

Covid-19 Jugaads: Cases, a Review of Relatedness to the Jugaad Principles and Its Contribution to the Existing Literature

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Abstract

In India 'Jugaad' is one type of innovation which entails use of ideas and techniques to make value addition to a product or service. The term 'Jugaad' refers to a flexible solution produced by ingenuity and wit. It's a cost-effective and adaptable method to innovation.(Ahuja, Radjou, & Prabhu, 2017). During the pandemic, Covid-19 to keep themselves protected from the virus infection during the lockdown various 'social distancing' and 'disinfecting' Jugaads were made in India. The paper studies the alignment of these Covid-19 Jugaads with the Jugaad principles mentioned in the literature and contributes to the existing literature pertaining to the study of Jugaads which believes that such Jugaads provides various social benefits. The Covid-19 Jugaad perspective also opens many research avenues for future studies to be made in this area.

Keywords: Covid-19, Jugaads, Frugal Innovation, Entrepreneurship

Introduction

As per the report on the Global Innovation Index 2021: Tracking Innovation through the COVID-19 Crisis by WIPO(World Intellectual property Organization) in the category of lower-middle income economies India is amongst the top three innovation economies. India has moved from 48th position in 2020 to 46th position in 2021 i.e., ahead by two spots and thus making it into the top 50. It earned second place in the lower middle-income group.(WIPO, 2021). Innovation may be defined as application of knowledge to create additional value and wealth and successful innovation includes the use of any knowledge not necessarily technological with a result of addition in value and wealth.(Singh, Sharma, & Mahendru, 2011). In India 'Jugaad' is one type of innovation which entails use of ideas and techniques to make value addition to a product or service. The term 'Jugaad' refers to a flexible solution produced by ingenuity and wit. It's a cost-effective and adaptable method to innovation.(Ahuja, Radjou, & Prabhu, 2017) It's a term used in India to describe the kind of resourcefulness that allows Indians to deal with both big and small problems in their daily lives. Jugaad is all about improvising and cobbling together a solution quickly and cheaply with whatever materials you have on hand. (Hesseldahl, 2012). Jugaad is a colloquial Hindi word that roughly translates as

"quick fix," "workaround," or "hack." It reflects a distinctly Indian idea that is widely used in Northern India. Jugaad is a mindset or strategy that seeks solutions in the face of hardship, expressing how the world is navigated through improvisation and resourcefulness. The phrase implies to breaking rules and using creative problem-solving techniques in order to make something function. It means using the changed items to serve a purpose different than what they were intended to, all with the aim of fixing something that is wrong or boosting efficiency.(Arya, jugaad: a study in Indian ingenuity and improvisation, 2020).

Jugaad's spirit is expressed in the ability to work with limited resources while still producing something important and valuable. With these innovations entrepreneurs are born and entrepreneurship involves a persistent will to achieve a goal even in the face of adversity. An entrepreneur would always like to reduce cost and increase earnings. As a result, Jugaad offers the quickest and most straightforward path to become a successful entrepreneur. India, being a developing country, craves for entrepreneurs who can solve societal problems with little resources. Because of a lack of financial backing, entrepreneurs try to manufacture something useful even out of trash, and the term "frugal social entrepreneurship" has become a trademark in India. For example, using improvised spare parts to keep outdated equipment operating is a famous example of street entrepreneurship.

Jugaad innovation is common in developing countries like India, where resources are sparse, and the environment is unpredictable. Indians' entrepreneurial spirit is evident in the innovations that arise from basic requirements with limited resources. A similar scarcity of resources occurred during the lockdown and aroused the entrepreneurial spirits amongst the people of India. The country-wide lockdown proclaimed on March 24, 2020, brought a stagnancy in people's lives while they also continued to work and conform to new functional norms. During the lockdown, several local ideas and contributions were made across the country, showcasing the underlying entrepreneurial and innovative spirit of an Indian common man.

The traces of this mindset could be excavated from the Indian history.

