

Evaluating Gig Economy In Industry 4.0 – A Sustainable Perspective

Avaliando Gig Economy na Indústria 4.0 - Uma Perspectiva Sustentável

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Abstract: *Industry 4.0 is a term used to refer to the fourth Industrial Revolution. This era is identified with two powerful forces: the growing adoption of technology in the workplace, and the changes in the demographic of today's workplaces to include temporary and contractual workers. The basic tenet of Industry 4.0 - which looks at increasing the efficiency of every step in the business process in a human environment - is enshrined in gig economy. Gig economy is characterized by an increased use of technology, which results in efficient use of resources and financial welfare for all. Gig economy workforce consists mainly of temporary or contract workers who leverage information technology to work efficiently. This paper highlights the relationship between gig economy and sustainability. The challenge of sustainability is to strike a balance between economic growth and concern for the environment. Gig economy is sustainable, as it meets the profit, planet and people related concerns. This form of work leads to increased financial welfare and quality of life for all, with a concern for environment and the people. This paper focuses on the challenges faced by the gig economy in order to remain sustainable. The opportunities which are inherent in the challenges are also delineated. Finally, gig economy has the capacity to build a roadmap for this new form of work, challenging the age-old business practices.*

Palavras-chave: *resultado triplo; indústria 4.0; gig economia; sustentabilidade*

1. INTRODUCTION

Industry 4.0 is a term introduced by Klaus Schwab of the World Economic Forum, to indicate the fourth industrial revolution – the first revolution being the steam engine, second being electricity, and the third being computers. Industry 4.0 technologies consist of Internet of Things, artificial intelligence (AI), robotics, 3D printing, cyber-physical systems, augmented reality, and virtual reality. Industry 4.0 technologies are predominantly skill-based and capital intensive in nature. These technologies, especially robotics, AI, and automation, will define the future of the global work, giving rise to the gig economy. This phase is characterized by interconnectivity, automation, machine learning and real time data. Most organizations face a

common dilemma, the need for interactivity and an ability to acquire real time understanding into operations, customers both internal and external, product and human resources. Industry 4.0 is not only about advances in technology and tools, it seeks to change the landscape of work. This will have ramifications on the way organizations function and operate. Industry 4.0 encompass the concept of shared economy. Shared economy is increasingly recognized as new paradigm in the world of work. Its foundations are built on the philosophy of Industry 4.0. It seeks to reduce costs and waste, increase efficiency, quality and flexibility in business processes and contribute to development of a humane environment. This challenge “to live well” and to create “strong health and just societies” is also a challenge of sustainability. This paper seeks to establish a relationship between shared economy and sustainability. Automation is expected to create new professions that do not exist today, much as technologies of the past have done. Hence, Industry 4.0 and gig economy go hand in hand, especially after the pandemic, which resulted in a work from home scenario. With less commuting due to this, there was additional time available on hand, and professionals looked to engage themselves in the gig economy as well.

Industry 4.0 embodied the concept of shared economy

According to Triplepundit (2019) “The sharing economy” refers to a type of business built on sharing of resources, permitting buyers to access goods without the burden of ownerships. Under shared economy, agents share assets they own but do not often use with opportunity to receive financial reward for it. The impetus towards a shared economy came in due to an increase in digital technologies and the financial crisis. Some popular synonyms for shared economy are “collaborative consumption” “collaborative economy” “peer economy” and “on demand economy” The expansion of the ‘gig’ economy, also known as the ‘sharing’ or ‘platform’ economy, is a relatively phenomenon that is increasingly impacting employee-employer relations and processes in organizations. The term Gig economy was conceived by Tina Brown, the former New Yorker editor in 2009. It has been used by studies focused on shared economy (SE) workers, although they are often applied to describe the same business phenomenon that include companies like Uber. This particular paper will use the term “gig economy” as a synonym to “shared economy”.

