

# Integrated Sustainability Assessment of Sharing Economy Models: The Case for Qatar

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## Abstract

This research is another contribution to the value of the sharing economy. Many applications are used worldwide for individual and group market sharing either Business-to-Business, Business-to-Customer, or Customer-to-Customer business models. In this research, we briefly illustrated 9 applications of the sharing economy. However, as the sharing economy phenomena grow, Triple Bottom Lines (TBL) for sustainability has to be evaluated for positive and negative impacts to ensure the quality of the business model as well as continuous improvement. Three methods of assessment were introduced: 1) Product Life Cycle Assessment, 2) Supply Chain Network & Saving and 3) Social Media Analysis of Sharing Economy Platform Website. Based on the literature review findings, many benefits and opportunities for improvement were addressed and summarized. As a result, the lesson learned analysis and recommendations were contributed to this research for the State of Qatar case. The sharing economy is a great global innovation and a proven high level of success. Consequently, researchers shall continue to study different business models and convert them into better market sharing by considering the sustainability, supply chain, policy implications, and other local and international legislation requirements. The authors also recommend widespread adoption of circular economy applications such as carsharing, home-sharing, for the FIFA World Cup Qatar 2022.

## Keywords

Sharing economy; Business models; Triple Bottom Lines, Sustainability, Supply Chain.

## 1. Introduction

One of the main significant roles to save the current economic value is the Sharing Economy concept. In this role, goods and services can be shared by different entities or customers using several business models for common achievements such as housing, carriage, and goods. Sharing the economy converted a slogan in the launch of this time period due to the shifting tenets and attitudes of the community and the technology growth especially after the many successful initiatives such as Airbnb and Uber (Cheng and Edwards 2017, Martin 2016). Exchanging the goods is also another innovative idea where the machine/equipment can be utilized to the maximum and shared by different parties to achieve each individual target (Allennm and Berg 2016). Numerous business models are available to customers in order to access other organizations' products, goods, or services which are considered utility sharing (European Commission 2013). Saving the economy by sharing is a sustainable technique in which customers could do their own needs as well as reducing the environmental impact footprint (Demainly and Novel 2014). The sharing economy is an area of research to develop and establish more creative and sustainable ideas to be considered by the decision-maker in organizations (Heinrichs 2013). Referring to the Sustainable Development Goals (SDGs) plan by 2030, a sharing economy is part of the initiatives that are built to support achieving these goals (United Nations

2017a). The sharing economy is positively contributing to have sustainable solutions worldwide either directly or indirectly for the 17 SDGs presented in Figure 1.



Figure 1. The global sustainable development goals (United Nations 2017b)

Sharing economy advocates highlighted the positive environmental influence (i.g. reduction of Greenhouse Gas, fuel consumption, etc), commercial benefits (i.e., subordinate expenses, market expansion, etc), and social corporate responsibility (i.e., better community interactions, work availability, customer satisfaction, etc) (Gonzalez-Padron 2017, Schor 2016). In many previous cases, the sharing economy could be in digitized phases for peer-to-peer exchanges (e.g., (Belk 2014, Hamari et al. 2016, Piscicelli et al. 2015, Matzler 2015)). Several mobile applications are in use for vehicle sharing for transportation purposes at the same or different destinations in the same way (Davidson and Infranca 2016, Stephany 2015). It was found to be user-friendly, professional, and efficient with a high level of quality performance by organizations considering the sustainably and economy in deep (see, e.g., Acquier et al 2017, Mair and Reischauer 2017, Geissinger et al. 2019). The blend consents for innovative systems of business movement, policy, and social interface, regularly systematized in rapid-growing digital stages. Moreover, the sharing economy often derives from a talent for sustainability. In which making use of indolent capacity might reduce the claim for goods and sort their usage further well-organized (Cohen and Kietzmann 2014, Daunoriene et al. 2015, Nica et al. 2015, Hamari et al. 2015a, Hamari et al. 2015b, Ma et al. 2018, Piscicelli et al. 2018).

