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Enabling tribal heritage entrepreneurship in Jharkhand: An exploratory study on current status and influencing factors for sustainable growth

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A B S T R A C T

Tribal heritage in Jharkhand holds immense potential not just as a cultural asset but as a foundation for sustainable, community-led entrepreneurship. This paper examines the major issues that can help the tribal societies transform their cultural heritage into legitimate business enterprises. Based on the domain, the study makes use of the Best-Worst Method (BWM) to rank significant enablers. It applies Interpretive Structural Modelling (ISM) and MICMAC analysis to discover the structural relationship between them. It is indicated that although the availability of natural resources, indigenous knowledge, and governmental support serve as the foundations of tribal enterprise, psychological preparedness and market access are the key factors in the long-term development. Interestingly, cultural values and education are also discovered as highly ingrained factors that determine an entrepreneurial intent and sustainability. The paper illuminates the multifaceted nature of the problems tribal entrepreneurs have to encounter, such as geographical remoteness and the changing demands of consumers, but also shows the opportunity to interfere by making specific changes. Through mapping of these enablers and their linkage, this study will provide a practical framework to be used by policymakers, NGOs, and local stakeholders to enable and expand tribal entrepreneurship in Jharkhand. Finally, it promotes the model of development in which cultural pride and economic empowerment must go hand in hand.

1. Introduction

Jharkhand represents a unique confluence of rich tribal heritage, abundant natural resources, and deep socio-cultural legacies. With Scheduled Tribes (STs) constituting 26.2% of the population, over 8.6 million people across 32 tribal groups hold one of India's strongest concentrations of indigenous cultural wealth (Census, 2011). Jharkhand is a state that forms a special blend of tribal heritage, rich natural resources, and rich socio-cultural heritage. Having a 26.2 percent population who belong to their Scheduled Tribes (STs), it is the possession of more than 8.6 million individuals within 32 tribal groups that have one of the most concentrated sources of indigenous cultural wealth in India (Census, 2011). These are communities that have a rich history of environmental knowledge, artisanship, performing art, and livelihoods based on forests. Businesses focusing on the indigenous crafts, forest products, eco-tourism, textiles and other areas of traditional art have been seen as an emerging opportunity towards sustainable development in the region that is being described as tribal heritage entrepreneurship. The cultural and commercial potential of iconic products including Dokra metal craft, Tasar silk, lakha bangles, Sohrai-Kohvar paintings, bamboo artefacts, and sal-leaf plates carry both cultural and high commercial potential (Naveen, 2023; Govindharaj, 2024).

This possibility is not evenly translated to viable and scalable entrepreneurial ventures. According to reports by NITI Aayog (2023) and the UNDP (2022), there is a paradox that persists despite the tribal communities containing the most rich sources of cultural and ecological wealth: they become one of the most economically marginalized groups. In Jharkhand, the poverty level below which tribal households were found to be located is more than 46 percent (WGRC, 2023). Entrepreneurship is mostly informal because of the barriers of access to market, financial literacy, poor infrastructure, absence of safe possession of land by only 8% of the market, gender-based marginalization, and low digital coverage (Mishra and Gupta, 2024). There are several government initiatives that seek to fill these gaps. Programs like Van Dhan Yojana, Jharcraft, AHVY, Palash and the PM Janjatiya Vikas Mission (PMJVM) have increased access to training, market connections and value addition (TRIFED, 2023). The recent interventions, including the CII2025, or digital marketplaces, like TRIFED, and the promotion

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of sericulture indicate the promise, and Tasar silk farmers report an increase in income 12folds (Central Silk Board, 2023). Nevertheless, all these achievements are still discontinuous and limited in terms of scale. The academic literature presents a wide continuum of factors that affect the entrepreneurship of tribes: geographical requirements (Kerketta, 2024; Jena, 2011), cultural values (Pravesh, 2016), mental orientation (Hajong and Sharma, 2010), level of education and financial aspects (Govindharaj, 2024), social processes, and the system of state support (Naveen, 2023). In the case of these factors which are multidimensional, prioritization that is structured and clear understanding of inter-factors is needed. In this regard, there are powerful multi-criteria decision-making tools like the Best-Worst Method (BWM) and Interpretive Structural Modeling (ISM) that provide powerful frameworks to determine, rank, and map the drivers of sustainable tribal heritage entrepreneurship.

Despite the vast cultural capital and an ever-expanding ecosystem of state programs, though, tribal heritage entrepreneurship faces unstable expansion rates, a lack of integration into the market, and scalability problems. Current efforts are still decentralized to the extent of a unified view of the strongest drivers, the comparative weight of said drivers, and the structural interactions modeling of business results. The presence of sufficient and effective empirical evidence based on how the factors of geographical, cultural, psychological, economic, social, and policy based factors add up to sustainable tribal entrepreneurship are lacking. This study fills this research gap by delineating these factors in a systematic manner and prioritizing them and modeling them systematically with the help of BWM and ISM. Based on the identified research gaps, the study aims to achieve the following objectives:

RO1. To identify the key factors that influence the sustainable growth of tribal heritage entrepreneurship in Jharkhand.

RO2. To prioritize these influencing factors based on their relative importance using the Best–Worst Method (BWM).

RO3. To analyze the hierarchical relationships among these factors by developing a structural model using Interpretive Structural Modeling (ISM).

The analysis concentrates on the tribal heritage entrepreneurship in Jharkhand that entails crafts, forest based, textile traditions and cultural enterprises. The information is gathered among the experts, practitioners, SHG leaders and authorities related to tribal entrepreneurship programs. Although BWM and ISM offer a good analytical rigor, the results are interpretative and rely on expert opinions. The author is not assessing the financial success of individual businesses, and the tribal groups are not exhaustively covered in the study. There is also the limitation of longitudinal analysis of data due to its cross-sectional nature.

This study is organized into six Sections. Section 1 outlines the background, problem statement, objectives, scope, and significance. Section 2 reviews the literature on tribal entrepreneurship and influencing factors. Section 3 describes the BWM and ISM methodology. Section 4 reports findings. Section 5 offers implications and recommendations, while Section 6 presents conclusions and future research directions.