“Gig” in colloquial terms, refers to a stint or a short term, temporary employment with an organization. Independent contractors started working in the area of Information Technology (IT) in the UK, where this mode of association with companies started trending in the late 1990s. The trend accelerated worldwide due to the spike in demand for IT professionals who could assist with Year 2000 (Y2K) projects. Subsequently, the platform business model came into vogue, with companies such as Uber and Airbnb becoming successful. These companies became Unicorns (i.e., achieving valuation of \$1 billion or more), without either permanent employees or permanent physical infrastructure. Companies whose modus operandi is through digital platform generally shun employing traditional regular employees. They are in a sense shell companies, without a workforce. Thus, it can be said that gig workers are said to be employed by an algorithm (KENNEDY, 2017).

Characteristics Of Gig Economy

The gig economy results in increase in financial welfare for all participants, more efficient use of resources, positive contribution to the environment, the development of social networks, spillover effects, decreased transaction costs, and financial stability. These are explained below.

- a) Increase in financial welfare for all gig members: Lenders of unused assets receive extra revenue of renting whereas borrowers spent less time for buying that asset or lending it from “traditional economy”;
- b) More efficient use of resources: If people begin to share an asset, it can be used more frequently or bring more benefit to the society. It is a creative way to consume through pooling and sharing resources that would otherwise be left idle. Sellers either manage or join a platform to disseminate a product or service across many keen users. Such ventures not only bring down waste for customers but also enhance the utilization of assets. This has a positive impact on the return on investment for asset owners. The success of Uber and Airbnb are excellent examples of innovation wherein owners share their assets which were otherwise underutilized, but now are source of income to the asset owners. Farmers across India do not have access to resources such as tractor and farm equipment. This results in huge wastage of crops and sometimes leading to dire consequences such as farmer suicide, etc. Tringo, a farm equipment rental service which includes tractors, allows these resources to be available to the farmers at inexpensive rates. However, it needs to be understood that having farm equipment handy does not automatically result in usage of this equipment; yet, availability of these equipment is ensured;
- c) Positive contribution to the environment: If people start to share asset, instead of buying them, production of that asset are likely to be reduced. As an indirect effect, pollution caused by supplier of raw material and manufactures will also fall.(ECONOMIST, 2013);
- d) Development of social network: People will meet each other while sharing and make more useful connections which is so important in this time where urban households are alienated from each other (WALSH, 2013);
- e) Spill over effect: Gig firms generate extra financial benefit, even for those who are not involved in it directly;
- f) Decreased transaction costs due to the leveraging of digital technologies;
- g) Financial stability: Those who could not afford to buy expensive assets could experience them, as people started to share them;
- h) These are also the hall mark of responsible business For example, reduction of operating expenses due to more productive resource management, successful economic, environment and social risk management, business stability depending on good associations with key stake holders and building staunch allegiance and gaining trust of customer through communication and commitment.

Current Scenario

It is estimated that India’s gig economy has a capability to grow up to \$3 billion. The demand for technical gig services increased by 20-25 percent between April-November this year compared to pre Covid levels (MAMTHA, 2020)

The tech industry leads Indian industry in overall gig hiring today. Gig work model is seen as a capacity scale up and reconstitution model by half of Indian industry today. The IT sector currently employs gig workers apart from their overall workforce. It seeks to increase the overall gig workforce in the coming 2 to 5 years, led by the Business Process Management (BPM) and IT industry in particular. Mostly, Gig workers are found in the standardized delivery roles. These roles are modular, process oriented and measurable to build a robust, long term engagement model beyond transactional contract-based work arrangements (NASSCOM, 2020)

The app-based food delivery industry accounts for an approximate \$7 billion to Asia third largest economy. Swiggy announced that it had acquired \$1 billion in funding from foreign backers including South Africa's Naspers and China's Tencent. The estimated value of the five-year company is estimated at more than \$3 billion. Alibaba Ant Financial, the Chinese behemoth, recently invested \$210 million in Zomato, valuing the start-up at \$2 billion. The app-based food delivery industry takes advantage of the rapidly growing information technology industry leading to efficient smart phone connectivity and cheap data plans.

