than older (Forbes, 2005). Age has a substantial influence on the agripreneurs' satisfaction (Dias et al., 2019a; Ovharhe et al., 2020). Mubeena et al. (2020) discovered that the interest in agripreneurship was high among youth. Abdullah and Sulaiman (2013) found that when compared to old farmers, young agripreneurs have the willingness to adopt new technology.

Previous studies have yielded mixed results on confirming the relationship between gender and satisfaction with firm performance. Selvendran (2017) and Wayne et al. (2014) noted that gender was correlated with agripreneurs' satisfaction. Women entrepreneurs were more satisfied with business than men (Cooper & Artz, 1995). However, the result of studies conducted by Madhumitha and Karthikeyan (2020), Kuada (2009) and Sinyolo et al. (2017) identified that gender was not related to the satisfaction of agripreneurs.

Education is a vital component that provides the required knowledge, skills, ability, self-confidence and motivation (Cooper et al., 1994; Pliakoura et al. (2020); ; ; ; ; observed that farmers who pursue entrepreneurship have a low level of relevant entrepreneurship education. Bannor et al. (2021), Sinyolo et al. (2017) and Wayne et al. (2014) noted that the education level of agripreneurs significantly influenced their satisfaction.

A life partner gives moral support and sharing business responsibilities as well as problem. Several studies confirmed that marital status is positively related to the satisfaction of agripreneurs (Addo, 2018; Ovharhe et al., 2020). El Shoubaki and Meike (2018) found that support of life-partner had increased the satisfaction of agripreneurs with their entrepreneurial activities.

The knowledge and skills needed to run an agri-business can be gained by observing how family members perform their tasks on their farms. The children of the agricultural family can easily understand business nuances (Kim et al., 2006). Madhumitha and Karthikeyan (2020) claimed that family support was considered as the key factor in motivating women to become successful agripreneur as young women in many societies rely on family members' opinions on their business and personal decisions. Dias et al. (2019a) and Ovharhe et al. (2020) proved that family type had a substantial impact on farmers' satisfaction.

Like education, experience in agribusiness is also one of the crucial factors which support acquiring business skills. An experienced entrepreneur can realize their limitations than young entrepreneurs (Wright et al., 1997). According to Hayward et al. (2006), experienced entrepreneurs may be overconfident when the nature of an enterprise varies from core areas. Fraser and Greene (2006) noted that experienced entrepreneurs were apparently more satisfied. Similarly, Dias et al. (2019b), Ovharhe et al. (2020) and Selvendran (2017) showed a positive correlation between farming experience and satisfaction of agripreneurs. However, Bradley and Roberts (2004) found that entrepreneurial experience did not affect entrepreneurs' satisfaction.

### **Emporographics and agripreneurs' satisfaction**

Emporographics are known as farm characteristics which play a vibrant role in the segmentation of the agricultural business. Several prior research works disclose the satisfaction of agripreneurs influenced by the set of essential emporographics variables viz., farm age, farm size, annual income, land ownership, sources of funds and intercropping.

Age of the farm notably connected with the gaining professional experience of the agripreneurs. Seasoned farmers perhaps, could learn more entrepreneurial skills from their routine business operations. The longevity of business operations ultimately determines the business growth and performance (Sleuwaegen & Goedhuys, 2002). Bannor et al. (2021) revealed that farm age has positively influenced the satisfaction of agripreneurs. In addition, many studies identified that farms' age is considerably related to the satisfaction of agripreneurs (Antoncic, 2009; Lucas, 2017).

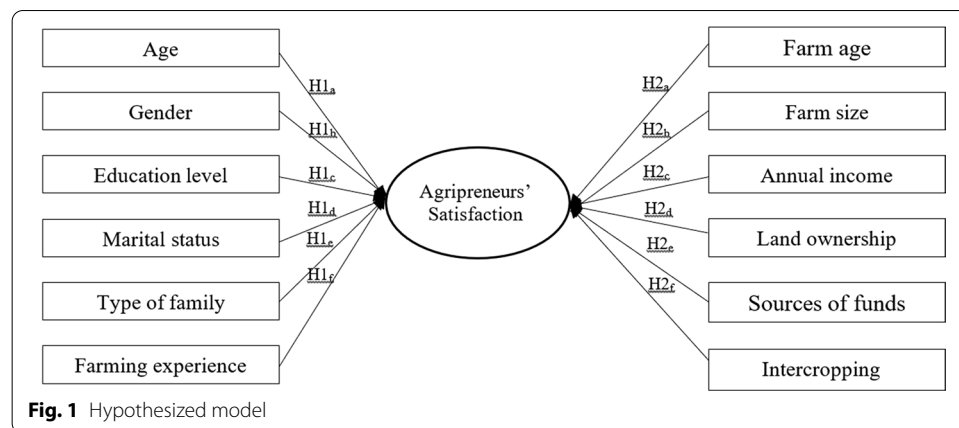
A farm size denotes an area of land devoted to agricultural processes to produce food and other crops that determine the capacity of production and volume of business operations of the agripreneurs. It is an indication of the farm's potential for profit-making. Thus, it serves as a surrogate for the entrepreneur's prestige, success and eliciting satisfaction (Weaver, 1977). It ultimately influenced the satisfaction of agripreneurs (Konyar & Osborn, 1990; Ovharhe et al., 2020). Wayne et al. (2014) identified the strong relationship between farm size, extension service offered, and agripreneurs' satisfaction. Addo (2018) and Bannor et al. (2021) claimed that agripreneurs' satisfaction is related to farm size.

