

# TOYO TIRES Hits The Streets With Tire As A Service

One Company's Vision For Transforming Its Business By Offering Tires As A Service

By Achim Granzen with Frederic Giron, Bernhard Schaffrik, Nancy Lin, Bill Nagel

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## Summary

When TOYO TIRES wanted to understand how its business needed to evolve to stay relevant, the firm realized that it had to adopt market-leading business models to make the organization more adaptive, creative, and resilient. In 2020, TOYO embarked on its path to becoming a digital business innovator, in close collaboration with strategic partner Tata Consultancy Services (TCS). This report shows how TOYO developed digital capabilities to create value-added services and pioneer the tire-as-a-service business model.

## Client Profile

Established in 1945 and headquartered in Hyogo, Japan, Toyo Tire Corporation produces tires for passenger vehicles, trucks, and buses. The firm operates two global business lines for tires: TOYO TIRES and NITTO. In February 2020, TOYO opened a new digital innovation and transformation headquarters to drive companywide digitalization efforts, conduct experimental research, and develop new digital products. Forrester spoke with Tetsuo Shimomura, the head of the DX promotion division of the firm's digital transformation headquarters.

## Wanted: A Reimagined Business Model To Make TOYO TIRES Future-Fit

TOYO realized that in a future dominated by self-driving commercial vehicles, the market needs value-added insights into every aspect of those vehicles — including tires. TOYO wanted to reimagine its business model to make the organization future-fit. The firm realized that most of its business consisted purely of tire sales and that it had little client feedback as to how its products actually performed. To change this, TOYO worked with strategic coinnovation partner TCS Japan to take the first steps toward building up its digital capabilities and making its future-fit vision for the company a reality. Early on, TOYO realized that it needed to use a variety of innovation practices, including:

- **Ad hoc innovation to harness insights and enable digital offerings.** TOYO first had to digitize its knowledge of tire performance and maintenance to generate more timely insights. It then worked with its newly established partner ecosystem to develop the device sensing and predictive modeling capabilities needed to improve tire maintenance for clients. Finally, TOYO leveraged these newly acquired insights and digital capabilities to pilot tire as a service with some of its commercial clients.
- **Repeatable innovation to continuously realize value.** TOYO realized additional business value at every step along the way, justifying its investments as it proceeded on its journey. The firm used its initial analytics work in the tire sensing solution, creating the basis of a usage estimation model for truck and bus tires and leading to the definition of a maintenance solution. TOYO also leveraged these insights when defining its tire-as-a-service business model and piloting it with some commercial clients.

“When imagining a world where self-driving/automated driving becomes the majority, especially in commercial vehicles, one wonders who will manage the tire maintenance. In such a situation, would there be a future for a company like TOYO if it continues to simply sell tires as a product? This is the question we asked ourselves that led us to investigate the concept of tire as a service.” (Tetsuo Shimomura, DX promotion division, digital transformation headquarters, Toyo Tire Corporation)

## The Solution: Five Innovation Capabilities Leads To Tire As A Service

Before piloting tire as a service, TOYO TIRES underwent a digital transformation, built up its analytics expertise, and created an initial business model. The firm realized that its primary need was to improve its understanding and insights generation. Traditionally, this was only done on paper at garages, so TOYO needed to digitize data gathering before it could generate predictive insights and develop new service-based business models. TOYO applied the five innovation competencies outlined in Forrester’s [innovation toolkit for technology leaders](#):

- **Strategy: Innovate at the core of the business.** When TOYO considered the role of a tire manufacturer in a future dominated by autonomously driven commercial vehicles, it realized that it could not continue to succeed by just selling tires. So the firm envisioned how it could use predictive modeling to develop and launch value-added services around tire wear and tear and safe driving. TOYO built on that experience to understand how a shift from products to services might work for it.
- **Culture: Develop a test-and-learn culture to spark innovation.** Using a progressive culture to imbue the company with entrepreneurial and creative spirit was already part of TOYO’s corporate vision. Adding interdisciplinary collaboration to the approach and establishing trust across seven departments from sales to technology enabled TOYO to overcome aversion to change and collaborate on achieving a common goal.
- **Structure: Create a home for innovation initiatives.** To enable its teams to develop innovative approaches using new technology, TOYO established a digital transformation headquarters in February 2020. This effort brought together already existing innovation initiatives, such as the tire sensing project, and served as an accelerator to drive digital transformation across the organization.

- **Ecosystems: Leverage coinnovation partners and build an ecosystem.** TOYO partnered with multiple technology and service providers to build an ecosystem that could help it create this new business model. Analytics provider SAS Institute worked with TOYO on the modeling. As coinnovation partner along the entire journey, TOYO worked with TCS Japan to realize its ambitions.
- **Technology: Build expertise on digital and emerging technology.** TOYO realized early on that it would need entirely new capabilities and expertise in analytics, predictive modeling, cloud, and data management. It would then use these digital skills and expertise to explore new business models. The gradual accretion of skills and expertise allowed TOYO to chart a robust course for its transformation and innovation endeavors without becoming overwhelmed or distracted.