Sustainability

Sustainability is a complicated concept. In the Charter for the UCLA Sustainability Committee (Sustain.ucla.edu UCLA Sustainability Committee Charter), **sustainability** is defined as:

The integration of environmental health, social equity and economic vitality in order to create thriving, healthy, diverse and resilient communities for this generation and generations to come. The practice of sustainability recognizes how these issues are interconnected and requires a systems approach and an acknowledgement of complexity.

The most used definition of **sustainable development** comes from the UN World Commission on Environment and Development: "sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Sustainability is often thought of as a long-term goal (i.e., a more sustainable world), while sustainable development refers to the many procedures and routes to achieve it (e.g., sustainable production and consumption, sustainable agriculture and forestry, research and technology transfer good government, education).

The **triple bottom line** is a salient assumption that forms part of the bedrock of sustainable development. It was first coined by John Elkington, the founder of a sustainability consultancy firm. This declaration means that businesses should consider three different core values in their concerns – profit or profitability, planet and people. Under this perspective, companies look for an equitable approach to long-term social, environmental and economic objectives.

- The Profit aspect of sustainability is used to describe strategies that encourage the usage of socio-economic resources in the best possible manner. A sustainable economic model suggests a fair distribution and efficient allocation of resources. The idea is to foster the utilization of those resources in an efficient and responsible manner, that provides long-term benefits and establishes profitability. A profitable business is more likely to remain in business and continue to run successfully year on year;

- The Planet aspect of sustainability is evident when processes, systems and activities reduce the environmental footprint of an organization's facilities, products and operations;

- The People aspect of sustainability centers on balancing the needs of the individual with that of the community.

Gig Economy And Sustainability

According to Curtis and Lehner (2019), the five characteristics of a gig economy for it to be sustainable are as follows.

a) Information and Communication Technologies (ICT)-mediated: The recent advancements in gig economy can be attributed to the rising use of information technology which facilitates the interaction between the users and providers, creating a multi-stakeholder market. This results in decreased transaction costs. The interchange may take place either

online or offline, facilitated by technology, either through formal channel (e.g., app or website) or informal channels (e.g., Facebook group);

b) Nonfinancial motivation for ownership: The gig economy uses to its advantage the idling capacity of products and services. The basic tenet of gig economy ensures that while providers do make money during these transactions, it is by using those products and services that are not being used by the owner;

c) Temporary access: The gig economy is characterised by utilization of unused goods, yet there is no transfer of ownership rights. It is different from other ways of utilization such as buying, gifting, swapping, second-hand, donating or trading, because sharing in this context does not lead to the change of ownership;

d) Rivalrous: When sharing, the use of shared goods prevents their concurrent use by another person or entity. Goods that are available simultaneously by all are not good examples of the gig economy. This is so because they possess low idling capacity and unlimited access;

e) Tangible goods: The gig economy shall expedite, transaction of tangible goods, as against intangible goods. Tangible goods possess clear idling capacity. They also possess clear mechanisms for access and ownership.

Thus, sustainability is responsive to the demands of the modern business world which remolds potential risks into development opportunities for organizations.

Gig Economy And Sustainability Challenges

Gig economy has seen a phenomenal rise across the world in the past decade. This has raised justifiable concerns questions about its feasibility as an economic and lively hood model that can be sustainable in the future.

In the following section, we shall address the challenges faced by gig economy in order to be responsibly sustainable keeping in mind the triple bottom line profit or prosperity, planet or environment concern and people in that order.

Transactions in the gig economy are advantageous to both parties; even in the case of goods, lending them is a benefit: there are less costs to the lender because the good was unused, whereas the borrower gains entitlement to the product without charge. This reflects in the rise in income or consumer welfare as a direct outcome of lower transaction costs. The rental accommodation business models such as Airbnb and OYO rooms provide an online platform that connects the house owner to the prospective client who is looking for accommodation. As a pricing strategy, the provider charges commission from the accommodation owner, however subsidizes the customer. Since transactions now take place online, risks involved in stranger sharing are the lowest (BENKLER, 2004).

The challenges for the gig economy are further explained in terms of them being Prosperity/profit related, Planet/Environment related, and People related.

