TRIBAL ENTREPRENEURIAL DEVELOPMENT" & E-MARKETING OF MINOR FOREST PRODUCE (MFP) AND DEVELOPMENT OF VALUE CHAIN MODEL IN COSTAL ANDHRA PRADESH

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Abstract

This study explores the potential for tribal entrepreneurial development and the implementation of e-marketing strategies for Minor Forest Produce (MFP) in coastal Andhra Pradesh, India. Given the rich biodiversity and vast forest resources in this region, tribal communities possess unique opportunities to sustainably harness and commercialize MFP. However, they often face challenges, such as limited market access, lack of entrepreneurial training, and absence of a structured value chain. This research aims to address these gaps by developing a comprehensive value chain model tailored to the socio-economic context of coastal Andhra tribes. By utilizing e-marketing tools, the study seeks to empower tribal entrepreneurs to reach broader markets, enhance price realizations, and establish a sustainable income stream. Through field surveys, stakeholder interviews, and market analyses, the study provides insights into effective value chain linkages, pricing mechanisms, and digital platforms suitable for MFP. The proposed model highlights the importance of integrating government support, private partnerships, and community-led initiatives. Ultimately, the study envisions a sustainable, inclusive approach to tribal development, aiming to uplift livelihoods and promote economic resilience within tribal communities in Andhra Pradesh.

Keywords: *Minor Forest Produce, Tribal Entrepreneurial Development, Value Chain Model*

Introduction:

Tribal communities in India, especially those residing in forested regions, rely heavily on minor forest produce (MFP) as a source of livelihood and sustenance. MFP includes non-timber resources such as honey, bamboo, medicinal herbs, and various nuts and seeds. For tribal populations, the collection and sale of MFP constitute a crucial economic activity, sustaining their traditional lifestyle while also providing a means to improve their socio-economic conditions. Despite this, the full potential of MFP remains largely untapped due to limited market access, price disparities, and the absence of structured value chains. The integration of entrepreneurial development within tribal communities, particularly through MFP-based enterprises, has the potential to enhance income levels and create sustainable economic opportunities. Entrepreneurial training, business support, and resource management can empower tribal communities to diversify their economic activities and increase market value for MFP. However, challenges such as digital illiteracy, insufficient financial resources, and infrastructural barriers often hinder the development of tribal entrepreneurship, particularly in rural and coastal areas of Andhra Pradesh. In recent years, e-marketing has emerged as a powerful tool to address these challenges by creating new market avenues and reducing the dependency on intermediaries. E-marketing allows tribal producers to reach broader consumer bases and gain fair prices for their products. Government-led initiatives, such as the Minimum Support Price (MSP) scheme for MFP and

the establishment of digital platforms under the Tribal Cooperative Marketing Development Federation of India (TRIFED), have furthered these opportunities. However, the effectiveness of these digital channels remains dependent on the availability of training and resources that enable tribal producers to engage with technology and online platforms effectively. The development of a value chain model is critical for maximizing the economic returns from MFP by improving the processes involved in production, processing, and distribution. Such a model could optimize resource use, establish stable market channels, and promote fair trade practices. For coastal Andhra Pradesh, where tribal communities are highly dependent on MFP, a value chain model tailored to local conditions can strengthen the link between producers and markets, ensuring that benefits reach tribal entrepreneurs directly. This study examines the factors influencing tribal entrepreneurial development, with a specific focus on the e-marketing of MFP and the construction of a value chain model suited to the coastal regions of Andhra Pradesh. By analyzing current policies, market conditions, and infrastructural needs, this research aims to provide insights into fostering a sustainable and equitable framework for tribal MFP producers, ultimately contributing to their social and economic empowerment.

Review of Literature:

Introduction to Tribal Entrepreneurship and Minor Forest Produce (MFP)

Tribal entrepreneurship, particularly in rural and forest-dwelling communities, has garnered attention in recent years due to its potential for empowering indigenous populations and promoting sustainable livelihoods (Das, 2014). Minor forest produce, which includes non-timber forest resources like honey, bamboo, medicinal plants, and nuts, serves as a vital source of income for tribal communities. In India, the importance of MFP as a contributor to rural income and sustenance has been acknowledged by policymakers and economists alike (Rao & Srinivas, 2017). However, traditional markets often fail to offer fair pricing, distribution channels, or adequate support for tribal entrepreneurs engaged in MFP activities (Dhamala, 2019).

Tribal Entrepreneurial Development

Developing tribal entrepreneurship requires a comprehensive understanding of the socio-economic and cultural dynamics of tribal communities. A study by Choudhury and Mahapatra (2020) emphasizes the role of training programs and skill development in fostering entrepreneurial mindsets among tribal youth. These programs often include training on resource management, business skills, and financial literacy, which are critical for successful entrepreneurship (Singh & Rajan, 2018). Additionally, the support of government and non-government organizations (NGOs) in terms of financial assistance, grants, and microfinancing opportunities has been identified as a pivotal factor in tribal entrepreneurial development (Thakur & Nayak, 2021).

e-Marketing of Minor Forest Produce

The adoption of e-marketing strategies has shown potential in bridging the gap between tribal

producers and the mainstream market. E-marketing can offer access to wider markets, improved price transparency, and a reduction in intermediary costs (Kumar & Saini, 2020). In their research, Mishra and Pathak (2021) explored the application of digital platforms for MFP trade, highlighting the role of e-commerce in addressing inefficiencies in traditional distribution networks. The study further notes that digital literacy remains a barrier, as many tribal producers are unfamiliar with technology-based market platforms. To counter this, initiatives like mobile application-based trading and government-led e-portals have been proposed to streamline the sale of MFPs (Verma & Gupta, 2022).

Development of Value Chain Model in Coastal Andhra Pradesh

The value chain model focuses on maximizing value addition at each stage of production, processing, and distribution (Basu, 2019). Research on developing a value chain for MFP in Andhra Pradesh highlights the role of stakeholders like producers, processors, marketers, and policymakers (Joshi & Patel, 2020). According to Raj & Kumar (2019), effective value chain models involve improving infrastructure, establishing cooperatives, and creating policies that facilitate credit access for tribal entrepreneurs. Furthermore, training in sustainable harvesting and post-harvest processing is essential to maintain the quality and longevity of MFPs (Menon & Sahu, 2021).

