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FACTORS INFLUENCING THE ADOPTION OF SUSTAINABLE PRACTICES IN AGRO-BASED ENTERPRISES

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Abstract
Agro- based enterprises play a pivotal role in strengthening the economy of the India. Due to engagement of huge resources in the sector, its participation in the endeavour to embrace sustainability issues through its value creation process substantially effects the country's pace towards approaching Sustainable Development Goals. This necessitates the comprehension of factors that influence the entrepreneurs of Agro based enterprises to adopt sustainable practices. The present study aims to establish understanding of such factors with the use of Garret Ranking Method. Undertaken in Jorhat district of Assam, the study revealed that as per the opinion of the entrepreneurs, Customer demand is the most significant factor leading to inclination of entrepreneurs towards sustainable practices.

Keywords: Agro-based Enterprises, Factors, Garret Ranking, Practices, Sustainable.

Introduction

Agro-based Industry in India

The agricultural sector serves as the backbone of the Indian Economy. It is a highly recognised sector for its contribution towards economic growth and employment generation. The agro based industry represents the primary sector of the economy responsible for transforming agricultural produce to consumable goods. Operating as a part of the manufacturing sector, this industry actively participates in converting raw materials to items eligible for final consumption. In a typical economy, agro based enterprises or units are value adders to agricultural produce which are either partially or wholly non consumable.

India is an agrarian country. Almost 70% of the Indian population is dependent on agriculture. As of 2020 the agricultural sector contributes to 17% of the country's GDP employing more than 60% of the population. Paving a path for industrialisation and development, agro-based industry has evidenced significant surge of new enterprises taking part in adding value to agricultural produce. These enterprises not only facilitate meeting domestic needs but also enable catering to export requirements, thereby strengthening the economy. They establish a strong presence in the economy particularly in rural India[1]. As a developing country, India is largely dependent on this industry for establishing developmental forward and backward linkages between agriculture and industry[2].

The Indian agro based industry entails various types of businesses like tea industry, sugar industry, dairy industry, food processing industry, vegetable oil industry, coffee industry, jute industry and much more. Thus, the sector is responsible for the availability of various food items, beverages, livestock, textiles, fertilizers etc. Due to its diverse area of operations and heterogeneous nature this industry also spawns

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other new industries in the Indian economy.

Assam as a north eastern Indian state is well known for its rich heritage and natural resources. The state economy is largely dependent on the agriculture sector. Relying on this sector, the agro based industry in Assam generates substantial employment opportunities and significantly participates in utilization of abundant local resources of the region. Some of the key areas of agro based industry include- Tea industry, Dairy and poultry industry, Spice industry, Rice milling, Spice processing etc. The Jorhat district is one of the most important business hubs of Assam. Considering this the present study attempts to identify the factors that drive the agro-based enterprises (MSMEs) of Jorhat district, Assam to adopt sustainable practices, based on the opinion of the entrepreneurs. It shall bring into light the most and least significant factors influencing the enterprises to adopt sustainability-oriented practices.

The practices of enterprises in the agro based industry are primarily linked to agriculture, thereby providing a greater scope for embracing sustainable practices. Balancing agricultural productivity with the well-being of environment and society is a crucial part of seeking sustainability both at the firm and country level. Here sustainability is inclusive of long-term survival of the firm with social development and environmental welfare. Identifying the most relevant factors that drives the agro-based enterprises to adopt sustainability practices may facilitate to deal with green transition challenges.

Thus, the significance of the study lies in its potential to contribute towards advance academic knowledge and comprehensive understanding of what drives entrepreneurs of agro based industry to adopt sustainability practices in their business. Moreover, by providing practical insights to the entrepreneurs, it is intended to facilitate the country's progress towards achievement of sustainable development goals thereby creating resilient and striving sustainable industry sector.

Agro -based industry, Growth and Sustainable Development

Kachru (2010) focusing on the status and growth prospects of agro-based enterprises, highlighted the potentials of the industry due to its heterogeneous nature of operation along with the challenges faced by the industry in terms of huge working capital necessities, inadequate automation and lack of technological upgradation.

Kar and Mishra (2004) in their book opined that establishing agro- based industry has two-way benefit for a developing country like India as it uses the agricultural produce on one hand and gives rise to the necessity of other industries which supplements the process of agricultural expansion.

Examining the relationship between agro -based industry and sustainable development Venkatesh (2019) stressed on how sustainable agriculture can be used for achieving productivity and efficiency while protecting natural resources. Both domestic and international requirements should be considered through sustainable agriculture to ensure striving economic and social sustainability.

