

Smart Cities and Urban Mobility for Innovation and Sustainability

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Abstract

This study is grounded in theories of degrowth and the circular economy. The general objective of this research leads to a thematic discussion of urban mobility in big cities that will suggest solutions for implementation in sustainable forms of technology which could transform metropolises into smart cities. As specific objectives, it seeks (1) to demonstrate the problem of urban mobility in large cities; (2) to address the global trend of changing unsustainable consumption habits into habits of minimal consumption, linked to Latouche's theory of degrowth and the circular economy; and (3) to interpret new trends in large urban centers with a focus on the smart city. As it happens, young millennials choose to enjoy goods, instead of owning them; with the availability of the Internet, people have started to interact with cities, exchanging information about traffic (congestion and public transport routes); they also access alternative modes of transport, such as the use of shared vehicles, bicycles, electric scooters and other modes that can be rented through apps. However, many companies which claim to offer sharing services in fact practice pseudo-sharing for the sake of profit. The methodology in this study was inductive in nature, using secondary sources, from qualitative bibliographic research starting from electronic searches of articles available in public domain pages, which allowed various publications on the chosen topic to be accessed for review. The result is an academic contribution to the public understanding of current conditions that may lead the elaboration of public policies for updated scenarios of smart cities to the benefit of residents.

Keywords: smart cities, urban mobility, degrowth theory, circular economy theory, pseudo-sharing

1. Introduction

The central enquiry of the present research is to know whether human beings could solve the problems of urban mobility through new alternative modes of transport and what the consequences would be. Outstanding among these is the sharing of vehicles, a model linked to innovation and sustainability. As a solution to this central problem, we point to the development of innovative technologies capable of transforming metropolises through the Internet into smart cities which optimize the use of goods available by transforming them into services to all citizens.

This solution applies the technological dimension of sustainability to urban mobility. Gabriel Real Ferrer, cited by Garcia (2015) describes this dimension as “the individual and collective human intelligence, accumulated and multiplied, that can generate a sustainable future”. In this sense, the Rio Declaration on the Environment and Development, resulting from ECO92, reaffirmed that, to achieve sustainable development, countries must reduce unsustainable patterns of production and consumption (Principle 8) and seek the exchange of scientific knowledge and technology to create innovative technologies capable of solving environmental problems (Principle 9).

The general objective of the present paper is to discuss the disorderly growth of cities and its effects on urban mobility, which impair the quality of life for everyone. As specific objectives we seek to demonstrate: 1) that urban mobility in large cities creates problems; 2) that people's former behavior has been replaced by a minimalist way of life, related to Latouche's (2009) degrowth theory and to the Circular Economy. People are choosing to enjoy goods as services, rather than possessions, and to rely on sharing apps or other alternative means of mobility, such as bicycles and electric scooters; 3) that some sharing application companies which claim to contribute to sustainability

and urban mobility have, however, subverted the initial idea of free rides among friends by creating a sharing market and pseudo-sharing, which prioritizes impersonality and commercial profit.

2. Theoretical and Conceptual Review

The theoretical framework is based on Latouche's Theory of Degrowth (2009), the Circular Economy and Schumpeter's Economic Development Theory. The concepts of environmental benefit and economic progress, however, remain incompatible. Armada (2017) warns about the ecological deficit resulting from excessive demand and the global expansion of consumerism over nature's resources. Latouche (2009) illustrates the idea of unsustainability by showing that the useful bioproductive space on our planet is only a fraction of the total, divided by the world population.

In 1972, the French sociologist Serge Latouche, a member of the Club of Rome, published 'The Limits to Growth', which was considered the starting point for discussions on sustainability. It launched the challenge to make environmental and economic relations harmonize through the adequate, rational, and balanced use of natural resources. It contained a scathing critique of developmentalism and consumerism today, reviewing the capacity of Earth's ecosystems and finding new indicators that could support decisions on the human/environment relationship. In his book Latouche provocatively proposed a social model that embodied a lower consumption and production of goods, pointing to frugality as the only way of satisfying the world's needs without generating poverty and environmental damage. Taking into account the needs of matter and energy and the surfaces required to absorb the residues of production and consumption, the bioproductive space consumed by the world's population is already greater than the Earth's estimated capacity to absorb them. This has already put some people into a planetary deficit, which prompts a defense of degrowth in the production and consumption of goods. Only by this means will the human race survive without exploiting another planet.

