Impact of Industry 4.0 over crowdsourcing in Indian Circumstances

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We are going through an era of industrial revolution, known as Industry 4.0 which is providing facility of implementing variety of emerging technologies. The initiatives of industry 4.0 are influencing every area of business system. Crowdsourcing is playing a significant role in this industry revolution, through which new products are designed and produced using innovative ideas of the community. In this dynamic business environment, business development and growth demand product to be innovated on a fast pace according to the need and wish of the end user or the customer. This study explores the impact of industry 4.0 over crowdsourcing for new product development and presents the challenges of adoption of industry 4.0 that will impact over business processes in Indian scenario. The study also highlights the opportunities provided by Indian market by using crowdsourcing as a methodology, along with diverse social and cultural features.

Introduction

The business environment of the world is changing very fast and pushing business processes to be changed accordingly. Due to static and conventional product development customer interest and satisfaction in the product or services starts declining which results low profits. The only solution left with the organization after that is to create new innovative products which would be appreciated by the customers and satisfy their needs. This process of innovation increases sustainability of the product in the market too.

To make the customer feel an important part of the organization and take their suggestions for mass production of newly invented products, use of crowdsourcing is a far better idea. The availability of fast speed internet service acted as icing on the cake and increased convenience of the customers and other stakeholders of the organization to encourage them for suggesting more and more innovative ideas so that existing services or products may be improved or new products may be introduced.

Industry 4.0

Industry 4.0 is an industry revolution which helps business process of industry which supports business organisations to run the systems autonomously by using technologies like cloud computing, IOT, reality technologies, simulations, block chain, 3D printing, Cyber security and crowdsourcing etc.
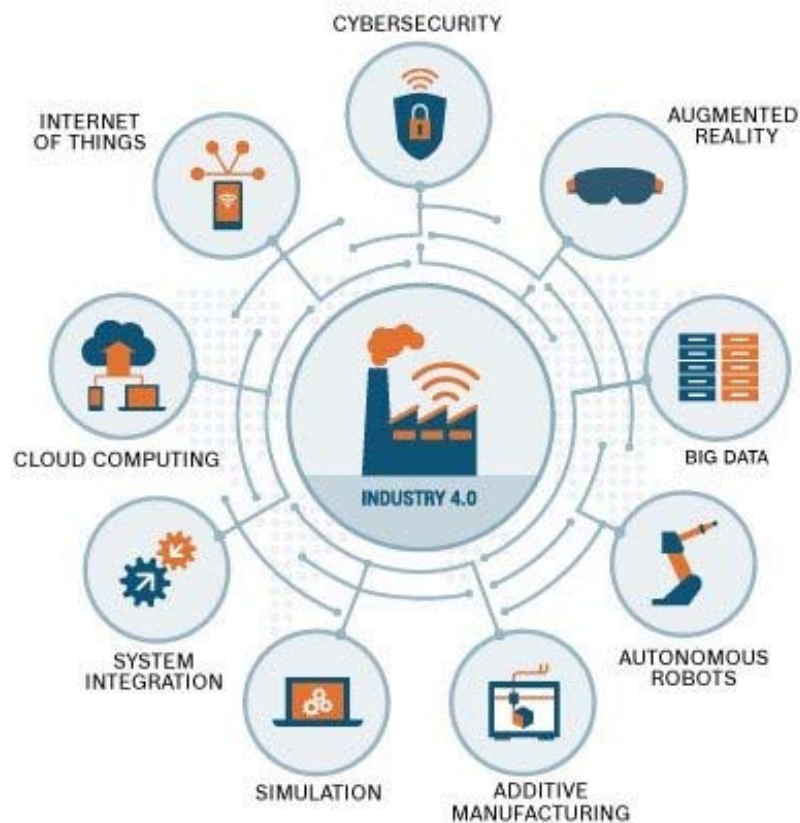
Industry 4.0 influenced manufacturing processes of the industry worldwide. It provided smarter applications for established communication between various machines and devices (Oliveira E, et al, 2018).

If we talk about advantages of wireless network, it is easy to install it even in remote locations, it is more scalable, all time accessibility of internet. All smart devices like smart phones and smart watches are wireless network enabled and equipped with number of sensors which in turn helps providing relevant information from the owner of the smart devices. This information can be used for various applications like customer feedback collection. Therefore in order to meet specific industrial requirements more robust internet wireless networks were developed which worked efficiently under worst environmental conditions like, the presence of high level of vibrations, dust, heat, humidity and other obstacles.