Prosperity/ Profit related Challenges

The rise of the gig economy will have ramifications on other markets. For example, legacy business and their workers in hospitality business are likely to experience lower earnings. Research found that the growth of Airbnb in Texas was at the expense of hotel earnings (Zervas et.al., 2017). This had a lopsided impact on lower end hostels and hotels not dealing with business travelers. Rentals increased in neighborhoods where home sharing is popular. It was also noticed that neighbors faced nuisance with strangers. Therefore, government agencies are being tough on their directives toward home sharing platforms.

Gig economy seems to be increasing disparity, as it has been seen that well-educated white-collar providers capture market opportunities which was the arena for less educated blue- or pink-collar workers. Concomitantly, gig economy results in increase in consumer welfare from lower prices and more variety. Economic inequality driven by provider side dynamics is likely to build up as well. According to Shapiro, (2012) many gig economy firms fail just because they do not know how to charge commission from their clients properly or do not have a sound economic plan.

Planet/ /Environmental related Challenges

There has been significant interest in the gig economy as a medium of promoting sustainable usage and environmental practices (Tussyadiah, 2016; Hamari et.al., 2016) The planet aspect or environment aspect of sustainability associated with the gig economy is also complicated. Sharing is said to be eco-friendly, because it is assumed that they reduce the requirement of the good or the building of new facilities (in the case of workplaces, buildings or shared spaces such as WeWork).

People related Challenges

With regard to people, it has been increasingly felt that both the buyers and sellers benefit from networking, making contacts, and getting to know each other (Fitzmaurice, et al. 2020, Schor et al., 2016). The success of gig economy is largely attributed to the Generation Y which actively chooses internet and mobile devices, which is a basic characteristic of gig economy. It has been seen that people who engage in the gig economy, do so for social needs rather than economic reasons (Bocker and Meelan, 2017). Yet it has been observed that the new relationships formed tend to be more casual and not long lasting. People now participate in the gig economy for economic reasons (PARIGI et al., 2013).

Ratings are used by the platform owners to ascertain the quality of service rendered. The quality of ratings may also contribute to declining significance of social networking on the sharing platform. As participants gain more rating overtime, trust is established and there is less requirement for face-to-face transaction. Gig economy may be damaging to social cohesion. It has been seen that people engage in types of exclusionary behavior while choosing their trading partners in the gig economy (SCHOR et al., 2016).

In conclusion, people, planet profit effects on gig economy are largely unclear. While the monetary aspects are obvious, the distribution effect may be quite skewed. Environment benefits are mainly seen in car and ride sharing. However, its effect on the overall effect of gig platforms may be minimal due to rebound effect.

Opportunities For Sustainable Gig Economy In Industry 4.0

Based on review of literature, the opportunities inherent in each of the three challenges – namely, Profit related, Planet related, and People related - are presented in this section.

Profit Related:

There is a fear that gig economy will become part of the informal network economy as a result of which they do not pay any taxes and will not follow safety regulations (Shapiro, 2012).

Many platforms operate around loopholes in law and take undue advantage of these gaps in regulation. They say that the current laws are not applicable to their business model. “We’re a technology company,” they will state – rather than acknowledge that they are in fact a high-

tech taxi company, food delivery company or cleaning company, etc. The lack of legally accepted employer-employee relationship, such workers are mostly not eligible to any social benefits, such as, gratuity, provident fund, sick leaves, annual leaves and overtime, besides a severance compensation.

Cost sharing was seen to be the main reason for participants who joined sharing economic practices such as Zipcars. For it to be shareable, the asset must not be too cheap or be too expensive (Sach, 2011). The gig economy model must meet the requirements of individual at lesser costs or better quality.

In order for gig economy to be successful, the platform should collect a “critical mass of users”. This should make sure that if a new entrant came, consumers would find it difficult to change to a new platform. However, there is a risk that that known market players would engage in trade barriers which would not be avoided by government anti-monopoly authorities due to lack of rules.

The legal framework is not ready for such eventualities. In the meanwhile, it is to be ensured that the interests of the workers are safeguarded.

