



THEORETICAL CONCEPT ON DIGITALISATION OF REMOTE INDIAN SALT CULTIVATORS THROUGH “SALINE HORSE” INFORMATION TECHNOLOGY FOR LIVELIHOOD UPLIFTMENT

Mayuri Banerjee Bhattacharya* and Arvind Kumar

Salt & Marine Chemicals Division, CSIR- Central Salt and Marine Chemicals Research Institute, Bhavnagar-364002, India

ARTICLE INFO

Article History:

Received 20th May, 2018

Received in revised form 14th

June, 2018 Accepted 8th July, 2018

Published online 28th August, 2018

Key words:

Digitalization, digital literacy, e-marketing, e-business, e-learning, Indian salt works, cost analysis of salt works, unorganized sector.

ABSTRACT

Common Salt (NaCl) is a mineral of universal distribution and an easily available commodity. Many countries are harnessing salt resources at various levels of magnitude, and the world salt production has crossed 260 million ton per annum. India with an annual production of 27.6 million ton ranks third after China and USA. In India, Gujarat, Tamil Nadu and Rajasthan contribute to about 96 % of the Country's salt production. Gujarat contributes 75 % to the total production, followed by Tamil Nadu (11 %) and Rajasthan (10 %). Other states such as Andhra Pradesh, Maharashtra, Orissa, Karnataka, West Bengal, Goa, Himachal Pradesh, Diu & Daman also contribute to a small extent. Every year demand is increasing at a rate of 4-5% and by the year 2018 – 19 the requirement will be 28.40 million ton. This demand is mostly for catering the increasing capacity of salt based industries (chlorine, caustic soda and soda ash etc.).

Though India have organizations like Central Salt and Marine Chemical Research Institute (CSIR-CSMCRI), Indian Salt Manufacturing Association (ISMA) and Salt Directorate, Salt Department Govt. of India (GOI) and other associations in various states yet digitalization as well as digital literacy of Indian Salt is far to achieve. Present paper propose theoretical concept to empower the remote salt workers in unorganized sectors to though “Saline Horse” Information technology for promote digital literacy, e-commerce, e-knowledge recourse. Paper discuss about models for creating a unique platform for the Indian salt producers in organized and unorganised sectors of salt work.

Copyright©2018 *Mayuri Banerjee Bhattacharya and Arvind Kumar*. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Globally, 52.7% population are mobile phone internet users and it's estimated that by 2019 more than 60 % world population will use mobile phone internet^[1]. Worldwide use of smart phone has brought tremendous internet revolution. However, internet use in Asia is relatively very high considering the population of Asia. In India, presently there are 432 million internet users and by the end of the June 2018, it is estimated to have nearly 500 million internet users^[2]. Furthermore, it is estimated that proportion of mobile internet users in urban and rural India will increase more than 18% and 15 % respectively^[2]. In Rural India, nearly 78 million people have internet accessibility and using their internet daily. As per Internet and mobile Association of India (IAMAI) 2016, proportion of internet users in rural India is comparable to that of urban populations. In the rural, 26% of young men, 7 % of working women, 10% of non-working women and 13 % of older men are using internets^[3,4].

In the rural villages of India, majority uses internet for entertainment, social networking and communications. Internet has penetrated in the life of urban as well as rural population of India and serving many purposes^[4]. The world of internet along with digital media has raised the hope for new arenas of knowledge as well as business. e-Commerce or e-trade have benefited various industries like textile and garment, electronic, food and beverages, tours and travel, health care and wellness industries, pharmaceuticals, beauty and cosmetic, furniture and home décor. e -Customers can directly purchase without any restriction of time and place^[11].