For Latouche (2009), the theory of degrowth implies an economic proposal that includes environmental and also social issues, for unlimited economic growth will be fatal to humanity. Often, indeed, it reflects no effective improvement in human development. Beyond purely economic questions, Armada (2017) finds degrowth a necessary change; it would bring to public awareness new paradigms with different proposals for dealing with the limits of natural resources. Armada believes that other indicators than the GDP (Gross Domestic Product) should be used to measure the wealth of nations; these new indicators would concern the quality of life, well-being, sustainability and the eradication of global poverty.

According to Latouche (2009), no useful purpose is served by accumulating useless goods. Sustainable development implies limiting the use of natural resources and improving technologies for optimizing their use. Latouche found that the change to a sustainable world involves combating the waste of natural resources and the programmed obsolescence of products by acknowledging the limits of the planet's capacity. It is up to people and their organizations to opt for a better economic model and develop technologies that can make their world sustainable.

The implications of degrowth would oblige us to reassess consumer trends, and conceptualize new values so as to find new solutions for consumer cravings. We should rebalance our acquisitiveness so as to benefit our relationship with the environment; redistribute wealth so as to eliminate extreme poverty; relocate sources of raw materials to protect the environment from degradation; and reduce waste, recycling things to restrain the urge to prospect further. These logics are closely aligned to the views of Morin (2013, p. 28), which Armada cites, given that it is impossible for a finite world to have infinite growth. In this sense, Latouche and Harpages (2010, p. 14), cited in Armada (2017), defend degrowth, stating that:

La hora del decrecimiento ha llegado! Y la sociedad de la sobriedad voluntaria que emergerá de su estela supondrá trabajar menos para vivir mejor, consumir menos pero mejor, producir menos residuos, reciclar más [...]. En pocas palabras, recobrar el sentido de la medida y una huella ecológica sostenible.

As the Brundtland Report, 'Our Common Future' (1987), points out, there is much evidence of unsustainable human behavior in relation to the environment, which is why we must rethink our individual and collective choices. The need for sustainability prepared the ground the degrowth theory and the search for a circular economy. Regarding people's daily travel needs alone, the damage done by the one-person vehicle, that great predator of the environment, would be mitigated by the sharing of vehicles, thus helping sustainability and urban mobility together.

The dominant economic model since the Industrial Revolution has been based on the linear flow of raw material from extraction and processing to transformation into goods, their consumption and disposal. With the finite nature of natural resources, this model is no longer viable, making it necessary to create the socio-environmental alternative

of a circular model. This would optimize, as far as possible, the use and reuse of natural resources or products, which were recycled or returned them to the production chain.

According to Pereira et al. (2017), new ways must be found of structuring production, biased in favor of the Circular Economy, through products with eco-design that encourage longevity, durability, repair potential, the possibilities of updating (upgrading), reuse, re-manufacturing, and recycling. Restorative industrial models would be characterized by reduced dependence on natural resources and energy.

The circular economy is a new model of economic development, focused on sustainability, which seeks to maximize the intrinsic value of a product, intensifying its use and reuse, in order to reduce waste and earn economic and environmental benefits. The example of sharing vehicles, cited above, meets this concept of the Circular Economy, because it would make it unnecessary to purchase a new vehicle while existing machines were lying idle.

In economic terms, sharing can be considered from the Schumpeterian point of view a disruptive innovation. So much so that a reading of Morichochi and Gonçalves (1994) indicates that such innovation makes a difference in everyday life and in the economy as well. It renders meaningless the search for novelty that attracts an individual's consumer cravings. These are changes that realign the market itself, intertwining its innovations with those of industries which attract competition by adapting to creative products. Industries, however, could also be reorganized to expand sustainably; indeed, they will be required to do so because society will demand it from the standpoint of future generations, who will want to enjoy the resources currently available to industries.

Next, the circular flow will be disrupted by the breaking of monopolies and the influx of innovations that will rescue the markets by attractive pricing, thanks to lower costs. The offer of services also converges with the appeal of intelligent platforms that will replace labor by applications, and thus create competitive advantages. In addition to advances in Internet exchange operations, these platforms are already perceptible in the fast delivery and vehicle sharing of transport providers.