In the Indian mythological history the 'Jugaads' could be traced as well. Lord Shiva dispatched search parties out into the world to locate a head for Lord Ganesha after he had been beheaded by him. And when they failed to locate a human head, they substituted an elephant's head.(Saha, 2018)

Since millennia, technological advancements have been a vital aspect of life in India. In the Indus Valley Civilization, which is the country's earliest known civilization innovations as use of mud bricks, use of curved shell buttons, construction of step well to check overflow by use of gutter around the stepwell etc. were made. (Aronovsky, 2005). Indigenous product and process innovations also took place in this duration. The natural sciences were found later, as Aryabhata's discovery of zero between 476 and 550 BCE (Ray, 2009). People thus, contributed to the development of more efficient and effective methods and goods for their survival. (Singh, Iqbal, & Pundir, 2017)

Since then, the Jugaads have grown not only at urban cities but also at the rural areas. For instance, in 2009 the Mitticoal clay refrigerator was invented. For Indians living in rural areas without access to electricity, food preservation was a challenge that the refrigerator aimed to solve. Mansukh bhai Prajapati, its creator, was driven by a societal need and as a response to the need generated due to an earthquake which hit his village in 2001.(Arya, Jugaad: A study in Indian ingenuity and improvisation, 2020). Which also highlights an innovation as an outcome of crisis situation.

The Twitter hashtag #JugaadNation has skyrocketed in popularity on social media over the past few of years. (Saha, 2018). The usefulness of such Jugaads could be seen during the covid-19 pandemic when people were locked down in their home vicinities and had less resources to continue working and yet following the covid protocols. The people applied these Jugaads to keep themselves safe during the covid lockdown phase. As also mentioned, the entrepreneurial spirit of jugaad is practiced by millions of Indians to improvise intelligent and reasonable solutions to everyday problems. (Radjou, Prabhu, Ahuja, & Roberts, Jugaad Innovation : think frugal, be flexible, generate breakthrough growth, 2012)

The paper tries to review the following:

- Whether the covid Jugaads follow the principles of Jugaad given by (Radjou, Prabhu, & Ahuja, Jugaad Innovation, 2012)
- Covid-19 Jugaads' contribution to the existing literature

Secondary sources of information as newspapers, Journals, websites and internet were used to collate the information relating to Jugaads in India during Covid-19.

Principles of Jugaad

Radjou et al. (2012) identified six guiding principles for Jugaad. The principles are 1. Look for opportunities in hardship 2. Work more efficiently 3. Think and act adaptably 4. Keep it straightforward 5. Add a margin (Inclusive) 6. Trust your gut (Passion). (Radjou, Prabhu, & Ahuja, Jugaad Innovation, 2012)

Covid context Jugaads cases

As advised by WHO (World Health Organization) the protocols to be followed by the public and which triggered Jugaad type of frugal innovation to happen across the country were:

- Keep physical distance of at least 1 metre from others (Social distancing)
- Keep good hygiene as regular sanitization (Protection from the virus)

In order to keep themselves protected from the virus infection during the lockdown various 'social distancing' and 'disinfecting' the following Jugaads were made in India. The product as an outcome of Jugaads, the indigenous technology used, and the utility obtained are described through the following cases:

Case 1:

Product: A robot for covid patients was developed by the students at Kerala engineering college with assistance from the state health agency. It was labelled as Nightingale-19. The doctors and nurses could maintain the social distancing while taking care of the patients as well with the help of this robot. Nightingale-19 was a robot cart on wheels that could be remotely controlled and provide up to 25 kg of food and

water for six patients at once. After each round used to serve the patients, it was cleaned and disinfected.

Jugaad technology: It was constructed using components from several other machines, including a microcontroller board, a vehicle wiper motor, and a racing-drone camera. It decreased the likelihood of high-risk contact and decreased the expense of protective equipment.

Utility: Making sure patients receive the care they require, including face time for the isolated convicts via a specially created video-display technology that allows patients to connect with their doctors and nurses, adding that crucial human touch. (New Indian Express, 2020).

Case 2:

Product: Zero contact temperature check

Jugaad technology: An infrared thermometer was installed over a selfie stick being used by a police officer in Chandigarh to monitor someone's temperature without making physical contact, and the device was mounted where a smartphone was fastened.

Utility: Police officers were able to maintain a safe distance from irate drivers and motorists while simultaneously searching for a high body temperature, a typical COVID-19 indication. (Nandi, Ahuja, Banerjee, & Choudhary, 2020).