Considerable cases found in the literature show a significant positive impact on the Triple Bottom Lines (TBL) components (Kucukvar et al. 2014, Onat et al. 2014). In the San Fransisco case, ridesharing platforms decided to be implemented as a tolerant stage to mark San Fransisco as a global innovative city (Flores et al. 2017). In China, ridesharing is enclosed as a package that has the potential to achieve considerable energy reserves and pollution prevention by weakening the willingness to procure new cars (Yu et al. 2017). In Indonesia and the Philippines, another study was conducted for sharing economy in a ridesharing platform taking into account the huge number of users as well as the differences in culture and lifestyle (Yuana et al. 2019). One more case was evaluated in Singapore and Australia. Another success story in ridesharing was framed and focused on tourism ecosystems and smart technologies (Tham 2016). The sharing economy is a way of promoting new methods of financial development and empowering peoples through innovative opportunities for revenue, employment, and social interface (Kenney and Zysman 2016, Cherry and Pidgeon 2018). The sharing economy researches and studies are increasing significantly for the last 10 years in different sectors. Figure 2 show the express upsurge of publications.

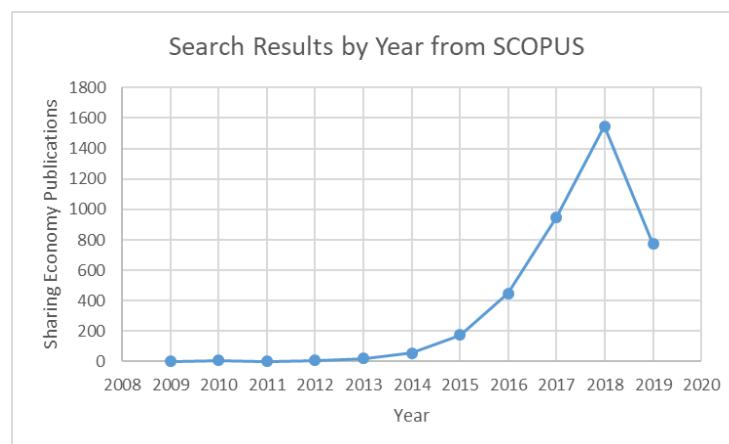


Figure 2. Search results from 2009 until 2019

The sharing economy ecosystem is containing consistent subsystems. These four subsystems have interrelation based on the nature of life. The inner subsystem (layer) involves providers and consumers. Both are having a relationship with the surrounding boundary (platform). The platform subsystem controls the Triadic relationship as well as the business model with the partners, competitors, and the bigger subsystem of “Government”. The platform subsystem shall follow any governmental or organizational requirements within the community. Social, economic, and environmental impact within the sharing economy ecosystem framework (Leunga et al. 2019). Figure 3 illustrates the sharing economy ecosystem framework explained above.

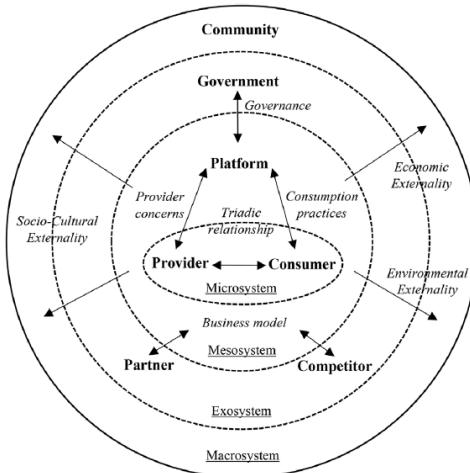


Figure 3. A model of ecosystem framework (Leunga et al. 2019)

### 1.1 Objective

This research focuses on the sharing economy's overall principles and its relation to sustainability. Many application were conducted in sharing economy worldwide and brief information about this application are introduced in Section 2 followed by addressing the positive and negative TBL impacts and sustainability matrices for general business models in Section 3. Sharing economy methods of assessment such as product life cycle, supply chain network & saving, and social media analysis of sharing economy platform websites were highlighted in Section 4. The research team focused also on the benefits and current opportunities to apply the successful storied in the sharing economy in Section 5 followed by the lesson learned and recommendation Section 6 which emphasis more on the State of Qatar. Finally, the conclusion and future work are presented in Section 7.