Low expectancy is kept due to industry real time demand. Since wireless signals can be trapped easily by hackers, cyber security solutions and privacy solution have been provided to solve such problems. 5G bandwidth is proposed to be deployed by the end of the year 2019 and by that time all the proposed technologies of Industry 4.0 are supposed to be deployed worldwide.

Figure 1 – Emerging Technologies with Industry 4.0

Source - https://www.manufacturersalliance.co.uk/2018/03/08/sme-manufacturers-adopting-industry-4-0-technologies/

The fast growing technologies are transforming the conventional business processes and enabling an environment of machine-to-machine communication by providing very high and ubiquitous access of Internet. It will support the whole manufacturing process and mass production of customized products based on the requirement of the customers.

Industry 4.0 is also concerned with health and safety of the workforce, quality of working conditions, improved work-life balance with a reason that happier workforce will produce better quality products and will be more productive and innovative.

Figure 2 – Ecosystem of Industry 4.0
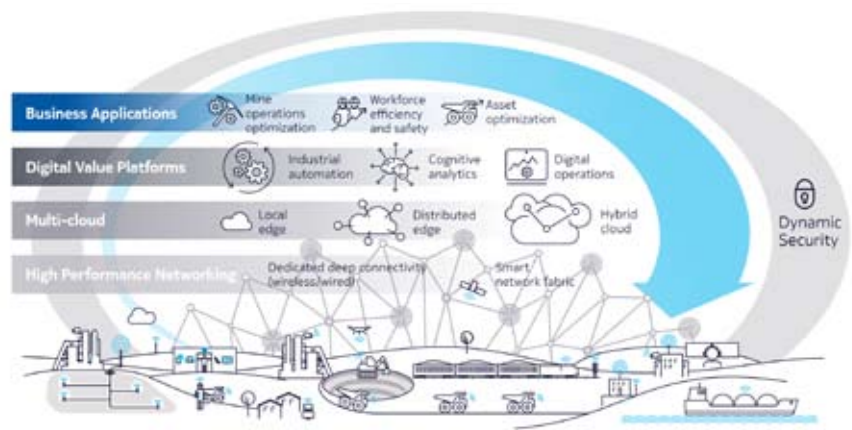
Source - Future X and Open Innovation at Nokia https://rctom.hbs.org/submission/future-x-and-open-innovation-at-nokia/

Crowdsourcing

Jeff Howe initiated the idea of crowdsourcing in 2016. With a wish of launching a new or improved product or service in the market when an organisation gives a task to individuals or group of people to get it's best solution, this process is called crowdsourcing. The participants receive fame and award by the organisations and in return the organisation gets lots of profit.

Crowdsourcing has given number of useful applications to the world. Frequently used reCaptcha for verification of human actions, is a product of crowdsourcing created by scientists of Carnegie Mellon University. (Crowdsourcing by Hana Shepherd, 2012)

For the organisations in the western world, use of co-creation is very common. Organisations like P&G, Nike and Ikea got benefitted when used crowdsourcing. The benefits of the co-creative enterprise are greater productivity and creativity, lower costs and employee turnover, and new business models and sources of revenue.

Western countries used methodology of crowdsourcing for new product creation very much. Well-known brands like Adidas and Nike implemented it and made lots of money. A self-devised model for acquisition of suggestions or knowledge through crowdsourcing is shown as below –

Characteristics of Crowdsourcing (Palacios et al, 2016)

There are five different characteristics of crowdsourcing as suggested by Palacios -

1. **Learning paradigms**: generates new ideas which is source of new learnings for the organization.

2. **Problem solving Technique**: with the help of collective intelligence from outside the organization solve their business problems.

3. **Collaboration**: stakeholders and organisations collaborate together to achieve success.

4. **Open innovation**: organization gives an open and equal opportunity to the outside world of generating new ideas.

5. **New Product Development**: The main objective of co-creation using crowdsourcing is to create new or modified services or products which satisfy the needs of the customers.

Classification of Crowdsourcing

Crowdsourcing can be classified in the following manner -

- **Crowd creation** - the most common form of crowdsourcing in which collaborative efforts are made to create a product or a service.

- **Crowd voting** – the most popular form of crowdsourcing to generate community view points for any specific incident, movie or newly launched product.