2.1 Theoretical and Conceptual Elements in the Problem of Urban Mobility in Big Cities

According to Albino and Vieira (2019), by 2050 the number of people residing in cities is estimated to reach 6.3 billion, the result of the greatest wave of urbanization in the history of mankind. Among the 33 megacities in the world are São Paulo and Rio de Janeiro, two municipalities well known for their population density and rampant urbanization. The unsustainability in these urban conglomerates comes from their heavy pressure on the environment and its natural resources; urban mobility is one of the indicators that reveal the disorder of their growth.

The road network, with its capacity to pollute, may be considered an inconvenience in terms of public transport. Furthermore, urban infrastructure does not always keep pace with the growth of cities, which causes most people to settle on the outskirts, further and further away from urban centers and from their places of work. With regard to urban mobility, it has been found that the increased use of cars on the streets is unsustainable and demands solutions. Urban mobility has two aspects: public and private, since the private car competes with public transport. But these two aspects are not integrated, and, as Valente and Patrus (2019) observe, the problem of quality public collective mobility in vehicles powered by clean technology still awaits solution by idealists.

The 2030 Agenda for Sustainable Development, a document signed by the member countries of the UN in 2015, called for novelty in planning that would realign the planet with sustainability through short-term resilience. Thus, its Objective 11 is geared to transforming cities into more inclusive, safe, and sustainable human settlements, through action on housing, transport, security, urban mobility, and the risk of disaster. It set goals such as the expansion of green areas in cities, through the implementation of a green infrastructure that could reduce planetary warming and air pollution and control both floods and droughts. These solutions are necessary to meet the current and future demands of all cities and their inhabitants.

Sustainability, in terms of urban mobility, was initially foreseen by the Report of the Commission of the European Communities, which even in 1992 noted the negative impact of the increase in individual means of travel: congestion, diseases and accidents. Thus, four goals were set for sustainable mobility: (1) reducing travel, by facilitating citizens' access to online shopping and working from home (as has intensified in the Covid-19 pandemic); (2) changes of modes of transshipment, favoring journeys on foot, by bicycle, electric scooter, public transport or shared vehicle; (3) for example, increasing urban density, reducing travel distances for residents, creating neighborhood businesses; (4) reducing the environmental impact generated by CO₂ pollution, by introducing more energy-efficient public transport (electric or hybrid cars, rejecting fossil fuels) and public incentives to use single-person vehicles less.

2.2 Theoretical and Conceptual Elements in Changed Behavior, and People's Unsustainable Consumption Habits

The new habits set by the pandemic scenario greatly boosted prevalent attitudes in the 21st century. They individually and collectively examined a variety of measures, ranging from conscious consumption to health issues. Working at home in the pandemic allowed individuals to interact in society and work remotely in their slippers and shorts. Younger people were consolidating the appeal of minimalism. In their purchase decisions, people were trying to balance personal satisfaction with environmental, social, and financial obligations.

We can observe, therefore, that the consumption habits of people living in large urban centers are changing. Many of them have chosen not to have their own vehicle, and instead have started to use transport apps. This change in behavior reflects a global trend related to young millennials, who are adopting more sustainable individual postures, related to the degrowth theory of Latouche (2009) and the Circular Economy.

Millennials are people who are now between 20 and 35 years old. Their hallmark is that they are the generation that experienced the transition from the analog world to the digital one. They are also called Generation Y and represent a good share of the economically active population and of potential consumers. They have a behavioral profile that is more engaged with environmental issues in its consumption choices than their forebears had. They are adept at a minimalist lifestyle, which uses technologies available on the Internet, such as rental applications and the sharing of goods and services, choosing to pay for the enjoyment of an asset rather than its acquisition. They choose to live in small, rented apartments and seek no unnecessary accumulation of wealth; thus, by necessity or personal choice, they newly translate capitalism in the 21st century, where less is more, being is worth more than having, and enjoyment comes from what is replaceable. Following this trend, automobiles do not attract young adults who hate congested traffic; with a transport app, they can order a car as they finish their morning coffee. Car rental is still possible through a subscription service directly from the automakers; here the advantages include no taxed costs, annual licensing, maintenance, or insurance.

Thus, trends on the business side point to a circular economy, where the happiness of the final consumer is not allowed to prevail at the expense of the suffering or degradation of another part of the production chain, be it people, animals or the environment.

