International Journal of Electronics Engineering, 4 (2), 2012, pp. 187–189

Where there is Jugaad, there is a way

Mandeep Singh[1] and Virk Jitender Singh[2]

Department of Electrical & Instrumentation Engineering, Thapar University, Patiala, India
(E-mail: [1]mandy_tiet@yahoo.com, [2]mail4virk@gmail.com

Abstract: Innovation is the alternate way to do the task differently or we can say that it is the unconventional ways to solve problems. An effort has been made to study various kinds of innovations prevalent in India, with the objective to spread the Indian innovations worldwide. So much so, the Indian innovative way of finding the way out is termed as 'Jugaad'. This paper reports the various Jugaads applied in industry, agriculture and in daily life.

Keywords: Jugaad, Innovation, improvisation.

1. INTRODUCTION

Very often in today's context innovation to the everyday man can be best described as to borrow someone else's idea and apply it to your own need, be it in business , product & services or every day home chores. A successful innovation does not have to be an all-new invention. It just could to be a new method to do something in a new and different way that is beneficial to you. Innovation and competitiveness have a dynamic, mutual relationship. Innovation thrives in a competitive environment and in turn, plays a key role in the achievement of such an environment. Innovation generates economic value, new jobs in the economy and culture of entrepreneurship.

2. REVIEW

Any kind of innovation either large or small starts with small attempts of solving the problems in the different ways. This work illustrates creativeness of the Indian mind and its immeasurable capability to opportunistically invoke 'Jugaad' especially in rural sector of India [1]. In our country there is a massive problem of unemployment in rural as well in urban areas, for which Jugaad is a novel prospect. A study has been made on existing Jugaads and their implementation to solve the problems. The popular attention towards rural invention couldn't come at a better time for a nation that increasingly values creativity but is still given to rote learning at schools and colleges. Even our roadside mechanics are more pragmatic and practical than those who have obtained Engineering degrees from premier institutions. At present many foreign companies are approaching India for some new ideas. It is a matter of pride that Indians have inborn capability of scientific and logical thinking. We only have to explore it and appreciate the Jugaads of common people. In short this is the art of holistic thinking, an unbound, resilient creativity and of improvisation and rapid prototyping under severe constraints.

2.1. Why Innovation Matters?

Innovation puts us on a consistent path to growth. The company or community that fails to innovate is on the road to obsolescence. Peter Drucker once said that the purpose of a business enterprise is to create a customer. Nokia became number one in India by using innovation to create 200 million customers [2]. It introduced regional language support in the mobile sets. Through observing the unique needs of Indian customers, particularly in rural villages where most of the population resides, it segmented them in new ways and put new features on handsets relevant to their unique needs.

2.2. Innovation in Rural India: Genesis of Jugaad

In India more than 70 per cent of its population resides in villages. In rural India people face a new challenge everyday so they have their own mindset to resolve the problems; hence they have precious resource of innovation. They are habitual to face new obstacles in day-to-day life; every impediment thus became an opportunity to create something new. Further the necessity to use their competitive advantage and their ability to struggle for survival also makes them innovators. People in rural India have an ability to utilize almost all the things which any one can throw away easily and this concept of optimum utilization of the available resources is very well known as 'Jugaad'. This Jugaad can almost make anything possible. Also Jugaad is for everyone without regard to race creed or color; it does not know any geographical boundaries. The mindset of individuals in rural India is that "where there is Jugaad, there is a way" every time they have an alternate way to do the things anyhow. Individuals in rural India would like to do in their own way as per according to their customized application requirement for a particular task and this diversification leads towards the innovation. Moreover a Jugaad technology is the suitable word for such kind of innovations in rural India.

2.3. The Jugaad Concept

When everything fails, Jugaad works. Now the question arise what exactly Jugaad is? Jugaad is perhaps the only option when no other option is left, it is a technique of do it now somehow. Nobody can teach or learn Jugaad, for this we have to indulge our self in it for this there is no particular formula; each and every Jugaad is of its own kind, it may vary from person to person and from situation to situation. Moreover the multiple utilization of single product is also a Jugaad, it is all about the reinvention either it is a product or a process. This might well be a legendary but it clarifies the infinite capacity of the Indian mind to "resourcefully" innovate or invoke Jugaad (a word that's become prevalent internationally). There are number of examples of Jugaad innovations.

2.4. Some Examples Around

Dial a motor: This system enables the user to switch ON or OFF an electrical motor with the use of Mobile phones. This mobile operated motor control system is very common in rural India to operate the motor pump from any distant location for irrigation purpose.

Oorja-branded stove: Oorja-Branded stove is the standardized product developed by the First Energy in Collaboration with Indian Institute of science Bangalore. Oorja stove is a biomass based cooking solution fired by fuel pellets made from ground nut shells, peanuts husk and other agricultural waste [3].

Maruta:Many years back, the innovative Punjabis assembled a Jugaad vehicle by mounting a diesel irrigation pump on a steel frame with wheels. This creation was ultra-cheap as compared to the standardized vehicle but did not conform to vehicular regulations.

Innovative tawa**:** It's an aluminum tawa with a ribbed base and concentric circles that keep surface hot for long.

Lassi-maker washing machine: Houses in rural Punjab often use their top loading washing machines to churn curd and make lassi. In Ludhiana, an innovative lassiwala commercially sells his 'lassi-maker' washing machines at a fraction of the price of regular washing machines.

Horse shaver: A barber from UP, Mohammed Idris, uses a bicycle-powered horse-shaver in which the power of the bicycle rotary drive is converted via speed cable to the cutting blade, which cuts the hair [4].