Dobryagina (2020) revealed that the quantum of monetary rewards directly influences individuals choosing agricultural entrepreneurship as their career option. Some studies found a positive correlation between income and agripreneurs' satisfaction (Ao et al., 2017; Reddy et al., 2020). Handy et al. (2011) identified that agripreneurs under normal circumstances have an assured income derived from cultivation. Studies by Fan and Luo (2009), Ovharhe et al. (2020) and Singh et al. (2019) divulged that the income from agripreneurship has a positive impact on personal growth, and thereby, the satisfaction of agriculture entrepreneurs.

The pattern of land ownership is a crucial factor that ultimately determines the freedom of doing agripreneurial activities. It determines the livelihood capabilities of agricultural entrepreneurs and, indirectly, their income level. The agripreneurs who have their land can do business better than those who cultivate in leased lands. Morgan et al. (2010) and Ovharhe et al. (2020) discovered that agripreneurs who cultivate in their land are more satisfied than those who cultivate in leased land. Yet, another study by Rao et al. (2016) identified that the farmers who cultivate in the contract land are highly satisfied.

In general, there is literature evidence that shows the critical role of sources of funds in the degree of agripreneurial operations. According to McMahon (2001), increased reliance on external finance was associated with better business growth. Kristiansen et al. (2003) showed that entrepreneurs who mobilized funds from family and third-party investment had a higher business success rate. Most of the agripreneurs are reluctant to approach organized financial institutions for their financial requirements. Access to unorganized sector credit has plumped the economic status of the agripreneurs because of usurious private lenders who charge exorbitant rates of interest. Mubeena et al. (2020) stated that those agripreneurs who availed financial support with nil interest from





families are more satisfied with agricultural entrepreneurship, which is in contradiction to those agripreneurs who availed financial support from banks as they are more dissatisfied due to the high cost of loans. Dias et al. (2019a), Bannor et al. (2021) and Chatterjee et al. (2020) found that sources of funds had a significant influence on the satisfaction of agripreneurs.

The intercropping practice facilitates a higher yield and additional income from the same piece of land. Handy et al. (2011) and Dai et al. (2017) identified that intercropping has positively influenced the income of small landholders. Jaganathan and Nagaraja (2015) found that agripreneurs derived additional income from intercrops, generate more employment and also, increase soil fertility.

Even though our review of the literature is not extensive, it clearly highlights the gaps in existing research. Based on the analysis of available literature, we seek to explore the role of demographics and emporographics on agripreneurs' satisfaction. In this regard, the following two hypotheses are framed and tested. Based on prior studies, we hypothesize that demographic characteristics such as age (H1a), gender (H1b), education level (H1c), marital status (H1d), type of family (H1e) and farming experience (H1f) significantly influence the agripreneurs' satisfaction. Likewise, emporographics factors such as farm age, (H2a) farm size (H2b), annual income (H2c), land ownership (H2d), sources of funds (H2e) and intercropping (H2f) significantly influence the agripreneurs' satisfaction. Figure 1 depicts the hypothesized relationship between the dependent (agripreneurs' satisfaction) and independent variables (demographics and emporographics).

## Materials and methods

The current study aims at gauging the satisfaction of agripreneurs and seeks to explore the effect of demographics and emporographics on agripreneurs' satisfaction. The agripreneurs who had been involved in the cultivation and marketing of agricultural products in the rural area were the target population. The Salem district was purposively selected for the study, since relatively a great number of people have rigorously engaged in agripreneurial activities than their counterparts in other districts of Tamilnadu. A field survey was conducted to gather data from the agripreneurs. In all, 800 questionnaires were distributed, 16 of the questionnaires were incomplete. Thus, 784 questionnaires were used for analysis.

In this study, carefully crafted a questionnaire was used to amass responses from the agripreneurs. Using a questionnaire for data collection is considered an appropriate method to obtain correct responses (Chisnall, 2001).

After the extensive literature survey, we amassed scales and items related to agripreneurs satisfaction from earlier studies. These were reworded to suit agricultural entrepreneurs. Moreover, we found that there is no comprehensive standardized instrument for measuring agripreneurs' satisfaction. Therefore, we propose a new survey instrument developed by us that effectively measures the agripreneurs' satisfaction. We would prefer to call this instrument *AprenSAT*. This instrument covers seven dimensions, namely, material availability, government support, farm growth, farm income, market performance, cultivation and production and perceived farm image. The pilot study, frequent discussions made with agripreneurs and in-depth interactions with subject experts provided the necessary input and direction in defining, crafting, and refining the *AprenSAT* Questionnaire. Furthermore, the content validity was checked by a panel of experts consisting of two representations from each category, namely, subject expert, doctoral scholar and agripreneur. To check the comprehensibility of the *AprenSAT* instrument, a pilot study was conducted with the original pre-final version of the drafted questionnaire that comprised 34 attributes for measuring the agripreneur's satisfaction. After the pilot study, we observed that only 29 attributes are consistent with the seven dimensions of *AprenSAT*. Eventually, the final version of the questionnaire has seven dimensions of *AprenSAT* covering only 29 attributes out of the original 34 attributes (Table 1). This novel *AprenSAT* Questionnaire could effectively be used not only in India but across the globe to measure the satisfaction of agripreneurs.