2.3 Theoretical and Conceptual Elements of Sharing Apps: The Pretext of Contributing to Sustainability and Urban Mobility

The paper by Valente and Patrus (2019) tells us much about the concept of sharing, which can be considered to replace what is called private property and is available to any two or more individuals, who enjoy its common benefits and also the costs that affect the property. Such a concept has been practiced since the dawn of humanity. However, in the current movement a tendency to return to the original can be discerned in the practice of sharing goods and services and the culture of hitchhiking in a neighbor's vehicle if a common route and time can be agreed. The Internet has also multiplied sharing, while cutting the entanglement with personal property. It expands free riding into a personal business, one of many shares, from taxis to grocery shopping. It is the new shared economy that emerges from the world at present. This awareness of service requires innovative regulatory measures in today's consumer society.

Sharing not only combats possible waste, but optimizes the cost of living, improves resource allocation, expands benefits, and relieves urban life. A mobile application permits third-party goods to can be used. Community coexistence is fostered as well, because it lends itself to collaborative postures that avoid additional money, or induces them in those who would like to contribute temporarily in order to enjoy other people's goods in time. Clearly, not purchasing a shared asset also slows down the market, since the borrower is using it without acquiring it as property. Lenders remain the owners of these goods, but through friendly ethics they can enter a digital market located between suppliers and consumers.

3. Preparation Methodology

The present paper is a qualitative study applied in an Amazonian situation, guided by studying the behavior of the social actors involved. Its methodology focuses on Kirschbaum (2013), which guides the researcher's freedom of choice in opting for a path to cognitive construction; it allows a temporal, subjective traditionalist view, which may incorporate a positivist stance. First, the design followed by Afonso, Rangel, and Pedro Filho (2021) was considered. It focused on interpreting a social problem to benefit stakeholders by applying research to provide significant practical solutions.

3.1 Regarding the Method

In this study, the Content Analysis Method is applied, in which the researcher collects data and information in an appropriate way, through specific techniques carefully applied. These data are explored and can be treated in a multifaceted way, since they form a corpus to be worked on by means of the researcher's subjective interpretation, provided that the researcher tries to protect himself as far as possible from the imperative logic entailed by the rationality of the technical treatment of the data and information.

3.2 Regarding the Procedures Adopted

Although this investigation is qualitative in nature, it has an inductive element. It used data collected from secondary sources after bibliographic searching of the world wide web, taking care to ensure originality and maintaining ethical protocols. Its citations are in compliance; data were collected electronically, from published scientific articles on the topic addressed; the reading and content analysis involved splitting up and categorizing the findings.

The present authors agreed to admit procedures such as gathering and selecting from diverse bibliographic collections, using digital platforms and other publications. They collected material from indexed journals that were available for consultation on the world wide web; they also engaged in floating reading in order to choose what would serve the proposed treatment in compliance with the objectives. Another procedure was to split up information in order to identify the corpus to be treated in this task; the results were then categorized, in order to carry out the content analysis.

The research involved weekly notes, in which the acceptable sources were weighed according to their agreed meaning; the concepts were selected according to the relevance of their helpfulness for the task. The data were split up to improve the textual production, providing the text with clarity and objectivity. The categorization of the operational concepts followed the precepts of Pasold (2018), which allowed a research report with the required scientific value to be composed.

4. Results

4.1 Results Regarding the Problem of Urban Mobility in Large Cities

Several countries have incorporated projects and actions into their agendas which aimed to reduce the environmental liabilities of megacities and implement sustainability at the local level. This raises the concept of smart cities that have reached the most advanced stage of technological convergence with city management, aiming to provide a high quality of life and economic competitiveness to their inhabitants. Scholars have much to offer on the topic of smart cities. According to Pedro Filho (2021):

The Smart City concept that best approximates to this study is that offered by Coelho (2015). The author relies on the testimony of the quality of life under mass migration pressure, and efficiency in essential services that must not be obstructed; it should be adapted to new ideas that improve living conditions. It would thus meet the attributes of what the authors call the Smart City ... focusing on a future designated by the challenge to individuals in their daily lives from the evolution of technology ... the Smart City is a concept through which to interpret the configuration of integrated municipal services, bringing ... citizens the facilities offered by technology for... well-being and the quality of life ...

The above concept was first presented at the Seminar on Smart Cities promoted by the University of Electronic Sciences and Technology held in Chengdu, capital of Sichuan Province, which the Brazilian scholar attended at the invitation of the city, and is based on the principle that, through technology and intelligent solutions for the construction and development of public policies initiated by the residents, cities can be modernized and humanized. The basic proposal would be to optimize new forms of metropolitan governance, capable of minimizing the environmental impact of accelerated urban growth.