2. Literature Review

Tribal heritage entrepreneurship is a set of enterprise activities that are based on the indigenous culture, the traditional knowledge, the craftsmanship and other resource-based practices peculiar to the tribes. Such entrepreneurship in India is not only the economic venture; it is also a socio-cultural process in which identity, heritage, and livelihood intersect. Jharkhand, home of strong tribal communities including Santhal, Munda, Ho, and Oraon are also endowed with traditional artisanal crafts, forest-derived products, symbolic artistic expressions, festivals and cultural practices. Nevertheless, even with such high cultural capital rate and number of around 8.6 million tribal dwellers, the entrepreneurial practices in the area are still underdeveloped, disjointed, and bound by institutional, structural, and capability-related issues (Census of India, 2011; TRIFED Jharkhand, 2011). Informality, inadequate financial inclusion, insufficient market connections, ineffective policy enforcement, and low human capital make the scaling of tribal enterprises inhibitory, which existing studies continuously emphasize (TRIFED, 2020; Kumar, 2023).

Meanwhile, contemporary academic literature highlights the growing importance of a broad set of enabling conditions, such as institutional support, skill development, market access, technology integration, and social networks, in fostering sustainable tribal entrepreneurship and livelihood security. Collectively, these insights highlight the importance of a systematic understanding of the key drivers that shape entrepreneurial evolution and how these factors interact within a broader socio-economic and cultural context (Chandramohana et al., 2023; Zijoodia et al., 2025). It is on this background that this current research fits in the growing body of research by analyzing the current state of tribal heritage entrepreneurship in Jharkhand and determining significantly contributing factors to its sustainability. The collective knowledge aims to improve the current literature and provide real-world advice to policy-makers, institutions and community organizations concerned with developing tribal heritage entrepreneurship in the area.

2.1 Tribal entrepreneurship: status, patterns and potential

Various empirical researchers in India reveal that tribal entrepreneurship is usually created around craft, forest products, value addition to agriculture, and cultural tourism (Daimari and Singh, 2022; Kumar, 2023). In Jharkhand, tribal carvers and wood and forest collectors take up groups associated with districts like Gumla, Simdega, West Singhbhum, and Khunti;

the products of them are bamboo/wood craft, lac goods, hand loom Tasar silk and traditional paintings (TRI Jharkhand, n.d.; Pharma Innovation study, 2023). Market interventions with the help of the government, e.g., Van Dhan Vikas Kendras consider to organize collectors as SHGs and offer value-addition, but the outcomes demonstrate poor scalability and uneven market connections (TRIFED, 2020).

2.3 Enablers and recent opportunities

New openings have been highlighted in recent studies and practitioner reports: e-commerce agreements (e.g. TRIFED-Meesho), special promotion of sericulture with significant increases in revenue, and an increasing domestic and global demand of ethical, handcrafted products (TRIFED press releases; Central Silk Board, 2023; EPC Handicrafts, 2022). There are community-based value chains and cooperative models that have been demonstrated to be in the form of higher returns when these are combined with training and exposure to the market (Nilerd, 2022; Iipinge, 2022). Nonetheless, the literature also explains that opportunities can only navigate towards sustainable growth as long as they are managed in respect to institutional, social, and human capital.

2.3.1 Geographical Factors (GEOF)

Geographical setting plays an important role in the entrepreneurial involvement because it determines the availability of markets, resources, and economic opportunities. The urbanisation level is usually more suitable to offer infrastructure, connectivity and business networks and eases under the conditions of the initiating and maintaining enterprise activities. On the other hand, the remote locations are experiencing logistical challenges that translate to high costs of operation. Geographical proximity to markets influences distribution of goods, cost-effectiveness, and ability to reach customers and the provision of business opportunities, controlled by the availability of natural resources to behave in a location-specific manner. Collectively, these elements outline the viability and competitiveness of entrepreneurial operations, especially in rural and semi-urban environments where the environmental and locational benefits are most critical in the development of the enterprises (Acs et al., 2018; Faggio and Silva, 2014).

2.3.2 Cultural Factors (CULF)

The cultural environments have a profound effect on entrepreneurial intentions and firm-forming behaviour as it shapes common belief systems, social values and behavioural standards. First Nation knowledge and practices tend to promote tradition focused business models that are resource efficient and embedded within the community. The presence of cultural values and beliefs support or deter in taking risks, innovating and diversifying the enterprise. Meanwhile, local tastes, traditions and identity formed consumer preferences (CULF3) that directly affect the market demand and product design. All of these cultural factors make up an enabling ecosystem within which entrepreneurship is compatible with the social legitimacy and communal expectations (Hofstede, 2001; Hayton et al., 2002).

2.3.3 Psychological Factors (PSOF)

The psychological factors are key determinants of the entrepreneurial intentions and performance. The society image of entrepreneurship as a safe and acceptable profession has a significant influence on the engagement into enterprise activities. Such managerial behaviour as leadership orientation, skills in decision-making and problem-solving, leads to the resilience of enterprises and their success in their operations. Moreover, Risk-taking behaviour is an indication of the individual, what they are willing to do; that is, the ability to venture in unpredictable opportunities, which is a major characteristic indicated by entrepreneurial development and innovation. All these mental characteristics lead to persistence, creativity, and motivation, which enable one to overcome business obstacles (Krueger et al., 2000; Rauch & Frese, 2007).

2.3.4 Economic Factors (ECOF)

The entrepreneurial decision making and growth is supported by the economic conditions as a structural backbone. Education level is what provides people with knowledge, skills and capabilities required to identify opportunities and to manage enterprises. Its access to credit and financial services has a critical role to play in terms of capital formation, alleviation of liquidity constraints, and stimulations of business growth. The availability of markets creates new sales and distribution channels and competitive edges. Collectively, these economic facilitators help to a great extent in increasing the capability of individuals to engage in entrepreneurial activities and maintain lucrative operations in dynamic contexts (Schultz, 1961; Beck & Demirguc-Kunt, 2006).

