A Study on Factors Affecting Rig Entrepreneurs with Particular Reference to the Namakkal District of Tamilnadu

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Area/Section: Business Management.
Type of the Paper: Research Analysis.
Type of Review: Peer Reviewed as per |C|O|P|E| guidance.
Indexed in: OpenAIRE.
DOI: https://doi.org/10.5281/zenodo.10882169
Google Scholar Citation: IJMTS

How to Cite this Paper:
Kanchana, D., Aithal, P. S. & Ganapathi, P. (2024). A Study on Factors Affecting Rig Entrepreneurs with Particular Reference to the Namakkal District of Tamilnadu. *International Journal of Management, Technology, and Social Sciences (IJMTS), 9*(1), 239-259. DOI: https://doi.org/10.5281/zenodo.10882169

International Journal of Management, Technology, and Social Sciences (IJMTS)
A Refereed International Journal of Srinivas University, India.

CrossRef DOI: https://doi.org/10.47992/IJMTS.2581.6012.0341

Received on: 10/01/2024
Published on: 28/03/2024

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ABSTRACT

Purpose: *To analyze the factors influencing Rig Entrepreneurs with high capacity Borewells, Medium capacity Borewells, Medium capacity Borewells & Low Capacity Borewells.*

Design/Methodology/Approach: *The study's main aim is to explore rig entrepreneurs' problems and prospects with particular reference to Namakkal District So; the study is primarily descriptive. Both primary and secondary data are used for the study.*

Findings/Results: *The study concluded that inadequate working capital was the critical constraint for them to initiate the rig business, followed by the high interest rate and requirements of too many documents and certificates. The lack of managerial skills, lengthy procedures and formalities, commission to a middle man, collateral security, difficulty in getting re-finance, and no proper assistance from any source were the rig entrepreneurs' other constraints.*

Outcome: *Rig entrepreneurs' constraints show that they face stiff competition from wealthy people. Since the investment is high and the return is also high, it makes more wealthy people eager to enter this rig business. Therefore, the wealth prospects should involve themselves in collaborative work with the social entrepreneurs in the joint venture and financial support through CSR instead of competing with social entrepreneurs. Entrepreneurial education for rig owners and development programmes like EDP and WEDP should be formed and executed to omit the rig business's lack of technical know-how. The educational institutions should be directed to have a course in their Entrepreneurship cell, with the District Industrial Center's help to promote more entrepreneurs for the borewell enterprises.*

Originality/Values: *The research work envisages the factors affecting Rig Entrepreneurs in the Namakkal district specifying that the work was carried out to outcome the problems of the rig entrepreneurs in the future. The technology has been improved in all the fields relevant to mines, and drought areas where the rig unit makes it difficult to enter the borewell point.*

Type of the paper: *Primary data using questionnaires were used from various sources like case study analysis, and journals were used for the research work.*

Keywords: Groundwater, Urbanization, Human population, Rigging industry, Entrepreneurs, ABCD analysis.

1. INTRODUCTION :

India is facing severe water scarcity. As per the geographical location, India receives water from the South-West monsoon and North-East monsoon. During the off-monsoon period, in the earlier days, the demand for water for agriculture and household activities was supplied by water springs, wells, and ponds. Later, due to the monsoon failure and the overexploitation of water, the water table went down. It paved the way to dig bore wells or tube wells. Borewells can be constructed quickly, comparing the

digging of wells and the cost of constructing is also less the open wells. Finding the water source is an essential concern before starting agricultural activities. So, borewell is the base factor for any plantation of any kind of crop. A Drilling Rig is a machine that bores holes or wells into the ground. Large constructions called "rigs" store all the drilling gear needed for a job.

According to Tegel et al. (2012) [1], round-structured wells were dug and not drilled in the ancient time wells. The people used limestone, bricks, and even bamboo to line the walls of the vessels. Wood-lined wells have been found in central Europe, dating back to the Neolithic era and later BC and Elytra, dated ca. 5200 BC.

The people started moving away from the river basin, finding a better living habitat and searching for good grazing lands for their animals. There, they started digging wells, to get water for their day-to-day purpose. Later as the world's climatic conditions of the globe changed, the water table slowly went down. The digging of wells beyond a certain depth was not practical, and it also needed modern high technologies to suck the water up. This type of construction also leads to high construction costs and risks of sliding the walls well. These hurdles lead to the development of a new way of digging wells. The Egyptians developed drilling systems in rocks as early as 3000 BC (Hodge, 2000). [2].

Defining and delimiting key terms and research programs are major challenges for evolving research fields. For strategic communication well known is the definition of Hallahan et al. (2007) [3]. In addition, another recent approach is discussed under the name entrepreneurial communication (Britta M. Gossel (2022). [4]). Strategy in strategic communication is strongly related to the concept of purposiveness, from the beginnings of its definitions (Hallahan et al. (2007). [3]).

Socio-Cultural conditions associated with entrepreneurship reveal pessimism concerning the prospects for less developed countries to generate sufficient entrepreneurship to achieve a high rate of economic development. According to Nathaniel H. Leff (1979) [5] Social psychology encompasses the individual-centric bias associated with the concepts of natural empirical science. The theory also based on intra individual processes are inadequate to explain social behavior whose dynamic and structural sources lie in the 3 interdependent contexts of biology, physical ecology, and the socio-cultural environment Pepitone (1981). [6]. Marshall attempts to distinguish his contributions, though frequently acknowledging those of others; and his clear views on how economists should proceed, though not suppressed, are not allowed to mark out a distinctively Marshallian program (Loasby (1986). [7]).

2. STATEMENT OF THE PROBLEM :

The entrepreneur combines the production factors and produces a product or renders a service to earn profit by bearing risk. The human resources needed for the rig entrepreneurs with medium-size technology is more than the entrepreneurs with highly modified technology. The nature of the business is such that they have moved from one place to another. The rigging machines are doing the tedious work of drilling the hard rocks and heavy, muddy sand. The depreciation of the machinery, repair, and maintenance also hinder the operation of this business. The spare parts for the rigging machinery are available only in certain places and also in specific industries. Recently, the rig entrepreneurs have been facing problems with the Ministry of Environment. Before digging a bore well, they have to seek permission from the revenue department, mining department, and the Ministry of Environment as and when needed. While constructing bore wells in the hilly regions, the entrepreneurs have to seek permission from the forest department and the Geology department. These restrictions also hinder the progress and prospects of this business.

3. OBJECTIVES OF THE STUDY :

(1) To study factors affecting the business of Rig Entrepreneurs with particular reference to Namakkal District.
(2) To ascertain the socio–economic status of rig entrepreneurs in Namakkal District.
(3) To analyze the level of satisfaction of rig entrepreneurs
(4) To identify the problems faced by rig entrepreneurs.
(5) To evaluate the advantages, benefits, constraints, and disadvantages of Rig Entrepreneurship.