The World Forum on Smart Cities assessed the scenario of global competitiveness and innovation in cities and concluded that a new economy controlled by broadband communication is currently emerging. It seems that the sustainability of cities has permeated our ability, as we understand it, to inform and connect people through technology. It has also contributed to improving air and water quality and the efficient conservation of energy in our journeys. When we expect such changes and enact measures that allocate resources better, the environment rapidly recovers from disasters. These comments from the Forum apply to cities that meet the requirements of cheaper services and more efficient results.

The spread of the Internet has meant an unprecedented increase in the number of people connected to the world wide web, and the almost universal use of cell phones and their applications. Geo-referencing devices (GPS) allow people in cities to trace routes and estimate travel times and other important information. It is easy to find one's way anywhere in the world, with the help of an app and to be aware of traffic conditions before leaving home. These facilities, which integrate the concept of smart cities, empower users and facilitate urban mobility. Technology has made the data on urban conditions accessible in real time, linking citizens with their city by keeping them informed of problems, while enjoying the dynamic solutions of modern networking. Cities are now considered technological platforms, including the application of solutions in living laboratories, helped by apps that reveal conditions in real time, avoiding unnecessary stress and delays.

With a view to implementing sustainable urban mobility, the Recife region points to the city of Recife, which has had outstandingly successful experience as an expressive living lab; for example, it implemented Bike Leve Project as a bicycle rental system, with its own stations accessed through a cell phone app. However, the concept of a smart city that comes closest to this study's ideal is described by Coelho (2015). He incorporates testimonies to the quality of life, the pressure of mass migration and the city's efficiency, which should not be obstructed, in providing essential services for improving citizens' routines by new ideas. Thus, it meets the requirements of what the author calls his project of the Intelligent City, focusing on a future bearing constant challenges from the evolution of technology. In his study, the Smart City is a concept which calls for the configuration of integrated municipal services, bringing its citizens the facilities offered by technology for their well-being and quality of life.

Among the solutions for urban mobility that he proposes, several apps connect people to cars, itineraries, and routes. Such computerized urbanization is the key technology for the development of smart cities, in that its solutions are linked to collaboration between citizens, while the cities themselves are pleasant to live in. Technological solutions to modular and pragmatic problems, based on open and collaborative structures, allow the government and companies to establish certain strategies and programs in which all the modes of transport are integrated. Sustainable urban mobility, it was found, demanded technological tools to create an efficient logistical system in which alternative, non-polluting and non-congestive modes of transport were available.

A good sustainable urban mobility program promises the production of long-term synergy. For this, environmental, economic, and social systems are established, including taxes on the use of private motor vehicles and investment in both public powered transport by clean energy and facilities to encourage walking and cycling. It is essential to develop a land use plan that prioritizes housing close to central areas or along corridors well served by public transport. Strategies must be implemented to encourage the use of non-polluting modes of transport, or, for short distances, journeys on foot, by bicycle or scooter, with traffic systems and speed controls that ensure safety for pedestrians, cyclists and others. Cargo vehicles should observe their own lanes and stopping points. Residents should be served by adequate pavements, signs, walkways, safe cycle paths, trees, and other measures such as planned dry ports for unloading goods that would avoid saturation by urban traffic.

4.2 Results of the Global Trend to Change Unsustainable Consumption Habits in Relation to Latouche's Theory of Degrowth

We have seen that consumers have lately been changing their relationship with consumer goods, no longer wanting to own them but starting to treat them as a service from leasing and sharing businesses, which supply cars, bicycles, scooters, accommodation, etc. Already bicycles and electric scooters can be hired for temporary use in the world's big cities.

This radical change means that we have moved from the era of ownership to the era of access. It wholly contrasts with the old idea that property is at the center of consumer concerns, typified by having, keeping, and accumulating. Concepts like these steadily lose their meaning when everything converges in the model of digital services connected/interconnected by the Internet.

4.3 Results Concerning the Practice of Pseudo-Sharing Which Privileges Profit and Self-Interest, in a Sharing Economy

In 2009, offers of shared services appeared on the market, including vehicular passenger transport, called car sharing; they connected pedestrians to drivers through mobile apps. This mixture of sharing and hiring gave rise to a new business model, in which money corrupted the primitive meaning of shared goods.