Tea-making machine: This low cost tea-making machine works on electricity and facilitates the Indian method of making tea by separately pumping in water, adding tea-leaves and sugar, heating, adding milk, boiling and filtering and dispensing automatically into cups.

Fiber Matchsticks: These matchsticks are in the form of thick threads secured together by natural binders such as sabudana. These matchsticks burn longer, are not easily breakable and they are cheap.

Garlic-peeling machine: It can peel large quantities of garlic without damaging the garlic.

Amphibious bicycle: It is a conventional bicycle fitted with four rectangular air floats that support the bicycle in water. The inventor is from Bihar and this device got him profiled on the Discovery Channel [4].

Zero-head water turbine: It generates electricity from flowing river water and simultaneously pumps the water for irrigation or other like purposes.

Milk Master, the manual milking machine: This milking machine consists of a set of reciprocating vacuum pumps with a vacuum gauge, a suction assembly unit and an air bubble-free gasketed milk canister to collect milk.

Indigenous buttonhole machine: It requires only the simple manual adjustment of one element to determine buttonhole length. It can on an average do 100-120 buttonholes an hour, and has a small lamp near the needle, which helps in inserting the thread.

Jaipur foot: Experimenting with rubber components and metal sheets, Dr PK Sethi and Ram Chandra Sharma produced this low-cost, durable, prosthetic foot that has given new life to amputee world over [4].

Miticool; the village fridge: This down-to-earth fridge is made from special clay and has three or more chambers for cooling water and storing fruits and vegetables.

Amphibious car: Stuck in seasonal floods, mechanic PSVinod came up with the unique idea of converting his old car into a boat-like float structure fixed above the tyres that could drive through flood water.

Bamboo tooth: DodhiPathak of Assam has made false teeth from bamboo, which can bite into chicken and are amazingly cheap at Rs. 20 a tooth.

Car for the disabled: A car-fanatic, Mujib Khan modified the brake, clutch and gear arrangement of his car so that he or any other person with disabled legs can drive it.

Head-Load reducer: KhimjibhaiKanadia, a retired schoolteacher has created an innovative device that has two extended supporting rods from a circular disk that is put on the head to hold the vessel. The mechanism shifts part of the head load to shoulders and thus saves the neck from stress injury.

Badminton stroke-practicing machine: Amlan Bhattacharya and Subash Das have made a machine that drops shuttle corks at regular intervals and also spins them using a conveyor belt.

Cotton-stripping machine: The earlier tedious handpicking methods have been replaced by this rudimentary machine that has dust collectors and an automatic feeding system to help it process.

Pepper machine: This machine simplifies the task of separating pepper from peppercorns. Pepper bunches are

put into a funnel-like structure, that then go through a series of rotating blades that are fitted inside [4].

Micro Windmill Mobile Charger: This is a small handheld windmill that operates whenever there is a draft of wind. It can charge a mobile phone and other equipment, including laptops.

Tree climber: It is made of iron rods and metal wires and grounded with two poles on either side. While climbing, the metal wire spreads around the tree that is connected to the footrest and gets tightened and helps in climbing.

And the list is endless. As innovation in rural India is a continuous process of developing new Jugaad to meet their ever-changing requirement by implementing new ideas. This process has now been adopted by several engineers and researchers as well. Some selected cases are given here as:

FarrataFan: We can use farrata fan in an innovative way for various industrial applications like detection and removing of emptycarton (corrugated box) from a conveyor belt of finished goods product, instead of using costlier automatic machines using X-rays etc., for the same task.

E-Waste: E-wastes are becoming the primary concern owing to inestimable health hazards and environmental pollution. This is alarming and threatening situation for us that despite several guidelines and government policies e-waste is not disposed of properly.It is not recycled or reused resourcefully and effectively. We have introduced an innovative process which is a "Jugaad" method to tackle this problem [5].

CattleDriven Electric Power Generator: A preliminary research based on a Cattle driven electric power generator has been done. Using cattle in the rural area, 300W of electricity has been successfully generated; while with the modified gear system, it is expected to comfortably go up to 600W. With initial cost of less than Rs15000/- per system, our payback period is less than four months! This is a somewhat an innovative and unknown technology, which offers a new vision for electric power generation [6].

3. CONCLUSION

Jugaad is an example of the skill of our people who use it in the absence of any available resource or help. This is the skill of a common man, who is really very intelligent but not wealthy. One can say that Jugaad is application of ones smartness in getting things done. Instead of looking down upon Jugaad, it should be recognized and appreciated as a valuable human skill. It is high time we learn to innovate and integrate Jugaad in our organization [7].

REFERENCES

[1] Rishikesha T. Krishnan, "From Jugaad to Systematic Innovation", Available at: *http://iimaalumni.org/n/front/home/pdfaug10/bookshelf.pdf*

[2] A. G. Lafley, Ram Charan, "Why Innovation Matters", Available at: *http://www.fastcompany.com/articles/2008/05/why-innovation-matters.html*

[3] First Energy, "Oorja Stove", Available at: *http://www.firstenergy.in/*

[4] *Hindustan Times,* "Esprit de Jugaad", Available at: *http://www.hindustantimes.com/StoryPage/Print/241749.aspx*

[5] Mandeep Singh, Jitender Singh Virk, (2012), "Innovative E-waste Management – The Jugaad Way", *International Journal of Electronics Engineering,* Volume 4, Number 1, pp. 141-143, January-June, ISSN: 0973-7383

[6] Mandeep Singh, Jitender Singh Virk, (2012), "Alternator–the Alternate Way", *International Journal of Electronics Engineering,* Volume 4, Number 2, (in press).

[7] NaviRajdou, JaideepPrabhu, Simone Ahuja, "Jugaad Innovation", Published by: Random House India-2012.