Case 3:

Product: Goods delivery funnel

Jugaad technology: a long plastic funnel was attached to a motorbike by an Indian inventive milkman to pour milk to the customer standing at the other end of the funnel. The milk is given to the customer in a container while they are safely separated at the open end of the pipe. A small liquor store in the Indian state of Bihar utilised the same jugaad to slide bottles to customers who were waiting at the end of the funnel to collect them. And further slid a plastic bottle in the funnel so that the buyer can put cash in it and pulled it back with a rope to make contactless payment.

Utility: An inventive idea from a rural innovator could be used to preserve social distance.

Case 4:

Product: A device to meet oxygen requirement of four patients at the same time.

Jugaad technology:The respiratory ventilators were in a great demand during the pandemic and so there was a big shortage of these. An inventive system was created that could provide 2000 ml of oxygen per minute into the lungs of a 280 kg body, allowing 4 persons weighing 70 kg each to breathe simultaneously. A splitter was attached to the main ventilator and was diverted with four outlets.

Utility: Several patients could breathe at the same time and solved the problem of shortage of these ventilators thus, saving lives of many people. India built and donated more than 10,000 such ventilators to various hospitals across the country where the patients were battling for their lives amidst the covid situation. (Nandi, Ahuja, Banerjee, & Choudhary, 2020)

Case 5:

Product: The social-distancing two-wheeler

Jugaad Technology: The nine-year-old daughter of a 39-year-old mechanic, technical instructor, and YouTuber from Agartala, India, was worried about riding in a crowded school bus after the lockdown. He purchased an old, abandoned bike, removed its engine, fitted it with a 750-watt DC motor, attached a battery, and converted it to an electric bike. He also divided the bike's structure into two parts using a long rod to connect the wheels in order to protect her from viruses and maintain social distance. Creating a two-wheeled vehicle that would maintain a social barrier between the driver and the passenger.

Utility: The bicycle increased people's awareness of how crucial it is to keep a social distance to stop the spread of disease.

Case 6:

Product: A simple pulley system to deliver the product and collect cash from the customers

Jugaad Technology: A small shopkeeper in Maharashtra built a contactless customer service system. He was able to move the goods purchased by the client with the use of a rope and a basic pulley system made from the wheel frame, gears, and pedals of a dismantled bicycle. A tiny plastic tray was linked to the pulley and was used to collect payment from the consumers. The tray moved to and fro by moving

the bicycle's pedal. The shopkeeper stood at one end and the customer on the other end thus maintaining social distancing.

Utility: The pulley system helped in maintaining social distancing preventing the spread of virus.

Case 7:

Product: Disinfection chamber

Jugaad Technology : Three ultraviolet lights (UV-C), a tried-and-true method of cleaning surface contaminants, were mounted to an old refrigerator. Thus, a common guy could sanitise his personal usage items like keys, money, mobile phones, etc. to stop the infection from spreading. Thus, innovated a very low-cost disinfecting chamber.

Utility: The innovation helped and claims to kill 99.9 percent of micro-organisms present on any object.

Case 8:

Product: Pressure cooker as a steriliser

Jugaad Technology: A pipe is fit at the nozzle of the whistle and the steam generated in the cooker was passed through the pipe and was sprayed on the vegetables bought which helped in disinfecting the fruits and vegetables more than what rinsing could have done.

Utility: The use of steam to kill germs/virus on the food stuff. Although the hack was not considered very safe due to emission of the hot steam.

Case 9:

Product: SteamIron as disinfecting tool

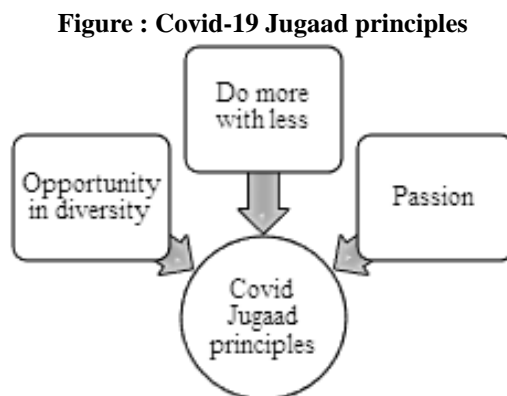
Jugaad Technology: A banker developed this idea of disinfecting the currency notes using a steam iron. He wore a mask and used to disinfect the notes as and when received using the iron.

Utility: A smart way of disinfecting the notes and thus preventing the spread of virus.