4. LIMITATIONS OF THE STUDY :

(1) Data and the results of the study apply to only the study area.
(2) Due to time constraints the researcher was not able to collect more data.

(3) There may be a chance of biased information.
(4) The sample size chosen covers only a small portion of the whole population. The information collected would not be relevant all the time.

5. REVIEW OF LITERATURE :

Baumol (1986) [8] arranged innovative exercises into two essential classifications, for example, 'starting' and 'mirroring'. Starting business visionaries present products, productive strategies, and different things and systems not beforehand accessible. mimicking business visionaries, then again, disperse the developments of the starting business visionaries.
Baumol (1986) [9] analyzed productivity lags in deindustrialization, unemployment, and the Balance of Payment and suggested a tempered view of the slowdown in U.S. productivity growth and its lag behind other countries.
Khanka, S. S. (1990) [10] examined the Kamauon division of Uttar Pradesh concerning the rise, execution, and enterprising improvement issues. Because of the essential Information gathered through an example of 50 little-scale ventures, the investigation Uncovered the severe issues that obstruct the fiery showcase of entrepreneurship in the Locale. Measures for sound development like money help, advertising offices and preparing had been proposed.
Long et al. (1995) [11] on contrasting entrepreneurs and non-entrepreneurs on their pioneering frame of mind and enterprising expectations it was accounted that the innovative gathering scored higher than the non-entrepreneurial bunch on every one of the disposition subscales (accomplishment, confidence, individual control, and development). An expectation to begin business scores for the entrepreneurs gathering was altogether higher than for the non-entrepreneurs gathering.
Lal, S. K. 2003 [12] The study of entrepreneurship has multi dimensions, large and small sectors, public and private sectors, and entrepreneurship in developed and developing societies. Entrepreneurship in different communities in historical perspective. entrepreneurship in manufacturing units and managerial entrepreneurship
Bruno (2005) [13], there are many advantages of low-cost drilling, and they were exposed in his study. The advantages as listed below:
(i) Compared to other promising drilling approaches, the Baptist method is considered simple and the knowledge easily transferable.
(ii) Local Materials: There are no unique materials or parts required. All the materials can be purchased through a local hardware store and manufactured in a welding shop.
(iii) Maintenance: Because of the simplicity of the method and the materials used, maintenance to the hand pump is relatively easy, ensuring minimal downtime.
(iv) Adaptable: The technology is also adaptable to local contexts. Depending on availability, alternative materials can be substituted.
(v) Inexpensive: The rig (including the drill stem, spout, pulley, drill bits, and toolkit) costs between $150-$300 US, depending on the location and depth of well. The cost of a well (including suitable casing, filter, hand pump, and concrete sanitation pad) is approximately $50-$250 US, depending on location and depth of well.
(vi) Lightweight: The materials required for drilling a well can be transported relatively quickly, allowing for more remote wells to be drilled. Fast. Compared to other manual drilling methods, the Baptist method is considered a fast-drilling procedure. Depending on soil conditions, rates of up to 100'(30m) per day can be attained.
As per the studies of Danert (2009), [14] Globally, hundreds of thousands of hands, or manually drilled wells provide rural dwellers with water for agriculture and domestic use. The four distinct types of manual drilling are auguring, jetting, percussion, and sludging, with variations on each. They are all suitable for niche hydro geological environments. Different techniques are being utilized in over 20countries worldwide. Despite its apparent affordability and suitability for local private enterprises, the full cost of hand-drilled wells can still be prohibitive for some end users, mainly if no income can be generated from the investment. There is a need for much more collaboration between organizations to develop and promote the technologies, and more lesson-learning from conventional drilling practices. A lack of proper understanding of groundwater resources is a barrier to full exploitation of the technology. More emphasis on monitoring the long-term sustainability of hand-drilled wells, including proper diagnosis of the reasons for breakdown is required.

Félix-Fernando Munoz, María-Isabel ENCINAR, Carolina CANIBANO 2009, [15] Entrepreneurship is seen as the main force of economic change, as the agency of self-transformation within restless capitalist economic systems. Therefore, a truly evolutionary perspective on economic policy-making must consider the significance and scope of entrepreneurship. Based on such a perspective, it might be possible to assess future outcomes of economic evolution under different policy measures related with, for instance, stimulating entrepreneurship as a policy that would provide the seeds for recovery from a slump in an economy. In this short note, our main claim is that the very nature of entrepreneurship implies the recognition of the role played by entrepreneurs' intentions, their tendency towards transforming goals and agents' spaces of action. Recognition is possible due to a more systematic analytical integration of these elements into a theory of entrepreneurship based on a 'production of action' conception (vs. the standard framework based on a 'technology of choice'). This analytical vision sheds light on how economic policymaking should be implemented to stimulate entrepreneurship.

Aithal, P. S., Shailashree, V., & Kumar, P. M.2015 [16] SWOT, SWOC, and PEST techniques provide an easy and systematic way of identifying various issues affecting a system and provides opportunity for further development. Whereas these provide a broad-based assessment for individual institutions and systems. The success of any business model depends on how a company makes profit by specifying its position in the value chain. ABCD Technique to analyze a business model and to study its effectiveness in providing value to its stake holders and sustainable profit through expected revenue generation. ABCD is an acronym that stands for Advantages, Benefits, Constraints, and Disadvantages. Application of ABCD analysis results in an organized list of business advantages, benefits, constraints, and disadvantages in a systematic matrix. The entire framework is divided under various issues/area of focus and various business deployment factors affecting the business/concept can be identified and analyzed under each issue by identifying critical effective elements

According to Aithal, P. S. (2016) [17] discussed about ABCD model based on four constructs Advantages, Benefits, Constraints, and Disadvantages, this system considers all determinants in key areas through analyzing the major issues and identifying the critical constituent elements. The overarching framework for four specific instances in hand namely Business model, Business strategy, Operational concept, and Functional system are outlined here. Finally, the ABCD analyzing framework is compared with other known analyzing techniques like SWOC, Competitive Profile Matrix (CPM) analysis, EFE & IFE Matrices, BCG analyzing frameworks, Porter's Five Forces Model, and PESTLE Analysis.

Morris et. al. (1993) [24] found that from an overview finished independently by three utilitarian region supervisors in every one of 84 modern firms. It was accounted for that corporate business, similar to a free fire up, depends vigorously on the individual entrepreneurs. This individual is increasingly able to prevail in a situation offering a weight on advancement and a feeling of solidarity and course.