Assessment of validity and reliability is one of the most fundamental aspects of instrument development. Therefore, in this study, the validity and reliability of our *AprenSAT* instrument were ascertained by Pearson's correlation and Cronbach Alpha ( $\alpha$ ) test, respectively. Pearson's correlation was applied between the total score of seven dimensions of *AprenSAT*. The correlation values range between 0.56 and 0.63 for all the seven dimensions of *AprenSAT*. In general, correlation in the range of 0.40 to 0.70 denotes strong validity of construct (Post, 2016). Hence, this result indicates that the newly developed questionnaire is a valid measurement tool. The Cronbach Alpha ( $\alpha$ ) test was used to verify the reliability and its test value stands at 0.907, which is more than that of a minimum threshold of 0.70 suggested by Hair et al. (2010), which denotes this questionnaire is highly reliable.

The survey questionnaire contains demographic characteristics, emporographics, and agripreneurs' satisfaction. Among the various types of scales, we preferred the widely accepted Likert's scale containing five points as it offers better clarity to respondents (Malhotra & Birks, 2003) by assigning 5 points to high satisfaction at one end of the scale and assigning 1 point to high dissatisfaction at the other end of the scale, while the remaining values are orderly fixed in between these extreme value and, named accordingly as satisfaction, neither satisfaction nor dissatisfaction and dissatisfaction.

The data collected from the agripreneurs were analyzed using the SPSS and SPSS-AMOS. The construct validity was measured through the Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). The discriminant validity was assessed using Construct Reliability (CR) and Average Variance Extracted (AVE). Furthermore,



**Table 1** Seven dimensions of AprenSAT and attributes of the study

Constructs	No	Code	Items
Materials availability (Ao, et al., 2017; Singh & Kalra, 2019)	1	MA-1	Availability of quality saplings
	2	MA-2	Availability of farm equipment
	3	MA-3	Availability of round the clock uninterrupted power
	4	MA-4	Availability of enough water for irrigation and related purposes
	5	MA-5	Availability of fertilizers and manures
	6	MA-6	Availability of Pesticides and weedicides
	7	MA-7	Cost of equipment and fertilizers
Government support (Kakkar et al., 2014; Mazibuko & Antwi, 2018; Mwamakimbula, 2014; Ncube, 2017; Selvaraj, 2015; Zawojnska, 2010)	8	GS-1	Conduction of Education/ awareness programmes by government
	9	GS-2	Availability of tailor-made insurance schemes offered by the government
	10	GS-3	Subsidies provided for the purchase of farm equipment, fertilizers etc
	11	GS-4	Relief measures during drought, flood and other natural disasters
	12	GS-5	Technical assistance from the government (such as soil report, weather report, market data etc.)
Farm growth (Lingesiya, 2017; Singh et al., 2019)	13	FG-1	Increase in cultivation area
	14	FG-2	Increase in production Turnover/ sales from the agri-business
	15	FG-3	Increase in usage of modern equipment
	16	FG-4	Growth in the number of labourers employed
Farm income (Ayranci, 2011; Chakraborty et al., 2019; Lingesiya, 2017)	17	FI-1	Support of income generated from agri-venture to maintain the desired level of standard of living
	18	FI-2	Income derived from allied agricultural activity
	19	FI-3	Return on Investment (ROI) from the agripreneurship
Market performance (Lingesiya, 2017; Singh & Kalra, 2019)	20	MP-1	Reception of farm produces in the markets
	21	MP-2	The market price for produces
	22	MP-3	Increase in the customer base as compared with the commencement of business
	23	MP-4	Growth in market coverage
Cultivation and production (Lingesiya, 2017; Singh & Kalra, 2019)	24	CP-1	Cost of crop maintenance
	25	CP-2	Quantity of produce from the farm
	26	CP-3	The ability of a farm to cultivation new crops based on market demand
Perceived farm image (Ayranci, 2011; Chakraborty et al., 2019)	27	PFI-1	Image of farm compared with neighbouring farms
	28	PFI-2	Recognition to farm in the society
	29	PFI-3	Individual recognition/ identify created by agri-venture

multiple linear regression was employed to identify the effect of demographic and emporographics on agripreneurs' satisfaction.

## Results

This section presents the demography of agripreneurs, emporographics of agri-ventures, agripreneurs' satisfaction, and the effect of demographic and emporographics on agripreneurs' satisfaction.

### Demographics and emporographics of agripreneurs

The demography of the agripreneurs as exhibited in Table 2 reveals that out of 784 agripreneurs, 44.6% were in the age group of below 35 years. It indicates that young farmers as agriculture entrepreneurs constitute the major chunk of the study population, while the middle-aged and old-aged farmers groups constitute the remaining study population in the study area. Another interesting inference that can be made from this descriptive analysis is that the majority (73.2%) of the agripreneurs are male. This denotes the entry of a noticeable number of women agripreneurs in the study area. 39.1 and 25.2% of the agripreneurs hold higher secondary and college-level education, respectively. Most of the agripreneurs (87.8%) are married and belonged to the joint family system. 44.8% of the respondents have 11–15 years of experience in agripreneurship.