The relatedness of these innovations or 'Jugaads' with the initial principles may be explored by further reviewing their nature to make them lie in the category of generic Jugaads and not specifically Jugaads due to crisis situation.

Covid-19 Jugaads: Relatedness, Discussion and Future Research Direction

During Covid-19 the Jugaads were made mostly to fight against the virus and to keep oneself protected. Relating these Jugaads to the principles stated by (Radjou, Prabhu, Ahuja, & Roberts, Jugaad Innovation : think frugal, be flexible, generate breakthrough growth, 2012) the prominent principles applied to these innovations are do more with less, find opportunities in hardship, and have enthusiasm. These Covid Jugaads were driven by these three principles as per the Figure 1.



The relatedness of these Covid Jugaads with the principles mentioned by Radjou et.al.(2012) may be further be understood with the help of a matrix as given in Table 1.

Table 1 Matrix of Covid-19 Jugaad cases and its relatedness to the Jugaad principles

Type of Jugaad	Principles		
	Opportunity in adversity	Do more with less	Passion
Robot for covid patients	Use of technology for combating covid crisis	Made with parts of used machinery	To adhere to the covid protocols-Social distancing
Zero contact temperature check with selfstick	Multi-purpose usage of existing technology	Low cost selfstick usage during covid 19	To adhere to the covid protocols-Social distancing
Goods delivery funnel	Serving the customers amidst the lockdown	Usage of a low-cost plastic funnel attached to the bike	To adhere to the covid protocols-Social distancing
Respiratory ventilators	A device to meet oxygen requirement of four patients at the same time	Low-cost splitter was attached to the main ventilator	Social concern/impact- donated more than 10,000 units to various hospitals-saved several lives
The social-distancing two-wheeler	Developed a vehicle to keep a distance between the rider and the passenger- a new of its kind	Used the parts of an old, scrapped bike	To adhere to the covid protocols-Social distancing social distancing
A simple pulley system to do business	Development of a pulley system for delivering and collection	Made from a dismantled bicycle's wheel frame, gears, and pedals	Maintaining social distance in accordance with the COVID procedures distance from society
Disinfection chamber	Innovation of a chamber to kill micro-organisms	Use of an old refrigerator and ultraviolet lamps	Disinfecting-protection against the virus
Pressure cooker as a steriliser	Use of household products to fight virus	Use of steam to disinfect vegetables/fruits	Disinfecting-protection against the virus
SteamIron as disinfecting tool	Use of household products to fight virus	Use of steam to disinfect	Disinfecting-protection against the virus

With the Covid-19 Jugaads following the generic Jugaad principles, these should also align well with the favourable and adverse arguments related to Jugaads in the existing literature. Discussing the favourable view, it could be pointed out that these quick-fix approaches used during pandemic helped the innovator to keep oneself safe and imbibed a social cause. One of the studies made included several case studies of Indian street vendors who have used their Jugaad to offer solutions to social issues. (Verma, 2017) This contributes to the existing literature which supports the Jugaads considering socio-economic development. As stated, Jugaad may not be a source of competitive advantage for business expansion, but it could be a source of improved wellbeing for inclusive growth. (Shepherd, Parida, & Wincent, 2019). Jugaads are a diverse collection of innovations with economic, social, and environmental benefits. (Bhatti, Basu, Barron, & Ventresca, 2018). It is argued that the Jugaads may result in beneficial solutions for the majority in society. (Roiland, 2016). Jugaads also contributes towards capturing the innovative spirit of the Indians. (Gobble, 2017). According to a study, Jugaad also promotes the radical transformation of the mass into a source of creativity, innovation, and ultimately social mobility. (Kaur, 2016).

Conclusion

Thus, in light of all these studies Covid-19 Jugaads focused on adhering to the covid protocols as social distancing and protection against the virus which not only provided social benefits but also showcased the innovative Indian mindset. Although there are a few studies which believes Jugaads to be negative and not desirable for the society due to its linkage with poverty, unsafe practices and resource constraints. (Birtchnell, 2011), Quality issues, compromise in legal provisions and unscalable business (Prakash, Chatterjee, Srivastava, & Chauhan, 2019) but the social benefit provided by these Covid-19 Jugaads refute these claims but also opens several avenues for future research in the direction of Jugaads which may add to the literature which supports the presence of such Jugaad innovations.

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