Wright et al. (1997) [25] led top to bottom-up close and personal meetings with entrepreneurs who have left from their first adventure and become associated with quite a while. The examination's discoveries propose that sequential business visionaries fall comprehensively into two gatherings. The principal gathering attempts a second adventure nearly for guarded reasons, regularly in a similar part and even a similar firm. This gathering can be isolated into two sub-gatherings, 'bunch makers' and 'gathering engineers.' Somewhat, these gatherings parallel the specialist/go-getter differentiation distinguished in other research on enterprising sorts.

Sellappan (1998) [26] investigated Impact of Entrepreneurial Climate on Awareness, and Attitude Orientation revealed that understudies having a high enterprising atmosphere bunch altogether contrasted from low pioneering gathering on accomplishment. The executive's organizations had the most extreme degree of individual control while designing establishments had the least. Understudies having a highly creative atmosphere, had a more considerable amount of confidence and the other way around. Moreover, understudies having a place with various degree of atmosphere and different classifications of courses stay homogenous on development.

Michael, Khepar and Sondhi (2008) [27] in their study has defined the bore well as Water well is a hole or shaft, usually vertical, excavated into the earth for bringing ground water to the surface. Wells also serves other purposes such as observation/exploration, artificial recharge, and wastewaters (very restricted these days due to environmental concern). Wells of horizontal extent (known as 'horizontal wells') are sometimes constructed because of special groundwater situations. Horizontal wells are

advantageous when groundwater is derived primarily from infiltration of stream flow (e.g., collector wells) or in the situations where aquifers are thin, poorly permeable or underlain permafrost or saline water.

Saini (1996) [28] in his study about Entrepreneurial Development Programs directed in the Northern Region he found that he examination, which depended on the reactions of 127 members uncovered that lion's share of them had a place with Urban based higher standings and administration families. 58 out of 127 people attempted innovative exercises in the wake of going to the program. The investigation factually demonstrated that the development pace of work age and deal turnover accomplished via prepared entrepreneurs had shown an altogether higher development rate.

Carteret al. (1996) [29], proposed that community water supply programs in developing countries frequently utilize wells or boreholes equipped with hand pumps as the technology of choice. Whilst easy targets concerning numbers of wells to be drilled or villages to be served are often prominent, the broader objectives of such programs are rarely expressed in quantified terms and, as a consequence, program impact is often disappointing as well as challenging to evaluate. Because objectives are not clear, program strategy fails to include all the issues and activities necessary to benefit participating communities. In the paper, target objectives, checklists of program activities, and staffing requirements are proposed. The subject of program impact is briefly discussed, and a realistic approach to program evaluation is outlined. The paper is intended to aid project planners and guide managers and evaluators of existing well hand pump programs.

Cloesen (2007) [30] in his study, has come with a new model of drilling called Baptist drilling. It is a hybrid between sludging and percussion drilling, this method permits to drill through loose soil and "soft" rock, like light conglomerates, consolidated volcanic ashes, some calcareous rocks, and weathered materials. however, it will not penetrate hard original rock or boulders (e.g. in ancient river beds). Like in sludging, the drilling process is continuous: the drill bit usually is not removed from the borehole until it is finished and the broken material is pumped to the surface in the drilling liquid (mud). The driller's hand does not have to reach the end of the drill pipe, and drill stem extensions can be several meters long. Percussion action is performed by lifting the drill stem with a rope over a pulley, attached to a simple derrick, made with whatever available wood or bamboo poles.

5.1 Factors Affecting the Rig Entrepreneur Industry:

(1) Availability of Capital:

The availability of funds is a crucial element for each entrepreneur to consider. A company's capital requirements are the total of money it will need to start making a profit. Lack of access to cash is typically regarded as one of the key challenges facing entrepreneurship.

(2) Low skill level workers:

Most of the entrepreneurs of rural backgrounds they have unable to find highly skilled labour. Turnover rates are also high because workers are migrated in nature they are not stable in their work. Entrepreneurs have only availability of low-skill level workers and they use a limited range of skills in the workplace.

(3) Infrastructure & Technology:

In the rig industry technology plays a vital role. Technology has presented several options for marketing to entrepreneurs. Technology leads to increased productivity and it save the cost and time.

(4) Political factors:

Political factors that influence entrepreneurship when there are not enough government concessions and incentives and incentives offered, things start getting difficult for the entrepreneurs.

(5) Lack of Specific knowledge and skills:

Lack of knowledge is the major factor affecting the business that causes failure. Using the proper knowledge and skills in the right way can help the business more efficiently, and decrease business risks. The entrepreneur should get proper education and training about the operation of equipment.

(6) Lack of Financial support:

The rig entrepreneurs have seasonal work they do not have a continuous business. Many entrepreneurs have very limited personal savings. Lack of sufficient finances when setting up their own business to be fully operational, Rig entrepreneurs are lagging in the financial support from the banks and some financial institutions for getting financial borrowings and loans. Financial support can help to cover the cost of setting up the business.

6. RESEARCH METHODOLOGY:

Methodology in research is the approach taken to systematically address the research issue. The primary purpose of this research is to examine, with a focus on Namakkal District, the elements that contribute to the success (or failure) of the rig entrepreneur industry. The focus of the research is mostly descriptive. The research makes use of both primary and secondary sources. Questionnaires are used for primary data collection, while research articles, journals, surveys, governmental documents, books, dissertations, and the internet are mined for secondary data. The samples were chosen using a basic random process, so every component of the cosmos has an equal chance of being included. The analysis relied on data that was refined using basic percentage calculations. In order to investigate what factors, have an impact on the rig entrepreneur's industry in the Namakkal district, a sample of 285 rig entrepreneurs was chosen.

7. CONCEPTUAL RESEARCH MODEL BASED ON REVIEW OF SUCH MODELS & FOCUS GROUP INTERACTIONS :

7.1 Postulates for Conceptual Model Based on Factors Affecting Rig Entrepreneurs:

(1) Rig-entrepreneurs' have external constraints for capital sources
(2) Rig-entrepreneurs' have internal constraints for capital sources
(3) The external constraints are significant on the overall constraints of the respondents
(4) The internal constraints are significant on the overall constraints of the respondents