The concept of disruptive innovation devised by Veyat (2016) consists of abandoning a production process when it has become obsolete. In this concept not only the process but the entire business model that used it is abandoned, affecting an entire industry or market segment, when one model changes or goes completely out of date. The classic

example is that of the iPhone camera, which has virtually replaced conventional cameras. This concept is used to explain the new sharing economy, whose business model came to compete with the previous one, that of taxis.

At the same time, the inclusion of monetary rewards caused a dissociation from the old cultural relationship in sharing goods which used to be freely shared, such as free rides; rides were now accessed at a cost.

Furthermore, shared economy businesses emerged without asking the regulatory bodies for permission, violating the established rules of the status quo, under the pretext of being a disruptive innovation, but one with beneficial consequences for society. Only after regulation would they be integrated into public planning, requiring legislators to speed up the legal permission to legitimize the redesigned innovation.

Peter Drucker (1985) describes innovation as a specific tool for entrepreneurs, through which they explore changes by offering a differentiated service that they and their customers learn about and experience. For Porter (1990), a company gains competitive advantage by implementing innovative actions; in doing so it practices innovation in its broadest sense, involving both new technologies and ways of performing tasks and producing goods.

The need to innovate becomes evident in any analysis of the mission and vision of the world's largest companies. It shows how strategically important innovation is for competitiveness; companies combine innovation with technological progress, as if it were the engine of economic growth. Here, innovation is defined as the use of new technological or market knowledge to offer a new product or service to consumers. Thus, according to Pedro Filho (2021), the Schumpeterian concept of innovation is related to creative destruction, which results in an imbalance when a new model emerges. This can unbalance traditional structures with consequences for increased pressure on already scarce resources.

Destructive innovation highlights people's impotence to change the rules of capitalism, whose unbridled dynamics and continuous need for adaptation prevent any truce in competition, which is now inevitable for public and business organizations.

The praise of the sharing economy in urban mobility acknowledges degrowth, in Latouche's argument. The environmental impact from habits of sole proprietorship must be reduced. In theory, sharing allows us to drastically reduce the number of vehicles on the roads and the very need to own one. If we did so, we would diminish the production of new items and reduce the consumption of finite resources and pollution from production. It is believed that the more things are shared, the fewer natural resources will be consumed, which endorses the feasibility of more sustainable consumption.

Even when the new actors in the sharing market do not share this environmentally friendly desire for sustainable urban mobility, they certainly seek their own interest. Passengers are primarily looking for low travel costs and app drivers are looking for a source of income. The approach of self-interest, on the part of both driver and passenger, counters the romanticized vision of the new paradisiacal Age of Sharing. It highlights the true commercial content of this type of business, which provides people with access to goods and services, and moves attention away from its initial purpose, related to the expected social and environmental benefits of sustainability through the reduction of consumerism and the production of goods.

5. Conclusion

In this paper, we sought to show that the problems related to urban mobility such as air pollution, congestion, and a poor quality of life, faced by large cities around the world, can be sustainably solved through the application of technological developments.

It brought in the concept of the smart city, arising from technological assumptions as an indispensable factor in those cities that are modernizing and humanizing themselves. This concept offers better infrastructure to citizens through the efficient management of existing resources and the implementation of innovative urban policies. It transforms cities into more inclusive, safe, and sustainable human settlements. It presupposes a new form of metropolitan governance, centered on broadband communication and the potential of technology, to inform and connect people, reducing costs, improving the quality of services provided, and making cities friendlier.

As for urban mobility, it was evidenced that the Internet permitted applications to emerge which connect people to public transport, itineraries, and routes. It also provided ways to share cars, bicycles, and electric scooters. This computerized urbanization is the key technology for the development of smart cities, because it provides solutions that link to collaboration between citizens, producing efficient cities which are also good places.

A global trend of replacing unsustainable consumption habits by minimalist consumerism was found, linked to the theory of degrowth formulated by Latouche (2009) and the Circular Economy, whereby young millennials choose to

enjoy consumer goods, such as services, rather than owning them.

Finally, it was concluded that the shared economy business model is not a mere sharing of idle vehicles, free of charge and reducing the environmental impact. It is, in fact, a business run primarily for profit. Pricing turns sharing into a profession for the driver, a lucrative enterprise for companies and an alternative to commuting for passengers, revealing the core of self-interest.