Government Policies and Institutional Support

Governmental support through schemes like the Minimum Support Price (MSP) for MFP and the Tribal Cooperative Marketing Development Federation of India (TRIFED) plays a crucial role in stabilizing prices and ensuring fair compensation to tribal producers (Chopra & Gupta, 2019). Additionally, TRIFED's digital initiatives for promoting MFP through online platforms have been instrumental in creating awareness and facilitating e- marketing (Sharma & Verma, 2020). Such policies and institutional frameworks are essential for integrating tribal entrepreneurs into mainstream markets while safeguarding their cultural heritage and sustainable practices (Krishna & Mehta, 2022).

Challenges in Implementing e-Marketing and Value Chain Models

Despite potential benefits, several challenges hinder the effective implementation of e-marketing and value chain models for MFP. These include inadequate digital infrastructure in remote areas, lack of digital literacy among tribal communities, and resistance to changing traditional marketing practices (Reddy & Rao, 2020). In addition, regulatory challenges and competition from commercial forest product suppliers pose significant obstacles (Sinha & Varma, 2021). A case study on the adoption of digital marketing by tribal communities in Andhra Pradesh highlights the need for capacity- building programs and support from local governance bodies to overcome these hurdles (Panda & Swain, 2023).

Research Methodology

Locale & Population of the study:

The study is confined to nine districts, namely, Srikakulam, Vizianagaram, Vishakhapatnam, East Godavari, West Godavari, Machilipatnam, Guntur, Prakasam and Nellore. The Costal

Andhra Pradesh is one of the most backward regions in the country. The region with nine districts covers an area of 974 kilometers comprising 2.2 million Tribal population as per 2011 census. The entire Costal Andhra Pradesh has been considered the locale for the purpose of the present study.

Sample size:

District Wise Population of Scheduled Tribes of A.P. 2011 census

Sl. No	Name of the District	Total Populati on	ST Total	ST Male	ST Femal e	% of Male (ST) Total Popu latio N	% of Femal e (ST) Total Popula tion	% of ST Total Popul ation
1	Srikakulam	2703114	166118	81382	84736	3.01	3.13	6.15
2	Vizianagaram	2344474	235556	114687	120869	4.89	5.16	10.05
3	Visakhapatnam	4290589	618500	302905	315595	7.06	7.36	14.42
4	East Godavari	5285824	297044	144548	152496	2.73	2.88	5.62
5	West Godavari	3994410	133997	65439	68558	1.64	1.72	3.35
6	Krishna	4517398	132464	66734	65730	1.48	1.46	2.93
7	Guntur	4887813	247089	125105	121984	2.56	2.5	5.06
8	Prakasam	3397448	151145	76677	74468	2.26	2.19	4.45
9	SPSR Nellore	2963557	285997	145168	140829	4.9	4.75	9.65
10	YSR Kadapa	2882469	75886	38571	37315	1.34	1.29	2.63
11	Kurnool	4053463	82831	42052	40779	1.04	1.01	2.04
12	Anantapur	4081148	154127	78573	75554	1.93	1.85	3.78
13	Chittoor	4174064	159165	79756	79409	1.91	1.9	3.81
ANDHRA PRADESH		49575771	2739919	1361597	1378322	2.75	2.78	5.53

Source: Census of India, 2011

* Data includes ST population of Submergence of Sch.villages of 7 mandals from Khammam district to the A.P. State (as per re organization act 2014)

Note: As per Andhra Pradesh Re organization Ordinance 2014, 7 Mandals (5 Complete & 2 Partial) of Khammam District are removed from Telangana State and tentatively added to Andhra Pradesh State. 22,680 (1% of ST's total population in Costal AP) scheduled tribe's as total sample and are divided among 9 districts of Costal Andhra Pradesh.

Sampling Design

The size of the sample would be 22,680 (Approximately 1%) scheduled tribe's among 9 districts of costal AP. The Sample would be drawn giving equal importance to all the 9 districts which is Scheduled Tribe's Total population in srikakulam district is 1,66,118 and sample drawn is 1% i.e 1,661, Vizayanagarm district is 2,35,556 and sample drawn is 2,355, Visakhapatnam district is 6,18,500 and sample drawn is 6,185, East Godavari district is 2,97,044 and sample drawn is 2, 970, West Godavari district is 1,33,997 and sample drawn is

1,339, Krishna district is 1,32,464 and sample drawn is 1,324, Guntur district is 2,47,089 and sample drawn is 2,470, Prakasam district is 1,51,145 and sample drawn is 1,511 and SPSR Nellore district is 2,85,997 and sample drawn is 2,859.

Sampling Technique

Stratified random sampling will be applied to select the study area (Scheduled Tribe's) among 9 districts which is located at costal Andhra Pradesh.

Data Type:

Researcher will be using both primary and secondary data for this research purpose.

Primary Data Collection:

Primary data will be collected through survey using questionnaire, focus group discussions and personal observations.

Secondary data Collection:

Secondary data will be collected from the different sources like Reports from the Ministry of tribal affairs Govt. of India, Tribal Welfare Department Govt of Andhra Pradesh, Hand books published by sampled districts Planning Offices, Annual reports and unpublished official records at the districts level offices such as Chief planning office. Five Year Plan documents of India and Andhra Pradesh, Journals, published books, reports articles, Seminar Papers published by Universities and Research Institutes and News Papers.etc.,

Statistical Tools for Data Processing:

The collected mass data would be processed and tabulated and the same would beanalyzed employing suitable Quantitative Techniques such as Descriptive Statistics, Cronbach's Alph, Correlation & Regression, EFA (SPSS-23.0v), CFA (SEM using AMOS 22.0v) as required drawing meaningful inferences.