Planet Related:

The relationship between gig economy and sustainability needs to be established empirically. Most research done in this area usually focus on “partial equilibrium analysis” which looks at first order effects. We need to have a systems approach in which structure, processes and practices are linked to each other. In order to find out the full impact, it is essential to examine all the changes resulting from the new sharing practices (FRENKEN, 2017). The relation between gig economy and ecological impact from a macro-economic perspective is yet to be confirmed.

People Related:

People are afraid of providing access to the assets they possess, to complete strangers. The other party is not sure whether using assets of unknown people may prove to be harmful to them. Trust and reputation are two main pillars that ensure the smooth functioning of the sharing economy. The trust and faith of people build up over time through frequent exchanges, interactions, communication and better understanding of the processes. Individual’s trust is based on the reputation and credibility of the platform.

There could be a formation of the self-policing community where two parties rate each other after every deal (SACHS, 2011). This rating influences many people to experience these sharing platforms (ZERVAS et al., 2015). Yet, cases of ratings being inflated have come into the public eye. Effective use of Facebook information could be made to rate the dependability of potential clients (SACHS, 2011).

There is a need for empirical study, to assess the sustainability impact of gig economy. The studies should include macro-economic variables focusing on all the aspects of sustainability - profit, planet and people. Unfortunately, gig platforms are extremely careful in granting researchers access to customer data, stating privacy and competition concerns. Research done by gig platforms using their own data tend to emphasize the first-round effects without looking at overall perspective. This has serious ramifications as vital policy decisions cannot be taken due to lack of evidence.

Gig economy’s exponential growth has left it unprotected to unfair competition between platform and transitional operations.

The Way Forward

Gig economy has a tremendous capability to lay an innovative trail to sustainable business and usage practices and thereby testing traditional business practices for good (COHEN & KIETZMANN, 2014). The future of the sustainable gig economy (Woodcock and Graham, 2012) lies in the following four trends: transparency, accountability, worker power, and finally, democratic ownership.

Transparency

Keeping in mind the people perspective, the gig economy seems to be concentrating on the results that workers bring, rather than the result of work on the workers. It seems to be an offshoot of traditional management theories, where in workers were looked at as an economic being rather than a social being (GANDINI, 2016). A set of five principles for fair work in gig economy which embody the spirit of sustainability are: fair wages (paying at least a minimum wage), the fair conditions (protecting worker's health and wellbeing), fair contracts (which are legal and clear), fair governance (having an appeals process for disciplinary issues and clear cut policies) that ensure justice for workers and finally, fair representations (worker voice is important in decision making, and acknowledging bodies such as unions, associations, etc.). Workers through various ways such as Facebook, WhatsApp, and Glassdoor, share information about their organizations, which only increases transparency.

Building reciprocal understanding about work and working conditions is a first step towards larger systemic change. This could lay the bedrock for a fairer world of work.

Accountability

On the one hand, governments the world over are deliberating seriously regarding the concept of universal basic income, to ensure minimum living standards for its employees, irrespective of their extent of employment throughout the year. On the other hand, companies such as Microsoft and Amazon, that employ temporary workers or independent contractors to a significant extent, have to ensure that gig workers' rights are protected. Some of the aspects that need to be assured include the ability to bargain collectively, basic working conditions including wages, hours of work and safe and healthy workplaces (INTERNATIONAL LABOUR ORGANIZATION, 2019).

Worker power

There is a need to build structures, processes and practices in the organization that harness worker power. It is important to involve workers in decision making. Since workers are aware of ground realities, they offer innovative yet practical solutions. However, to make this happen, workers need physical places and access to digital networks that help build stable and long-lasting collaborations.

Democratic ownership

Workers need to be involved in the formulation, implementation, and evaluation of all the aspects of the organization. Workers need to take over the running of the organization. Democratic ownership makes sure that it allots ownership and control of economic assets far more impartially.

2. CONCLUSION

The gig economy in the future would be characterized by users who know about the effects of the choices they make not only in monetary terms, but also their social and environmental ramifications. The legal framework would ensure the safety of the worker in the gig economy and the worker will have a significant role to play in the running of the organization. We would have formed strategies to strengthen, reinforce and use democratically run and responsible gig economy platforms.

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