Thus, in the shared economy, the values of a market economy are present in pseudo-sharing, a relationship that values the sense of community, reliability, and collaboration, which had been lost over time. In the pseudo-sharing of something which used to be free, large companies explore a profitable business in order to mediate it and it becomes a cultural process, with the possibility of 'uberization', affecting all services. This study is an academic contribution and may be of interest to public managers, community leaders, researchers interested in this topic, and others committed to learning about smart cities and the quality of life.

References

- Afonso, D. L. V., Rangel, F. A., & Pedro Filho, F. de S. (2021). Management, its main motivators, contributions and deadlocks in public management. *Brazilian Journal of Development*, 7, 86634-86653. <https://doi.org/10.34117/bjdv7n9-023>
- Albino, P. L., & Vieira, R. S. (2019). Smart cities and disasters: how a sustainable urbanization model can minimize environmental risks. *Public Policy Law*, 1(2). Rio de Janeiro. Magazine of the Graduate Program in Law at UniRio. Retrieved 12 Jan. 2021, from <http://seer.unirio.br/index.php/rdpp/article/view/9405>
- Andrade, J. N., & Galvão, D. C. (2016). The concept of smart cities combined with urban mobility. *Hum@nae*, 10(1). Retrieved Jan. 12, 2021, from <http://humanae.esuda.com.br/index.php/humanae/article/view/478>
- Armada, C. A. S. (2017, May). The degrowth theory as an alternative to the myth of continuous economic growth. *CECIESA – MANAGEMENT NOTEBOOK*, pp. 263-271. Retrieved 12 Aug 2021 from <http://webcache.googleusercontent.com/search?q=cache:XyrH0PBW5o4J:www.publicadireito.com.br/artigos/%3Fcod%3D61a10e6abb1149ad+&cd=7&hl=pt-BR&ct=clnk&gl=br>
- Berardi, P., & Dias, J. M. (2018, Sep./Oct.). The Circular Economy market: how businesses are being affected by the model that replaces the linear one and how they will be even more so in the medium and long term. *GVEXECUTIVE*. São Paulo, 17(5). Getúlio Vargas Foundation. Retrieved January 11, 2021, from [www.http://bibliotecadigital.fgv.br/ojs/index.php/gvexecutivo/article/view/77340](http://bibliotecadigital.fgv.br/ojs/index.php/gvexecutivo/article/view/77340)
- Brito, S. (2021, January). Less is more: by necessity or choice, the young adult embraces a transformative idea: enjoying can be better than possessing. *Look*. São Paulo: Editora Abril, Ed. 2720 – year 54 – n°1, pp. 52-53.
- Brundtland, G. H. (Org.) (1991). *Our Common Future* (2nd ed.). Rio de Janeiro: FGV.
- Campos, V. B. G. (2006, April/June). A Vision of Sustainable Urban Mobility. *Magazine of Public Transport*, 28(110), 99-106. Retrieved January 11, 2021, from <https://www2.camara.leg.br/mobilidade-urbana-fev-2016>
- Carvalho, N. C. O. de. (2017). Millennials: who they are and what generation Y young people want. Advisor: Prof. Dr. Lucia Silva Kubrusly. *Rio de Janeiro*, 45. Federal University of Rio de Janeiro. Retrieved Feb 4th 2021, from <https://pantheon.ufrj.br/handle/11422/4865>
- Coelho, N., Paiva, R., Baldaque, S., & Salgado, S. (2016). Smart Cities – Smart Cities – Technological infrastructure: characterization, challenges and trends. FEUP 2014/2015 Project. Porto: Grupo 32 MIEIC/MIEG. Retrieved 13 July 2016, from http://paginas.fe.up.pt/projfeup/submit_14_15/uploads/relat_GI32.pdf
- Derani, C. (2008). Economic Environmental Law. São Paulo: Saraiva, p. 58. In GARCIA, Denise Schmitt Siqueira. The search for an environmental economy: the link between the environment and economic law. In Denise Schmitt Siqueira Garcia (Ed.), *Governance, Transnationality and Sustainability* (p. 19). Itajaí Univali.
- Garcia, D. S. S. (2015). The path to sustainability. In GARCIA, Denise Schmitt Siqueira (Ed.), *Sustainable Debates: multidimensional analysis and Environmental Governance* (pp. 8-30). Ed. Itajaí– SC: UNIVALI, (I).
- Kirschbaum, C. (2013, June). Decisões entre pesquisas quali e quanti sob a perspectiva de mecanismos causais. *Revista Brasileira de Ciências Sociais*, 28(82). <https://doi.org/10.1590/S0102-69092013000200011>
- Latouche, S. (2009). Small Treatise on Serene Degrowth. Translation by Claudia Berliner. *São Paulo: Editora WMF Martins Fontes*, 27-28.
- Moricochi, L., & Gonçalves, J. S. (1994, August). Schumpeter's Economic Development Theory: a critical review.