7.2 Conceptual Model on Factors Affecting Rig Entrepreneurs:

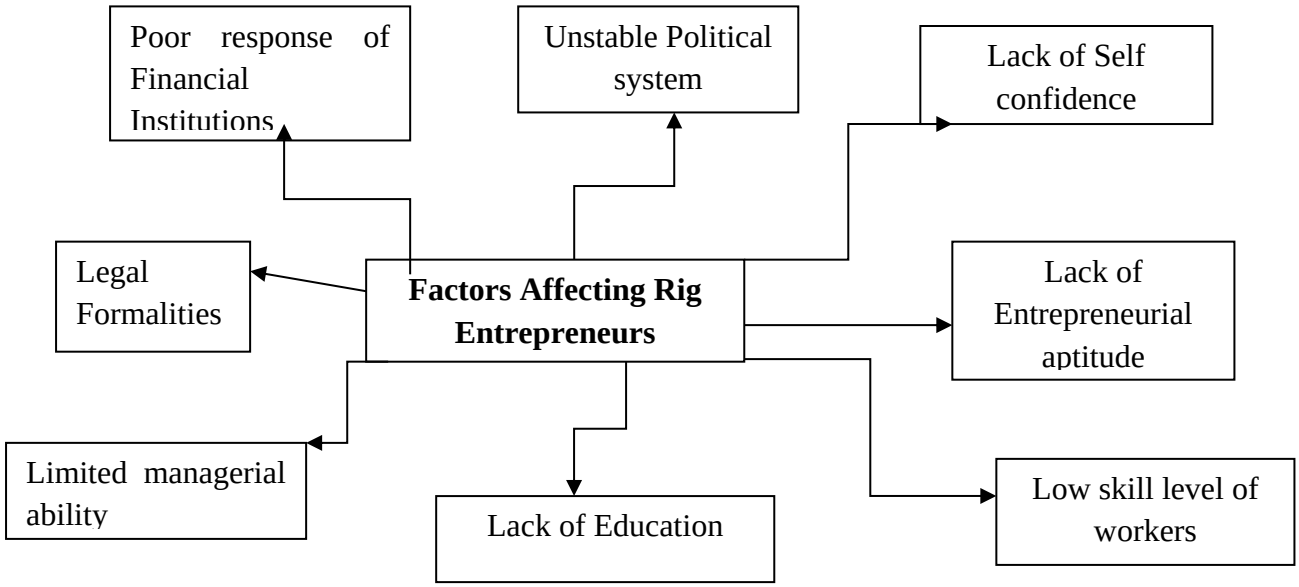

Fig. 1: Conceptual Model on Factors Affecting Rig Entrepreneurs

7.3 Descriptions of Various Affecting Factors"

Unstable Political System: The various crises rocking the various Governments at the three tiers of government cause certainty and increase the risk associated with investments. Poor Government Policy Though the government of India is fully aware of the importance of entrepreneurial development, yet we do not have a proper national policy on entrepreneurship (Rig & Borewells). It is expected that the government will formulate and enforce a policy aimed at promoting balanced regional development of various areas through the promotion of Rig entrepreneurs.

Poor Response of Financial Institutions: Rig Entrepreneurs are not able to offer collateral security for the grant of loans. Banks are not prepared to play with the public money and hence they impose various conditions for the grant of loans, these entrepreneurs who fail to comply with the conditions are

not able to get loans and hence, the dream of starting up their own entrepreneurship is shattered. The helpful attitude of lending institutions will go a long way in stimulating the entrepreneurial climate.

Lack of education: Rig entrepreneurs in Namakkal, Tamilnadu, India are lagging far behind in the field of education. Most of them (around sixty percent of the total) are illiterate. Due to a lack of proper education, Rig entrepreneurs remain in the dark about the development of new technology, new methods, and other governmental support which will encourage them to flourish. Tough competition Usually Rig entrepreneurs employ low technology in the process of production. In a market where the competition is too high, they have to fight hard to survive in the market against the organized sector and capacity to adopt advanced technology in managing enterprises.

Lack of entrepreneurial aptitude: Lack of entrepreneurial aptitude is a matter of concern for Rig entrepreneurs. They have no entrepreneurial bent mind. Even after attending various training programmes on entrepreneurship, they are failed to tide over the risks and troubles that may come up in an organizational working

Limited managerial ability: Management has become a specialized job which only efficient managers perform. Rig entrepreneurs are not efficient in managerial functions like planning, organizing, controlling, coordinating, staffing, directing, motivating, etc. of an enterprise.

Legal formalities: Fulfilling the legal formalities required for running a business becomes an upheaval task on the part of a Rig entrepreneur because of the prevalence of corrupt practices in government offices and procedural delays for various licenses, and etc., In such situations they find it hard to concentrate on the smooth working of the business.

Low skill level of workers: Most of the entrepreneurs of rural areas are unable to find workers with high skills. Turnover rates are also high in this case. They have to be provided with on-the-job training and their training is generally a serious problem for the entrepreneur as they are mostly uneducated and they have to be taught in the local language which they understand easily.

Lack of self-confidence: A rig entrepreneur because of their inherent nature, lacks of self-confidence which is essentially a motivating factor in running a business successfully. They have to strive hard to strike a balance between managing a family and managing a business

Turning into a rig entrepreneur is about more than gauging the risks against the benefits. As a rule, it is inescapable that different impacts will push or pull at the capacity to get independently employed, autonomous, and sufficient.

8. HYPOTHESES FOR PROVING THE CONCEPTUAL MODEL :

H01a: There is no significant difference among the capital sources on the rig-entrepreneurs' external constraints.

H01b: There is no significant difference among the capital sources on the rig-entrepreneurs' internal constraints.

H02: There is no significant impact of external constraints on the overall constraints of the respondents.

H03: There is no significant impact of internal constraints on the overall constraints of the respondents.

9. STATISTICAL ANALYSIS FOR TESTING THE HYPOTHESES :

Population of the study:

The population of this study is the entrepreneurs who are involved in the rig business in Namakkal. In Tamilnadu, the rig industry had its emergence from Tiruchengode. Later it spread to Namakkal, Salem, Karur and some parts of Coimbatore. Later in the last decade of the 20th century, the rig industry and rig entrepreneurs started their business all over Tamilnadu, and it also found many new entrants to this business. Though the industry has found its place all over the state, the development of adoption of new technologies in the rig industry occurs only in Namakkal and Tiruchengode. The researcher has selected the Namakkal district as the study area because of the incredible number of rig entrepreneurs available. As per the data available with the rig entrepreneur’s association, there are 1069 rig entrepreneurs in Namakkal district.

Determining sample size:

The study followed the formula defined by the National Education Association's research division for determining sample size (Krejcie& Morgan,1960) [18].

The formula is,

s = X2NP(1-P)÷d2(N-1)+X2 P(1-P)
Where,
s = required sample size.
X2 = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841) (1.96 X1.96 = 3.8416)
N = the population size.
P = the population proportion (assumed to be .50 since this would provide the maximum sample size).
d = the degree of accuracy expressed as a proportion (.05).
Based on the formula, the following table established the sample size to the respective population size.

Table 1: Sample size determination

N	S	N	S	N	S
10	10	220	140	1200	291
15	19	230	140	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	88	550	226	7000	364
120	92	600	242	8000	368
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

N=Population size; S=Sample size

The population of this study is 1069, and the appropriate sample size for this population is 285.

Sampling Method:

The simple random technique was used to select the samples, which gives an option for every unit of the universe to have a chance of being selected as the sample. From the total number of 1069 rig

entrepreneurs registered in the Rig Entrepreneurs Association, one-third of the entrepreneurs were selected as the research sample size. So, 285 rig entrepreneurs were selected as the sample to study the rig entrepreneurs' problems and prospects in the Namakkal district.