Digital Media has revolutionaries effect on the business as well as directly or indirectly boosted the economy. According to Boston Consultancy Group (BCG)report, main online activities of Indian's are shopping, education, social networking, selling, searching and saving^[5]. Government's 'Digital India' program was launched on 1 July 2015 with the objective to connect rural India with internet and improving digital literacy^[14]. Furthermore, the present concept focuses to develop knowledge-based transformation as well as also plans to develop information infrastructure across the country. Digital India has enormous market potential and Prime minister's 'DigiGaon' program has vision to provide internet

*Corresponding author: **Mayuri Banerjee Bhattacharya**
Salt & Marine Chemicals Division, CSIR- Central Salt and Marine Chemicals Research Institute, Bhavnagar-364002, India

connection and services to more than 150000 villages in the country [6,7]. Moreover, Prime minister's "Digital India" vision is to make India a digital super power. The main aim of digitalizing India is to encourage education, Tele-medicine, e-business and skill development among youth.

Even a small manufacturer can market their products through e-commerce and sell them online. In e-vending and e-retailing, the sellers can directly communicate with the end users, customers or clients hence, eliminating the middle man from the trading zone [12, 13]. The 'turning point' is that the entire country is using the internet for expansion and generation of business, except the Indian salt producers. More than 90% of salt producer are small scale industries and majority of them are unorganized salt workers. The rural salt farmers consider salt works as their traditional business.

The main source of salt in India is brine obtained from either sea or lake or sub-soil and rock salt deposits. The major salt producing regions are the coast of Gujarat (Jamnagar, Mithapur, Jhakhar, Chira, Bhavnagar, Rajula, Dahej, Gandhidham, Kandla, Maliya, Lavanpur), Tamil Nadu (Tuticorin, Vedaranyam, Covelong), Andhra Pradesh (Chinnaganjam, Iskapalli, Krishnapatnam, Kakinada & Naupada), Maharashtra (Bhandup, Bhayandar, Palghar), Orissa (Ganjam, Sumadi) and West Bengal (Contai) for marine salt. Additionally, Rajasthan salt is extracted using lake brine and sub-soil brine (Sambhar Lake, Nawa, Didwanalake, Rajas, Kuchhaman, Sujangarh and Phalodi). The most popular and hard to approach region for salt works is in Rann of Kutch (Kharaghoda, Dhrangadhra; Santalpur). In these areas, salt is mostly extracted from using sub-soil brine and lot of issues regarding quality and yield are persisting. Furthermore, in the state of Himachal Pradesh, Mandi is famous for Rock Salt Deposits [9]. To empower, the rural salt cultivators in the country infusion of digital literacy and digital awareness is necessary is explained in figure 1.

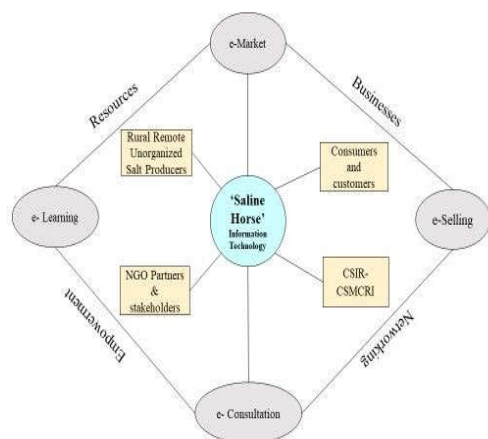


Figure 1 Schematic description of Saline Horse Information Technology: Transparent and Responsive system

METHODOLOGY

International and national data on internet and mobile users in India is obtained web base information available from e-newspaper and national portals. Authentic and credible information's is obtained from index journals. Articles and review papers on success of digital media, e-marketing and e-commerce are obtained from Google scholar, Research Gate and J-gate. Furthermore, the current data on salt production in India as well as in different states is accessed from CSMCRI

library. Full theoretical concept of Saline horse is developed by the authors.

First Theoretical Concept in India: Digitalization of Remote Indian Salt Cultivators

Technological power can transform and empower the rural India to great extent. This is the first concept in India, which will create online portal 'Saline Horse' an information technology for unorganized salt farmers to sell their salt directly in to the market. Website and App will have information on each unorganized salt farmers, with location, quantity and quality of the salt that they are producing in the remote regions. The purpose of the concept is to transform and empower the paradigms of Indian rural salt producers. Greater emphasis is given to promote e-based learning, up-gradation of technology, infusion of innovation and generation of strong network. The 'Saline Horse' technology is transparent and responsive system which will support and strengthen the existing livelihood of the remote salt cultivators.