- **Crowdfunding**. seeking for finance from multiple sources online.

- **Crowd Curation** – when information related to any specific topic is collected, it is called from a group of individuals, it is called crowd curation. For example – Wikipedia, TripAdvisor

- **User-generated content (UGC)** – Any type of content such as video, images, text or audio, posted on online platform. eg- YouTube, iStockphoto.

- **Crowd labour** – any individual or organization or group of individuals, using or hiring services form unknown organization. eg- OLA, Uber taxi services.

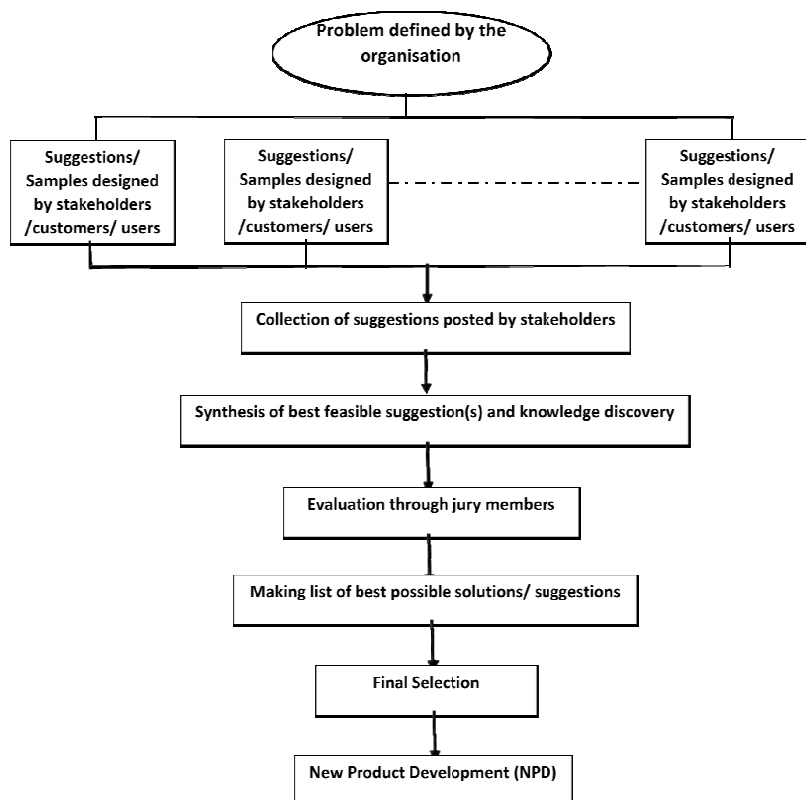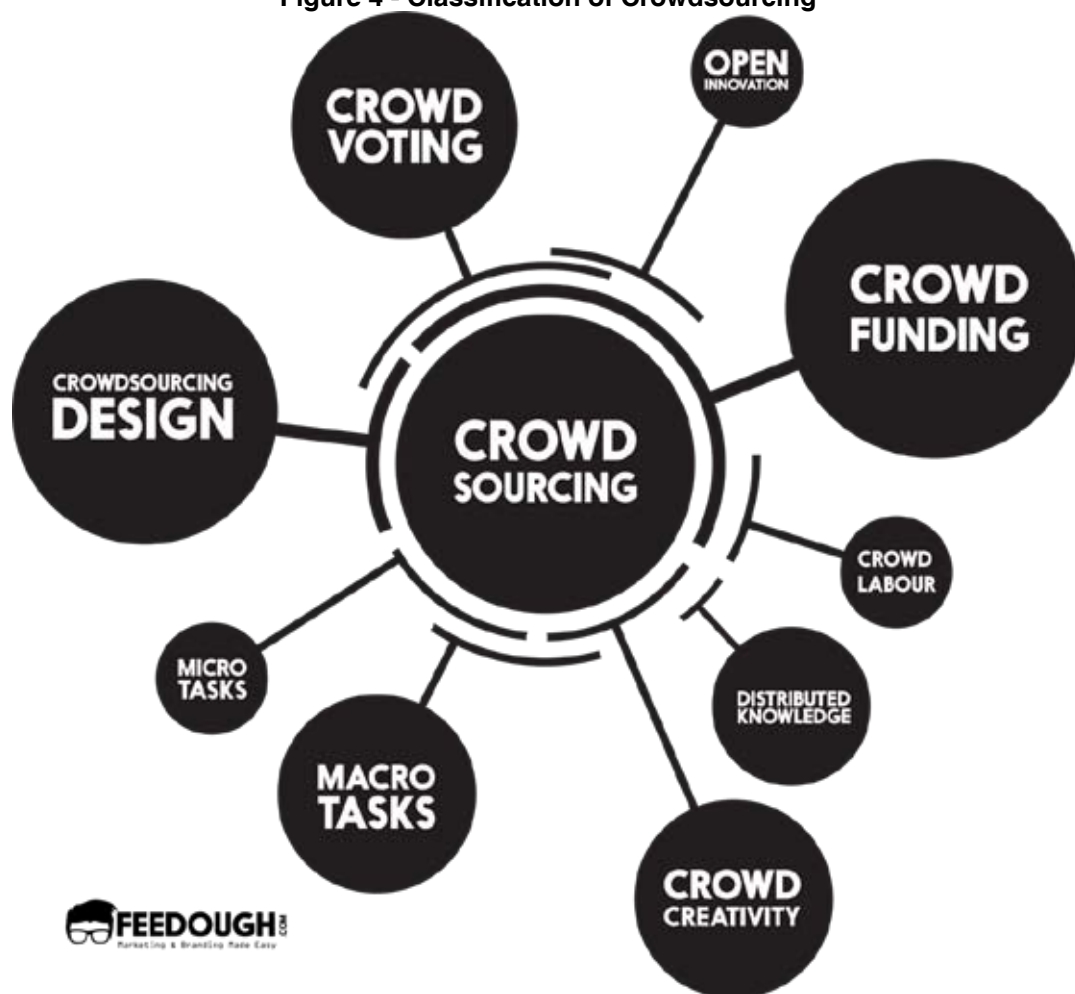**Figure 3: Knowledge Acquisition planning through Crowdsourcing**