Table 2: Type of Business Unit

Initial investment	Frequency	Per cent
Below 25 Lakhs	177	62.1
25 Lakhs to 50 Lakhs	60	21.1
50 Lakhs to 75 Lakhs	20	7.0
75 Lakhs to 1 Crore	18	6.3
Above 1 Crore	10	3.5
Total	**285**	**100.0**

The above table 2exhibits the information regarding the initial investment made by the respondents in the rig business. It is clear that 62.1 percent of them are invested in less than 25 lakhs rupees, and another 21.1 percent of them have invested 25 lakhs to 50 lakhs. Whereas 7 per cent of them are invested 50 Lakhs to 75 Lakhs, and 6.3 per cent are invested 75 Lakhs to 1 Crore. It is noted that ten respondents (3.5%) are investing the amount of up to 1 crore in the rig business.

Table 3: Sources of capital for starting the business

Sources of capital	Frequency	Per cent
Own capital	38	13.3
Borrowing	165	57.9
Sales of properties	44	15.4
Others	38	13.3
Total	**285**	**100.0**

The above Table 3exhibits information regarding the sources of capital for starting the rig business. It is noted that 57.9 percent of the entrepreneurs borrowed money for their rig business. 15.4 percent sold their properties to start the rig business, and only 13.3 percent sourced the funds from their own capital. Hence the rig business requires more investment, and the entrepreneurs tool more risk in initiating a fund to start their business. The study found that more than half of the respondents borrowed money to start their businesses.

Table 4: Factors influencing for becoming an entrepreneur

Factors	Frequency	Per cent
Push factor	196	68.8
Pull factor	89	31.2
Total	285	100

From the table 4, it is clear that 68.8 per cent of the respondents agreed that they became rig-entrepreneurs because of the push factors. Another 31.2 per cent of them stated that they undertook the rig business due to the pull factors.

Push factors:

The respondents of the study were asked to give rank for the various push factors. For that, the non-parametric test of Friedman's K-related sample was used to determine whether respondents had different push factors. Furthermore, the rank test helps determine which factor is mostly pushing the entrepreneurs to enter into the rig business.

Table 5: Push factors – Friedman Test

Mean Rank	Push factors		Rank
2.01	Dissatisfaction with the previous job		II
1.53	Need for greater earnings		I
3.26	Imbalance of Work life		III
3.76	Lack of job opportunity.		IV
4.42	**Family situation**		**V**
N	**Chi Square**	**df**	**Sig**
285	694.27	4	0.000

Table 5 shows a differential rank-ordered preference for the push factors that make the respondents become entrepreneurs. The Friedman test was calculated to test the significant difference in the push factors for the respondents. From the rank test results, it is found that the chi-square value is 694.27 at DF=4 and the p-value is 0.000 ($p<0.05$), ensuring that there is a statistically significant among the mean rankings of the push factors for the respondents. The table found that greater earnings were the primary factor that encouraged the respondents to start the rig business. Dissatisfaction with the previous job, imbalance in work life, lack of job opportunities, and family situation were all other major push factors that motivated the respondents to enter the rig business.

Pull factors:

Followed by the push factors, the respondents were asked to give rank for the various pull factors. For that, the non-parametric test of Friedman's K-related sample was used to determine whether respondents had different pull factors. Furthermore, the rank test helps determine which factor is mostly pulling the entrepreneurs into the rig business.

Table 6: Pull factors – Friedman Test

Mean Rank	Pull factors		Rank
3.07	Ownership preferred		II
3.6	Greater satisfaction from the job		IV
4.71	Independence		VI
3.34	Self-interest		III
4.4	Challenges		VI
1.88	Family tradition		I
N	**Chi Square**	**d.f**	**Sig**
285	453.1	5	0.000

Table 6 present ranks of the pull factors that make the respondents become entrepreneurs. The Friedman rank test used to test the significant difference in the respondents' pull factors. From the rank test results, it is found that the chi-square value is 453.1 at DF = 5 and the p-value is 0.000 ($p<0.05$), ensuring that there is a statistically significant among the mean rankings of the pull factors. The table 7 found that family tradition was the primary factor that pulled the respondents to start the rig business. Ownership, self-interest, independence, challenges, and greater job satisfaction were all other major pull factors that make the respondents to enter the rig business.

Table 7: Problems faced by the respondents – Friedman Test

Mean Rank	Problems		Rank
4.83	Lack of knowledge & skill		V
4.99	Lack of experience		VI
2.41	Lack of financial support		I
2.57	No proper guidance to avail loan		II
4.78	Discrimination by others.		IV
3.28	Devising suitable business policy		III
5.13	Others		VII
N	**Chi Square**	**df**	**Sig**
285	561.2	6	0.000

A non-parametric test of Friedman's K-related sample was used to identify which problem the respondents faced more. For that, the respondents asked to give rank for the various problems they faced. The rank test helps to determine which problem is mostly hurdled the rig entrepreneurs. From the rank test results, it is found that the chi-square value is 561.2 at DF=4 and p-value is 0.000 ($p<0.05$), ensure that there is a statistically significant rank given by the respondents about their problems. It is found that a lack of financial support was the primary problem for the respondents in their rig business, followed by there was no proper guidance forgetting loans, devising suitable business policies, discrimination by others, lack of knowledge and skill, and lack of experience.

The study aims to assess the rig entrepreneurs' various problems under different headings as technical, financial, and Labour problems. For that, the respondents asked to rank the various problems they face accordingly. The ranks on the technical problems were presented in Table 8.

Table 8: Technical problems faced by the respondents – Friedman Test

Mean Rank	Technical problem		Rank
3.32	Inadequate Facilities for repairs of machinery		II
3.86	Lack of technical knowledge		III
5.07	Out-Dated technology.		VII
4.5	Lack of technical know-how		VI
3.95	Lack of specialized skills for technical people		IV
2.84	Non-availability improved technology		I
4.46	Insufficient knowledge in Rig management		V
N	**Chi Square**	**df**	**Sig**
285	220.7	6	0.000

A non-parametric test of Friedman's K-related sample was used to identify which respondents' technical problem was more. From the results, it is found that the chi-square value is 220.7at DF=6 and p-value is 0.000 ($p<0.05$), ensure that there is a statistically significant rank given by the respondents about their technical problems. It is found that the non-availability of improved technology is the crucial problem stated by the respondents. They further stated that inadequate facilities available for repairing the machinery were another big issue they faced. Lack of technical knowledge, lack of specialized skills for technical people, insufficient knowledge, inadequate technical know-how, and outdated technology were the other major technical issues perceived by the respondents.