2.3.5 Social Factors (SOCF)

The three factors that affect entrepreneurial participation are social structures, which are in the form of demographic composition, networks, and social roles. Within household-based enterprises, individuals in the family might dictate the availability of labour, income stability, and social sustainability. The rate of women participation is important to inclusive entrepreneurship and contributes to economic strength at the community level. Informal networks are formed by the overall social conditions, such as trust, social cohesion, and community support, to share the resources and collaborate in businesses.

These social aspects enable the creation of an enabling environment in which people are dependent on family and community relationships to address risk reduction and enhance sustainability of the enterprise (Coleman, 1988; Aldrich and Zimmer, 1986).

2.3.6 Government Support & Political Factors (GOPF)

The policy orientation, institutional formation, and development programs and initiatives are important policies that govern the entrepreneurial ecosystems in terms of government and political structure. Regulatory policies and schemes like subsidies, financial incentives and compliant simplification allow barriers to entry to be low and formalise enterprise. Encouragement of local businesses facilitates local industries with training and grants as well as obtaining market contacts. Also, infrastructural development promotes mobility, communication and production capacities and the widening of operations by the entrepreneurs is made to be efficient. Institutional support is therefore a good source of economic participation and sustainable entrepreneurial development (North, 1990; Minniti, 2008).

Table 1
Listing Enablers Main Category and Subcategory

Main Categories	Subcategories	Description	Sources
Geographical Factors (GEOF)	Level of Urbanisation (GEOF1)	The density of settlements dictates service availability, communication networks, and entrepreneurial buzz within tribal hinterlands today.	Kerketta (2024) Jena (2011)
	Distance from Market (GEOF2)	Travel time to trading hubs influences input costs, perishability risks, and frequency of customer engagement.	
	Access to natural resources (GEOF3)	Proximity to forests, minerals, and craft materials anchors product uniqueness and reduces raw-material procurement expenses.	
Cultural factors (CULF)	Indigenous knowledge and customs (CULF1)	Traditional craftsmanship and ecological wisdom shape authentic offerings and foster community pride around heritage enterprises.	Govindharaj (2024) Naveen (2023) Pravesh (2016) Jena (2011)
	Cultural values and beliefs (CULF2)	Collective worldviews guide acceptable business practices, pricing ethics, and storytelling that resonates with local patrons.	
	Consumer preference (CULF3)	Evolving tastes among tourists and locals inform product design, packaging aesthetics, and experiential add-ons today	
Psychological factors (PSOF)	Perception about entrepreneurship (PSOF1)	How tribes view business risk versus reward frames willingness to innovate and invest personal resources.	Hajong and Sharma (2010) Mishra and Gupta (2024) Pravesh (2016)
	Managerial behaviour (PSOF2)	Leadership style, planning rigour, and delegation capacity determine operational efficiency in micro-scale ventures on the ground.	
	Risk-taking behaviour (PSOF3)	Comfort with uncertainty influences investment horizons, product experimentation, and the courage to enter unfamiliar markets boldly.	
Economic factors (ECOF)	Level of education (ECOF1)	Schooling equips entrepreneurs with literacy, numeracy, and digital skills necessary for market research and record-keeping.	Govindharaj (2024) Mishra and Gupta (2024) Kerketta (2024) Naveen (2023) Pravesh (2016) Jena (2011) Hajong and Sharma (2010)
	Access to credit (ECOF2)	Affordable loans unlock capital for equipment, raw materials, and scaling production capacity during high-demand seasons.	
	Access to Market (ECOF3)	Physical and digital channels connect artisans to broader buyers, improving sales volume and price realisation.	
Social Factors (SOCF)	Family size (SOCF1)	Extended households supply labour, share risks, and create an immediate consumer base for nascent ventures locally.	Govindharaj (2024) Mishra and Gupta (2024) Kerketta (2024) Naveen (2023) Jena (2011) Pravesh (2016) Hajong and Sharma (2010)
	Women's participation rate (SOCF2)	Active involvement of women diversifies income streams, preserves crafts, and enhances community acceptance of enterprises	
	Social conditions (SOCF3)	Health, sanitation, and safety environments influence workforce availability, productivity, and attractiveness to external partners today.	
Government support and Political factors (GOPF)	Schemes and Regulatory Policies (GOPF1)	Targeted subsidies, incubation centres, and simplified compliance norms lower entry barriers for tribal start-ups significantly.	Govindharaj (2024) Mishra and Gupta (2024) Kerketta (2024) Naveen (2023) Jena (2011) Pravesh (2016) Hajong and Sharma (2010)
	Promotion of Indigenous Businesses (GOPF2)	Official branding, drives, exhibitions, and certifications amplify the visibility and credibility of tribal heritage products worldwide.	
	Infrastructural development (GOPF3)	Reliable roads, electricity, and broadband connectivity reduce logistics constraints and integrate villages into mainstream commerce.	

2.4 Theoretical Framework

To build a robust analytical foundation, this research draws on four well-established theories that together explain how structural, cognitive, and social factors influence tribal heritage entrepreneurship.

