

Business Guides on the Go

Jan Y. Yang
Yunyi Gu
Zi Ling Tan

Chinese Electric Vehicle Trailblazers

Navigating the Future of
Car Manufacturing

SIMON 
KUCHER

 Springer

Business Guides on the Go

“Business Guides on the Go” presents cutting-edge insights from practice on particular topics within the fields of business, management, and finance. Written by practitioners and experts in a concise and accessible form the series provides professionals with a general understanding and a first practical approach to latest developments in business strategy, leadership, operations, HR management, innovation and technology management, marketing or digitalization. Students of business administration or management will also benefit from these practical guides for their future occupation/careers.

These Guides suit the needs of today’s fast reader.

Jan Y. Yang • Yunyi Gu • Zi Ling Tan

Chinese Electric Vehicle Trailblazers

Navigating the Future of Car
Manufacturing



Springer

Jan Y. Yang
Simon-Kucher & Partners
Frankfurt am Main, Germany

Yunyi Gu
Simon-Kucher & Partners
Frankfurt am Main, Germany

Zi Ling Tan
Simon-Kucher & Partners
Berlin, Germany

ISSN 2731-4758

ISSN 2731-4766 (electronic)

Business Guides on the Go

ISBN 978-3-031-25144-3

ISBN 978-3-031-25145-0 (eBook)

<https://doi.org/10.1007/978-3-031-25145-0>

© The Editor(s) (if applicable) and The Author(s), under exclusive licence to Springer Nature Switzerland AG 2023

This work is subject to copyright. All rights are solely and exclusively licensed by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors, and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Acknowledgement

The writing of this book would not have been possible without the blessing of our company Simon-Kucher & Partners Strategy & Marketing Consultants. We are lucky to build upon the rich body of knowledge in the relevant domains that has accrued at Simon-Kucher over years.

Special thanks go to Dr. Martin Gehring, Head of Global Automotive Practice at Simon-Kucher, who has encouraged us and trusted us with the opportunity to create this book.

We are obliged to our dear colleagues Brie Casazza and Lewis Hawes, who have worked tirelessly to polish our writing and elevate the quality of our book.

Last but not least, our gratitude goes to our editors Dr. Prashanth Mahagaonkar and Jialin Yan at Springer, who have supported us throughout the journey with their feedback and genuine interest.

Contents

1	Chinese EV Players: From Followers to Trailblazers	1
1.1	Electrification Across the World	3
1.2	Driving Forces and Recent Developments	4
1.3	Competitive Landscape	6
1.4	Outlook	8
	References	8
2	The History of the Chinese EV Industry	11
2.1	How the Chinese Government Fostered the EV Industry	12
2.2	Moving Away from Subsidies Toward Self-Reliance	15
2.3	New Players in the Domestic Market	17
2.4	Chinese EV Development in a Nutshell	18
	References	20
3	An Overview of the EV Stakeholders in China	21
3.1	Automakers	22
3.1.1	Traditional Automakers	23
3.1.2	Joint Ventures Between Western and Chinese Automakers	26
3.1.3	Chinese EV Start-Ups	28

3.2	Automotive Suppliers	31
3.3	Mobility Providers	34
	References	36
4	Electrification: Routes to the Future	41
4.1	EV Powertrains	41
4.2	Charging Infrastructure	44
4.3	Battery Supply Chain	46
4.4	Range Anxiety	49
4.5	Battery-Swapping Trend	51
	References	54
5	Smartification: The Holy Grail of EV	59
5.1	The Different Paths to Smartification	61
5.2	Intelligent Cockpits	64
5.3	Autonomous Driving	66
5.4	Optional or Standard	70
	References	72
6	Chinese Route to Market	75
6.1	Embracing the Mobile Era: The Rise of Super Apps	76
6.2	Is the Transactional Business Model Outdated?	78
6.3	Fan Economy	82
6.4	Guochao: National Trend	88
	References	89
7	Avoiding the Innovation Curse	93
7.1	Price Before Product	94
7.2	Pricing Pitfalls to Avoid	98
7.3	Generating Income from the Whole Life cycle	100
7.4	Providing Flexibility Through Pricing Models	101
	References	104

8 On the March to Globalia	107
8.1 Revisiting the Overview of EV Companies in China	109
8.2 An Overview of Chinese EV Players’ Footprint in Europe	111
8.3 What Has Worked and What Has not	112
References	114
9 Roadblocks to Success	117
9.1 Value Depreciation	117
9.2 Increasing Costs of Raw Materials	119
9.3 Governmental Regulations	120
9.4 Growing Competition	122
References	123
10 What the Future Has in Store	125
Glossary of Abbreviations and Acronyms	129
Index	131

List of Figures

Fig. 1.1	Market share for EVs by region in 2020 and 2021 (Irlle 2022)	4
Fig. 1.2	Daily price per barrel of crude oil (EUR) (Armstrong 2022)	5
Fig. 2.1	The policy architecture that supported the growth of the EV industry in China (He and Jin 2021b)	12
Fig. 2.2	Number of publicly available EV chargers (EVSE) in 2021, by major country and type (IEA 2022)	15
Fig. 2.3	Historical review of Chinese EV development (He and Jin 2021a)	19
Fig. 3.1	Leading automakers based on number of vehicles sold in China in 2021 (Chinese Automobile Dealers' Association 2021)	22
Fig. 3.2	Leading automakers based on number of EVs sold in China in 2021 (Chinese Automobile Dealers' Association 2021)	23
Fig. 4.1	Breakdown of EV powertrains	42
Fig. 4.2	Electric vehicle battery value chain (Finnish Minerals Group 2022)	47
Fig. 4.3	CATL R&D expenditure in absolute terms and as a share of company revenue (Gasgoo 2022)	49
Fig. 4.4	Top considerations for people when choosing an EV (Autolist 2021)	50
Fig. 4.5	Customers' expectations of minimum range of EVs (Gehring et al. 2022)	51
Fig. 4.6	Usage of NIO's battery-swapping service following adoption of their BaaS model (Kane 2021b)	53