Research Gap

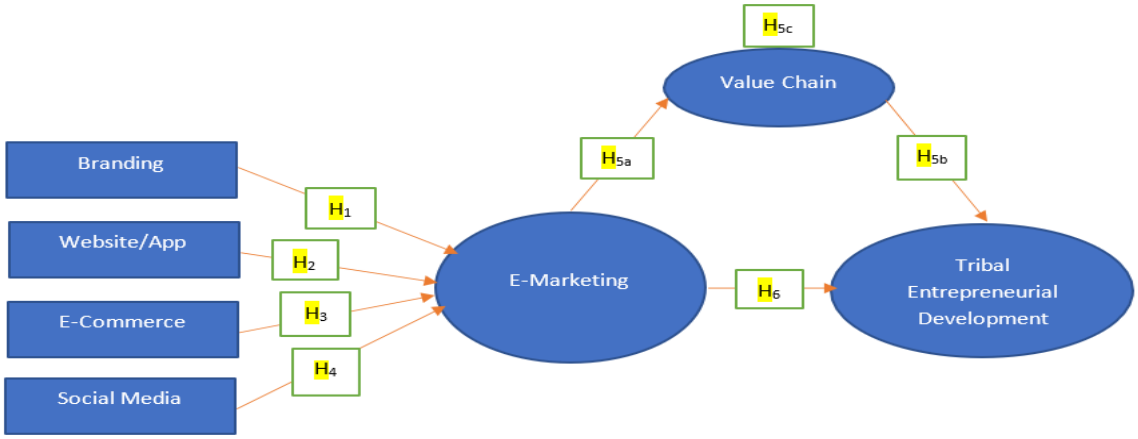
One of the reasons as to why tribal communities are not economically advanced in spite of their land holdings is that they have no skill in business. Efforts need to be made to encourage tribal entrepreneurship in small and large-scale businesses. Funds should be made available for them to set up enterprises in rural and urban areas. Export of tribal handicrafts should be encouraged by the government which will give more jobs to people thereby improving their economic condition. Most of the researchers extensively contributed in tribal entrepreneurship but very limited literature is available on & e- marketing of minor forest produce and development of value chain. Unlike the reviewed studies which are, mostly, macro in nature, the present one is a region-specific, i.e., Costal Andhra Pradesh. The study is confined to nine districts, namely, Srikakulam, Vizianagaram, Vishakhapatnam, East Godavari, West Godavari, Machilipatnam, Guntur, Prakasam and Nellore. . The Costal Andhra Pradesh is one of the most backward regions in the country. The region with nine districts covers an area of 974 kilometers comprising 22,67,910 Tribal population as per 2011 census and it is clear from the review of literature that there were no earlier specific studies like the present one which aims to study the "A study on tribal entrepreneurial development & e-marketing of minor forest produce (MFP) and development of value chain model in costal Andhra Pradesh". It is believed that the studies on tribal area help the policy making

body to suitably design schemes/programs for the tribal entrepreneurial development and economical development in tribal areas which is located in costal AP. Further, the study fills the existing knowledge gap in respect of e-marketing strategies for minor forest produce and development of value chain model for MFP in the costal Andhra Pradesh.

Objectives of the study:

1. To identify the various sources for tribal entrepreneurial development.
2. To evaluate the problems encountered by the tribal for entrepreneurial development.
3. To develop e-marketing strategies for minor forest produce (MFP).
4. To propose & develop value chain model for minor forest produce (MFP).
5. To study the expectations of tribal entrepreneurs from the government policies.

Conceptual Framework



Hypothesis:

H_1: Branding has significant impact on minor forest produce in E-Marketing.

H_2: Website/App creation has significant impact on minor forest produce in E-Marketing.

H_3: E-Commerce has significant impact on minor forest produce in E-Marketing.

H_4: Social Media has significant impact on minor forest produce in E-Marketing.

H_{5a}: E-Marketing has significant positive effect on value chain creation for minor forest produce.

H_{5b}: Value chain creation for minor forest produce has significant positive effect on tribal entrepreneurial development.

H_{5c}: Value chain mediates the relationship between E-marketing and tribal entrepreneurial development.

H_6: E-marketing has significant positive impact on tribal entrepreneurial development.

Structural Equation Modeling Analysis

SEM (Structural Equation Modeling) is a compilation of statistical models that seeks to explain associations among multiple variables. (Hair et al., 2006) It enables researchers to examine interrelationships among multiple dependent and independent variables

concurrently. (Hair et al., 2006) The reasons for selecting structural equation modeling (SEM) for data analysis were, SEM has the ability to test causal relationships between constructs with multiple measurement items. (Tabachnick and Fidell, 2001; Hair et al., 2006) It offers powerful and meticulous statistical procedures to deal with complex models. The relationships among constructs and indicator (Item/ Measurement) are validated by using CFA (Confirmatory Factor Analysis), also known as the measurement model, and relationships between constructs are tested using the structural model (Hair et al., 2006). As recommended by Anderson and Gerbing (1988) a two – step approach was adopted to perform structural equation modeling analysis. In the first step, the measurement model was specified using the relationships between indicator (observed) and latent (unobserved) factors. For the measurement model CFA (Confirmatory Factor Analysis) was performed using SEM software AMOS v.23.00. In the second step, the structural model related to dependent and independent variables was specific in order to test the hypotheses. Outcomes of measurement and structural model are presented as follows. Nevertheless, it is to be noted that for amplification and due to the limits of word length only final measurement model (CFA) results will be presented.

Measurement model specification and confirmatory factor analysis (CFA) results

In this investigate, CFA (Confirmatory Factor Analysis) was perform on the measurement model to review the uni-dimensionality, reliability, and validity of measures. Two broad approaches were used in the CFA (Confirmatory Factor Analysis) to evaluate the measurement model. First, contemplation of the GOF (Goodness of Fit) criterion indices and second, evaluate the validity and reliability of the measurement model.