## 2. Applications of Sharing Economy

The sharing economy is well dispersed through many applications based on different sectors. Many positive feedback and success stories improved the sustainability in each sector which will be briefly highlighted in this section. The online platform plays an excellent role to offer goods and services for an easy and accessible way to approached customers.

### 2.1 Business-to-Consumer

Business to consumer is a type of consumer transaction where products are sold directly to the consumer. In this case, the supplier buys products or services for their own consumption. The supply chain network can deal with producers, distributors, and merchants. In the modern world that is characterized by high competition and changing customer expectations, some industries are opting for leasing rather than selling to consumers. For instance, in the computer industry. Using this strategy, the product needs to be remanufactured once the lease expires. Other industries include car renting and furniture sales business. For these lease-based business models, consideration should be given to the closed-loop supply chain (ZanjiraniFarahani et al. 2016).

Essentially, the closed-loop integrates the traditional supply process with reverse logistics where an item is considered upon serving its original purpose. Once the item is manufactured it may be shipped and a reseller may be

used to distribute it. However, the manufacturer strives on encouraging the user to return the item once they don't require it or when it becomes un-functional. Then, reverse logistics steps in, and these items are repaired and later resold or they may be reused when making other products in the future. As an example, from a sustainable economy perspective, the United States retail e-commerce sales raised from around 34 million USD in 2009 to 154.5 million USD in 2019, powered by using novel technologies and a decade of United States monetary recovery. It is expected by the coming decades that challenges will continue to be developed and technologies will be enhanced based on the needs (Business News Daily Editor, 2020).

## **2.2 Peer-to-Peer Car Rental**

In peer-to-peer car rental, car owners give out their car for rent by others in a short period of time. The supply chain network should consist of car manufacturers, fleet distributors, and the customer. In this business, owners should consider having a collaborative model in the sharing economy to enable easy linkage with customers in support, insurance, maintenance, and fines if applicable (Guyader and Piscicelli 2019). Get Around is a peer-to-peer car rental company established in the United States in 2009 with annual revenue of 30 million USD which makes this type of business promising to revive the local market (FATbit Chef, 2021).

## **2.3 Ridesharing**

Ride-sharing is another cost-effective means of commuting which targets groups of people traveling together. These may include shoppers, workmates, and families among others. In ridesharing, the business should consider having a digital supply chain (Jin et al. 2018). Using this supply chain, there should be a platform to connect drivers onboard together with riders. The design of such a supply chain should be in a way that matches demand with supply while increasing the visibility of vehicles ready for sharing to ensure better asset utilization. A study on ridesharing proved that there is potential to reduce total kilometers driven by about 24% based on some valid assumptions. This reduction in traveling distance is equivalent to approximately 4.0 tons less of daily CO<sub>2</sub> emission (Jalali et al. 2017).

## **2.4 Bike Riding**

In bike riding, an integrated sharing economy model to be built and shall be capable to plan, monitor, and respond in this business. Again, the application should be designed in a way that users get accurate and detailed information and ensure there is a friendly interface. By having an integrated supply chain model, the company is capable of responding to customers' needs fast enough and high customer satisfaction (Yuana et al. 2019). Referring to a study conducted in Denmark, in which 420 thousand people bike at some point during the year, resulting in the saving of a net sum of 253 million USD annually in health care aids. The bike has many socio-economic benefits (Bielak 2015).

## **2.5 Home Swaps**

Home swapping is where parties agree to accommodate each other for a given period of time. Home swaps follow a mutual exchange process. The process should be set in a way that allows one to find a swap and send an application to the landlord. Then, both parties agree on the terms and conditions (Andriotis and Agiomirgianakis 2014). In this business, just-in-time operations are necessary to allow homeowners to respond quickly to those interested in home swapping. Additionally, the application model should ensure that there is a smart relationship in the supply chain as this creates the base for the swaps.