The emporographics as presented in Table 3 divulges that 49.7% of the farmers run 6–10 years old enterprise. The majority, 57.3% of the respondents cultivated crops in less than 1 hectare. 47.3% of the agripreneurs earned ₹50,001–1,00,000 per annum from cultivation. The majority of the agripreneurs cultivated on their own land (81.1%). Most of the agripreneurs (44.6%) have availed of loans for cultivation purposes, while 32.1% of farmers have borrowed money without interest from relatives and friends. 57.7% of the agripreneurs have cultivated multiple crops in their farmland along with the main crop.

### Results of exploratory factor analysis for satisfaction of agripreneurs

The result of EFA presented in Table 4. As the value of KMO stood at 0.644, the application of factor analysis was highly appropriate for the variables included in this study (Hair et al., 2010). Bartlett's  $\chi^2$  value was 23,721.048, and it was significant ( $p \leq 0.05$ ) at a 5% level. It is noted that a high level of inter-relationship was found among the scale variables. Therefore, these variables were adequate for the PCA. The factor analysis by PCA with varimax rotation identified seven Eigenvalues, which were greater than 1. These

**Table 2** Demographic characteristics of agripreneurs

Category		Frequency(N = 784)	%
Age (in years)	Upto 35	350	44.6
	36–55	158	20.1
	Above 55	277	35.3
Gender	Male	574	73.2
	Female	210	26.8
Education level	Primary School	150	19.1
	Secondary School	130	16.6
	Higher Secondary	307	39.1
	College	198	25.2
Marital status	Married	688	87.8
	Unmarried	96	12.2
Type of family	Nuclear	170	21.7
	Joint family	614	78.3
Farming experience (in years)	Up to 10	80	10.2
	11–15	351	44.8
	16–20	250	31.9
	Above 20	103	13.1

**Table 3** Emporographics

Category		Frequency (N = 784)	%
Farm age (in years)	Upto 5	237	30.2
	6–10	390	49.7
	Above 10	158	20.1
Farm size (in hectare)	Below 1	449	57.3
	2–4	267	34.0
	Above 4	68	8.7
Annual income (in INR)	Below ₹50,000	127	16.2
	₹50,001–1,00,000	371	47.3
	₹1,00,001–1,50,000	191	24.4
	Above ₹1,50,000	95	12.1
Land ownership	Own	636	81.1
	Lease	148	18.9
Sources of funds	Relatives/ Friends	252	32.1
	Banks	183	23.3
	Moneylenders	350	44.6
Intercropping	Cultivated	452	57.7
	Not cultivated	332	42.3

seven extracted factors explained 78.77% of the total variation depicting the presence of seven factors that have predominantly influence the satisfaction of agripreneurs.

The first set of variable loading has seven variables with 16.20% of the variance. This component was suitably named as ‘Materials Availability’. Thus, these variables have highly influenced the satisfaction of agripreneurs. The second component consists of five variables with 11.31% of the variance. These variables were aptly named as ‘Government Support’. The third set of variable loading has four variables with 11.31% of the variance. This component was appropriately named as ‘Farm Growth’. The fourth variable loading consists of three variables with 11.08% of the variance. Hence, this factor was named as ‘Farm Income’. The fifth variable loading includes four variables with 10.79% of the variance. Hence, this factor was called as ‘Market Performance’. The sixth variable loading comprises three variables with 8.75% of the variance. Hence, this factor was noted as ‘Cultivation and Production’. The seventh variable loading comprises three variables with 6.73% of the variance. Hence, this factor was suitably named as ‘Perceived Farm Image’. In a nutshell, the material availability, government support, farm growth, farm income, market performance, cultivation and production and perceived farm image were highly influenced in the agripreneurs’ satisfaction (Fig. 2).

#### Results of confirmatory factor analysis (cfa) and discriminant validity

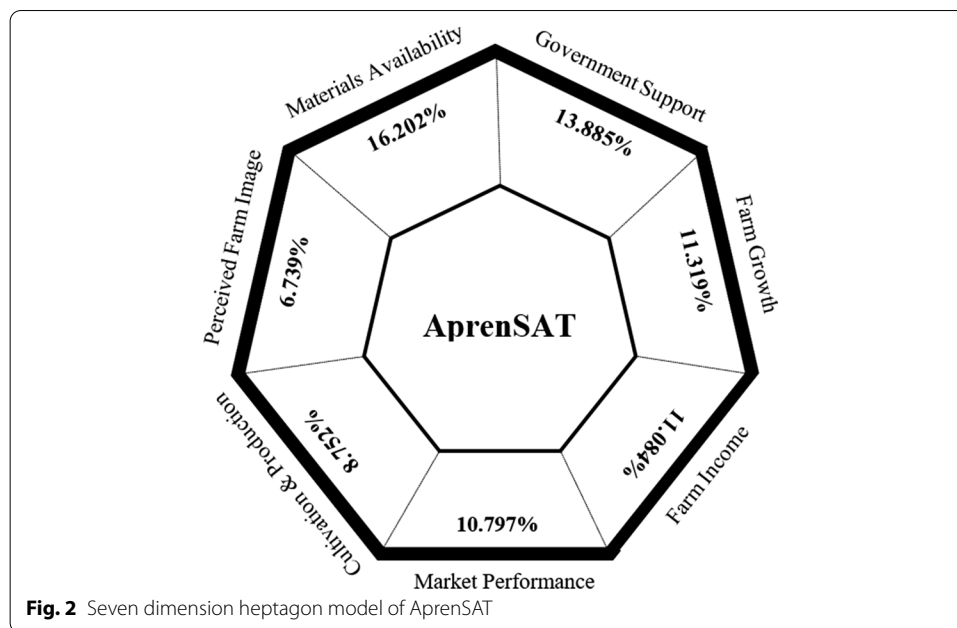
Table 5 exhibits the CFA and measurement properties. The composite reliability (C.R.) value for each factor ranged between 0.758 and 0.875, clearly surpasses the minimum threshold of 0.70 (Hair et al., 2010) and obviously, indicates good internal consistency among all the constructs. The goodness of fit indices for CFA yielded an acceptable level of fit (GFI = 0.906; CFI = 0.912; TLI = 0.901;  $\chi^2/df = 3.16$ ). The value of the RMSEA was 0.049, which denotes that the model fit was good as RMSEA value less than 0.08 is the gold standard for a strong fit of the model (Browne & Cudeck, 1993). This goodness of fit