Goodness of fit indices

SEM (Structural equation modeling) has three main types of fit measure indices: absolute, incremental, & parsimonious fit indices. CFA (Confirmatory Factor Analysis) was performed on the measurement model comprise seven factors, which were: Branding (BRN); Website (WEB); E-Commerce (ECO); Social Media (SOM); E-Marketing (EMA); Value Chain (VCM); Tribal Entrepreneurial Development (TED). These factors were calculated using number of indicators or Items or measures. In total, 36 items were derived from the Exploratory Factor Analysis. For instance, Branding (BRN) was measured by 4 items code named as BRN1, BRN2, BRN3 and BRN4; Website (WEB) was measured by 5 items code named as WEB1, WEB2, WEB3, WEB4 and WEB6; E-Commerce (ECO) was measured by 2 items code named as ECO1, and ECO3; Social Media (SOM) was measured by 5 items code named as SOM1, SOM3, SOM4, SOM5 and SOM6; E-Marketing (EMA) was measured by 5 items code named as EMA1, EMA2, EMA3, EMA4 and EMA5; Value Chain (VCM) was measured by 8 items code named as VCM1, VCM2, VCM4, VCM5, VCM6, VCM7, VCM8 and VCM9; Tribal Entrepreneurial Development (TED) was measured by 7 items code named as TED1, TED2, TED3, TED4, TED5, TED6, and TED7.

The measurement model was evaluated by using the ML (maximum likelihood) estimation techniques provided by the AMOS v.23.0. The results discovered that chi - square statistics (Chi-square value = 22495.611, df = 547) was significant at $p<0.000$ signifying that

fit of data to the model was not excellent and should be rejected. Though, it was irrational to rely on the chi – square statistics as a exclusive indicator for evaluate the specification of model, as this statics is perceptive to the sample size and is very susceptible to the violations of the assumption of normality, particularly the multivariate normality; it can be ambiguous. Thus, other fit indices i.e GFI, AGFI, CFI, NFI and RMSEA were used to evaluate the measurement of the model.

Domino effect discovered that the value of GFI = 0.890, AGFI = 0.886, CFI = 0.936 and RMSEA = 0.065. These results indicate for further improvement of model as the outcome were not reliable with the suggested values of the fit indices of a priori specific measurement model.

Given the fact that the goodness of fit indices (e.g. χ^2, GFI, RMSEA, AGFI) of the initial run of CFA (Confirmatory Factor Analysis) were not within the suggested level, further meticulous evaluation was conducted to refine and re-specify the model, in order to get better discriminant validity and achieve better fit of the model. The model improvement procedure applied and following criterion recommended by researchers. factor loading (i.e standard regression weight in AMOS v. 23.0) value should be greater than 0.7and Squared multiple correlations (SMC) value should be greater than the cut-off point 0.5 According to Byrne (2001). As recommended by (Randall E. Schumacker & Richard G. Lomax., 2010) The standard residual values should be within the threshold (above 2.58 or below – 2.58). (Byrne, 2001; Hair et al., 2006) Finally, MI (modification indices) that show high covariance and demonstrate high regression weights is for deletion. (Hair et al., 2006) Followed these suggested criteria; the output of the initial CFA (Confirmatory Factor Analysis) was examined to see whether any item is proving to be challenging. Evaluation of results indicated that the standard regression weight of all measurement items was above the recommended level (>0.7). However, assessment of modification indices indicated that the values of BRN3, BRN4, WEB1, WEB2, WEB4, SOM1, SOM3, SOM4, EMA3, EMA4, VCM1, VCM2, VCM4, VCM5, VCM6, VCM7, VCM8, VCM9,

TED1, TED2, TED3, TED4, TED5, TED6, and TED7 were having highest values and not within the acceptable level (above20). (Randall E. Schumacker & Richard G. Lomax., 2010). (Randall E. Schumacker & Richard G. Lomax., 2010) The items which shared a high degree of residual variance were therefore associated. After correlated these problematical items, the measurement model was re-run, as recommended Final CFA model is depicted in the following Figure

Revised CFA model

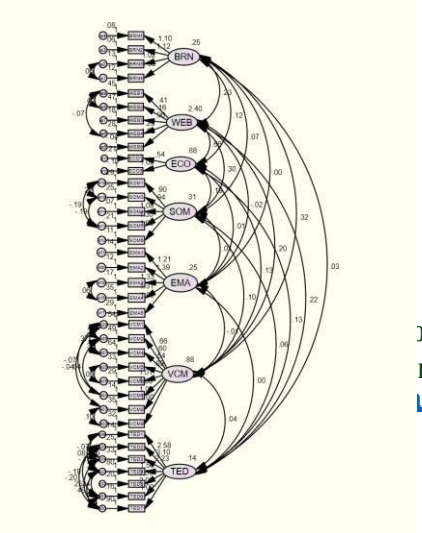


Figure No: 1

After associated these problematic items, which were of BRN3, BRN4, WEB1, WEB2, WEB4, SOM1, SOM3, SOM4, EMA3, EMA4, VCM1, VCM2, VCM4, VCM5, VCM6, VCM7, VCM8, VCM9, TED1, TED2, TED3, TED4, TED5, TED6, and TED7 was re – run for assessing the measurement model fit. The result of the model discovered that GOI (goodness of fit indices) were improved and the revised model established a better fit to the data. Results of the particular measurement model after correlated of superfluous items (see Table 1) indicted the total fit measures i.e GFI and RMSEA were 0.922 and 0.032, respectively, the incremental fit measures i.e., NFI and CFI were 0.919 and 0.954, respectively and the parsimony fit measure i.e AGFI was 0.938. All these measures surpass the minimum suggested values. In addition to these indices, the ration of χ^2/df was 2.403, which was within the adequate verge level (i.e., $1<\chi^2/df<3$). This GOI/goodness of fit statistics therefore established that the model effectively fitted the data.