Dwivedi et al. (2017) in their study explored the role of technology in realizing sustainable development goals in the Indian agricultural sector. Adoption of sustainable practices in the agricultural sector results in improved quality of product, conservation of environmental resources like soil, water etc and also lead to increase in crop produce.

Addressing the issue of sustainable development in Indian agriculture segment, Sengupta (2022) attempted to draw out a comparison between traditional practices and sustainable practices in agriculture relying on economic, ecological and societal dimensions. The advent of economic reforms should be based on agricultural development for effectiveness. Agricultural productivity can be increased only by applying sustainable agricultural practices, thereby tackling issues related to increase of output with varying degree of input.

Debbarma et al. (2021) signify agricultural and allied sectors to be one of the major contributors to degradation of environment in India. Focusing on the environmental efficiency of agriculture and related sectors based on empirical data, the study highlighted the paradigm shift in adoption of

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environmentally friendly policies in the country. It stressed that regulatory policies can be significant in moving towards green growth in agriculture and allied areas.
Sharma et al. (2017) outlined performance indicators and sub indicators for companies in agro industry by applying Green Supply Chain Management (GSCM). Government regulatory pressure ranked third in the study findings reflect the significance of the same in application of GSCM.
Hong et al. (2022) presenting a Sustainable Agriculture Business Model (SABM) for agriculture and allied business sectors, drew a comparison between those using the model and those operating on the basis of conventional agricultural business model. It was found that application of SABM is followed by maximum productivity within the availability of resources leading to better quality of life as compared to conventional business model.

Factors influencing adoption of sustainable practices

Literature concerning factors influencing the sustainable decisions of agriculture and allied industry or agro-based industry are exclusively focused on farming with special reference to a particular area or a particular crop. For instance, Azam & Shaheen (2019) in their study found that economic factors are among one of the primary factors leading to involvement in Organic farming along with government policy pertaining to farming. Kunzekweguta et al. (2017) Highlighted that Government regulations and policies along with competitive pressure play a vital role in adoption and intensity of conservation agriculture among smallholder in Zimbabwe. Undertaken in south-south Nigerian region, Okon & Idiong (2016) in their study focused on factors affecting the decision of vegetable organic farmers. It was found that higher income and level of education among the respondent led to adoption of organic farming practices.
Since, the present study focuses on agro-based units registered as MSMEs, a dive into existing studies exploring the factors influencing adoption of sustainable practices by MSMEs becomes essential. Tey.et.al. (2014) suggests that strong intentionality results in adoption of sustainable behaviour and practices. This perspective is supported by Do Paco et al. (2011) who stated attitude to be a significant factor influencing pro environmental behaviour and thus motivate sustainable practices. Additionally, Fayolle et al. (2014) stated that either positive or negative, but attitude strongly affects people's engagement in sustainable practices. Individual values and perception of the entrepreneurs drive them towards engagement in sustainable practices and explore competitiveness within the three elements of sustainability (Spence et al., 2011).
Kuçuksayraç (2015) in an attempt to explore the barriers, benefits and drivers of sustainability, the study provided an insight into the drivers of sustainability practices based on surveys conducted in European Union and Netherlands. Two drivers found to be common in both the surveys were Customer Demand and Government regulation. Shukla & Adil (2020) discovered the presence of logical relationship between drivers of sustainability. In case of manufacturing enterprises, the main motivational factors behind sustainable orientation were competitiveness, stakeholders' pressure, environmental regulations and sustainability performance output. The adoption of sustainable practices or more specifically eco-design is based on the interplay of factors like regulations, competitive advantage, consumer demand, individual perception and commitment and stakeholder's pressure. Regulations set the framework within which the operations are undertaken, whereas stakeholders pressure and individual or organisational commitment motivate them to indulge in sustainable practices (Tukker et al., 2000).
The significance of agriculture as well as agro based sector is well established in the available literature. Previous studies show how sustainability issues can be addressed in agriculture and agro based units along with addressing the role of such units in sustainable development. There are few studies concerning determination of factors leading to inclination of farmers towards sustainable decisions in agricultural sector. However, investigation of factors driving agro based entrepreneurs to involve in and

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adopt sustainability approach lack the focus of researchers. Therefore, the present study attempts to address this issue and thereby provide an insight into the most relevant factor that motivates the entrepreneur to integrate sustainability into their value creation process.

Materials and Methods

Research design & sampling technique: The research has been conducted adopting a descriptive approach accompanied by quantitative method of analysis. The population of the study comprises of agro-based enterprises set up within the financial period 2015-2016 to 2019-2020 and registered as MSMEs in the Jorhat district of Assam. As such, the threshold operating period of the enterprises is 4 years. The population was found to be 122. The researcher opted to collect data from 50% of the respondents and accordingly 61 Enterprises were approached. However, 52 responses were received and the same were considered for the study. Purposive sampling method has been used to select the elements of the sample for collecting primary data.

