

ENTREPRENEURSHIP DEVELOPMENT MODEL FOR CAMEL MILK-A STUDY OF RAJASTHAN STATE

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ABSTRACT

Camel, state animal of Rajasthan, and camel rearing community need adequate entrepreneurship model to market the milk and milk products as it remains the only potential source of income, though still unexploited, in the backdrop of rapidly declining camel population, ban on camel meat, low demand of camel for transportation and farming activities etc. To develop possible social enterprise business model for camel milk and its products and entrepreneurship development model for the state, the key problem areas are identified through factor analysis technique. The appropriate business model selection depends on addressing the key problems of camel milk entrepreneurship. This is very important when competition from cow milk is quite strong and widespread. The sound business model will benefit all the stakeholders---camel rearers, consumers, and entrepreneurs. Most importantly, it will save the camel from becoming the “endangered animal” category as per International Union for Conservation of Nature (IUCN), France.

KEYWORDS: *Camel, Milk, Entrepreneurship, Business Model, IUCN*

INTRODUCTION

Camelus dromedaries, the Indian camels, are in the IUCN red list of threatened species. IUCN is International Union for Conservation of Nature (IUCN), France working for preparing databases of plant and animal species which are progressing towards extinction. According to Times of India, news excerpt appeared on 19th Dec, 2016; the Indian camel may be placed to Critically Endangered Species in IUCN List very soon which is not a good sign. Further, it reports that according to the census, the population of camels in the state had fallen from 421,836 in 2007 to 325,713 in 2012, registering a drop of 22.79 per cent. The IUCN is International Union for Conservation of Nature founded in 1984 to create databases of animals and plants and their status. A primary reason for the inclusion of Indian camels in the IUCN red list is the decreasing trend in population.

Camel is the state animal of Rajasthan. The *Dromedary* and *Bactrian* are the two species of the camel. The *Dromedary* species are found in the western parts of India (Rajasthan, Haryana, Gujarat and Punjab) and *Bactrian* are native to Central and East Asia. They are classified on the basis of the single hump and double hump respectively.

The state-wise camel population states that 0.498 million camels in Rajasthan, 0.128 million camels in Haryana and 0.058 million camels in Gujarat constitute majority 93.12 per cent of total camel population (19th Livestock Census-2012).

According to studies conducted by Dr. DauLalBohra and National Research Centre for Camel, Bikaner; the main reasons for declining population of Indian camels are phenomenal drop rate of 25.6 per cent in 2003, the proliferation of diseases, a decline in pasture land and distorted male-female ratio. Before the declaration of a camel as the state animal, camels were also traded for meat. One school of thoughts say that the trading of camels for meat is the reason for the major decline of camel population. Another school of thoughts says that if there is no demand for camel meat, than there will be no demand for camels and no interest in breeding the camel. If there is no interest in camel breeding, the camel population will surely shrink. A camel is the state animal of Rajasthan, now, it cannot be traded for meat.

Raika: The Camel Breeders

The camel breeding is done mainly by the society of *Raika* people in Rajasthan state. They are skilled in breeding camels and these skills are passed on to them from generation to generation. The *Raika* society also does not support the trading of camel meat. The *Raikas* believe that if they sell camel milk, they will be the prey of misfortune. The main source of income for them was selling camels at good prices in Pushkar Animal fair. Now, the demand for camel declining in Pushkar Animal fair due to growing affordability of trucks and tractors. In breeding camels, the male to female ratio is generally equal. The female camel is more profitable than male camel. Due to male camels, the camel rearing costs increases as male camels cannot be sold for meat. According to articles and blogs, only one male camel is sufficient for 150 female camels.

IlseKöhler-Rollefson, an African woman worked on camel cooperatives in Africa region, also supports the need of camel slaughtering to increase the income of *Raikas* and survival of camels in India. Köhler-Rollefs on fears that there may not be any camels left by the time a viable mass market develops for camel milk. On the other hand, Mr. Arpan Sharma, spokesperson for the Federation of Indian Animal Protection Organisations (FIAPO), says that Indian state governments should look for other ways to support camel breeders instead.