Table 9: Financial problems faced by the respondents – Friedman Test

Mean Rank	Financial problem		Rank
3.52	Insufficient working capital		IV
4.61	Problems in procuring financial loans		VI
2.83	The high rate of interest		II
2.95	Difficult in getting money from buyers		III
4.37	High transaction cost		VI
2.73	Fluctuations in Diesel Price		I
N	**Chi Square**	**df**	**Sig**
285	278.4	5	0.000

The respondents gave their ranks on the various financial problems faced during their business operation. Friedman's rank test was adopted to identify which was the predominant financial problem faced by the respondent. From the test, it is found that the chi-square value is 278.4 at DF = 5 and the p-value is 0.000 ($p<0.05$), ensuring that there is a statistically significant rank given by the respondents about their financial problems. The fluctuation in diesel prices was the primary financial issue stated by the respondents. Furthermore, they further worried about the high interest rate and difficulty getting money from buyers who availed of their services. Insufficient working capital, high transaction costs, and problems in procuring financial loans were the rig entrepreneurs' other major financial problems.

Table 10: Labour problems faced by the respondents – Friedman Test

Mean Rank	Labour problems		Rank
3.66	Inadequate supply of labour		IV
3.74	Scarcity of Unskilled labour		V
1.92	Scarcity of experienced labour		I
2.04	High labour cost		II
3.63	Labour turnover		III
N	**Chi Square**	**df**	**Sig**
285	425.8	4	0.000

Further, the respondents ranked the various labour problems faced in their business Friedman's rank test was adopted to identify which was the crucial labour problem faced by the respondents. From the test, it is found that the chi-square value is 425.8 at DF = 4 and the p-value is 0.000 ($p<0.05$), ensuring that there is a statistically significant rank given by the respondents about their labour problems. The scarcity of experienced labours was the respondents' big issue among the various human resource issues. High labour costs, high labour turnover, inadequate labour supply, and unskilled labour were the other significant problems hurdled by the respondents.

10. RESULTS OF HYPOTHESES TESTING AND FINAL MODEL :

10.1 Conformity factor analysis:

This section provides the confirmatory factor analysis (CFA) results for two measurement models of internal and external constraints. Generally, the measurement model is a conventional confirmatory factor analysis (CFA) model. In the CFA model, no causal paths connect the latent variables. All factors are allowed to relate with each other, indicators are specified to load on one factor (factor loadings), and error terms are specified to be uncorrelated (Garson, 2022 [19]; Kline, 2005 [20], Mcdonald & Ho, 2002) [21]. CFA analysis in SEM focuses on analyzing the indicator variables' error terms (Garson, 2022) [19]. For the single indicator construct of depression, the error variance is estimated based on the formula: (1-alpha reliability coefficient) *variance of the indicator (Keith, 2005 [22]; Kline, 2005 [20]; Ping, 2003 [23]). The measurement model is evaluated like other structural equation models. Regarding the adequacy indicators of model fit, the researcher used the $\chi 2/df$ ratio below 3.0 is considered acceptable; the CFI, IFI, and TLI index values above 0.9 are acceptable, but values above 0.95 are

preferred; and the RMSEA index value 0.05 or below is considered a sign of a good fit, between 0.05 – 0.10 an acceptable fit, and larger than 0.10 should not be accepted. Measurement Model – External constraints. The measurement model for external constraints is presented in Figure The external constraints faced by the respondents were assessed using five statements. The model was estimated by confirmatory factor analysis. The CFA generated a chi-square ($\chi 2$) value of 9.238 with 5 degrees of freedom (df) and the normed chi-square to 1.848. Since the model chi-square is influenced by sample size based on the parsimony principle, the normed chi-square (NC = $\chi 2$ /df) was also used. Although there is no clear-cut rule about normed chi-square (NC) acceptable values, researchers generally use the normed chi-square criteria ($\chi 2$ /df) less than five as a good fit. This study's normed chi-square is 1.848, indicating a good fit based on the criteria of $\chi 2$ /df< 5.

The measurement model for external constraints is presented in the following Figures 2 & 3. The external constraints faced by the respondents were assessed using five statements. The model was estimated by confirmatory factor analysis. The CFA generated a chi-square $\chi 2$ value of 9.238 with 5 degrees of freedom (df) and the normed chi-square 1.848. Since the model chi-square is influenced by sample size based on the parsimony principle, the normed chi-square (NC = $\chi 2$/df) was also used. Although there is no clear-cut rule about normed chi-square (NC) acceptable values, researchers generally, use the normed chi-square criteria $\chi 2$/df less than five as a good fit. This study's normed chi-square is 1.848, indicating a good fit based on the criteria $\chi 2$< 5.