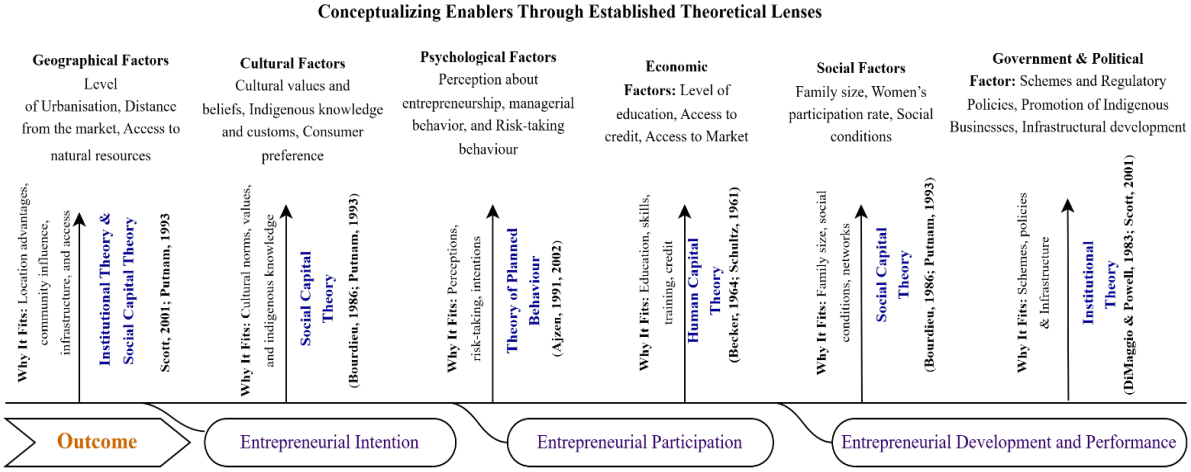

Fig. 1. Conceptualizing Enablers through Established Theoretical lenses

The literature demonstrates that entrepreneurial development is shaped by a multidimensional set of enablers operating across geographical, cultural, psychological, economic, social, and political domains. Geographical factors such as urbanisation levels, market distance, and resource access influence the practicality and cost of enterprise activities (Acs et al., 2018). Cultural norms, indigenous knowledge, and consumer preferences further determine social legitimacy and market acceptance (Hofstede, 2001). Psychological attributes, including perceptions, managerial behaviour, and risk orientation, play a central role in shaping entrepreneurial intentions (Krueger et al., 2000). Economic enablers like education, credit access, and market connectivity strengthen individuals' capacity to start and sustain ventures (Beck & Demirgüç-Kunt, 2006). Social structures, including family dynamics, women's participation, and community conditions, provide relational support and informal networks (Coleman, 1988). Additionally, government schemes, regulatory frameworks, and infrastructure development form the institutional foundation for enterprise growth (North, 1990). Collectively, these enablers highlight the need for an integrated understanding of entrepreneurship that spans individual, structural, and contextual determinants.

3. Methodology

This study conducted a thorough literature review to identify 18 key enablers for this research, consolidated the critical factors enabling sustainable tribal heritage entrepreneurship in Jharkhand (see Table 1). It assesses the current entrepreneurial status, identifies and prioritizes the most influential factors, and analyses their structural interrelationships to understand how they collectively shape sustainable growth. The involvement of thirty domain specialists in expert elicitation improved and validated the eighteen key enablers.

This study employed the Best-Worst Method (BWM) to ascertain consistent importance weights for each approach (Rezaei, 2015). The integrated BWM-ISM pipeline enables evidence-based sequencing, strategy formulation, initial step identification, and spillover monitoring. This study also utilises a methodological framework grounded in an original Interpretive Structural Modelling (ISM) approach, which is notably effective in addressing incoherent and ambiguous data (Li et al., 2019).

3.1 Best Worst Method

Rezaei (2015) developed the Best-Worst Method (BWM), a multi-criteria decision analysis (MCDA) approach, to identify the weights of expert criteria. BWM offers multiple advantages compared to AHP, fuzzy AHP, and similar methods. The BWM's integer ranking method reduces computational complexity (Rezaei, 2016). This method classifies and ranks strategies. It categorizes the most significant obstacles as 'best' and the least significant as 'worst'.

Step 1: Identify the strategies or criteria that need to be analysed.

Step 2*:* Select the most impactful (Best) and the least impactful (Worst) strategy or criterion.

Step 3*:* Evaluate the Best criterion against all other criteria using a scale of 01–09. The resulting Best-to-Others vector would be: $A_{Bj} = (a_{B1}, a_{B2}, \ldots, a_{Bn})$. Where, "$a_{Bj}$" Indicates the preference of the best criterion B over criterion j.

Step 4*:* Similarly, evaluate all other criteria against the Worst criterion in pairs. The resulting Others-to-Worst vector would be: $A_{Wj} = (a_{1W}, a_{2W}, \ldots, a_{nW})^T$, where a_{Wj} indicates the preference of the criterion j over the worst criterion W

Step 5: Calculate the optimised weights for each criterion $(w_1^*, w_2^*, \ldots, w_n^*)$. To do so, minimise the maximum absolute difference between $\{|w_B - a_{Bj}w_j| \; and \; |w_j - a_{jw}w_w|\}$ for all criteria. The optimisation problem is formulated as follows:

$$\begin{aligned} &\text{minmax}\{|w_B - a_{Bj}w_j|, |w_j - a_{jw}w_w|\} \\ &\text{s.t. } \Sigma_j w_j = 1 \\ &\text{w}_\text{j} \geq 0, \text{ for all j} \end{aligned} \tag{1}$$

This initial model (1) can be transformed into a linear form:

$$\begin{aligned} &\text{min}\xi^{\text{L}} \\ &\text{s.t.} \\ &|w_B - a_{Bj}w_j| \leq \xi^{\text{L}}, \text{ for all j} \\ &|w_j - a_{jw}w_w| \leq \xi^{\text{L}}, \text{ for all j} \\ &\Sigma_j w_j = 1; \text{w}_\text{j} \geq 0, \text{ for all j} \end{aligned} \tag{2}$$

Solving this linear model provides the optimal weights $(\text{w}_1^*, \text{w}_2^*, \ldots, \text{w}_n^*)$ and an optimal value for ξ^{L*}. Achieving a consistency value of ξL^* close to 0 is ideal for reliable comparisons between attributes (Gupta & Rezaei, 2019).