Figure 4 - Classification of Crowdsourcing

Source – www.feedough.com

Crowdsourcing products and services in India

The time has gone when India hesitated to start using new methods for success of business. Various successful methods of crowdsourcing can be described which were used by Indian organisations in India. In fact the government of India also use this methodology to seek opinions of Indian citizens for betterment of the country and make the people more satisfied and happier. Few of such applications may be discussed as below -

1. New Product Development – "My Expression"

In 2011, Titan Company of Tata group started using a web based application "My Expression" to collect jewelry making ideas from its customers and other unknown people. This invited wonderful ideas from various people for launching a sub brand 'MIA' of the brand 'Tanishq'. The main objective of Mia was to collect number of beautiful and innovative designs of jewelry for working ladies. To launch such a product, it was necessary to know the choice of the actual users. To achieve this objective lots of pictures and videos of designs of jewelry were collected from various people.

All these ideas were evaluated by a group of judges. Ten best designers were shortlisted, interviewed and best designs were declared and launched under the brand MIA. All the winners got recognition and awards. (Sarmah, B., & Rahman, Z. (2017).

Figure 5 – The Brand Mia

*Source: Campaign India
https://www.campaignindia.in/article/
tanishq-gets-young-women-to-interpret-
design-utility-for-mia/416737*

2. Smart India Hackathon

Government of India launched a program Smart India Hackathon (SIH) in 2017 to get a chance to find out solutions of various National level problems of Indian ministries and few private organisations and industries.

The objective of the government to start such a program was to use intelligence and innovations of Indian high tech youth and workforce to make hardware and software based solutions so that better conditions and services can be provided to citizens nationwide.

It is a very enthusiastic platform for big industry players, ministries and young engineers to come forward together for betterment of the country as well as professional growth of the young technical students. The methodology behind the process of SIH is crowdsourcing.

Figure 7 – Munger University Advertisement

Source – https://www.mungeruniversity.ac.in/news-updates/logo-designing-competition-for-munger-university-munger/

Figure 6 – Smart India Hackathon

Source - https://twitter.com/hashtag/smartindiahackathon

3. Academic Institution Competition based on crowdsourcing

Munger University of Bihar state recently launched a nationwide open competition for designing of its seal, logo, flag and monogram. They invited designs and drawings through an e mail. Best 10 entries will be awarded. Although, not much technology is involved in this process but it's a proof that significance of concept of crowdsourcing is being understood by non-technical organisations in India now.