Silent feature of the concept is to develop an apparent and approachable system for empowerment of the young rural salt workers in the remote region of Gujarat through integration of digital services. Thus, creating a direct linkage with the salt sellers, producers and users is prime focus (Figure 2).

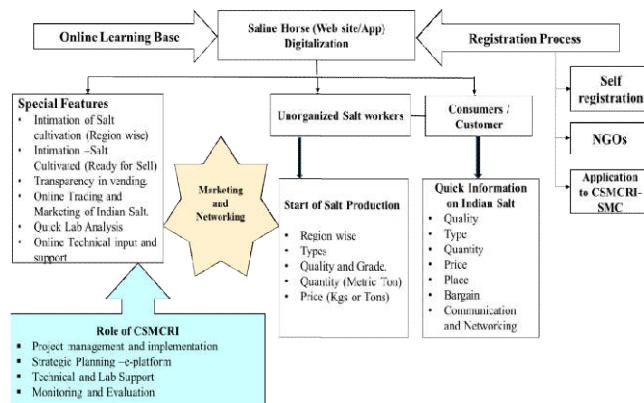


Figure 2 Conceptual Framework of 'Saline Horse' information technology

Problem statement: About 62% of the total production is from large salt producers (100 acre and above), 28% is contributed by small scale producers (less than 10 acre area) and rest by medium scale producers (10-100 acre). 87% salt producers are small scale and over 1.0 lakh labours are involved in solar salt production activities pan India.

Big salt producers like Tata, Aditya Birla, Nirma, Centuary, GHCL etc. have their own websites, but unorganized salt producers have no digital market system. However, the rural salt producers working in the remote region are devoid of the benefits of digital services. In the present situation, India is becoming largest digital super power. Hence, the concept 'Saline Horse' information technology intend to develop and design online website as well as app to the salt producers (unorganized and organized) and users.

Field survey was conducted in Kutch Region where among unorganized salt farmers. In the survey, 204 unorganized salt farmers and traditional salt cultivators participated in the social survey. Majority workers are young male salt farmers (68%). One of the interesting finding is that nearly 98% workers had mobile phones and majority of them are cleverly operating the smart phones. Salt workers age above 55years has simple

mobile phones but mostly young male workers has smart phone. Workers use phone for entertainment and for social networking.

While interviewing the salt famers and small scale salt producers, we found that marketing and salt vending is the biggest challenge in the remote regions. Salt workers informed that they sell salt to nearby salt industries at only 15-20 paisa per kg, later some industries sell the same salt to other large scale industries at higher rate. At the end of salt cultivation season, the worker’s encounter financial debt and have either have marginal or no profit. In addition, in unorganized solar salt works, workers pay 6000 rupees per month for solar panels. Moreover, the workers also informed that they get water for only 8 hours a day, and during the night the use diesel pumps for water. Workers are aware of online business and informed that people sell many products online (Figure 3).

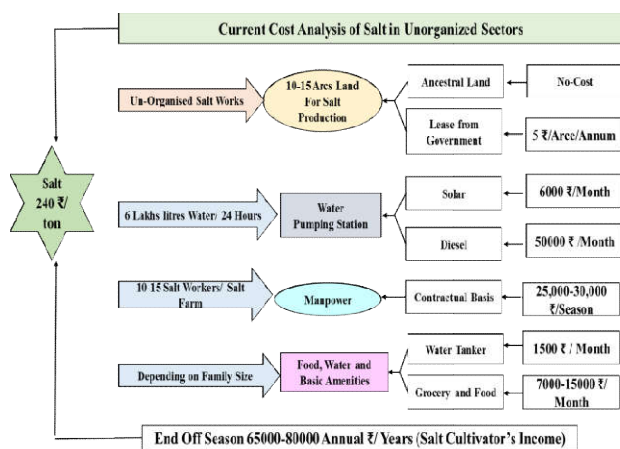


Figure 3 Current Scenario for Cost Analysis on Salt Production in Unorganized Salt Cultivators