**Table 4** Results of exploratory factor analysis

Constructs/factors	Factor loadings	Eigen value	% of Variance explained
Factor—1: Materials availability		4.698	16.202
MA-1	0.824		
MA-2	0.821		
MA-3	0.745		
MA-4	0.740		
MA-5	0.714		
MA-6	0.696		
MA-7	0.651		
Factor—2: Government support		4.027	13.885
GS-1	0.822		
GS-2	0.787		
GS-3	0.783		
GS-4	0.694		
GS-5	0.598		
Factor—3: Farm growth		3.283	11.319
FG-1	0.850		
FG-2	0.791		
FG-3	0.715		
FG-4	0.559		
Factor—4: Farm income		3.214	11.084
FI-1	0.829		
FI-2	0.717		
FI-3	0.709		
Factor—5: Market performance		3.131	10.797
MP-1	0.875		
MP-2	0.700		
MP-3	0.693		
MP-4	0.677		
Factor—6: Cultivation and production		2.538	8.752
CP-1	0.803		
CP-2	0.653		
CP-3	0.646		
Factor—7: Perceived farm image		1.954	6.739
PFI-1	0.773		
PFI-2	0.593		
PFI-3	0.589		

index for the seven-factor model shows the confirmation of construct distinctiveness for materials availability, government support, farm growth, farm income, market performance, cultivation and production and perceived farm image.

Moreover, we checked for discriminant validity by comparing the variance-extracted estimates of the measures with the squared correlation between constructs, as described by Fornell and Larcker (1981) and Netemeyer et al. (1990). The average variance-extracted (AVE) for all variables in this investigation was more than the suggested value of 0.50 (Malhotra & Dash, 2011). Since the value of variance extracted was more than the squared correlation, the measures have discriminant validity. In



this study, the estimates of variance extracted for cultivation and production and perceived farm image were 0.563 and 0.546, respectively, and both variables were more than the squared correlation between them. Likewise, the squared correlation between government support and farm growth was more than the variance extracted. Based on these statistics along with the CFA results, the study establishes discriminant validity between these seven variables.

Table 6 reports mean ( $\bar{x}$ ), standard deviation ( $\sigma$ ) and correlation. The mean values indicate that agripreneurs were highly satisfied with the market performance followed by farm growth, perceived farm image, farm income, materials availability, government support and cultivation and production. The study observed a strong positive correlation (0.594) between farm growth and government support, a moderate positive correlation (0.473) between materials availability and cultivation and production and a weak positive correlation (0.385) between materials availability and perceived farm image. Furthermore, government support was significantly related to farm growth, farm income, market performance, cultivation and production and perceived farm image.

#### Effect of demographic and emporographics on agripreneurs' satisfaction

Multiple regression was employed to find out the effect of independent variables, namely, demographic factors and emporographics on the dependent variable, namely, satisfaction of agripreneurs.

The effect of demographics and emporographics on the agripreneurs' satisfaction as presented in Table 7 reveals that the satisfaction of agripreneurs was substantially influenced by the demographic characteristics included in the model, since  $\text{Adj.}R^2$  value stood at 0.427. It denotes that 42.7% of the difference in the agripreneurs' satisfaction was influenced by the set of demographic variables, which confirms that the