Camel Milk

Potential of camel milk business as sustainable alternative income for *Raika* people is being studied by NRCC. The camel milk is white opaque in color and, without odour, it contains 8-11 per cent total solids, 1-1.25 per cent total protein but less than 1-3 per cent fat. The camel milk is perishable natural conditions but shelf-life of camel milk can be increased by using refrigeration facilities. It is rich in minerals like Iron, Copper, Zinc, vitamins like B1, B6, B12 and vitamin C. Camel milk also acts as immune-modulator due to the presence of high amount of lysozyme, lactoferrin, immunoglobulins and lactoperoxidase.

Camel milk is also called as “white gold” by *Raika* community due to its medicinal and health benefits. The Middle Eastern, Asian and North African cultures have been using camel milk as a natural remedy for diabetes for centuries. It is also helpful for children having milk allergy with cow milk and even initial research findings prove its role in the treatment of Autism in children. Fermented camel milk is effective as probiotic in the treatment of diarrhoea, allergy and respiratory diseases.

The factors affecting the milk production are mainly specific breed of camel, availability and quality of feed and fodder, the frequency of milking, weaning period and stage of lactation. The lactation period of Indian camels can last up

to 14 to 16 months depending upon the time of weaning of the calf. The milk yield in weaning period is average 3-4 kg/day. The peak yield is about 5-6 kg/day during fifth and sixth months of lactation.

Recent Developments

National Research Centre on Camel, Bikaner (NRCC) is the nodal agency for doing research on improving marketing of camel milk and sustainable income through camel milk for camel rearers. They provide training to the camel rearers and support them to become camel dairy entrepreneurs. In its annual report (2008) it clearly mentions that sale of camel milk can definitely increase the income of camel breeders and capable of generating a daily cash flow in comparison to other measures of income from camels.

On 29th November, 2016 the Food Safety and Standards Authority of India (FSSAI) has approved camel milk for the sale purposes. It is good news for the camel rearers and camel milk entrepreneurs.

Presently, camel milk is distributed and sold only through NRCC dairy booth. In view of its health benefits (Khanna *et al.*, 1991, Gorakhmal *et al.*, 2000 and Agarwal *et al.*, 2005), people residing in urban areas also expressed that they were consuming camel milk for the variety of health benefits.

No studies have been carried out on entrepreneurship development model for camel milk. Keeping in view the aforesaid facts, this research has been planned to find out the best suitable model for camel milk marketing among different possible models for marketing of camel milk.

LITERATURE REVIEW

The camel milk business opportunity is gaining attention day by day. An article based on United Nation clearly shows the size of business opportunity

“In 2009 The Emirates Industry for Camel Milk & Products (EICMP) estimated that ‘the market for camel’s milk and milk products exceeds \$200 million in the Arab world alone. The UN’s Food and Agriculture Organization (FAO) agrees the potential market could be as much as \$10 billion, and their dairy expert, Anthony Bennett, supports that contention by noting that milk – even milk from camels – is money’.”

The statement clearly shows how huge camel milk business opportunity is. The global production of camel milk is 5.4 million tonnes per year. There are around 200 million customers of camel milk in Arab and many more millions in other countries. The website www.pigwillfly.com in an article “Any Entrepreneurs Interested in Camel Milk?” states that there are problems in production, manufacturing and marketing of camel milk.

Though average camel milk production is 5 liter per day but FAO dairy expert Anthony Bennett that instead of intensive camel milk dairy farming, the improved feed, husbandry and veterinary care can improve camel milk production upto 20 liters per day. The main problems are low milk yield, the stubbornness of camel in releasing milk, shorter shelf life, nomad nature camel rearers etc.

At the international seminar, **The Camel in Rajasthan: From Heirloom to Unique Selling Point**, hosted by Lokhit Pashu Palak Sansthan (LPPS) in Jaipur on 7-8 April 2008, camel expert Dr. UliWernery from Dubai described camel milk as more valuable than oil due to medicinal and health benefits. LPPS Director, Han want Singh also told that there were 15 thousand adult female camels in Jaiselamer (Raj.) but so far they could extract milk from one herd only,

due to lack of collection, processing and marketing provisions. The wind farms, urban sprawls, army occupations, foresters etc. are decreasing grazing lands for camels.

Shihab, a woman entrepreneur in Jordan, developed the range of cosmetics from camel milk. Apart from cosmetics, her company also developed antibodies from camel milk which are more stable. These antibodies have various diagnostic and medicinal benefits.