## **2.6 Fashion Rental**

For fashion rental, the closed-loop supply chain should be considered. Fashion clothes are used a bit and later are kept in a chest of drawers and later they may be thrown away as part of the garbage. Because of these features, there's a need to have a rent centered system to promote product sustainability. Fashion item's lifecycle may be short and their costs may be higher and again fashion can be transferred from one city to the next. Consuming fashion products using rental services helps in improving sustainability as mentioned by (Hu et al. 2014). Therefore a rental established closed supply chain works well for fashion items sharing economy business.

## **2.7 Clothes Washing**

The clothes washing supply chain should be one that ensures minimal waste in the supply chain. This is achievable by using appliances that are sustainable and recyclable as opposed to disposable appliances. This is achievable by creating an internet connection of appliances and users while designing great subscriptions having active sales channels while managing the relationships with consumers. A comprehensive case study conducted in Japan shows the reduction in environmental negative impacts and customer satisfaction (Amasawa et al. 2018).

## 2.8 E-Commerce

E-commerce firms sell different products with each product having its strategic needs. In this case, it calls for a platform for sales and ensures transparent and sustainable supply chains that ensure efficiency. There should be distribution centers for online orders while ensuring that inventory systems are automated (Marinkovic et al. 2016).

## 2.9 House Sharing

In house sharing, the supply chain should have direct links with customers cutting down the traditional practice of point to point. The business should ensure it utilizes big data to get instant information from the customer. This data allows house owners to get insights about the customers and their needs while giving a future prediction. A deep study has been conducted on home-sharing for Hostaway and how far it is economically worth it (Zhuikova 2017).

## 3. Metrics

The sharing economy concept continues to grow worldwide. With modern technological growth, there exist various platforms that ease the process of sharing goods or services while increasing its convenience. There are various positive and negative impacts of the sharing economy. This paper looks at the impacts of the sharing economy as part of the sustainable assessment process. These sustainability indicators are briefly illustrated in Table 1.

Table 1. Sustainability assessment indicators for use

Focus Area	Indicator	Description
Environmental	Greenhouse Gases (GHGs)	The Amount of CO <sub>2</sub> eq generation is based on fuel consumption and other global warming potential gases. Many environmental concerns are considered a major consequence of global warming.
	Energy Consumption	Energy usage required the firing of materials with a heating value which is highlighted as the main factor of GHGs and contributing factors to the economy.
Economic	Gross Operating Surplus (GOS)	The governments' available currency of making investments, operating the local market, and paying any required taxes.
	Total Investment	Raw material, services, and goods purchasing either directly or indirectly.
	Total Intermediate	Intermediate raw material and supply chain investment.
	Import	The applicable financial value of purchased material from overseas countries to be delivered to the point of the requestor.
Social	Tax	Any compulsory legislative charge to customer or company and usual its fixed percentage.
	Compensation of employees	Employee income based on the work completed including additional allowances.
	Men	The number of men who handle the work.
	Women	The number of women who handle the work.
	Injuries	Rate of recordable injuries to complete the work.
	Labor Skills	Level of worker's skills, education & quality.

## 3.1 Positive Impacts of the Sharing Economy

### 3.1.1 Social Impacts

The sharing economy is an arrangement that gives people from different groups an opportunity to reduce their expenses, earn a profit, and be included socially. Using the sharing economy, there exist carpooling services that help in connecting people from one similar point to the next while making transportation cheaper. Sharing rides with others give people who don't own a car a chance to commute with reduced costs. Additionally, with the sharing economy, we have peer-to-peer accommodation that allows people to share a room that is not in use without renting it on a permanent basis (Geissinger et al. 2019). An example includes AirBnB which gives people a chance to look for houses, rooms, or apartments and rent at reduced prices. Therefore, the social benefits of the sharing economy include helping people and making them socially included. For instance, when people age, they may be unable to drive, and they may opt to carpool, they may also need an extra source of income which is achieved by room sharing. Notably, the sharing economy helps individuals save money by using shared resources (Leunga et al. 2019).