Goodness of fit statistics of revised CFA model

	Absolute fit measures					Incremental fit measures		Parsimony fit measures
	(χ^2)	(Df)	(χ^2/df)	(GFI)	(RMSEA)	(NFI)	(CFI)	(AGFI)
Criteria			$1<\chi^2/Df<3$	≥0.90	≤0.05	≥0.90	≥0.90	≥0.90
Obtained	1241.207	547	2.403	0.922	0.032	0.919	0.954	0.938

Table No:1

Note : (χ^2) = Chi-square; (Df) = Degrees of freedom; (GFI) = Goodness of fit index; (RMSEA) = Root mean square error of approximation; (NFI) = Normated fit index; (CFI) = Comparative fit index; (AGFI) = Adjusted goodness of fit index

(Randall E. Schumacker & Richard G. Lomax., 2010) In addition, other estimation criterion show that model fit the data adequately well, such that, standard regression weight were all greater than 0.7, critical ratios values were above 1.96 and standard residual were all within the threshold level (+2.58, -2.58). In summing up, the outcome confirmed that model was fit to the data, signifying no further modification required in the model. Thus the uni -dimensionality of the model was established.

Construct reliability statistics

(Constructs)	(Construct reliability)
criterion	**≥0.7**
Branding (BRN)	0.931
Website (WEB)	0.846
E-Commerce (ECO)	0.865
Social Media (SOM)	0.885
E-Marketing (EMA)	0.925
Value Chain (VCM)	0.930
Tribal Entrepreneurial Development (TED)	0.911

Table No:2

The results mentioned in the table 2 showed that the reliability coefficient for the construct Branding (BRN) 0.931; Website (WEB) 0.846; E-Commerce (ECO) 0.865; Social Media (SOM) 0.885; E-Marketing (EMA) 0.925; Value Chain (VCM) 0.930, Tribal Entrepreneurial Development (TED) 0.911 which was above the criteria strictly recommended (>0.7). The results also revealed that construct's reliability estimate for all the constructs indicated high internal consistency and adequate reliability of the construct. Besides, all other estimation values were above the recommended cut off point indicating strong reliability and high internal consistency in measuring relationship in the model.

Convergent validity

(Constructs)	(CR)	(AVE)
BRN	0.810	0.669
WEB	0.754	0.628
ECO	0.812	0.674
SOM	0.908	0.691
EMA	0.914	0.638
VCM	0.922	0.645
TED	0.951	0.673

Table No:3

Rule of Thumb: CR > 0.7

CR > AVE AVE > 0.5Factor loadings of construct, AVE (average variance extracted) and CR (composite reliability) estimation were used by investigator to assess the convergent validity of each of the constructs. A bare minimum cut off criteria for standardized regression loadings (>0.7, AVE >0.5 and reliability >0.7) were used to evaluate the convergent validity. Results are existing in Table 3

Discriminant validity

(Constructs)	(AVE)	(MSV)	(ASV)
BRN	0.669	0.511	0.505
WEB	0.628	0.608	0.509
ECO	0.674	0.506	0.603
SOM	0.691	0.602	0.607
EMA	0.638	0.609	0.604
VCM	0.645	0.507	0.608
TED	0.673	0.620	0.601

Table No:4

Rule of Thumb: MSV < AVE ASV < AVE

The discriminant validity was assessed by the AVE (average variance extracted) for each construct compared with the resultant SIC (squared inter-construct correlation) and the AVE estimate larger than SIC estimates. Results of the discriminant validity for each construct used in this study presents in the Table 3 and 4. (Maximum shared squared variance

(MSV), Average shared squared variance (ASV)).

Inter – construct correlations

	BRN	WEB	ECO	SOM	EMA	VCM	TED
BRN	**0.807**						
WEB	0.129	**0.831**					
ECO	0.216	0.486	**0.835**				
SOM	0.200	0.492	0.391	**0.762**			
EMA	0.186	0.265	0.447	0.127	**0.803**		
VCM	0.271	0.384	0.386	0.229	0.375	**0.796**	
TED	0.229	0.209	0.418	0.469	0.237	0.414	**0.891**

Table No:5

Note: Diagonal values are Average Variance Extracted (AVE) and off diagonal are inter-construct squared correlations.

Results shown in Table 5 Reveals that, the AVE (Average Variance Extracted) estimates of all the constructs were larger than their corresponding squared inter-construct correlations estimate, which confirmed a high level of discriminant validity of the constructs. In addition, this indicate that the measured items have more in common with the latent construct they were correlate with than other latent constructs; thus, providing strong hold for the discriminant validity.

Structural Model Evaluation and Hypotheses Testing

The following section presents results of hypotheses testing. Table 6 shows six hypotheses represented by causal paths (H_1, H_2, H_3, H_4, H_{5a}, H_{5b}, H_{5c}, and H_6) that were used to test the interaction between the latent constructs. The latent constructs were used in the projected theoretical model were classified in two main categories: exogenous and endogenous constructs. Exogenous constructs were the Branding, Website, E-Commerce and social media, while endogenous constructs were E-Marketing and Tribal Entrepreneurial Development. Goodness of fit indices (GOI) and other parameters estimates were examined to estimate the hypothesized structural model. Results of Assessment of parameter estimates suggested that six hypothesized paths were significant. Thus, indicating support for the six hypotheses. These results are presented in detail as follows.

Hypotheses testing/ paths causal relationships

(Construct)	(Code)	(Hypotheses)	(Hypothesized Relationships) (positive)
Branding	BRN	H_1	BRN ⟶ EMA
Website	WEB	H_2	WEB ⟶ EMA
E-Commerce	ECO	H_3	ECO ⟶ EMA
Social Media	SOM	H_4	SOM ⟶ EMA
E-Marketing	EMA	H_{5a}	EMA ⟶ VCM
Value Chain	VCM	H_{5b}	VCM ⟶ TED

E-Marketing – Value Chain – Tribal Entrepreneurial Development	EMA – VCM - TED	H_{5c}	→ VCM TED →
Tribal Entrepreneurial Development	TED	H_6	EMA → TED