**Table 5** Results of confirmatory factor analysis

Constructs	C.R	Standardized loadings ( $\lambda_{y_i}$ )	Reliability ( $\lambda^2_{y_i}$ )	Variance ( $\text{Var}(\epsilon_i)$ )	AVE $\Sigma(\lambda^2_{y_i}) / [(\lambda^2_{y_i}) + / (\text{Var}(\epsilon_i))]$
Materials availability	0.875				0.503
MA-1		0.806	0.650	0.350	
MA-2		0.772	0.596	0.404	
MA-3		0.673	0.453	0.547	
MA-4		0.735	0.540	0.460	
MA-5		0.742	0.551	0.449	
MA-6		0.636	0.404	0.596	
MA-7		0.569	0.324	0.676	
Government support	0.869				0.574
GS-1		0.901	0.812	0.188	
GS-2		0.638	0.407	0.593	
GS-3		0.806	0.650	0.350	
GS-4		0.704	0.496	0.504	
GS-5		0.713	0.508	0.492	
Farm growth	0.836				0.568
FG-1		0.626	0.392	0.608	
FG-2		0.869	0.755	0.245	
FG-3		0.888	0.789	0.211	
FG-4		0.580	0.336	0.664	
Farm income	0.758				0.516
FI-1		0.613	0.376	0.624	
FI-2		0.679	0.461	0.539	
FI-3		0.843	0.711	0.289	
Market performance	0.806				0.512
MP-1		0.728	0.530	0.470	
MP-2		0.778	0.605	0.395	
MP-3		0.731	0.534	0.466	
MP-4		0.614	0.377	0.623	
Cultivation and production	0.790				0.563
CP-1		0.858	0.736	0.264	
CP-2		0.787	0.619	0.381	
CP-3		0.578	0.334	0.666	
Perceived farm image	0.782				0.546
PFI-1		0.640	0.410	0.590	
PFI-2		0.754	0.569	0.431	
PFI-3		0.813	0.661	0.339	

**Table 6** Descriptives and correlation

	$\bar{x}$	$\sigma$	1	2	3	4	5	6	7
1. Materials availability	3.690	0.719	1						
2. Government support	3.585	0.960	0.025	1					
3. Farm growth	4.014	0.702	0.047	0.594**	1				
4. Farm income	3.844	0.724	0.078*	0.389**	0.379**	1			
5. Market performance	4.056	0.551	0.257**	0.429**	0.314**	0.283**	1		
6. Cultivation and production	3.319	0.781	0.473**	0.273**	0.015	0.060	0.108**	1	
7. Perceived farm image	3.916	0.545	0.385**	0.286**	0.167**	0.300**	0.043	0.649**	1

Note: \*\* denotes 1% and \* denotes 5% levels of significance



**Table 7** Regression model summary

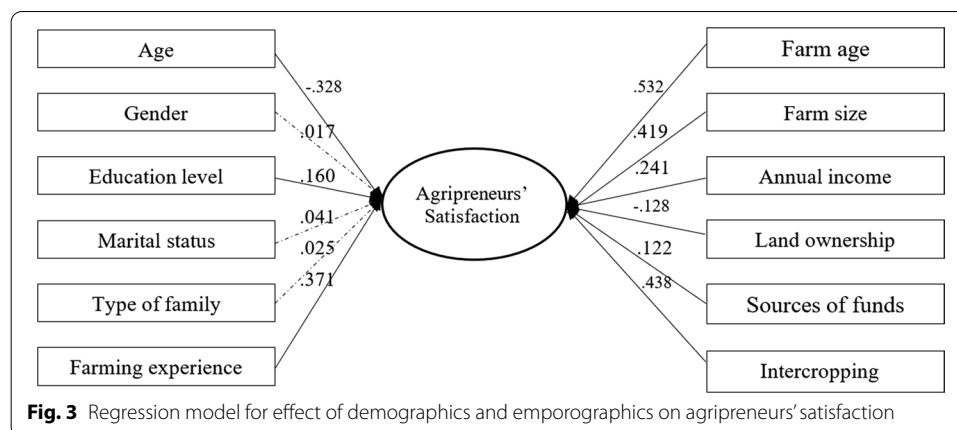
Variables	Constructs	$\beta$	$t'$	$P$	Model summary				
					$R$	$R^2$	Adj. $R^2$	$F$	$P$
Demographics	Constant	18.365	27.829	0.000	0.687	0.442	0.427	18.692	0.000
	Age	− 0.328	− 1.702	0.000					
	Gender	0.017	0.275	0.123					
	Education level	0.160	1.163	0.001					
	Marital status	0.041	0.634	0.153					
	Type of family	0.025	0.415	0.421					
	Farming experience	0.371	4.447	0.000					
Emporographics	Constant	19.147	29.487	0.000	0.704	0.496	0.462	24.071	0.000
	Farm age	0.532	1.053	0.000					
	Farm size	0.419	2.285	0.003					
	Annual income	0.241	2.360	0.000					
	Land ownership	− 0.128	− 0.756	0.002					
	Sources of funds	− 0.122	− 0.523	0.004					
	Intercropping	0.438	1.576	0.000					

proposed model was a strong predictor. There was a strong association between agripreneurs' satisfaction and demographic characteristics, since the ' $R$ ' value was 0.687. The  $F$  statistic (18.692) was significant at a 5% level ( $p \leq 0.05$ ) points out that the overall model fit was significant.

The regression coefficient shows that the demographic characteristics of agripreneurs such as age ( $\beta = -0.328$ ;  $t = -1.702$ ,  $p \leq 0.05$ ), education level ( $\beta = 0.160$ ;  $t = 1.163$ ,  $p \leq 0.05$ ) and farming experience ( $\beta = 0.371$ ;  $t = 4.447$ ;  $p \leq 0.05$ ) substantially influence the agripreneurs' satisfaction. It could be ascertained that that age has a substantial negative influence on agripreneurs' satisfaction. Furthermore, gender, marital status and type of family did not significantly ( $p > 0.05$ ) influence the agripreneurs' satisfaction. Therefore, the study hypotheses  $H1_a$ ,  $H1_c$ , and  $H1_f$  are proven correct, whereas the study failed to prove the remaining hypothesis, such as  $H1_b$ ,  $H1_d$ , and  $H1_e$ .