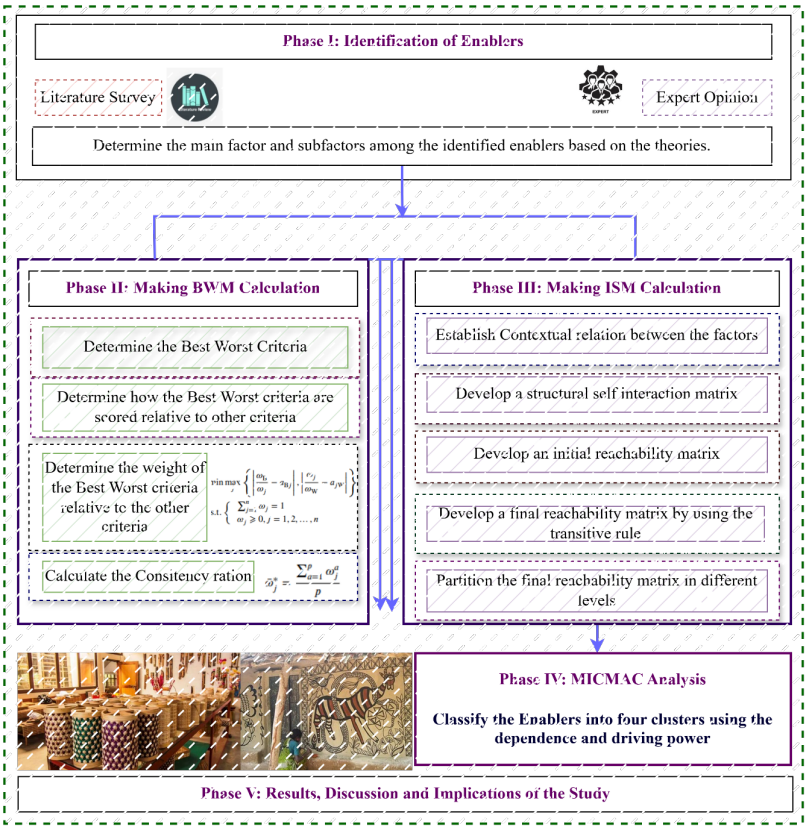

Fig 2: Research Framework of the Study

3.2 Interpretive Structural Modelling (ISM) Methodology

Interpretive Structural Modelling (ISM) is a systematic methodology used to transform complex, ambiguous mental models into a clear, structured, and hierarchical representation of relationships among system elements. Developed by Warfield (1973), ISM enables researchers to derive a visible, well-defined graphical model using reachability and transitivity principles. It is instrumental when the variables are interdependent and not supported by an a priori theoretical framework. ISM has been successfully applied in studies involving as few as five and as many as ninety elements (Sushil, 2017; Li et al., 2019).

The ISM process begins by identifying key elements related to the research phenomenon. In this study, the issues were pre-identified (Table 1), and data were collected from 30 field respondents. Their mental models regarding contextual relationships among the issues were captured through **pairwise comparison questionnaires**, structured in an *n(n–1)/2* matrix. Respondents evaluated each pair using the following relationship logic:

- **V**: Row element leads to column element
- **A**: Column element leads to row element

- **X**: Both elements influence each other
- **O**: Elements are unrelated

Table 2
Structural Self-Interaction Matrix (SSIM)

Factor	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18
A1	1																	
A2	O	1																
A3	V	A	1															
A4	V	O	V	1														
A5	V	O	V	X	1													
A6	V	O	A	O	O	1												
A7	V	V	X	O	O	O	1											
A8	X	O	V	V	O	A	O	1										
A9	O	O	V	X	O	V	O	X	1									
A10	O	O	O	O	O	O	O	X	O	1								
A11	O	O	O	O	O	A	O	O	O	V	1							
A12	O	V	V	O	O	A	A	A	A	O	O	1						
A13	O	X	X	O	O	A	O	X	O	A	V	V	1					
A14	V	V	V	O	O	X	V	V	O	O	O	O	X	1				
A15	V	O	O	X	X	V	V	V	X	O	V	O	V	O	1			
A16	V	V	O	V	X	V	V	V	V	O	V	O	V	V	X	1		
A17	V	O	V	X	V	V	O	V	V	O	O	O	V	V	V	A	1	
A18	V	V	O	O	O	O	V	V	V	O	V	V	A	V	V	V	O	1

3.2.1 Development of the Structural Self-Interaction Matrix (SSIM)

Using the modal value (most frequent response), individual responses were aggregated to construct the SSIM (Table 2). This matrix is the starting point for building the structural model.

3.2.2 Construction of Initial Reachability Matrix

The SSIM was converted into a binary reachability matrix following ISM rules:

- V → (i,j = 1; j,i = 0)
- A → (i,j = 0; j,i = 1)
- X → (i,j = 1; j,i = 1)
- O → (i,j = 0; j,i = 0)

This matrix reflects direct relationships among factors.

3.2.3 Development of the Final Reachability Matrix

Transitivity was then checked to incorporate indirect relationships; for example, if *A leads to B* and *B leads to C*, then *A logically leads to C*. All such inferred relationships were marked as dark 1 to distinguish them from direct links. The final matrix (Table 3) also provided driving power (sum of 1s in a row) and dependence power (sum of 1s in a column), later used for MICMAC analysis.

3.2.4 Level Partitioning

To derive the hierarchical structure of the ISM model, a level partitioning procedure based on set theory was used. For each factor:

- The *reachability set* contains the factor and all factors it influences.
- The *antecedent set* contains the factor and all factors influencing it.
- The *intersection set* captures common items from both sets.

Factors whose reachability and intersection sets were identical in the first iteration were assigned to Level I (top level). Once a factor's level was established, it was removed, and the process was repeated until all levels were determined. This produced the hierarchical layering of the model.

3.2.5 Development of the ISM Digraph and Final Model

Using the fully partitioned levels and transitive relationships, a directed graph (digraph) was constructed and subsequently converted into the final ISM model (Figure 1), following the classical Warfield methodology.

3.3 MICMAC Analysis

It is a structural methodology introduced by Godet (1986). It is commonly used as a complementary method to ISM. It uses the data of the fully transitive reachability matrix. Following the data-centred approach, a driving–dependence diagram is drawn that classifies the issues into four clusters: autonomous, independent, dependent, and linkage.