An article titled “Can Camel Milk Save India’s Nomadic Raikas?” appeared in www.nationalgeographic.com (2016) which is based on Köhler-Rollefson’s 25 years of experience with Indian camels and *Raika* community. In this article, she emphasized on developing new products and markets for camel milk to give consistent income source to *Raika* community.

The literature review discussed in above paragraphs contains sufficient evidence for huge marketing opportunity of camel milk but no literature or research is found to work on micro issues of camel rearers, camel milk production and camel milk marketing. This research paper explores the dimensions of the problems faced by camel rearers and camel milk entrepreneurs so that a suitable framework for a business model for camel rearers and entrepreneurs and entrepreneurship development model for the state can be proposed.

MATERIALS AND METHODS

The sample of camel rearers and camel milk entrepreneurs was selected on the basis of multi-stage judgmental sampling. The Rajasthan state was selected on the basis of the fact that a maximum number of camels in India are in Rajasthan. The potential camel milk pocket areas were suggested by National Research Centre on Camel, Bikaner (NRCC). Then, 200 camel milk rearers were selected through convenience sampling and the rearers were contacted on village level and they were asked about problems faced in camel milk marketing, their socio-economic demography to zero in the key problem areas for framing the entrepreneurship model for camel milk entrepreneurs and entrepreneurship development model for the state.

Research Instrument

Owing to language barriers, heterogeneity of education levels of camel rearers, entrepreneurs and consumers; the questionnaire could not be used. The schedule was used as primary data collection instrument. Majority part of the questionnaire was dedicated to exploring the entrepreneurial aspects, tastes and preferences, barriers, problems, prospects for camel rearers and camel milk entrepreneurs.

The schedule mostly contained close-ended questions. There were 14 statements which were evaluated on Likert type scale. The Sample of 200 camel rearers and entrepreneurs were surveyed and the data was analyzed through statistical technique- factor analysis.

FACTOR ANALYSIS RESULTS

Factor analysis is an interdependent technique, whose primary purpose is to define the underlying dimensions among the variables in the analysis.

The primary input of factor analysis is correlation matrix. Adequacy of sample size is the initial consideration for applying the factor analysis. For checking the sample size adequacy, Kaiser-Meyer-Olkin (KMO) measure of sampling

adequacy was calculated. The KMO value found from Baretlett’s test of superiority shows the appropriateness of sample for factor analysis. The overall Kaiser-Meyer-Olkin factor adequacy was 0.61. The study employed the latent loot root criteria or Eigenvalue criteria for determining the number of factors to be extracted. Only those factors having Eigenvalue greater than 1.0 are considered for modeling.

The set of 14 statements regarding the problems associated with camel rearing were framed with the scale of “strongly agree”, “agree”, “neutral”, “disagree” and “strongly disagree” with the score of 5, 4, 3, 2 and 1 respectively.

Factor loading represents the correlation between variables and its factor. Their signs are just like any other correlation coefficient. Positive sign means variables are positively correlated and negative signs are negatively correlated. The extracted factors represent the different dimensions of camel rearers’ problems. The four factors model explains 66.22 per cent of the total variance

Table 1: Total Variance Explained

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|-----------|---------------------|---------------|--------------|-------------------------------------|---------------|--------------|-----------------------------------|---------------|--------------|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 2.748 | 19.632 | 19.632 | 2.748 | 19.632 | 19.632 | 2.571 | 18.364 | 18.364 |
| 2 | 2.404 | 17.169 | 36.801 | 2.404 | 17.169 | 36.801 | 2.404 | 17.175 | 35.539 |
| 3 | 1.509 | 10.781 | 47.581 | 1.509 | 10.781 | 47.581 | 1.686 | 12.042 | 47.581 |
| 4 | 1.301 | 9.294 | 56.876 | 2.359 | 17.598 | 14.259 | 1.025 | 16.238 | 66.222 |
| 5 | 1.166 | 8.326 | 65.201 | | | | | | |
| 6 | .940 | 6.711 | 71.912 | | | | | | |
| 7 | .794 | 5.673 | 77.585 | | | | | | |
| 8 | .695 | 4.966 | 82.551 | | | | | | |
| 9 | .651 | 4.649 | 87.200 | | | | | | |
| 10 | .518 | 3.701 | 90.901 | | | | | | |
| 11 | .485 | 3.463 | 94.364 | | | | | | |
| 12 | .404 | 2.887 | 97.251 | | | | | | |
| 13 | .226 | 1.611 | 98.862 | | | | | | |
| 14 | .159 | 1.138 | 100.000 | | | | | | |