Table No:6

Final Hypothesized Model

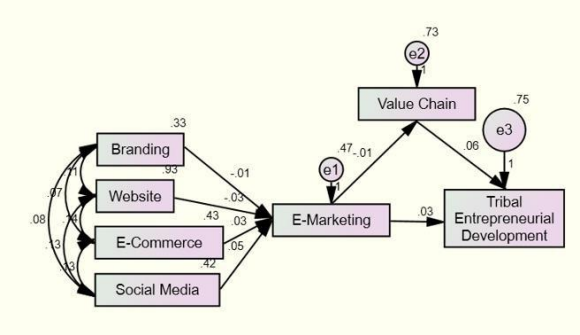


Figure No:2

Structural model fit measure assessment

	Absolute fit measures					Incremental fit measures		Parsimony fit measures
	(χ^2)	(Df)	(χ^2/df)	(GFI)	(RMSEA)	(NFI)	(CFI)	(AGFI)
Criteria			$1<\chi^2/Df<3$	≥0.90	≤0.05	≥0.90	≥0.90	≥0.90
Obtained	209.782	8	1.001	.950	0.010	0.967	0.981	0.974

Note : (χ^2) = Chi-square; (Df) = Degrees of freedom; (GFI) = Goodness of fit index; (RMSEA) = Root mean square error of approximation; (NFI) = Normated fit index; (CFI) = Comparative fit index; (AGFI) = Adjusted goodness of fit index

Table No:7

Table 7 shows the fit indices indicate that the hypothesized structural model provided the good fit to the data. Although the likelihood ration chi-square (χ^2 = 209.782; df = 8; p= .000) was significant (p< .001); however, other fit measures showed that model adequately fit the observed data. The absolute fit measures i.e GFI and RMSEA were .950 and .0010 respectively indicating good fit of model. The incremental fit measures i.e NFI and CFI were .967 and .981 respectively, which were above the minimum requirement showing adequate fit and the parsimony fit measure i.e AGFI was .974, which also was above the cut – off point of > 0.9). In addition to these indices, the (χ^2/df) = 1.001 was within the threshold level i.e 1.0 <χ^2/df < 3.0) supporting these findings.

Regression estimates of latent constructs

	Estimate P	S.E	C.R.
Branding ← E-Marketing	.088 ***	.041	4.018
Website ← E-Marketing	.116 .011	.048	2.307
E-Commerce← E-Marketing	.284 .013	.037	2.082
Social Media ← E-Marketing	.627 .012	.039	2.069
E-Marketing ← Value Chain	.819 ***	.045	4.007
Value Chain ← Tribal Entrepreneurial Development	.647 ***	.028	4.014
E-Marketing ← Value Chain ← Tribal Entrepreneurial Development	.791 ***		
E-Marketing ← Tribal Entrepreneurial Development	.414 .001		

Table No:8

Note: Estimate = regression weight; S.E = standard error; C.R = critical ration, p = significance value.*** 0.1% level of significance (P< 0.001), ** 1% level of significance (P<0.01), * 5% level of significance (P<0.05), @Not significant.

Another most significant part of structural model measurement is coefficient parameter estimates. The parameter estimates were used to fabricate the estimated population covariance matrix for the structural model. The model was defined by 36 measurement items that acknowledged the seven latent constructs. The covariance matrix amongst the constructs was applied to test the model. According to Hair et. al. 2006, When the critical ration (CR or t – value) is higher than 1.96 for an estimate (regression weight), then the parameter coefficient value is statistically significant at the .05 levels. Critical ration or t –value was obtained by dividing the regression weight estimate by the estimate of its S.E (Standard error). Using the path estimates and CR (Critical Ratio) values, ten causal paths were examined in this research study. For eight causal paths estimates t – values were above the 1.96 critical values at the significant level p < .05. The overall structural model is depicted in Figure 2 and parameter estimates are presented in Table 8. It is to be noted that the measurement items and error terms associated with latent constructs are not shown for clarity. Outcome existing in the Table 8 indicate that the six out of six hypothesized paths between independent (Exogenous) and dependent (Endogenous) variables were significant. For instance, the hypothesized path between Branding (BRN) and E- Marketing (EMA) with CR value of 4.018 (P<0.001); Similarly, paths between Website (WEB) and E-Marketing (EMA) with CR value of 2.307 (p <0.05) ; E-Commerce (ECO) and E-Marketing (EMA) with CR value of 2.082 (p <0.05); Social Media (SOM) and E- Marketing (EMA) with CR value of 2.069

(P<0.05); E-Marketing (EMA) and Value Chain (VCM) with CR value of 4.007 (P<0.001) Value Chain (VCM) and Tribal Entrepreneurial Development (TED) with CR value of 4.014 (P<0.001) E- Marketing (EMA) to Tribal Entrepreneurial Development (TED) through Value Chain (VCM) with CR value of 4.097 (P<0.001) E- Marketing (EMA) and Tribal Entrepreneurial Development (TED) with CR value of 2.175 (P<0.05) was statistically significant.

(Construct)	(Code)	(Hypotheses)	(Hypothesized Relationships) (positive)	(Standardized regression weights) (β)	Hypotheses Supported
Branding	BRN	H1	BRN → EMA	0.124	Yes
Website	WEB	H2	WEB → EMA	0.281	Yes
E-Commerce	ECO	H3	ECO → EMA	0.625	Yes
Social media	SOM	H4	SOM → EMA	0.519	Yes
E-Marketing	EMA	H5a	EMA → VCM	0.474	Yes
Value Chain	VCM	H5b	VCM → TED	0.709	Yes
E-Marketing – Value Chain – Tribal Entrepreneuri al Development	EMA – VCM - TED	H5c	EMA VCM TED	0.607	Yes
Tribal Entrepreneuri al Development	TED	H6	EMA TED →	0.739	Yes

Table No:9

Moreover, in testing the hypotheses, results shown in Table 9 revealed that six hypothesis i.e H_1, H_2, H_3 H_4, H_{5a}, H_{5b}, H_{5c}, and H_6 were positive and statistically significant. The results suggest that standardized estimates for these hypotheses (β = 0.124, 0.281, 0.625, 0.519, 0.474, 0.709, 0.607, 0.739 respectively) indicate statistical significance and thus showing support for these hypotheses.