### **3.1.2 Economic Impacts**

The sharing economy comes with various economic benefits. First of all, individuals reduce their costs as carpooling services and car sharing can be accessed at a lesser price rendering them favorable to commuters who are sensitive to price (Wu and Zhi 2016). For instance, Uber provides cost-effective services and they are able to match supply with demand thereby allow better resource utilization. This is profitable to the company as it does not have to incur costs when demand is low as they can predict peak and off-peak times (Leunga et al. 2019).

On the economic growth aspect, the sharing economy provides employment opportunities. For instance, it has created self-employment, as individuals can rent out their vehicles and earn an income out of it. Additionally, they can rent out the unused space in their homes or even items at a fee for a given time period. The sharing economy, therefore, gives people a chance to earn more income as opposed to the traditional economy (Leunga et al. 2019).

### **3.1.3 Environment Impacts**

Environmentally, the sharing economy is beneficial as it leads to reduced emissions due to the lower number of vehicles on the roads as people opt for car-sharing and carpooling services as opposed to each one of them using their private cars. As noted by (Skjelvik et al. 2017), this reduces air pollution while reducing noise and congestion, additionally using the sharing economy, recycling is recommended as opposed to burning items like clothing.

## **3.2 Negative Impacts of the Sharing Economy**

Socially, a sharing economy may promote moral issues in society and security may be under threat. This occurs as it entails dealing with unknown people using online platforms. Because of moral issues in society like theft cases, one may not trust people with their assets and people are also cautious when getting into other people's cars or houses. Economically, a sharing economy may promote capitalism. For instance, in some cases, the Uber Company overcharge riders to keep them off the road especially in the winter season. Besides, the accommodation sector charges a high price in festive seasons and this may not feel a sense of saving that comes with the sharing economy (Hu et al. 2014). On the other hand, the sharing economy allows entry of service providers who are not licensed and some fail to comply with environmental regulations. Lack of regulation puts the safety of the individuals and community at risk and the quality of air may be compromised. Again, it creates room for having vehicles that nor serviced on the roads put the environment at risk because of emissions and this may also put the life of commuters at risk. Uncertain environmental impacts still applicable and it is subject to further research to confirm scientifically if the sharing economy phenomena help to reduce the amount of energy used as well as the emissions formation (Jin et al. 2018).

## **4. Methods of Assessment**

### **4.1 Product Life Cycle Assessment**

The product life cycle assessment is one of the practical methods for sustainability assessment. It is wildly used to evaluate the product life cycle from beginning to end and how it will impact the environment with each and every stage of the product life. Life cycle sustainable analysis is a method to measure the economic impact and the social impact on the product lifecycle in addition to the environmental impact (Onat et al. 2017). The product lifecycle allows doing detail sustainable analyses on a product basis. The sharing economy can be influenced through the product lifecycle to help to reduce worldwide environmental pollution and Carbon footprint. Information and technology for product lifecycle can be shared to improve social life and to reduce waste (Onat et al. 2016).

### **4.2 Supply Chain Network and Saving**

The sharing economy in logistics and supply chain networks determines the company's requirement to manage the relationship between them and other companies (Kucukvar et al. 2014). The Sharing Economy has demonstrated very high unruly to numerous businesses that are advantages in the landscape. There are many advantages identified in the movement and hospitality sector. The logistics sector also is considered an important sector in service operations. The sharing economy provides a simplifying role in sustainable growth. It is a big challenge and complicated process to ensure the goods picking and delivery are optimized from a cost-saving as well as customer satisfaction perspective.

Considering the unutilized automobiles for the sharing platform process, many other businesses could use these automobiles on a rental basis either during the weekend or public holidays for personal usage, short-term projects,

and private tasks. Furthermore, it will help logistic service providers to satisfy the customer's requests with the lowest cost which is considered a win-to-win situation for the owner, customer, and service provider (Gesing 2017).