Table 2: Rotated Component Matrix

| S. No. | Statements | Government Policies Framework | Professionalization of Camel Rearing and Entrepreneurship | Market Dynamics Management | Entrepreneurship Ecosystem and Consumer Awareness |
|--------|--|-------------------------------|---|----------------------------|---|
| 1. | There is a high cost of labour in rearing camels | -0.558 | | | |
| 2. | It requires skilled labour | | | | |
| 3. | There is a need of increasing veterinary/extension services | | | | |
| 4. | There is no organized market for selling the produce | 0.767 | | | |
| 5. | The logistics cost for camel milk is high | | 0.698 | | |
| 6. | There is a need of proper pricing criteria special for camel milk | | | 0.676 | |
| 7. | There is a need of processing units | | | | 0.538 |
| 8. | Unawareness regarding the registration procedures | | 0.544 | 0.676 | |
| 9. | Lack of knowledge regarding the benefits of camel milk | | 0.708 | | |
| 10. | There is a need of regulatory authority | -0.703 | | | |
| 11. | There is a need of awareness campaigns | | | | 0.812 |
| 12. | The Lengthy procedures for getting credit from government institutions for marketing purpose | 0.713 | | | |
| 13. | There is a need of trained human resources | | | | |
| 14. | There is a need of government schemes/programmes for supporting the camel rearing | | | | |

* *Source: Author's own computation based on field data 2017*

Extraction Method: Principal Component Analysis.

Source: Author's own computation based on field data 2017

DISCUSSIONS

Based on the factor analysis four components are extracted. These factors represent the categorization of problems. These categories are given the name as follows---

- Government Policies Framework
- Professionalization of Camel Rearing & Entrepreneurship
- Market Dynamics Management
- Entrepreneurship Ecosystem and Consumer Awareness

The **Government Policies Framework** factor addresses the categories of the problem that could be dealt with state government policies and interventions. The **Professionalization of Camel Rearing & Entrepreneurship** factor represents the problems of rearers that need professional development and approach. The market prices and accessibility are clubbed in **Market Dynamics Management** factor. The **Entrepreneurship Ecosystem and Consumer Awareness** factor represent the problems that address the issues related to entrepreneurship ecosystem and consumer awareness.

The Government Policies Framework factor gives directives to the state machinery to form policies that resolve issues related to high labor costs in camel rearing, creating an organized market for camel milk and camel milk products, need of regulatory body and problems of procedure for registration and marketing of camel milk and camel milk products. The Professionalization of Camel Rearing and Entrepreneurship factor proposes to inculcate professionalism in camel milk industry so that logistic costs can be reduced; awareness regarding registration procedures can be increased and awareness about commercial benefits of camel milk and camel products can be increased among camel rearers and entrepreneurs. The Market Dynamics Management factor covers the aspects related to the mechanism of determining the prices of camel milk procurement and prices of camel milk at the consumer end. The Entrepreneurship Ecosystem and Consumer Awareness factor cover the aspects and problems related to setting up camel milk processing units and increasing consumer awareness about camel milk and camel milk products.

The entrepreneurship model for camel milk rearers and camel milk entrepreneurs and entrepreneurship development model for the state to develop sustainable and profitable camel milk business should be framed as per the four- factor model discussed above.

CONCLUDING REMARKS

The camel milk is the last hope of survival for Indian camels and camel rearers. The rate of population de-growth is very sharp. To arrest de-growth and even turning it into growth is a very difficult task. The commitment of this research bears a noble cause of saving the fabulous animal- the camel. If this study succeeds in exploring entrepreneurship for camel milk, saving a species on earth is a feeling that cannot be explained in words. The business opportunities are clearly visible. The right business model(s) are needed to reap the fruits. The business model should be developed keeping in mind the four factors extracted in factor analysis. These factors are need of government programmes for establishing organized camel milk market, lack of knowledge and logistics cost involved in the registration procedure, need of pricing and authority control for camel milk and need of awareness campaigns and processing units. Model based on the four factors model should be able to resolve the issues of pricing issue, awareness campaigns, and processing of camel milk.

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