- production, process and technologies.
- Digitalization salt market for unorganized salt producer.
- Bridge the barrier between salt farmers, CSMCRI and consumers.
- Grading of the salt produced by the unorganized sectors.
- Developing skill, awareness and knowledge through Saline Horse information technology
- Creating equal opportunities for India Salt producer and consumers through e-market.
- New online hub for learning and marketing the salt.

Target Beneficiaries: Target or primary beneficiaries are the rural salt producers in the remote regions of the Gujarat. The salt producers in the remote region can register in the website either self or sending applications to CSMCRI or through the NGO partners. Once registration is completed, they can access the site or app having transparent and responsive system. For registering in the website or in the app, criteria is that even the salt producer owning smallest land and producing even few tons of salt will become the part of e- platform.

Secondary beneficiaries: Salt Customers, consumers, vendors, retailers, small and large industries. However, both norganized and organized salt producers as well as the salt customers will be benefited.

CONCLUSION

There has been significant advancement in salt quality, quantity, production processes as well as in the technologies. Chemical up-gradation of Indian salt process has displayed remarkable rise. However, technical proliferation in term of information is still lagging. There is dearth of information on recent technologies, buyers, sellers, quantity, quality and price on salt. Unorganized salt producers cannot sell salt directly to market, whereas organized salt producers lack global linkages of the markets. Salt farmers working in the remote regions of various states be it Gujarat, Rajasthan or Tamil Nadu faces various challenges during the salt cultivation. Furthermore, at the end of salt production, marketing of the cultivated salt is the major issue in the remote regions. An extensive field survey in remote regions in Lower Rann of Kutch (Santhalpur, Kharagoda, Maliya, Adesar) where, 204 salt producers participated in the interview revealed that during salt cultivation seasons, they encounter several problems, of which marketing, grading (quality check) and cost analysis is major concern. Apart from this, workers need to upgrade their existing knowledge on salt cultivation to enhance their yield and quality.

Although young salt famers have internet as well as using smart phone for entertainment, social networking yet they lack platform for digital marketing of the salt. Hence, to connect and bind the existing and upcoming stakeholders in the Indian Salt ‘Saline Horse’ information technological hub (website and app) is necessary. The proposed concept will ensure maximum benefits to remote rural salt cultivators through e-platform for digital marketing of the salt as well as in the proliferation of

SWOT Analysis of the ‘Saline Horse’ Website and APP	
Strength	Weakness
<ul style="list-style-type: none"> ➤ ‘Centre of Excellence’ in salt technology, production and utilization. ➤ Proficient, diligent, experienced and committed staffs. ➤ Research and development laboratory facilities. ➤ Large and small-scale industries support. ➤ Up-gradation of salt technologies and support Indian Salt production. ➤ Support from central and state government supports. ➤ Mobile Van with lab facilities for salt analysis in remote regions. 	<ul style="list-style-type: none"> ➤ Lack of knowledge among older salt farmers on use of internet and smart phone. ➤ Limited accessibility to uninterrupted and continuous internet services. ➤ No Smart phone. ➤ Language barrier. ➤ Training in the remote region.
Opportunity	Threats
<ul style="list-style-type: none"> ➤ Creating new e-platform for Indian salt farmers working in remote regions. ➤ Salt quality check, grading and cost analysis. ➤ Connecting young salt farmers from remote regions to mainstream markets through website. ➤ Quick dissemination of knowledge on salt 	<ul style="list-style-type: none"> ➤ Limited funds and shortage in digital infrastructure. ➤ Limited access to the internet and lack of online portal for marketing of salt produced by unorganised salt sectors. ➤ Monopoly of organised salt manufacturers.

new technologies and generation of avenues in salt manufacturing process.