#### **4.3 Social Media Analysis of Sharing Economy Platform Website**

Social media has a great and fast impact on the sharing economy. We can see that the sharing economy industry for the media and entertainment area is having a growth by 107% over the years. Many transitions happened with the effect of social media on the sharing economy. One of them is a lot of businesses are depending on applications rather than the traditional way, such as the restaurant sector in which people are using delivery applications rather than calling the restaurant to throw the phone. Another example is the advertisement through social media. Social media has a huge impact on advertisement strategy in which it gives higher audience exposure and lower advertisement cost. The social media effect on the sharing economy is growing very vast in why many businesses worldwide are trying to have social media involved in their business. Buying and selling are easier and faster through websites and sharing information as well (Seghouani 2019).

### **5. Benefits and Opportunities**

A sharing economy seeks to maximize the use of underutilized resources. In the model, resources are not owned by a single person but by a network of people who make use of them. The framework incorporates the sharing, gifting, lending, swapping, leasing, and renting of the provisions to eliminate underutilization and to restructure consumption. The economic model is based on the argument that collaborative ownership is more beneficial than individual ownership and that access to goods is preferable than ownership of the same goods. The model focuses on access-based consumerism, which is achieved through borrowing, leasing, renting, and pooling, as opposed to ownership of the assets (Curtis and Lehner 2019). The economic approach can be applied to the transport sector, the fashion industry, and housing to eliminate redundancy and to achieve sustainable efficiency.

A lease grants exclusive possession rights and usage to the lease. A lease can cover the land, equipment, and buildings. A business can avail the option of leasing to customers who use them in return for continuous payments. A lease agreement can exclude the initial deposit. In a sharing economy, businesses will only offer leases for their products instead of normative sales. In line with the objectives of a sharing economy, leases will grant usage rights and partial possession as opposed to full ownership. Since other parties can utilize the leased resources after the expiry of the set timeframes, the assets will not become redundant.

Sharing economic principles can be applied to the transportation sector through peer-to-peer car rentals, ride-sharing, and bike-sharing. In peer-to-peer car rentals, vehicle owners lease their cars out to other people for set periods. The car owners first register on a service provider portal; then, a person seeking their services can find them at the portal and pay a fee to use any available vehicle. By renting out cars, the owners can make money, and the vehicles are fully utilized. A sharing economy seeks to maximize the use of existing resources; in this case, peer-to-peer car rental achieves this objective. Ride-sharing involves pooling people together to use a single transformational unit, for example, a car. By using one vehicle, transportation costs, environmental pollution, and traffic congestion are reduced; thus, transport systems become more efficient and environmentally friendly. Carpooling is also efficient, as it saves citizens' time and money (Shaheen et al. 2016). Bikes riding can also be adopted as part of sharing economies. In the bike-sharing system, bicycles are made available to the public for a fee or for free. The bikes connect passengers to public transport stations, which eliminates the first mile and last-mile problem. By facilitating the use of public means, bicycles enable the realization of sharing economies.

The theory of a sharing economy also extends to the fashion industry. In a sharing economy, fashion accessories are rented from rental service providers. This model eliminates the sole ownership of fashion items that easily become redundant. Moreover, the public can choose from a wide range of products, which allows them to experiment with different styles before settling on a single fashion line. Fashion renting also meets the specific needs of customers. For example, for a wedding, a bride can rent a gown and return it later instead of buying it. Otherwise, such fashion accessories become stockpiled and are unlikely to be reused by the same person. Hence, fashion renting eliminates this kind of underutilization and wastage. Cloth washing can also be made more economical by incorporating the principles of sharing economies. Washing machines can be lent out to other people or laundry can be done for others at set prices; thus, this eliminates the need for personal washing machines through access-based owners.