The satisfaction of agripreneurs was substantially influenced by the emporographics included in the model, since Adj. $R^2$  value stood at 0.462. It implied that 46.2% of the difference in the agripreneurs' satisfaction was determined by the emporographic variables, which hint at the strong predictable nature of the proposed model. There was a strong association between agripreneurs' satisfaction and emporographics, since the ' $R$ ' value was 0.704. The  $F$  statistic (24.071) was significant at a 5per cent level ( $p \leq 0.05$ ). Therefore, the overall model fit was significant.

The emporographics factors such as farm age ( $\beta = 0.532$ ;  $t = 1.053$ ,  $p \leq 0.05$ ), farm size ( $\beta = 0.419$ ;  $t = 2.285$ ,  $p \leq 0.05$ ), annual income ( $\beta = 0.241$ ;  $t = 2.360$ ,  $p \leq 0.05$ ), land ownership ( $\beta = -0.128$ ;  $t = -0.756$ ,  $p \leq 0.05$ ), sources of funds ( $\beta = 0.122$ ;  $t = -0.523$ ,  $p \leq 0.05$ ) and intercropping ( $\beta = 0.438$ ;  $t = 1.576$ ,  $p \leq 0.05$ ) were significantly related to the agripreneurs' satisfaction. This study observes that land ownership had a negative effect on the agripreneurs' satisfaction. Therefore, the hypotheses  $H2_a$ ,  $H2_b$ ,  $H2_c$ ,  $H2_d$ ,  $H2_e$ , and  $H2_f$  are proved correct (Fig. 3).



## Discussion

This study observes that agripreneurs' satisfaction was highly influenced by factors, such as market performance, farm growth, perceived farm image, farm income, materials availability, government support and cultivation and production. There was a marked linkage between cultivation and production and farm image. There exists a moderate positive correlation between materials availability and cultivation and production. Moreover, government support was significantly related to farm growth, farm income, market performance, cultivation and production and perceived farm image. In addition, the study identifies that age has a negative influence on the agripreneurs' satisfaction. It denotes that as the farmers' age and their satisfaction towards agripreneurship drift downwards. In other words, the young agripreneurs are more satisfied with the cultivation and marketing of agricultural products. This result is in line with the studies of Ovharhe et al. (2020), Sinyolo et al. (2017), and Wayne et al. (2014).

This study finds that gender does not influence the agripreneurs' satisfaction. This result confirms the results of earlier studies of Madhumitha and Karthikeyan (2020), Kuada (2009), and Sinyolo et al. (2017). The education level of agripreneurs positively impacts the agripreneurs' satisfaction, which denotes that as the farmers' education level increases, there is an increase in their satisfaction towards agripreneurship. This finding is in harmony with the findings of Ovharhe et al. (2020) and Bannor et al. (2021), while this contradicts the findings of Singh et al. (2019) and Sinyolo et al. (2017).

As marital status does not influence the agripreneurs' satisfaction, their agriventure operations are not hindered by marital and family commitments as observed by Selvendran (2017) and El Shoubaki and Meike (2018). This study discovered that type of family has no influence on the agripreneurs' satisfaction which corroborates with the findings of Madhumitha and Karthikeyan (2020) and contradicted the findings of Kuada (2009) and Bannor et al. (2021). This study results portrayed that the farming experience has a positive influence on the agripreneurs' satisfaction. This result is supported by several earlier studies, including those by Dias et al. (2019a), Ovharhe et al. (2020) and Wayne et al. (2014). However, this result contradicted the observation of Bradley and Roberts (2004).

The study found that farm age has positively influenced the agripreneurs' satisfaction. Similar results were reported by Antoncic (2009) and Lucas (2017). It is also observed that the farm size has positively influenced the agripreneurs' satisfaction echoing the findings of Addo (2018), Bannor et al. (2021) and Vasan (2020). In this study, marginal-level farmers make up most of the study population. It is inferred that Indian farmers are marginal and small farmers. Cultivation and marketing of agricultural products are mostly preferred by these agripreneurs as it is an intensive crop that requires a constant high level of attention.

The success of any business operation is highly dependent on the income generated by it. This holds well in the case of agripreneurship too. In this study, it is found that the annual income has a positive influence on the agripreneurs' satisfaction. It indicates that as the level of income increases, the satisfaction level of the agripreneurs also increases. This resonates well with the studies of Bannor et al. (2020), Fan and Luo (2009) and Chatterjee et al. (2020).

Land ownership has decreased the agripreneurs' satisfaction. It implies that agripreneurs who cultivate in their land are more satisfied than their counterparts who got engaged in agriculture on leased land. This finding corroborates with the finding of Morgan et al. (2010) and Ovharhe et al. (2020). Sources of funds have a strong impact on the agripreneurs' satisfaction. It signifies that those agripreneurs who received funds from family and friends, also termed 'love money', are more satisfied than those who invest the money borrowed from banks and other moneylenders. It is observed that most of the agripreneurs in the study area borrows from private moneylenders for their immediate financial requirements connected with farming and agriventure operation. Moneylenders charge an exorbitant rate of interest which increases the cost of cultivation, leading to a decrease in profitability. Ultimately, this lower profitability leads to dissatisfaction among the agripreneurs. This result is consistent with several prior studies (Bannor et al., 2021; Chatterjee et al., 2020; Mubeena et al., 2020).

