

Conclusion

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The sharing economy is nowadays a major sector in the global economy and companies embracing the new trends of collaborative consumption have been growing at very rapid rates across the globe. The newly created markets that are already valued at mutli-billion dollars confirm that the sharing economy is not a temporary fashion but rather a growing trend in changing consumers behaviors that will continue to create business opportunities, many of which are already threatening traditional industries such as transportation and hospitality.

The book overviews the fundamentals of the sharing economy which are based on three main pillars: mathematics, engineering, and business. This book first reviewed the mathematics of sharing which provides a theoretical foundation to enable the proper design and dimensioning of sharing systems.

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While several mathematical models have been developed to study sharing systems, several challenges remain including developing models that scale to realistic sizes, enable real time decisions, adapt to changing behaviors, and incorporate multiple competing and decentralized decision makers.

Then the book presents several recent technological developments that enable the sharing economy. The widespread adoption of the mobile phone has certainly provided the launch pad for the early adopters of the sharing economy. These technological developments continue to be an innovation platform for providing new services and user experiences. The recent innovations have been focusing on enabling fully decentralized systems that can autonomously reallocate resources to adapt to the continuously changing behaviors of consumers and resource owners. The underlying challenges also include security of massive scales of data, optimal coordination of decentralized peer-to-peer networks, and signaling to induce behavior change in a decentralized approach.

The final section of the book highlights promising use cases of the sharing economy mostly focusing on transportation and energy. Furthermore, sharing data in itself is growing as a platform that will empower many new services such as future connected autonomous vehicles, and manufacturing (Industry 4.0). The next generation sharing platforms will include continuous sensing, reporting, and conditioning of the shared resources, autonomous operation, assignment, and adaptability of the resources to the users, and the adoption of secure decentralized transaction processing.

The sharing economy is still at its early stages where the technology as well as the prosumers base are developing and maturing. The current obstacles for the growth of the sharing economy continue to be the regulatory resistance and the fear of the traditional players that are threatened by the emerging business models. The continued research and development in the mathematics, engineering, and business aspects of the sharing economy will help dissipate these obstacles and produce a long-term transformation in collaborative consumption of resources.