Home swaps and house sharing also operate on the principle of sharing economies. House swaps occur when families from two different locations visit each other's regions. However, instead of renting hotel rooms and lodgings, the families agree to use each other's houses for the set duration. The approach eliminates the need for

hotels and other expensive housing arrangements. It also promotes tourism by reducing overall costs. Heinrichs (2013) highlights that the sharing of rent and the exchange of goods through schemes such as home swaps is the cornerstone of the sharing economy. House sharing refers to an arrangement where a person or family temporarily stays with another family in their house at a set price or for free. These two sharing approaches to housing will lead to environmental conservation by reducing carbon emissions and the environmental degradation associated with real estate development.

## 6. Lesson Learned and Recommendations (State of Qatar Case)

Based on the overview conducted in the literature for the sharing economy, we found that there are ongoing concerns for the tourism and hospitality business. The hospitality or accommodation sharing economy system has impacted negatively the local hotel room's revenue. As a result, hotels in the area shall look back into the market prices and improve the rental rates in order to stay in operation and meets customer demands as the competition being more.

Uncertain environmental impacts remain in the gray area where further researches and detailed studies are required to confirm how they could be scientifically impacted by the sharing economy phenomena. Greenhouse gases, criteria emissions pollutant, wastewater discharges, and energy consumption are examples of the environmental impacts which are subject to change.

Additionally, most of the sharing economy studies are found in countries with high development scale and more population which is logical due to customer needs and constraints of nature. There is a great opportunity to conduct several studies related to sharing economy businesses in the State of Qatar while considering the life cycle assessment, sustainability indicators, and supply chain. Using SCOPUS data presented in Figure 4, no publications or case studies based sharing economy found for Qatar. We highly recommend initiating and support further researches in this area for the benefit and success stories explained in this paper.

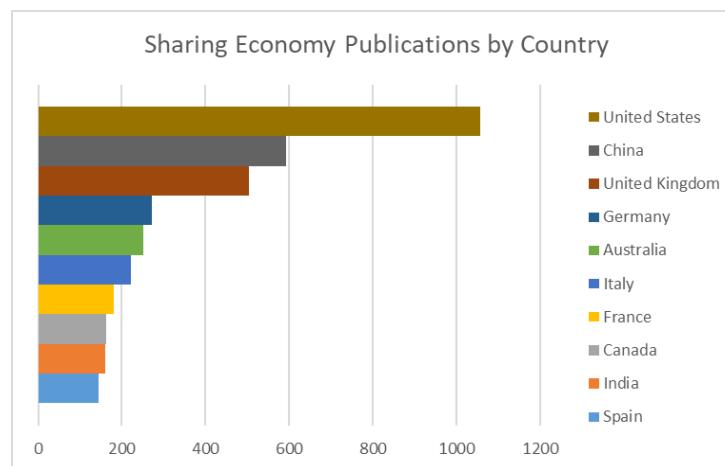


Figure 4. Sharing Economy Publications by Country from 2009 until 2019

Different cultures and lifestyles may have resistance to apply sharing economy applications. For example, in Qataris culture, ridesharing and carpooling could be challenged with the current lifestyle for nationals which reduces the chances of improving the sharing economy in Qatar. This has no relation with being Qatar a rich country nor having constrained in traditions and culture. Generally, in the State of Qatar, the automotive and transportation sharing economy is widely used nowadays and shows a gradual increase, like Uber and Careem.

Furthermore, sharing accommodation is another challenge where privacy and security remain concerns. Despite all of this, Qatar could promote this phenomenon by initiating projects in order to eliminate cultural resistance. Policymakers and governmental authorities shall illustrate the right ways to regulate the sharing economy beneficial cases, promote the local economy, demonstrate corporate social responsibility, and reduce the negative environmental impacts.

Understandably, part of the governmental revenue (either municipality or tourism authority) relies on tax paid by regulated organizations such as hotels, suites, and residential apartments. It is expected that the revenue of the government will be impacted, nevertheless, the government shall review the current case comprehensively including the sustainability assessment, and develop policies to satisfy the needs and regulate the peer-to-peer platforms with the demand shifting in the country.