Mediation Effect

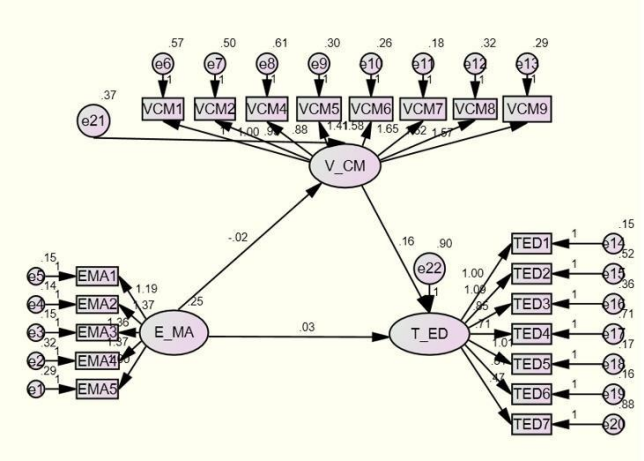


Figure No:3

The study assessed the mediating role of value chain on the relationship between E-Marketing on tribal entrepreneurial development. The results revealed a significant indirect effect of E-Marketing on tribal entrepreneurial development was positive and significant (b = 0.146, p = .000), hence hypothesis accepted. Furthermore, the direct effect of E-Marketing on tribal entrepreneurial development in presence of the mediator was found significant (b=0.131, p = .000). Hence, value chain is partially mediating between E-Marketing and tribal entrepreneurial development (H_{5c}). Mediation analysis summary is presented in the below table 4.104.

Relationship	Direct Effect	Indirect Effect	Confidence Interval		P-value	Conclusion
E-Marketing -> Value Chain -> Tribal Entrepreneurial Development	0.131 (.000)	0.146	Lower Bound	Upper Bound	.000	Partial Mediation

Table No:10 Findings

The study aimed to explore the potential for tribal entrepreneurial development, assess the role of e-marketing in promoting minor forest produce (MFP), and develop a value chain model tailored for the tribal communities of Coastal Andhra Pradesh. The key findings are outlined below:

- **Significant Economic Potential of Minor Forest Produce:** The study revealed that minor forest produce represents a valuable economic resource for tribal communities, offering opportunities for income generation and sustainable livelihoods. With a diverse array of products such as honey, medicinal herbs, wild fruits, and nuts, tribal communities can capitalize on their natural resources for entrepreneurial ventures.
- **Low Levels of Entrepreneurial Activity:** Despite the potential, the study found that entrepreneurial activity among tribal communities is relatively low. Factors such as lack of access to financial resources, limited market knowledge, and insufficient training in business management were identified as barriers to entrepreneurship.
- **Need for Capacity Building:** There is a strong need for capacity-building programs focused on entrepreneurship and business skills development. Training in areas such as financial literacy, marketing strategies, and production techniquesis crucial for empowering tribal

entrepreneurs and enhancing their competitiveness in the market.

- **Digital Literacy and E-Marketing:** The findings indicated a significant gap in digital literacy among tribal communities, which hinders their ability to effectively engage in e-marketing. While there is enthusiasm for using digital platforms to market minor forest produce, many tribal entrepreneurs lack the necessary skills and access to technology.
- **E-Marketing as a Growth Catalyst:** E-marketing emerged as a powerful tool to enhance the visibility and sales of minor forest produce. The study found that an effective online presence could connect tribal producers with wider markets, enabling them to reach urban consumers and niche markets interested in organic and sustainably sourced products.
- **Value Chain Inefficiencies:** The analysis of the existing value chain revealed several inefficiencies, including fragmented supply chains, reliance on middlemen, and lack of processing facilities. These inefficiencies reduce the income received by tribal producers and diminish the overall value of minor forest produce in the market.
- **Collaboration Opportunities:** The study identified opportunities for collaboration between tribal producers, government agencies, NGOs, and private sector entities. Such partnerships could facilitate knowledge sharing, access to financial resources, and infrastructure development, ultimately strengthening the value chain for minor forest produce.
- **Sustainability and Conservation Practices:** The findings emphasized the importance of sustainable harvesting practices. Tribal communities possess traditional knowledge regarding the sustainable use of forest resources, which can be integrated into entrepreneurial practices to ensure environmental conservation and long-term viability of their resources.
- **Government Support and Policy Framework:** The study highlighted the need for supportive government policies that focus on tribal entrepreneurship and the marketing of minor forest produce. This includes financial assistance, infrastructure development, and creating an enabling environment for tribal businesses to thrive.

- **Social Impact and Empowerment:** The potential for entrepreneurial development was linked to broader social outcomes, such as increased empowerment of women and youth within tribal communities. Engaging these groups in entrepreneurial activities can lead to improved social status and better access to education and healthcare.

Suggestions

- **Capacity Building for Tribal Entrepreneurs:** Provide training and skill development programs to tribal communities in entrepreneurship, financial literacy, and business management, focusing on value-added processing and packaging of minor forest produce.
- **Strengthening Digital Literacy for E-Marketing:** Conduct digital literacy workshops to equip tribal entrepreneurs with knowledge of e-marketing platforms, digital payment systems, and social media marketing to broaden their market reach and increase sales.
- **Establishment of a Transparent Value Chain Model:** Develop an efficient and transparent value chain that links tribal producers with local markets and e- commerce platforms,

ensuring fair pricing, reduced middlemen intervention, and timely delivery of goods.