Economic Information, SP, 24(8), 28-35.

- Morin, E. (2013). *The Way: for the future of humanity*. Translated by Edgard de Assis Carvalho and Mara Perassi Bosco. Rio de Janeiro: Bertrand Brasil, 2013. In ARMADA, Charles Alexandre Souza (Ed.), *The degrowth theory as an alternative to the myth of continuous economic growth* (May 2017, 263-271). CECIESA – MANAGEMENT NOTEBOOK. Retrieved 12 August 2021, from <http://webcache.googleusercontent.com/search?q=cache:XyrH0PWB5o4J:www.publicadireito.com.br/artigos/%3Fcod%3D61a10e6abb1149ad+&cd=7&hl=pt-BR&ct=clnk&gl=br>
- Pasold, C. L. (2018). *Legal Research Methodology: Theory and Practice* (14. ed.). Rev. current. And amp. Florianópolis: Emais.
- Pedro Filho, F. de S., et al.. (2018, April). Public Management Focused to the Smart City. *International Journal of Advanced Engineering Research and Science (IJAERS)*, 5(4), 181-187. <https://doi.org/10.22161/ijaers.5.4.27>
- Pereira, F. dos S., et al.. (2017). Projects aligned with the precepts of the Circular Economy. BNDES. Circular Economy Holanda Brasil – from theory to practice 2017. Retrieved August 12, 2021, from <https://webcache.googleusercontent.com/search?q=cache:ddTS0erdGNgJ:https://web.bndes.gov.br/bib/jspui/bitstream/1408/12075/2/Economia%2520Circular%2520Netherlands%2520-%2520Brazil%2520%2520Da%2520Theory%2520%25C3%25A0%2520Pr%25C3%25A1tica%2520-%2520p%25C3%25A1gs.%252089%2520-%252095.pdf+&cd=19&hl=pt-BR&ct=clnk&gl=br>
- Porter, M. E. (1990). *The competitive advantage of nations*. New York: The Free Press.
- Quintino, L., & Mendes, F. (2021, January). Eu sou o meu patrão: As mudanças no mercado e o desejo de liberdade fazem com que mais trabalhadores optem por ser os próprios chefes. *Veja*. São Paulo: Editora Abril. Ed. 2720 – ano 54 – n°1, 50-51.
- Romani, A. R. (2016). *Gestão Estratégica com Foco no Grau de Desempenho Inovativo. Dissertação*. Programa de Pós-Graduação Mestrado em Administração. Universidade Federal de Rondônia. Porto Velho. Retrieved from <http://www.ppga.unir.br/pagina/exibir/6340>
- Strapazzon, C. L. (2009). Technological Convergence in Urban Policies: Small and Medium Smart Cities. *Unicuritiba Legal Magazine. Curitiba*, 22(6), 89-108. Retrieved January 11 2021, from www.http://unicuritiba.edu.br
- Valente, E., & Petrus, R. (2019, January/March). On the sharing economy and the sharing market: an analysis of Uber as pseudo-sharing. *Management & Technology Magazine. Pedro Leopoldo*, 19(1), 210-229. Retrieved 7 Jan. 2020, from <http://revistagt.fpl.edubr>
- Veyat, P. (2016). Disruptive innovation, another example of a buzzword? HEPHLO December 9, de 2016. Retrieved 12 Nov. 2019, from <https://www.heflo.com/pt-br/gerenciar-negocios/inovacao-disruptiva-exemplo>
- Vieira, R. S. (2012). The construction of environmental law and sustainability: reflections from the context of the United Nations Conference on development. In Michel Prieur, & José Antônio Tietzmann and Silva (Eds.), *Legal Instruments for the Implementation of Sustainable Development* (2012, For. 360). Goiânia: Ed. Of PUC Goiás.
- Wandescheer, C. B., & Venturi, T. G. P. (2017). Sustainable Development and Some Critical Considerations to the Capitalist Economic Model. *New Legal Studies*, 22(2017). <https://doi.org/10.14210/nej.v21n2.p670-699>

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