Fig. 5.1	Importance of advances in EV intelligence to Chinese consumers (D1ev 2021)	61
Fig. 5.2	Huawei intelligent vehicle business strategy (Huawei 2020)	63
Fig. 6.1	NIO value scoring system (App.Nio 2018)	88
Fig. 7.1	Requirement for successful price models—make customer value the focus (Yang and Gu 2021)	95
Fig. 7.2	Consumer segments of Chinese EV owners (Yang and Gu 2021)	96
Fig. 7.3	Willingness to pay for different connectivity features (Yang and Zuo 2021)	103
Fig. 9.1	Price of lithium in recent years (Trading Economics 2022)	120
Fig. 9.2	Number of EV models available globally (IEA 2021)	123

List of Tables

Table 1.1	Top 25 automakers by market cap (truncated) (Pontes 2022)	7
Table 4.1	China's charging infrastructure in comparison to the rest of the world (IEA 2022a)	45
Table 4.2	Top 10 battery manufacturers in 2021 by market share (Randall 2022)	47
Table 5.1	Official Chinese taxonomy of driving automation for vehicles (Liang et al. 2021)	67
Table 5.2	SAE levels of driving automation (SAE 2021)	67
Table 6.1	Subscription model offers of selected automakers in Germany	79
Table 7.1	Revenue streams of the main Chinese EV start-ups (Yang and Gu 2021)	101
Table 8.1	Moves in Europe by automakers Geely and SAIC	112
Table 8.2	Moves in Europe by up-and-coming automakers	113
Table 9.1	Difference in value retention between EVs and ICE vehicles (Zhou 2021)	118



1

Chinese EV Players: From Followers to Trailblazers

Keywords Electrification • Chinese electric vehicle Industry • Electric vehicle innovations • Powertrain shift • Future of mobility

Made in China, no wonder.

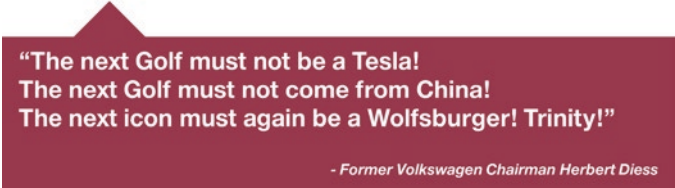
I still remember laughing with my friends over the pair of Bluetooth earphones I'd bought on AliExpress for 20 euros, which had inexplicably ceased to function in just 2 weeks. It was not too long ago when the label “Made in China” was synonymous with low quality and fake products. Electronics, textiles, plastics—you name it. It is not too surprising, especially when you consider how rapidly the Chinese manufacturing industry has grown. China accounted for 28.7% of global manufacturing output in 2019 (Richter [2022](#)) and 30.0% in 2021 (Xinhua [2022](#)).

This perception prevailed in the automotive industry, where most attempts by Chinese automakers to expand globally were met with resounding failure. However, times have changed, and apprehension toward Chinese products and vehicles has eroded. China's rise as an economic superpower and its steely determination related to electrification has propelled it to the forefront of the automotive industry, where it is

now ready to challenge the existing leaders. This is the story of Chinese electric vehicle (EV) trailblazers and how they will shape the future of mobility.

In May 2021, William Li, CEO of one of China's growing electric EV start-ups, NIO, announced the company's first venture in entering international markets. Setting up shop in Norway, NIO aims to enter the wider European market from 2022 (Mihalascu 2021). Li is not alone. NIO is one of many Chinese EV start-ups that have found immense success at home and are now setting their sights abroad: first stop—Europe.

As more and more EV start-ups start looking overseas for opportunities, especially within the European market, it is time for established manufacturers to gain a better understanding of who they are dealing with and start contemplating their own moves to stave off their competitors from the Far East.



**“The next Golf must not be a Tesla!
The next Golf must not come from China!
The next icon must again be a Wolfsburg! Trinity!”**

- Former Volkswagen Chairman Herbert Diess

These were the fighting words of former Volkswagen chairman Herbert Diess when speaking to disgruntled workers after facing a vote of no-confidence back in November 2021 (Wittich 2021). A long-time admirer of Tesla, Diess found himself in trouble with the works council when he suggested that Volkswagen was at risk of losing 30,000 jobs if it did not step up production. It is not the prettiest reality for traditional automakers to face, but Diess has acknowledged that Volkswagen has fallen behind their competitors when it comes to the race for electrification.

He recognizes that this new era in the automotive industry revolves around technology and software and requires a different set of competencies that Volkswagen just does not have right now. Their productivity lags behind the likes of Tesla—Volkswagen needs more than 30 h to produce a car at its main plant, while Tesla only needs 10 h. Diess sees Tesla as the benchmark for the future that is here to stay, but also admitted that Chinese EVs were “really good” (Lambert 2021).