- **Collaborate with Local and National E-commerce Platforms:** Partner with popular e-commerce platforms to create dedicated sections for minor forest produce from tribal regions, promoting these products to a wider audience and ensuring quality standards are met.
- **Improve Access to Financial Resources:** Facilitate access to microfinance, government schemes, and financial institutions, enabling tribal entrepreneurs to invest in better production techniques, storage facilities, and logistics for their MFP products.
- **Focus on Sustainable Harvesting and Conservation:** Promote sustainable harvesting practices for minor forest produce to ensure environmental conservation while maximizing yield, helping maintain the balance between economic growth and ecological preservation.
- **Branding and Marketing of MFP Products:** Develop a distinct brand for tribal minor forest produce with clear value propositions like organic, sustainable, or eco-friendly, making the products attractive to urban consumers and niche markets.
- **Establish Cooperatives or Tribal Producer Companies:** Encourage the formation of cooperatives or tribal producer companies to pool resources, increase bargaining power, and improve collective marketing efforts, thereby benefiting from economies of scale.
- **Government and NGO Support:** Seek active collaboration with government bodies and NGOs to facilitate policy advocacy, capacity building, and infrastructure support for e-marketing and value chain development in tribal areas.
- **Monitor and Evaluate Impact:** Set up monitoring and evaluation frameworks to assess the impact of value chain improvements, e-marketing initiatives, and tribal entrepreneurial development. Adjust strategies based on feedback to ensure continuous improvement.

These suggestions aim to empower tribal communities in coastal Andhra Pradesh through entrepreneurial development, leveraging e-marketing and an optimized value chain for minor forest produce.

The study on "Tribal Entrepreneurial Development & E-Marketing of Minor Forest Produce (MFP) and Development of Value Chain Model in Coastal Andhra Pradesh" highlights the critical role that government policy can play in fostering the socio- economic development of tribal communities. The following policy recommendations are designed to create an enabling environment for tribal entrepreneurs, promote e-marketing, and enhance the value chain for minor forest produce.

1. Policy Framework for Tribal Entrepreneurship

A. Establishment of a Dedicated Tribal Entrepreneurship Development Policy: The government should formulate a comprehensive policy that specifically addresses the needs of tribal entrepreneurs. This policy should outline clear objectives, strategies, and mechanisms for promoting entrepreneurship among tribal communities, including the provision of financial assistance, training programs, and market access initiatives.

B. Inclusion of Tribal Communities in Economic Planning: Tribal representatives should be included in local and regional economic planning committees to ensure that their

perspectives and needs are integrated into policy-making processes. This participatory approach will enhance the relevance and effectiveness of policies aimed at promoting tribal entrepreneurship.

2. Capacity Building and Training Initiatives

A. Skills Development Programs: The government should implement targeted training programs that focus on entrepreneurship, digital marketing, and value chain management. Collaborating with NGOs, educational institutions, and industry experts, these programs can equip tribal communities with the necessary skills to engage in e-marketing and manage their businesses effectively.

B. Digital Literacy Campaigns: To bridge the digital divide, the government should launch campaigns to enhance digital literacy among tribal populations. This includes workshops and training sessions on using e-commerce platforms, digital payment systems, and social media marketing.

3. Financial Support and Access to Resources

A. Microfinance and Credit Facilities: The government should facilitate access to microfinance institutions and banks to provide low-interest loans and grants to tribal entrepreneurs. This financial support will enable them to invest in production, processing, and marketing of minor forest produce.

B. Creation of a Tribal Business Fund: Establish a dedicated fund to support tribal enterprises focused on minor forest produce. This fund can provide seed capital, equipment, and infrastructure support to enhance production capabilities and market reach.

4. Infrastructure Development

A. Improve Transportation and Logistics: The government should prioritize the development of transportation infrastructure in tribal areas, ensuring efficient access to markets. Investments in roads, storage facilities, and transportation networks will facilitate the movement of minor forest produce from rural areas to urban markets.

B. Establish Processing Units and Cold Storage Facilities: Setting up processing units and cold storage facilities in tribal regions will enhance the value chain for minor forest produce. This infrastructure will allow tribal entrepreneurs to process their products, increase shelf life, and improve marketability.

5. Promotion of E-Marketing and Market Access

A. Collaboration with E-Commerce Platforms: The government should collaborate with established e-commerce platforms to create dedicated sections for tribal products, allowing tribal entrepreneurs to reach a wider audience. These partnerships can also involve training on how to effectively use these platforms for marketing and sales.

B. Branding and Marketing Initiatives: Develop branding initiatives that highlight the unique qualities of tribal minor forest produce, focusing on sustainability and organic practices. This can include participation in trade fairs, exhibitions, and food festivals to showcase these products.

6. Strengthening the Value Chain

A. Establish Value Chain Support Mechanisms: Create mechanisms to strengthen the

value chain for minor forest produce, which includes improving linkages between producers, processors, and marketers. This can involve setting up cooperatives or producer organizations that facilitate collective marketing efforts and negotiations with buyers.

B. Policy Support for Fair Trade Practices: Implement policies that promote fair trade practices, ensuring that tribal producers receive fair prices for their products. This can include regular market assessments to determine fair pricing and mechanisms for transparent transactions.

7. Environmental Sustainability and Conservation

A. Promote Sustainable Harvesting Practices: The government should encourage sustainable harvesting practices among tribal communities to ensure the conservation of forest resources. This can be achieved through awareness campaigns and training programs that highlight the importance of biodiversity and ecosystem preservation.

8. Certification Programs: Establish certification programs for organic and sustainably harvested minor forest produce. This can enhance marketability and provide consumers with assurance regarding the quality and sustainability of the products they purchase.

9. Monitoring and Evaluation

A. Establish a Monitoring Framework: Create a robust monitoring and evaluation framework to assess the impact of policies and programs aimed at tribal entrepreneurial development. This framework should include performance indicators that measure economic outcomes, social impacts, and environmental sustainability.

B. Regular Feedback Mechanisms: Implement mechanisms for regular feedback from tribal communities regarding the effectiveness of policies and programs. This can ensure that policies remain responsive to the evolving needs and challenges faced by tribal entrepreneurs.

Conclusion

The successful implementation of these policy recommendations will be instrumental in promoting tribal entrepreneurial development, enhancing the e-marketing of minor forest produce, and strengthening the value chain in Coastal Andhra Pradesh. By adopting a holistic approach that addresses capacity building, financial support, infrastructure development, and market access, the government can empower tribal communities to achieve sustainable economic growth while preserving their cultural heritage and natural resources. Ultimately, these initiatives will contribute to improving the livelihoods of tribal populations, reducing poverty, and fostering social equity in the region.

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