Acknowledgements: Authors are thankful to CSIR-Central salt and marine chemicals research institute, Bhavnagar, Gujarat for providing institutional support. MB is also grateful to Dr. Sourish Bhattacharya Scientist CSIR CSMCRI for valuable suggestions. We are also thankful to Mr S C Upadhyay, Senior Scientist, CSIR-CSMCRI and Mr. Bipin Vyas, Scientist, CSIR-CSMCRI for providing constant encouragement and support. MB acknowledges BDIM for providing PRIS number CSIR-CSMCRI – 151/2018.

Reference

1. 2019 M. Global mobile phone internet user penetration 2019. Statistic [Online]. Statista. 2018. Available from: <https://www.statista.com/statistics/284202/mobile-phone-internet-user-penetration-worldwide/> [Accessed on 29 May 2018].
2. The Economic Times (2018). News. Internet users in India expected to reach 500 million by June: IAMAI [Online]. Available from: <https://economictimes.indiatimes.com/tech/internet/internet-users-in-india-expected-to-reach-500-million-by-june-iamai/articleshow/63000198.cms>
3. Libza M (2018). Available from: <https://yourstory.com/2018/03/mobile-internet-users-india-reach-478-million-june-2018-iamai-report/> (Accessed on 24th May 2018).
4. Internet and Mobile Association of India (2015). 11th Annual Report 2014-2015. Available from: http://www.iamai.in/sites/default/files/annual_report/AnnualReport2014-15.pdf. (Accessed on 24th May 2018).
5. Aguiar, M., Boutenko, V., Michael, D., Rastogi, V., Subramanian, A., & Zhou, Y. (2010). The Internet's New Billion: Digital Consumers in Brazil, Russia, India, China, and Indonesia. *Boston Consulting Group, Boston, USA*. Available from: <http://online.wsj.com/public/resources/documents/BCGInternetReport.pdf>.
6. The Economic Times (2018). DigiGaon. Available from [https://economictimes.indiatimes.com/topic/Digi-Gaon\(Accessed on 25th May 2018\)](https://economictimes.indiatimes.com/topic/Digi-Gaon(Accessed on 25th May 2018)).
7. Daily News Analysis (2017). Budget 2017: Bharat Net allocation moves up to Rs 10,000 cr, 'DigiGaon' initiative launched. Available from: <http://www.dnaindia.com/business/report-budget-2017-bharat-net-allocation-moves-up-to-rs-10000-cr-digi-gaon-initiative-launched-2305482> (Accessed on 23rd May 2018).
8. Thomas, P.N (2012). *Digital India: understanding information, communication and social change*. SAGE Publications India.
9. MBA Rendezvous (2018). Indian Salt Industry. Available from <https://www.mbarendezvous.com/case-studies/salt/> (Accessed on 27 may 2018).
10. Industrial Grade Salt (1982). Common Salt for Chemical Industrial under BIS: IS: 797-1982. Available at: <http://saltcomindia.gov.in/IndustrialGrade.html?tp=Salt>.
11. Lim, H., & Dubinsky, A. J. (2004). Consumers' perceptions of e-shopping characteristics: an expectancy-value approach. *Journal of Services Marketing, 18(7)*, 500-513.
12. Rao, B., 1999. The Internet and the revolution in distribution: a cross-industry examination. *Technology in Society, 21(3)*, pp.287-306.
13. Rao, B. and Minakakis, L., 2003. Evolution of mobile location-based services. *Communications of the ACM, 46(12)*, pp.61-65.
14. Kedar, M.S., 2015. Digital India New way of Innovating India Digitally. *International Research Journal of Multidisciplinary Studies, 1(4)*.

How to cite this article:

Mayuri Banerjee Bhattacharya and Arvind Kumar (2018) 'Theoretical Concept on Digitalisation of Remote Indian Salt Cultivators Through "Saline Horse" Information Technology for Livelihood Upliftment', *International Journal of Current Advanced Research*, 07(8), pp. 14830-14833. DOI: <http://dx.doi.org/10.24327/ijcar.2018.14833.2703>