In our paper, we are highly recommending establishing sharing and circular economy applications, platforms, and business models in Qatar to support FIFA World Cup Qatar 2022, Qatar National Vision (QNV) 2030 as well as country performance and development growth. Absolutely, the government will take the advantage of reducing environmental impacts, more economical benefits, customer satisfaction, and maximizing the utilization of resources. Few application-based sharing economies can be enhanced in Qatar as following:

- Shared mobility services such as bike-sharing, scooter sharing, motorbike sharing, car sharing, etc.
- Shared transportation services, such as truck sharing, logistics transportation, ridesharing and carpooling, etc.
- Material storage area and consumables sharing.
- Airplane (e.g. Qatar Airways fleet) sharing with other agencies.
- Accommodation and hospitality sharing especially during tourism seasons. Owners of farms, camps, resorts can offer their properties and increase the variety of choices which obviously will impact Qatar Tourism positively.
- Enhance the usage of the existing small-scale of consumer goods share economy applications such as Mzad Qatar, where most of the used goods, properties, spare parts, maintenance services, and many other advertisements are shares via the digitalized platform in peer-to-peer platforms.

## 7. Conclusion

The sharing economy is an area of research to develop and establish more creative and sustainable ideas to be considered by the decision-maker in organizations. The Sharing economy is part of the initiatives that are built to support achieving Sustainable Development Goals. Many positive environmental influences, economic benefits, and social corporate responsibility resulted from this initiative.

It was found that the sharing economy researches and studies are increasing significantly for the last 10 years in different sectors. This research is considered as another contribution to the value of the sharing economy. Many applications are used worldwide for individual and group market sharing either Business-to-Business, Business-to-Customer, or Customer-to-Customer business models.

In this research, we briefly illustrated 9 applications of the sharing economy. Also, three methods of assessment were introduced: 1) Product Life Cycle Assessment, 2) Supply Chain Network & Saving and 3) Social Media Analysis of Sharing Economy Platform Website. Based on the literature review findings, many benefits and opportunities for improvement were addressed and summarized. The research team highlighted the lesson learned and recommendations considering the State of Qatar case which was never evaluated in the past for the sharing economy business model.

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## Biographies

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**Saleh Aseel** is one of the distinguished Ph.D. students in the Engineering Management Program at Qatar University with respect to critical thinking and problem-solving skills. Saleh is currently working as a senior manager in Oil & Gas Company and has +20 years of work experience in the Qatar industry, BSc in Chemical Engineering from Qatar University, an Executive MBA from Hull University in the UK, and Executive Master in Energy and Resources from Hamad Bin Khalifa University in Qatar. Besides, he continues his Ph.D. within the Engineering Management Graduate Program at Qatar University. His research capacity is shown through initiating and writing conference and journal papers related to sustainability assessment and carbon emissions of LNG production and maritime transportation.

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**Abdulrahman Al-Siddigi** is a graduate Master's student from Qatar University in the Engineering Management Program, Qatar. Abdulrahman has enough experience in maintenance and worked as a Maintenance Engineer for +5 years in a Petrochemical Company. He is currently working on projects as a Project Engineer in the same sector. He graduated as BSc in Mechanical and Industrial Engineering from Qatar University, Qatar.

**Murat Kucukvar** serves as Associate Professor of Sustainability in the Department of Industrial and Systems Engineering at Qatar University. He was also the founder and co-director of the Sustainable Systems & Solutions Lab (S3\_Lab) at Istanbul Sehir University. He published more than 125 academic journals and conference proceedings with over 3000 citations and 30 h-index in the field of sustainability. He worked as an advisor to the Turkish Water Institute and a member of the Turkish National Delegation in the Coordination Program for Euphrates-Tigris (CPET) task force for the socio-economic, environmental, and energy systems analysis. He has also been actively involved in several research projects together with key American, European, Middle East, and Turkish universities, research centers, and companies including Qatar Transportation and Traffic Safety Center, Japanese Marubeni, University of Manchester (UK), Walton Sustainability Solutions Initiatives (WSSI) at Arizona State University, University of Central Florida, University of California San Diego, Florida Solar Energy Center, and Turkish Water Institute.