Data collection methods: Bi-lingual Semi structured interview schedules were used to collect the primary data and secondary data was collected from various research papers and earlier published works in the area.

Data analysis technique: To analyse the factors behind adoption of sustainable entrepreneurial practices GARRET's Ranking method was used. This method is often used significant factors influencing the behaviour of respondents (Ao & Jamir, 2020). One of the reason to use this method is that it is based on the point of view of the respondents (Ao & Jamir, 2020) In context of the present study, the method was used to get an insight into the most significant factors that drives the enterprise to adopt sustainable practice at a certain level. Participants were asked to rank the 5 factors (from most to least) which drive them to adopt the entrepreneurial practices in a certain manner. As such, the first rank represents the most significant driver and the fifth rank represents the least significant driver.

As per the Garret Ranking Method, percentage score =

$$\frac{100 \times (R_{ij} - 0.50)}{N_j}$$

Rij =Rank given for ith item jth individual
Nj = Number of items ranked by jth individual.

Results and Discussion

Demographic Attributes

As represented by Table 1, out of the 52 respondents interviewed, majority 67.3% were male and 32.7% were female. Greater involvement of male entrepreneurs as compared to female entrepreneurs is evidenced by the region. Most of the respondents, 46.2% were found to fall in the age group of 31 years to 40 years followed by 42.3% who fell in the age group of 41 years to 50 years. Very few, only 11.5% belong to the age group of 50 years & above. Most of the entrepreneur engaged in agro- based enterprises belong to the youth group. A note-worthy discovery is entrepreneurs surveyed were found to be 31 years old or more reflect the absence of involvement of younger entrepreneurs in the concerned industry within the study area. With regards to education qualification, majority of the respondents 50% were graduates. A few only 2 respondents were found to be post graduate degree holders. Respondents with under-matriculate and matriculate level of educational qualification constitute only 11.5% and 13.5% of the sample. This is a reflection that the entrepreneurs of the said sector possess quite higher level of educational qualification with lesser people representing the low level of education demography.

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Table 1: Profile of Respondents: Demographics and Business Attributes

Profile of respondents		**Count**	**Table N %**
Gender	Male	35	67.3%
	Female	17	32.7%
Age	31 years to 40 years	24	46.2%
	41 years to 50 years	22	42.3%
	50 years & above	6	11.5%
Educational Status	Under-matriculate	6	11.5%
	Matriculate	7	13.5%
	Under-graduate	11	21.2%
	Graduate	26	50.0%
	Post- Graduate	2	3.8%
Profile of the business		**Count**	**Table N %**
Industry Group	Non- Food Processing Enterprises	18	34.6%
	Food Processing Enterprises	34	65.4%
Annual Income	Less than 1,00,000	21	40.4%
	1,00,000 to 5,00,000	15	28.8%
	5,00,000 to 10,00,000	5	9.6%
	10,00,000 & above	11	21.2%
MSME classification	Micro	41	78.8%
	Small	11	21.2%

Source: Own Survey

Business Attributes

The above table also depicts the business profile of the respondents which includes industry group, annual income of the business and Industry classification. Industry group has been categorised into food processing units and non-food processing units. It was found that, majority 65.4% were food processing units like biscuit factory, bakery, Spice processing factory, rice mills, pickle manufacturers, etc and 34.6% comprises of non- food processing units like organic fertilizer manufacturers, tea manufactures, dairy farmers, etc. The composition of annual income shows that 40.4% of respondents fall in the low-income bracket of below ₹1,00,000 and 28.8% have an income of ₹1,00,000 to ₹5,00,000. Only 9.6% and 21.2% of the respondents fall in the tax payer group representing entrepreneurs with ₹5,00,000 to ₹10,00,000 and above ₹10,00,000 of income. Among the respondents, most i.e.,78.8% are registered as micro enterprises and 21.2% were found to be registered as small enterprises. Remarkably, there are no medium enterprises in the sample.

Drivers of sustainable practices

The collected data has been analysed using Garret ranking method and the analysis has been presented in three tables. Table 2 represents the frequency of ranks assigned to each factor or driver considered in the study. Following this, the method of determining percent position value was applied and using the Garret value table, Garret values were determined for each rank, as shown in Table 3.