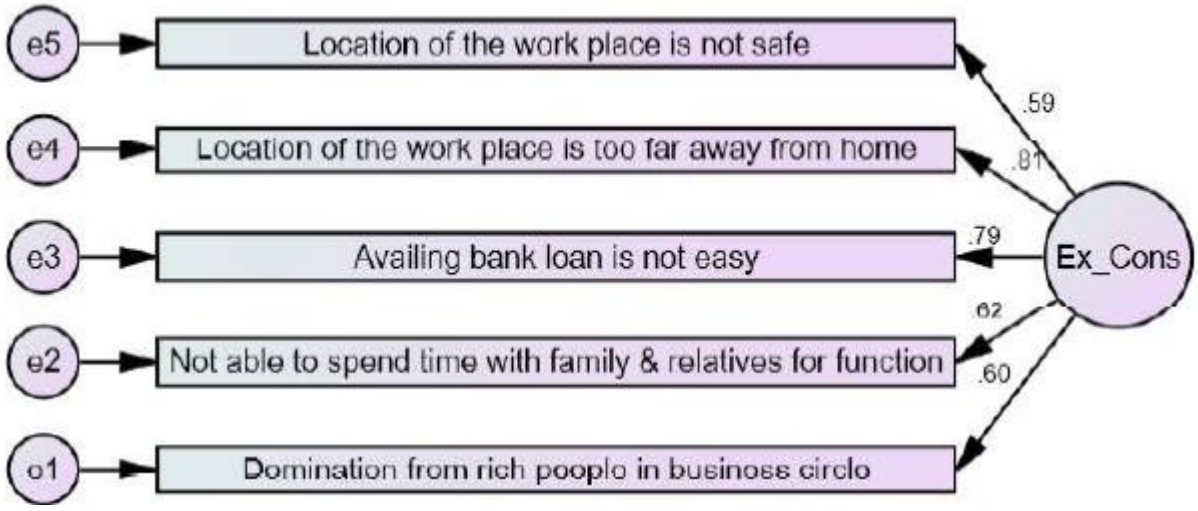

Fig. 2: Measurement Model External Constraints Standardized

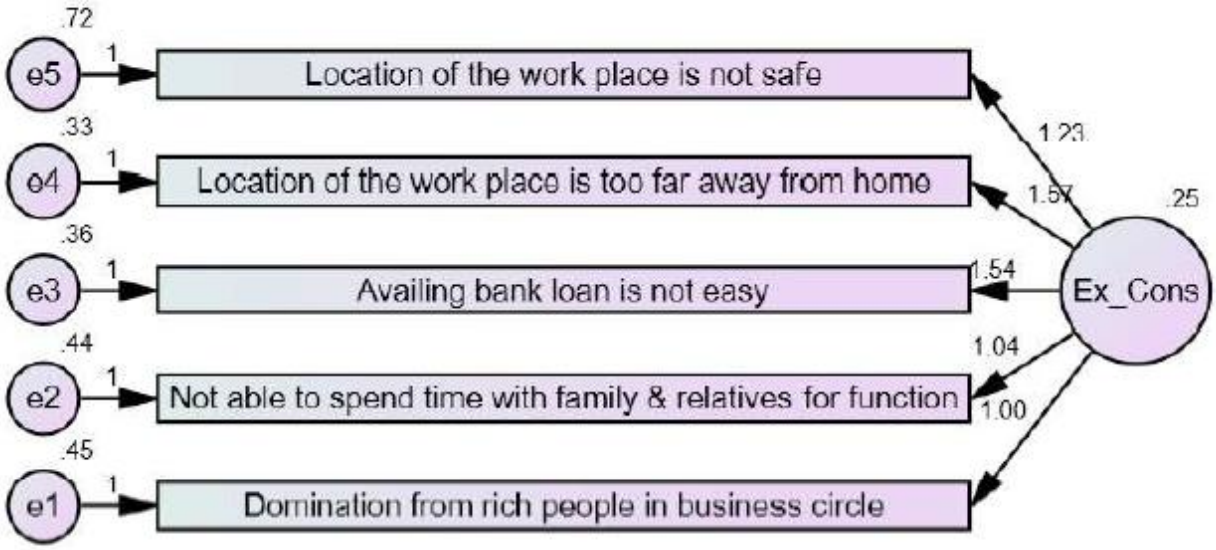

Fig. 3: Measurement Model External Constraints Unstandardized Model

Other fit indices yield the following values: GFI of 0.987, TLI of 0.981, CFI of0.99, RMSEA of 0.055, and SRMR of 0.024. These fit indices are ensured the adequate model fit the data. The comparison of the fit statistics for the initial and modified measurement model is presented in Table 11.

Table 11: Fit Statistics for the Measurement Model External Constraints

Fit Index	Acceptable Threshold levels	Measured model
Relative 2 (2/df)	Less than 5	1.848
Root Mean Square Error of Approximation (RMSEA)	Values less than 0.07	0.055
SRMR	SRMR less than 0.10	0.024
The goodness of fit index (GFI)	Values greater than 0.90	0.987
Tucker-Lewis Index (TLI)	Values greater than 0.90	0.981
Comparative Fit Index (CFI)	Values greater than 0.90	0.99

10.2 Measurement Model Internal constraints:

The internal constraints perceived by the respondents were assessed using four statements. The model was estimated by confirmatory factor analysis. The CFA generated a chi-square (χ^2) value of 0.197with 2 degrees of freedom (df) and the normed chi-square to 0.99, and it was indicating a good fit based on the criteria χ^2 /df < 5.

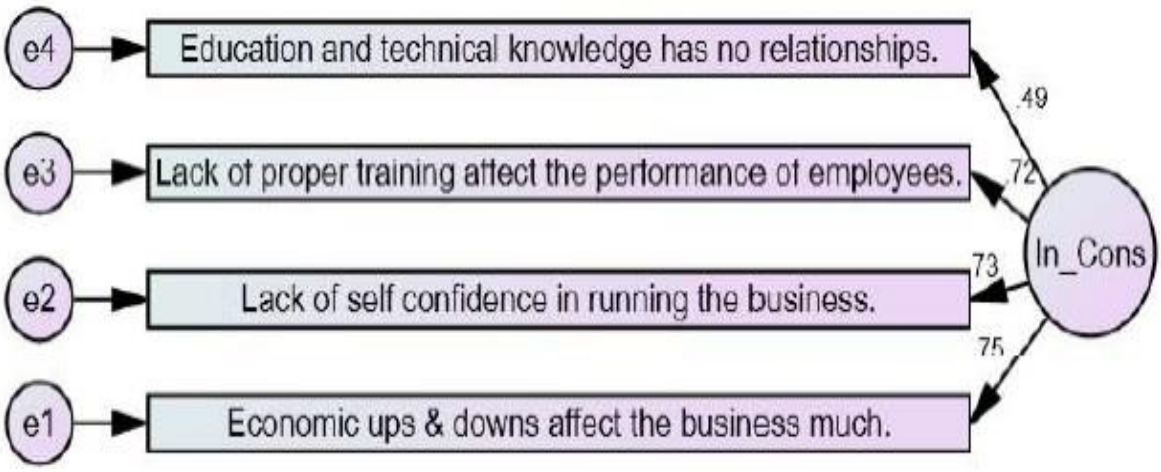

Fig. 4: Measurement Model Internal Constraints Standardized Model

Other fit indices yield the following values: GFI of 0.984, TLI of 0.971, CFI of0.99, RMSEA of 0.001, and SRMR of 0.004. These fit indices ensure the adequate model fits the data. The comparison of the fit statistics for the initial and modified measurement model is presented in Table 12.