4. Result

4.1 Best Worst Method

The BWM analysis highlights that economic factors are the most critical enablers of tribal heritage entrepreneurship in Jharkhand, with access to markets, education, and credit emerging as the top sub-factors. Psychological factors, including risk-taking, managerial behaviour, and perception toward entrepreneurship, follow closely, emphasizing the role of mindset and leadership in venture success. Government support, particularly initiatives promoting indigenous businesses, also plays a significant role, while geographical, cultural, and social factors are comparatively less influential, suggesting that location, traditions, and community support, though important, require complementary economic and institutional mechanisms to drive sustainable entrepreneurial growth**.**

Table 3
Global weight and ranking of enablers main category and subcategory

Main Factors	Main Factor Weight	Group Rank	Sub-Factor	Code	Sub-Factor Weight	Global Weight	Rank
GEOF	0.111	4	GEOF1	A1	0.208	0.023	13
GEOF	0.111	4	GEOF2	A2	0.282	0.031	10
GEOF	0.111	4	GEOF3	A3	0.39	0.043	9
CULF	0.071	5	CULF1	A4	0.302	0.022	14
CULF	0.071	5	CULF2	A5	0.386	0.028	12
CULF	0.071	5	CULF3	A6	0.242	0.017	16
SOCF	0.063	6	SOCF1	A7	0.169	0.011	17
SOCF	0.063	6	SOCF2	A8	0.139	0.009	18
SOCF	0.063	6	SOCF3	A9	0.487	0.031	11
GOPF	0.181	3	GOPF1	A10	0.257	0.047	8
GOPF	0.181	3	GOPF2	A11	0.567	0.103	2
GOPF	0.181	3	GOPF3	A12	0.098	0.018	15
PSOF	0.244	2	PSOF1	A13	0.197	0.048	7
PSOF	0.244	2	PSOF2	A14	0.303	0.074	5
PSOF	0.244	2	PSOF3	A15	0.306	0.075	4
ECOF	0.329	1	ECOF1	A16	0.257	0.085	3
ECOF	0.329	1	ECOF2	A17	0.178	0.059	6
ECOF	0.329	1	ECOF3	A18	0.382	0.126	1

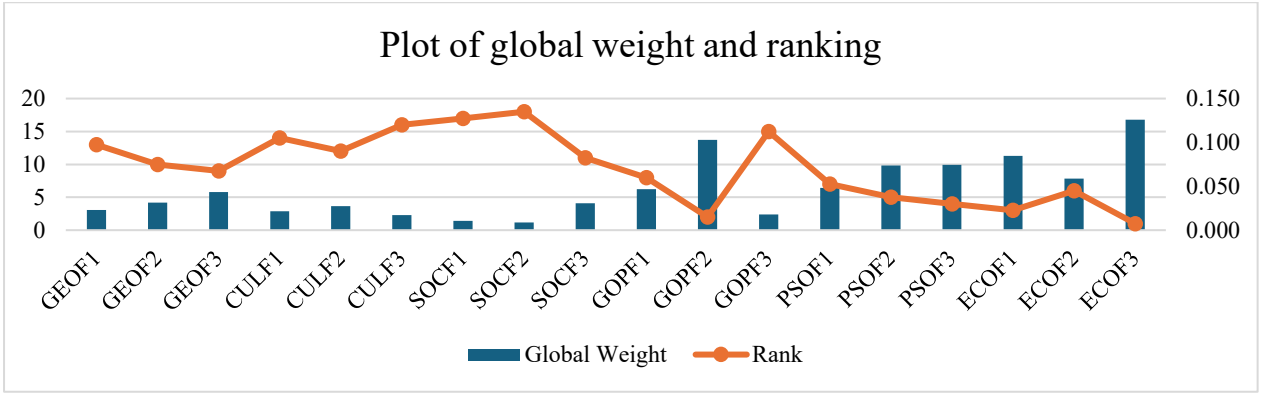

Fig. 3: Plot of global weight and ranking

4.2 ISM Results and Interpretation

The Interpretive Structural Modelling (ISM) technique was applied to structure and understand the complex interrelationships among the eighteen factors (A1–A18) presented in the Final Reachability Matrix (FRM). The FRM reflects the transitive closure of expert judgements, where a value of "1" indicates direct or transitive influence among the factors.

Table 4
Final reachability matrix

Factor	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	Driving Power
A1	1	0	**1**	**1**	0	0	0	1	**1**	**1**	0	**1**	**1**	0	0	0	0	0	8
A2	**1**	1	1	0	0	**1**	**1**	**1**	0	0	**1**	**1**	1	**1**	0	0	0	**1**	11
A3	1	**1**	1	0	0	1	1	**1**	0	0	**1**	**1**	1	**1**	0	0	0	**1**	11
A4	1	0	1	1	1	**1**	**1**	**1**	1	0	**1**	**1**	**1**	**1**	1	**1**	1	0	15
A5	1	**1**	1	1	1	**1**	**1**	**1**	**1**	0	**1**	0	**1**	**1**	1	1	**1**	0	15
A6	1	**1**	**1**	**1**	0	1	**1**	1	**1**	**1**	1	1	1	1	0	0	0	**1**	14
A7	1	1	1	0	0	**1**	1	**1**	0	0	0	1	**1**	0	0	0	0	0	8
A8	1	**1**	1	1	**1**	**1**	**1**	1	1	1	**1**	1	1	**1**	**1**	0	**1**	**1**	17
A9	**1**	**1**	1	1	**1**	1	**1**	1	1	**1**	**1**	1	**1**	**1**	1	**1**	**1**	0	17
A10	**1**	**1**	**1**	**1**	0	0	0	1	**1**	1	**1**	**1**	1	**1**	0	0	0	**1**	12
A11	0	0	0	0	0	0	0	**1**	0	1	1	0	**1**	0	0	0	0	0	4
A12	**1**	1	1	0	0	**1**	**1**	0	0	0	0	1	**1**	0	0	0	0	0	7
A13	**1**	1	1	**1**	0	**1**	**1**	1	**1**	**1**	1	1	1	1	**1**	**1**	0	1	16
A14	1	1	1	**1**	0	1	1	1	**1**	**1**	**1**	**1**	1	1	0	0	0	**1**	14
A15	1	**1**	**1**	1	1	1	1	1	1	**1**	1	**1**	1	**1**	1	1	**1**	**1**	18
A16	1	1	**1**	1	1	1	1	1	1	**1**	1	**1**	1	1	1	1	1	**1**	18
A17	1	**1**	1	1	1	1	**1**	1	1	**1**	**1**	**1**	1	1	1	**1**	1	**1**	18
A18	1	1	**1**	**1**	**1**	**1**	1	1	1	**1**	1	1	**1**	1	1	1	**1**	1	18
Dependence Power	**17**	**15**	**17**	**13**	**8**	**15**	**15**	**17**	**13**	**12**	**15**	**16**	**18**	**14**	**9**	**8**	**8**	**11**	

Based on this matrix, the hierarchical partitioning process was carried out by systematically calculating reachability sets, antecedent sets as well as intersection sets of each factor. This level partitioning indicated a hierarchical structure of six levels where one can see the direction of the influence distribution between the foundational drivers (bottom), and outcomes (top):

Level 1: A1, A11, A12, A13: These are highly dependent factors and with limited driving power which means that they are outcome factors. They are very dependent on the system conditions existing and are indicative of the final outcomes of interactions across the model.