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Table 2 Factors driving entrepreneurs to adopt sustainable practices

Ranks / Factors/ Drivers	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Total
Customer demands	31	10	8	3	0	52
Government Regulation	1	18	8	23	2	52
Competition	0	4	13	3	32	52
Economic Benefits	7	7	10	16	12	52
Self- Motivation	13	13	13	7	6	52
Total	52	52	52	52	52	

Source: Own Survey

Table 3 Percent position and Garret values

Ranks	100(Rij-0.5)/Nj	Percent Position Value	Garret value
1	100(1-0.5)/5	10	75
2	100(2-0.5)/5	30	60
3	100(3-0.5)/5	50	50
4	100(4-0.5)/5	70	40
5	100(5-0.5)/5	90	25

Source: Own elaboration

Table 4 Overall rank applying Garret Ranking method

Factors/ Drivers	Ranks given by respondents					Total Garret Score	Mean Score	Rank
	Rank 1	Rank 2	Rank 3	Rank 4	Rank5			
Customers demand	2325	600	400	120	0	3445	66.25	I
Government Regulation	75	1080	400	920	50	2525	48.56	III
Competition	0	240	650	120	800	1810	34.81	V
Economic Benefits	525	420	500	640	300	2385	45.87	IV
Self- Motivation	975	780	650	280	150	2835	54.52	II

Source: Own Survey

As the analysis reveals Customers demand is the most influential factor in the adoption of sustainable practices. With mean score 66.25 and Garret score of 3445, it obtained first rank among all the drivers. Following this, Self-motivation ranked second with mean score of 54.52 and Garret score of 2835. With a mean score of 48.56, Government regulation was found to be the third most influential factors affecting adoption of sustainable practices. Economic benefit ranked fourth and Competition was found to be the least dominant driver with mean score of 34.81. It's worth mentioning that Customer demand was not ranked fifth by any respondent reflecting the critical significance of the factor for the entrepreneurs and Competition, although a key factor, was not ranked first by any of the respondent.
Entrepreneurs of agro based enterprises in Jorhat district consider Customer demand as the most relevant factor while undertaking business decisions. Their approach to sustainability and its integration

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in the supply chain is largely impacted by the demands of targeted customers. This may also be an indication of the shift in consumption patterns of customers, with more people choosing to be environmental friendly. Self- motivation is another significant driver of sustainable practices among agro- based units. This depicts that the attitude and perception of entrepreneurs in the studied area is quite positive towards addressing sustainability issues.

Government regulation is considered to be significant by the respondents but it stands to be less critical among the considered factors. Moreover, the semi structure interview schedule revealed that respondents viewed government regulations as a framework within which their operations are carried out. Though it encourages them to undertake some of the sustainable decision. The influence is quite limited to a few areas of integration. Prioritizing customer demand to immediate economic benefit, entrepreneurs reflect their belief in customer centric approach for long term sustainability and growth.

Though stakeholders' pressure is a significant driver of choosing sustainability approach, the effect of individual stakeholders differs. This is evident from the results that competition arising from market counterpart is considered to be quite insignificant by entrepreneurs while making sustainability induced decisions.

Conclusion

Sustainable practices adopted by entrepreneurs are perceived to increase their economic performance along with assurance of socio-ecological well-being. Identifying and understanding factors which make agro- based enterprises involve in such practices is imperative to ensure and promote practical mapping of sustainable entrepreneurial practices both on the part of enterprises and the government. Therefore, the study aimed to identify and explore drivers addressing the above context.

The findings of the study revealed that on an average the entrepreneurs in Jorhat district possess a high level of educational qualification however most of the enterprises are carrying on their businesses with low level of income. Majority of the entrepreneurs consider customer satisfaction as the top most prior factor in running the business. The concept of sustainability can be integrated in any stage of the value creation process and agro based enterprises exploit this opportunity based on the demands of customers. Though government regulations plays a vital role in driving enterprises to adopt certain practices, entrepreneurs consider it less significant influencer, terming it to be limited in scope.

The study suggests that there is an opportunity for the government to introduce regulatory reforms based on sustainability dimensions. Along with this, undertaking programs for promoting adoption of sustainable practices and their benefits might prove to be a catalyst for sustainable transformation.

Further exploration is required into business specific identification of factors, provided the heterogeneous nature of agro based industry. Moreover, studies can be conducted on establishing the relationship between the factors, perceived by the entrepreneurs as most significant drivers, to the sustainable performance indicators at the firm level. This shall contribute to advanced level of knowledge in sustainable entrepreneurship research.

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Conflict of Interests
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Author's Contribution
The authors have jointly undertaken the research from development of conceptual framework to production of relevant consequences of the study, including thorough examination and editing.

Ethics Approval Statement
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