In the study area, the farmers follow intercropping practices, which facilitate getting a higher return from the same piece of land. Thus, the intercropping pattern has a positive influence on the satisfaction level of the agripreneurs in the study area. This result conforms with the findings of prior research works done by Dai et al. (2017) and Jaganathan and Nagaraja (2015).

### **Recommendations**

Among agripreneurial operations, cash crop cultivation is considered to be the most profitable income-generating business in the Indian economy. The agripreneurs will be highly motivated when the government comes out with supportive policies and implement suitable and actionable marketing strategies. Adequate information about the market, marketing strategies and export opportunities must be communicated to the agripreneurs through proper channels and facilitated by the fast-growing digital economy. Besides, capitalizing on IoT during the production phase will also help in data mining and open doors to new economic activities in the blockchain industry. The fourth industrial revolution is not just for the heavy or technological-based industries but also agriculture and, in this case, the cultivation, production, promotion and marketing, distribution and sales of the agricultural products and agro-based value-added

products. Cultivation and production of agricultural products are seasonal. Hence the agripreneurs need to engage in other income-generating activities to supplement their livelihood. Scheduling the production and harvesting times, the agripreneurs and farm managers may plan with the cultivation of intercrops or be engaged in other sectors to generate additional cash flow. This will ensure that they have continuous income for daily and monthly expenses. The agripreneurs may also be assisted with financial support during the seasonal demand to compensate for the unexpected loss encountered. On the other hand, the government can take necessary steps to provide an incentive for research and development (R&D) to diversify the use of agricultural products.

Training programmes can be conducted for the agripreneurs so that they can learn new techniques and technologies in cultivation, which in turn takes them to the next level in cultivation. Capacity-building initiatives are crucial for the empowerment of the farmers' community, facilitating the creation of an effective value chain for agricultural products and value-added products. This will increase the demand for agricultural and agro-based value-added products domestically and internationally, which will boost the growth of the economy in the long run.

The cost of production or the yield per acre is significantly high. The farmers can meet the expenses only when the product reaches the markets on time. Besides having a good access road, transportation facilities and adequate storage facilities must be provided. The entrepreneurs who see this as a business opportunity may be provided financial and technical support for the creation of transportation and storage facilities. These facilities in turn will create more jobs. Most importantly, these measures will ensure that the agricultural products reach the clients in various markets be it domestic or international in pristine conditions and on time; otherwise, most of the agricultural produce would lose its value and may only be sold below the market value or just be disposed of due to its perishable nature. The barriers and obstacles related to the communication process between wholesalers, retailers and commission agents must be rectified. An integrated system that allows artificial intelligence to record the trend of production will help the buyers and clients be updated on the availability of the agricultural products based on the origin of locality, the quantity and the quality of the produce. This will also help the clients be prepared for the arrival times for collection on various occasions, celebrations, and events. In a nutshell, only a coordinated set of activities that include government support, training, institutional support, and technology modernization in every stage of production to supply chain can positively enhance the livelihood and satisfaction of agripreneurs. Moreover, agripreneurship activities significantly support the economic growth and development of India.

## Conclusion

The current study investigates satisfaction of agripreneurs and seeks to explore the effect of demographics and emporographics on agripreneurs' satisfaction. We propose a new survey instrument, called *AprenSAT*, for effective measurement agripreneurs' satisfaction cutting across regions. The extraction of seven factors confirms the presence of seven dimensions of agripreneurs' satisfaction. The *heptagon model of AprenSAT* reveals the seven factors as market performance, farm growth, perceived farm image, farm income, materials availability, government support and cultivation and production. The

regression result proves that demographic factors such as age, education level and farming experience have a significant influence on the agripreneurs' satisfaction. In addition, emporographics such as farm age, farm size, annual income, land ownership, sources of funds, and intercropping have a substantial influence on agripreneurs' satisfaction. The results derived from the current study are relevant and valuable in numerous ways. First, this study helps to understand the level of agripreneurs' satisfaction towards their agri-business. Second, the proposed survey instrument, the *AprenSAT* is a valid, reliable and effective tool for measuring the agripreneurs' satisfaction. Third, the proposed *seven-dimension heptagon model of AprenSAT* has remarkable utility to all stakeholders starting from researchers, academicians, etc., to policymakers. Fourth, this study makes an immense contribution to the existing body of knowledge. Fifth, since we recommend to policymakers the coordinated set of activities including training, institutional support and technology modernization in every stage of production to supply chain to enhance the livelihood and satisfaction of agripreneurs, our recommendation will have a ripple effect on the well-being of not only agripreneurs but also, on the rural, industry and service sector.

#### Abbreviations

AprenSAT: : Agripreneurs satisfaction; GOI: : Government of India; IBEF: : India Brand Equity Foundation.

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#### Authors' contributions

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#### Declarations

##### Ethics approval and consent to participate

During data collection, respondents gave verbal consent for the data collectors and showed their willingness to fill the dispatched questionnaires.

##### Consent for publication

Not applicable.

##### Competing interests

The authors declare that they have no competing interests.

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