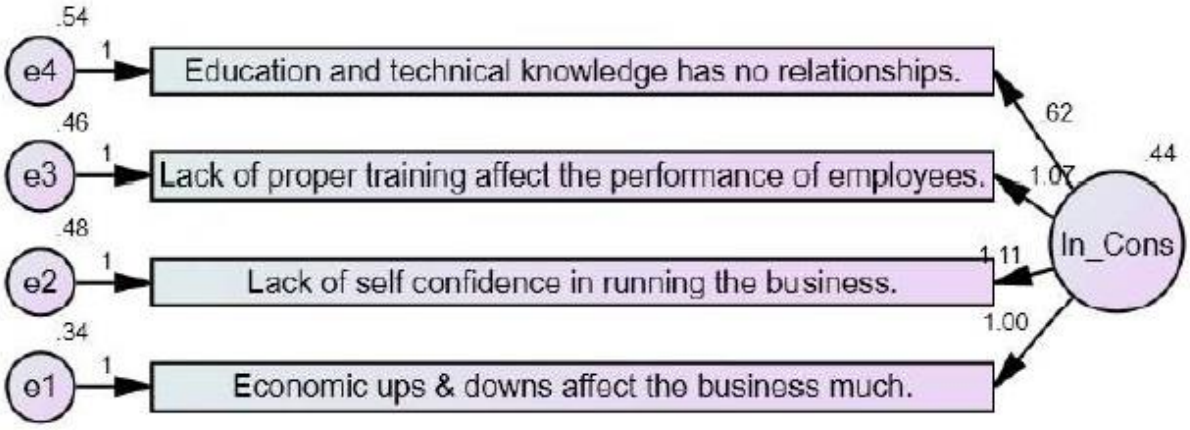

Fig. 5: Measurement Model Internal Constraints Unstandardized Model

Table 12: Fit Statistics for the Measurement Model Internal Constraints

Fit Index	Acceptable Threshold levels	Measured model
Relative 2 (2/df)	Less than 5	0.99
Root Mean Square Error of Approximation (RMSEA)	Values less than 0.07	0.001
SRMR	SRMR less than 0.10	0.004
The goodness of fit index (GFI)	Values greater than 0.90	0.984
Tucker-Lewis Index (TLI)	Values greater than 0.90	0.971
Comparative Fit Index (CFI)	Values greater than 0.90	0.99

From the results of Exploratory Factor Analysis, the respondents, socio economic constraints' variables are reduced into two significant factors, with a total variance of 59%. Factor analysis of the socio-economic constraints established two components based on two significant headings: external constraints and internal constraints.

Regarding the external constraints, the study found that the domination of wealthy people in the business circle was the significant issue, not able to spend time with family & relatives for function, availing bank loan is not easy, location of the workplace is not safe, and location of the workplace is too far away from home. The mean values indicated that the respondents' overall perception of the external problems in doing business is high. Further, the study established a significant difference between the samples' mean responses towards the external constraints. Therefore, it is confirmed that the rig entrepreneurs are facing the listed external constraints significantly.

As far as internal constraints are concerned, lack of education and technical knowledge are significant in doing the rig business. Lack of proper training performance, economic ups & downs, and lack of self-confidence are all other significant internal constraints perceived by the respondents. With the help of mean and standard deviation values, the study confirmed that the respondents' overall perception of the rig business's internal constraints is high. The one-sample t-test confirmed a significant difference between the samples' mean responses towards the internal constraints. Therefore, it is established that the rig entrepreneurs are facing the listed internal constraints significantly. Findings related to the Influences of Demographic Profile on Socio-economic Constraints of the Rig Entrepreneurs. It is found that the age group of 35 years and below is facing higher external constraints than the other age groups. The F test was made to reject the null hypothesis (H01a) and revealed that it significantly influences the rig entrepreneurs' external constraints. Regarding internal constraints 46 to 55 years of age.

11. ABCD ANALYSIS OF CONCEPTUAL MODEL :

11.1 About ABCD Analysis:

ABCD analysis is a systematic analysis framework (Aithal et al. (2015), (2016) [16-17]) to identify advantages, benefits, constraints, and disadvantages of a system, concept, idea, material, strategy, product, service, model or any resource. There are four types of ABCD analysis: (1) ABCD listing from the author's point of view [31-33], (2) ABCD listing from major stakeholders' Points of view [34-36], (3) ABCD factors and elementary analysis [37-40], and (4) ABCD quantitative analysis [41-45]. In this section, ABCD listing from the author's points of view are identified and explained.

11.2 Advantages of Conceptual Model:

(1) Parent's motivation makes the entrepreneur achieve more turnovers per year
(2) Dissatisfaction of the previous job makes them to become an entrepreneur
(3) Self-interest, challenges, and greater job satisfaction made them to enter into the rig business
(4) The government takes necessary steps to get finance through various financial institutions
(5) Reduction of human power due to advanced technology

11.3 Benefits of Conceptual Model:

(1) The rig units constructed were user-friendly
(2) The depth of borewells has increased
(3) Time consumption for drilling was reduced
(4) Automated machines were used, for example, the unit used in Uttarakhand state for mine recovery
(5) Technology was improved.

11.4 Constraints of Conceptual Model:

(1) Inadequate working capital
(2) Collateral security
(3) High rate of interest
(4) Too many documents & certificate
(5) Difficulty in getting refinance

11.5 Disadvantages of Conceptual Model

(1) Problems with the employees
(2) Lack of managerial skills
(3) Language problem
(4) No proper assistance
(5) First-generation entrepreneur

12. SUGGESTIONS :

The government must encourage more entrepreneurs to undertake rig borewell business through institutional setups for providing training and skills for improving the business. Many institutional supports are available for other transport to relate training since rigging is a specialized one; the educational institution should concentrate on making more technical people carry out this rig activity.
The rig ventures in the study area experienced adverse treatment and were not ideal for starting their business financially. While endorsing the monetary help, the systems and the formalities should be made uniform for all banks; to support the business, the credit sum should be amended upward considering acceleration in the input costs. The process of sanctioning loans must be improved to keep away from regulatory and authoritative deferrals in excellent credit. The banks ought to be made to reserve a higher level of its need area advances to rig business than as of now; The bank must be more imaginative and forceful in its approach in planning and showcasing of monetary packages including progression of advances, dispersion of sponsorship and distinguishing the correct recipients to serve them better. The banks will have the opportunity to permit little overdraw on account of transitory credit needs; to guarantee a smooth credit stream, particularly SIDBI, IDBI, and others ought to be opened at the area level. The compound loan can be produced using a solitary source Rs. 25 lakhs at least without

demanding guarantee security; All the parts of banks and monetary establishments should show recorded as a hard copy of the help delivered by branches.
The finding on the rig entrepreneurs' constraints shows that they face stiff competition from wealthy people. Since the investment is high and the return is also high, it makes more wealthy people eager to enter this rig business. Therefore, the wealthy prospects should involve themselves in collaborative work with the social entrepreneurs in the joint venture and financial support through CSR instead of competing with social entrepreneurs.

13. CONCLUSION :

Entrepreneurs are those who recognize a need and actively seek out means of filling it, typically in the form of new products or services. The study area's rig startups were subjected to unfavorable conditions, making it difficult for them to get off the ground financially. There are many different types of entrepreneurship training programmes, but they all share a common goal: to equip aspiring business owners with the skills, knowledge, and networks they need to launch or grow their own companies.
Initiating entrepreneurship in India is yet overwhelmed by small-scale industries. They represent over 95% of firms and create 80% of employment opportunities in the manufacturing sector. This experience recommends that the development in exchanged businesses is not because of plants accomplishing more significant economies of scale and transportation merchandise a way off, as might have at first been envisioned. All things considered; worldwide stock chains have coordinated small enterprises. In the Tiruchengode area, agriculture was not in decent shape during the early 1970s. A few farmers left agribusiness and were watching out to wander into greener fields. In 1975-76, some of them held hands and pooled their money to grab the rig business in Tiruchengode. However, today, rigs from Tiruchengode move everywhere to penetrate borewells.

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