Level 2: A2, A3, and A6: These aspects are the intermediate effectors. They are driven by some underlying factors but also upwards. The fact that they have 2-way interactions shows their participation in the translation of core drivers into high-level consequences.

Level 3: A4, A8 and A9: These aspects play the mid-hierarchy linkage roles. They influence how the upper-level variables work as well as being influenced by powerful underlying enablers. Their influence pattern indicates that they become working mechanisms in the system.

Level 4: A10, A14, and A7: These factors are right on top of the key foundation layer and they indicate high driving ability.

A5, A15, A16, and A17: these are factors of great driving power and moderate dependent. Their position suggests that they are substantial strategic impetuses, modulating multiple levels upwards and controlling vital behavioural outcomes.

Level 6: A18: The maximum driving power, minimum dependence root factor, A18, becomes the final driver. It is the main source of influence, with all other factors either directly or indirectly depending on the former.

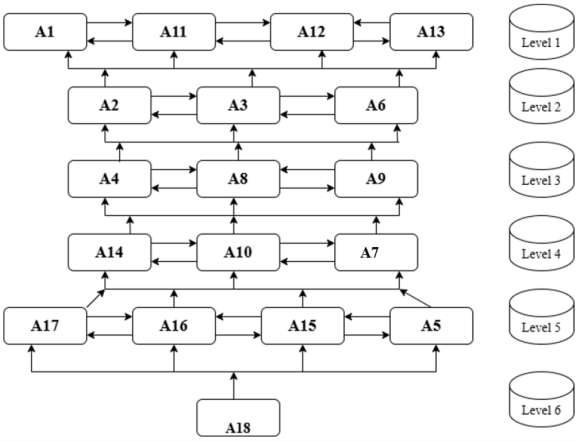

Fig. 4. Interpretive Structure Model

The final ISM digraph constructed from these levels depicts a clear upward propagation of influence. The bottom-most factor (A18) feeds into the strategic driver group (A5, A15, A16, A17), which in turn shapes both structural mechanisms (A10, A14) and operational linkages (A4, A8, A9). These then influence intermediate actors (A2, A3, A6), ultimately determining the dependent outcome variables (A1, A11, A12, A13).

4.3 MICMAC

The MICMAC analysis classifies the enablers into four clusters based on their driving and dependence power. *Autonomous factors* are minimal here, indicating that almost all variables meaningfully influence the system. *Dependent factors* (e.g., A1, A2, A3, A7, A11, A12, A14) show high dependence but low driving power, meaning they are outcomes rather than influencers; these factors tend to shift when stronger drivers change. *Linkage factors* (A4, A6, A9, A10, A13) exhibit both high driving and high dependence, making them highly sensitive and unstable any change in these elements significantly impacts the system and, in turn, is influenced by it. *Independent or driving factors* (A5, A15, A16, A17, A18) show strong driving power but low dependence, making them foundational enablers that push the entire system forward. These drivers should be prioritized strategically, as they hold the highest leverage for strengthening the overall framework.

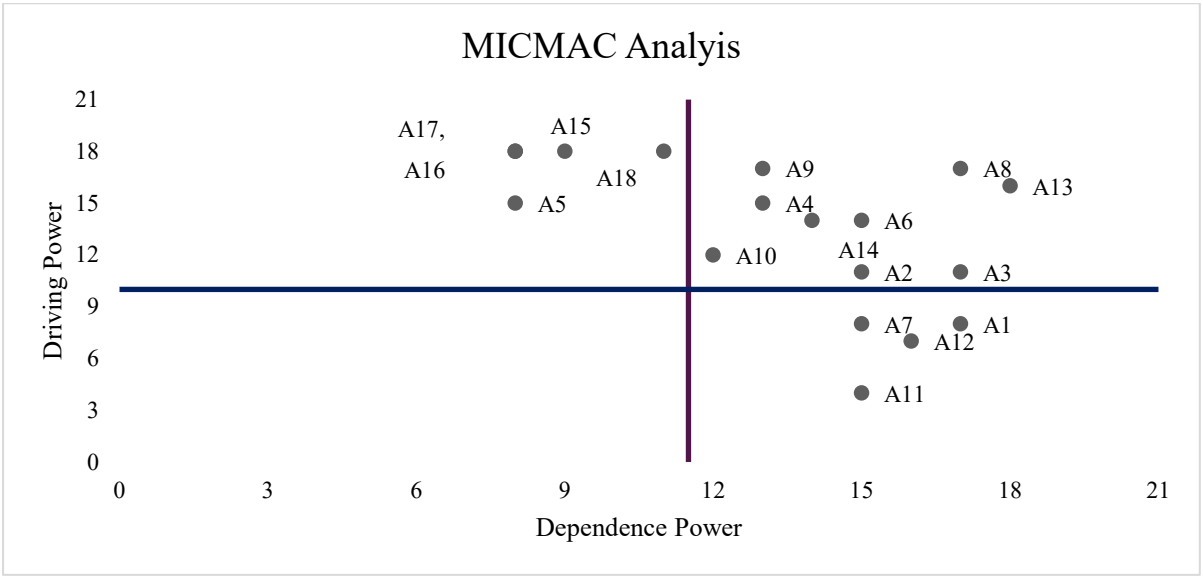

Fig. 5. Driving & Dependence Diagram (MICMAC)

5. Discussion

The results indicate that the economic factors (ECOF), especially market accessibility and credit and education become the most powerful drivers. This is in line with the previous studies of economic empowerment as the most important predictor of entrepreneurship among the marginalised and indigenous society (Anderson & Giberson, 2004; Dana, 2015). According to previous research, it is always seen that tribal businesses are systematically disadvantaged in terms of scale, competitiveness and sustainability due to the absence of a good economic infrastructure (Walter & Suchet-Pearson, 2007). These findings are supported by our results A16 (market access) and A18 (financial capital) have the highest overall global weights and the greatest drive force, and there is some evidence that financial inclusion is the primary determinant of rural entrepreneurial growth (Banerjee et al., 2015).