4. Recruitment 4.0

In 2012, Economic Times revealed the fact that few recruitment firms in Kolkata used crowdsourcing for their recruitment drive by using social media technology. This process was named as Recruitment 4.0. According to times jobs, more than 60% recruitment agencies are using this new phenomenon which is making their tasks easier and cost effective.

Impact of Industry 4.0 over Crowdsourcing

There are few applications below to show the transformation of crowdsourcing into other applications due to technologies involved in industry 4.0.
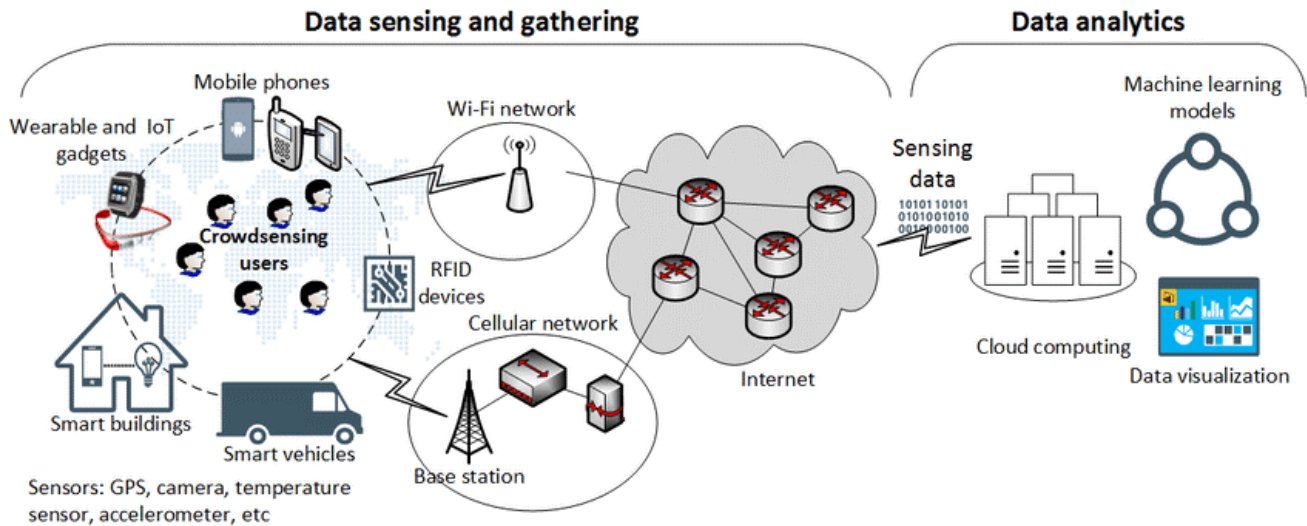
Evolution of crowd sensing

Evolution of Industry 4.0 is transforming the way of collecting information or data or ideas from the stakeholders through crowdsourcing and has emerged as crowd sensing. In crowd sensing, data of the customers or other stakeholders of the orgaisations is collected automatically with the help of smart devices. IOT and IIOT are the most important technologies with the help of which crowd sensing is possible.
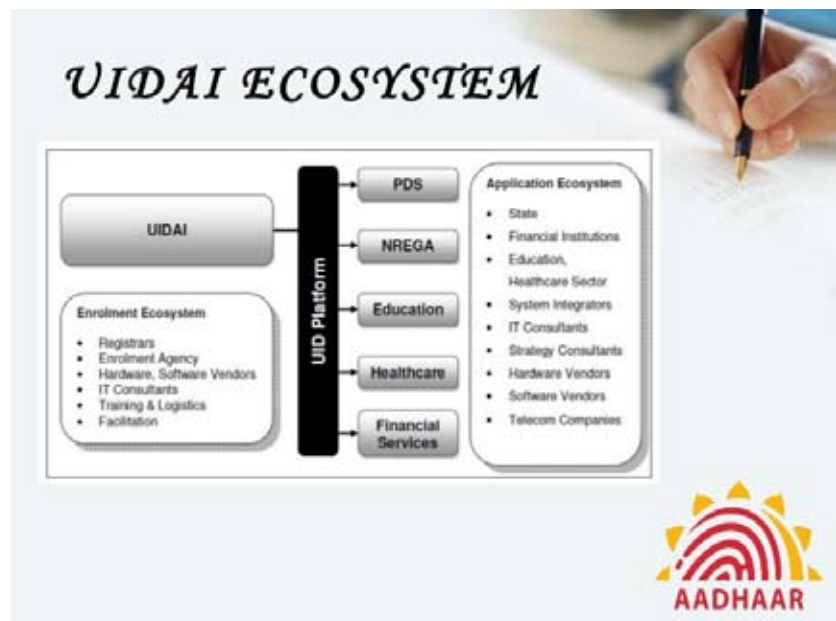
Figure 8 – Crowd sensing

source - https://www.researchgate.net/publication/313427791_The_Accuracy-Privacy_Tradeoff_of_Mobile_Crowdsensing