## Moving From Digital Insights To Analytics-Based Predictions To A Service Business Model

TOYO TIRES used an improved, highly accelerated process of data gathering to enable timely insights on how customers used its products and where the potential for improvement lay. As these proof-of-concept investigations evolved, they identified business opportunities. This led TOYO TIRES to develop a tire-as-a-service pilot. To achieve this, the firm set out to:

- **Fuse traditional manufacturing and digital expertise with tire sensing.** In February 2020, TOYO announced its development of [tire sensing technology](#), combining TOYO's expertise in tire manufacturing and operational wear on varying road types and conditions with its partners' expertise in analytics and AI. The team used on-tire devices and edge computing to visualize what happens on vehicles and built algorithms to measure and estimate the forces exerted on tires in real time. It even took cues from video games on how to visualize tire pressure and road grip.
- **Identify early business opportunities for maintenance services with wear estimation.** In July 2020, TOYO showcased its [maintenance solution for logistics support](#) with a model to estimate tire condition for trucks and buses. It then built capabilities and a platform to monitor and predict tire wear in real time. Tire sensing will be a critical element of safety in a world of autonomous vehicles.
- **Develop and pilot a business model to enable tire as a service.** The knowledge and experience gained with tire sensing led TOYO to explore how a new business model centered on service instead of products could work. Understanding the drivers that could shift to a tire as a service model, TOYO embarked to investigate and pilot the concept to help optimize maintenance cost and processes for its

clients, TOYO ran its pilot with a selection of its commercial customers.

## Results Assessment: Demonstrate Future-Fit Service-Oriented Business Models

Facing a future of increasing numbers of autonomous commercial vehicles and decreasing availability (due to demographic shifts) of human labor to perform manual tire service, TOYO needed to make itself more adaptable, resilient, and creative. To this end, it will pilot a business model that pivots to services; while the concept is still in the pre-pilot stages, TOYO is solidifying the details of the business model and deciding on a go-to-market strategy. This will allow the company to realize a key business initiative outlined in its latest [medium-term business plan](#) for 2021 to 2025: to develop a solutions business using proprietary tire sensing technology to deliver new business value to clients. Working with its tire-as-a-service pilot clients, TOYO TIRES has:

- **Successfully validated the value proposition and reception of a service model.** TOYO validated key benefits that its customers could reap from a service-centric business model. Tire-as-a-service pilot customers benefited from increased safety, real-time tire pressure monitoring, and faster tire replacement and maintenance. Some pilot customers had already done in-house research and were thus very receptive to the idea. Most customers also reacted positively to the subscription model, while also suggesting a more complete managed service model for eventual general market introduction.
- **Created digital business value using TOYO Connect as a value-added service bundle.** TOYO realized value by creating value-added services that enable clients to understand tire condition in real time and make maintenance decisions based on actual wear and tear. TOYO will launch a bundle of value-added services around tire as a service with basic functionality; future add-ons will be based on customer feedback. The main functionality —wear prediction for maintenance estimation and real-time tire pressure and temperature monitoring — has already been established. Future functionality could include detection of wheel runoff, monitoring of cargo vehicles for uneven load, and driving behavior.

## Lessons TOYO TIRES Learned

TOYO is continuing to fine-tune the tire-as-a-service business model and evaluate its go-to-market approach but has already learned a lot from its digital transformation. Tire sensing, tire as a service, and TOYO Connect are the first visible and successful outcomes and a result of the team's effort to bring together technical and engineering teams, business teams, and partners. TOYO has successfully transitioned from ad hoc

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innovation (building digital capabilities for tire sensing) to repeatable, strategy-driven innovation. TOYO Connect is the first result of this; adding features to it and launching a tire-as-a-service program on a larger scale will shift TOYO toward customer-led, technology-driven innovation. TOYO TIRES learned that in order to be successful on its innovation journey:

- **Innovation requires new ways of working.** The digital transformation headquarters is not limited to tire as a service; it also drives the digitization of all other aspects of TOYO's infrastructure, operations, sales, and manufacturing. Established in 2019 as a small team with members from different departments, it was promoted to headquarters status in 2020. It uses a hub-and-spoke model, with 10 or more people in the hub and connected teams in other parts of the organization. This gives the team more leverage to drive culture and change management and user acceptance of new digital processes.
- **A partner ecosystem is key to building new skills.** The shift from manufacturing products to services requires new capabilities, new infrastructures, and a fusion of IT and operating technology expertise. Having a partner to provide guidance and smooth the accumulation of expertise significantly accelerates capability acquisition. TOYO worked with TCS throughout its journey; additional partners completed the ecosystem at various steps along the way (such as SAS Institute for modeling expertise).
- **Trusted relationships are key to piloting innovative new services.** TOYO strove mightily to explain to pilot customers how the company uses the data and what it does to keep it safe and protect it from misuse and fraud. TOYO has found it highly beneficial to have existing long-term trusted relationships with its customers and address any remaining up front. It selected pilot customers based on existing strong relationships and trust as well as diversity of vehicles, business types, and locations.

## Supplemental Material

### Companies We Interviewed For This Report

We would like to thank the individuals from the following companies who generously gave their time during the research for this report.

Tata Consultancy Services (TCS)

Toyo Tire Corporation

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