The high impact of psychological factors (PSOF) risk-taking, management behaviour, and the entrepreneurial perception is also congruent with the classical behavioural models and implies that entrepreneur intentions can be heavily moderated by personal cognitiveness and motivation (Ajzen, 1991; Krueger et al., 2000). The use of psychological constructs as the second-most powerful main factor can be attributed to the literature on Indigenous entrepreneurship culture, which states that cultural identity, confidence, and the perceived behavioural control profoundly influence the ability of the entrepreneur in the tribal context (Hindle and Lansdowne, 2005). In our research, A14 and A15 are significantly important structurally in the BWM ranking and the ISM positioning as it incriminates the medicine factor between the underlying economic drivers and the entrepreneurial performance that is observed.

The government support (GOPF) takes a middle but important place in the hierarchy. It agrees with the findings that institutional mechanisms, subsidies, and indigenous development programs tend to act as a catalyst as opposed to enablers in their own right (Lähdesmaki et al., 2019). Enabling environments are formed by policies on skills development missions, rural craft clusters, and market linkage schemes but ultimately rely on economic and psychological preparation which is exactly the trend exhibited in the ISM structure where the role of government factors is a bridge constructs (Level 34) and not a primary driver.

Interestingly, geographical, cultural and social dynamics which were traditionally focussed on during tribal development research are relatively underweight. Although prior literature tends to indicate that the distance between the organization and its tribal and collectivism characteristics, as well as cultural norms, provide a large effect on tribal entrepreneurship (Peredo and Anderson, 2006; Light and Dana, 2013), our results imply the assumption that the specified variables are further moderators than drivers. Many of these were classified under the MICMAC group as dependent or linkages thus suggesting that they can only influence entrepreneurial behaviour when empowered by other stronger economic and institutional factors. This is a subtle shift out of orthodoxy that leads to the provision of vibrancy to the current tribal entrepreneurship theory through the emphasis of the in-ability of cultural embeddedness to maintain enterprise viability without similar economic support systems.

5.1 Policy Implications

This study has preceding policy implications on how to ensure tribal heritage entrepreneurship in Jharkhand. To begin with, priority should be placed by policymakers on economic facilitators that include credit access, market inclusion, and entrepreneurial training, as they are most systemic contingents, and have been steadily consolidated in the research about Indigenous enterprises as drivers to entrepreneur success (Ratten & Dana, 2019). Tribal entrepreneurial performance can be positively boosted by enhancing financial inclusion, increasing access to markets, and increasing the vocational education of skills. Second, there is also a necessity to empower psychological preparedness of the potential entrepreneurs by enhancing their leadership capacity, training on risk-management, and specific entrepreneurial-orientation programs to tribal youths. These capacity building processes may boost the confidence, decision optimality and perceived behavioural control variables as the key factors of entrepreneurial behavioural literature (Ajzen, 1991). Third, the interventions embraced by the government should be able to operate in harmony with economic drivers instead of in isolation. The combination of the financial support and the capacity-building initiatives, say, the association of subsidies with training or market facilitation can produce more sustainable and long-term impact (Lähdesmaki et al., 2019). Lastly, the policies should target maintaining cultural heritage of tribes and increase their commercial feasibility. Some of the strategies like establishing craft groups, marketing native products and using e-commerce sites can also increase the exposure and coverage of tribal artisans to the market which is relevant to the findings in Indigenous entrepreneurship literature that culture-based but commercially sensitive development (Dana and Anderson, 2007). Taken together, all of these directions of the policies contribute to a comprehensive ecosystem strategy that will foster cultural sustainability as well as economic empowerment among tribes (Ratten & Dana, 2019).

5.2 Limitations and Future Research

Although the study is very informative, it has limitations. This is a subjective bias that the expert input might bring to BWM and ISM, which is disadvantageous to structural modelling research (Warfield, 1974). The analysis is also specific to the context of Jharkhand; hence, it may not be possible to generalize the results to other tribal areas. Additionally, the study fails to empirically prove the hierarchical relationships by quantitative modelling (e.g., SEM), which further research may investigate. Lastly, the socio-cultural variables are placed lower but have to be further ethnographically examined to learn the grace of interactions. The research can be expanded in the future to include longitudinal data, cross-regional comparisons and cross-validation using mixed methods to ensure the effectiveness of these structural relationships.

6. Conclusion

The proposal provides an organized insight into how the enablers of tribal heritage entrepreneurship in Jharkhand are founded through combining BWM view, ISM view, and MICMAC view. As it is found, economic factors especially access to markets, credit and education are the most powerful drivers, then are the psychological factors which are associated with risk-taking, managerial behaviour and entrepreneurial perception. Government assistance is a catalyst in the middle level, geographical, cultural and social geo-factors facilitate but have lesser influence. These findings add information to the current amount of literature by helping to understand the hierarchical interdependences between enablers and emphasizing economical and psychological preparedness as the background conditions of stable tribal entrepreneurship, which further elaborates the Indigenous entrepreneurship theory. In practice, this does highlight the necessity of enhancing financial inclusion, market connections, entrepreneurial education, and culturally oriented commercial policies to educate tribal populations. Additionally, the capacity-building efforts should be combined with institutional support so that their results would be more unified and effective. The study, on the whole, comes to a similar conclusion that tribal entrepreneurship is a multilayered ecosystem whose key drivers are economic and psychological capabilities; hence, specific interventions in these dimensions will become the basis of supporting strong, culturally based, and economically viable entrepreneurial activity within tribal areas.

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