Smart devices use sensors which help the device collecting data of the users. A simple example of crow sensing is Google Maps application in which sensors of smart devices of the commuters of a route collect data of the complete route and places which are situated along the route. Later on the application uses the same data to solve queries of so many other travelers or commuters of the same route.

Aadhaar Card for Smart Cities

Aadhaar is a biometrics based identity card of every Indian national provided by UIDAI, government of India. The mission of Indian government to develop 100 smart cities is also going on parallely. The base of development of smart cities in the emerging technologies due to which sensors, IoT and AI technologies will be able to sense biometric information of the users through any smart device automatically for authentication of the person.

Figure 9 – Aadhaar Indian Express

Source – https://indianexpress.com/article/india/ecosystem-hit-govt-thumbs-up-but-fingers-crossed-in-tech-space-5376326/

Initiatives of India for adoption of Industry 4.0

Various emerging technologies are being used already by different business segments in India eg- FMCG, healthcare industry, telecommunication industry, manufacturing and logistics industry. Other than this, the country has started investment in developing smart cities since the year 2015. The mission of development of smart cities

is possible to achieve due to presence of technologies emerged through Industry 4.0.

Very soon India will be ready with its smart factory in Bangalore which will give mass production in a cost effective manner. One of the states of India will be transformed to smart IOT hub by 2020.

These are the few initiatives taken by the country for adopting the latest technology in the years to come. Various startups in India, like zomato, have realized the reliability and effectiveness of crowdsourcing by knowing about the choice and creativity of their loyal customers as compared to the conventional methods.

Industry 4.0 is no longer a 'future trend'. Various industries have adopted the technologies as part of their business development plans and transform their businesses.

Challenges faced by the country

Although India is welcoming industry 4.0 with both of her hands, industries are facing few challenges in deploying the emerging technologies and business ideas. These challenges are as below -

Crowdsourcing issues

If any organisation plans to launch a crowdsourcing campaign, suggestions shared by the stakeholders must be given proper care and all the decisions should be transparent for them as well. The organisations need to be ready for receiving funny and weird suggestions too. There are few examples of such organisations in India who faced such issues of crowdsourcing.

- 'Henkel', a washing powder manufacturer faced an unsuccessful crowdsourcing campaign in 2011 as it tried to create a new design for the dishwasher liquid 'Pril'.

- The crowd suggested weird names for a drink launched by 'Mountain Dew'.

- There is no guarantee that the ideas given by the crowd are free from plagiarism. In such cases, organisations may face copyright issues later on.

Privacy issues

Since smart devices are capable of collecting, storing and transmitting personal data even without the person's conscious knowledge, privacy issues have become highly complicated and extremely important.

Cyber security issues

Due to ubiquity of Internet, social media, IoT and networking technologies, **threat of cyber attack and data theft has become more vulnerable.** Around 60% Indian organisations feel that cyber security has become one of the main concerns for them in the era of 4th industrial revolution.

Conclusion and Future Work

McKinsey analysed, "if Indian companies adopt Industry 4.0 across functions such as manufacturing, supply chain, logistics and procurement, they can enhance their operating profits by 40% at less than 10% of the planned capital expenditure."

Based on the above lines of McKinsey, the author reviewed the existing scenario of crowdsourcing in India and predicted the future development of this concept in business processes with the supportive set of emerging technologies of Industry 4.0. The conclusion is that instead of crowdsourcing, a new concept of crowdsensing will emerge in which required information will be gathered by the sensors from all stakeholders automatically, without any human intervention. This concept will work proficiently in India after smart cities will be fully developed within few more years.

One major hurdle of development of industries in 4th industry revolution may be lack of technology experts and practitioners in the business industry which may decrease the speed of development for some time initially but once this situation will be over, the world will see new innovations in coming years.

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