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Tesla, Inc.: what the Tesla 2021 Form 10-K shows about the Accenture's assumptions

Cross-source comparison of Accenture's 2021 semiconductor whitepaper assumptions against Tesla's 2021 Form 10-K disclosures.

EARLIER What The long view of the chip shortage: Building resiliency in semiconductor supply chains assumes, believes and expects
whitepaper · 2021 · 24 assumptions
Holder: Accenture
File: assumptions_accenture-2021.json
Set: accenture-2021

LATER Tesla 2021 Form 10-K
Form 10-K Annual Report · published 2022-02-07 · covers 2021-01-01 to 2021-12-31
Holder: Tesla, Inc.
201 pages
Set: tesla-2021

release r2 · Data model: ainolabs-data-model-v2.1 · schema ainolabs-observations v2 · prompt observations-prompt-v2.0 · dimension list v2

In short

Tesla's 2021 Form 10-K provides extensive empirical evidence addressing Accenture's assumptions regarding semiconductor shortages, supply chain vulnerabilities, manufacturing concentration, and inventory management. Tesla reports producing 930,422 vehicles and delivering 936,222 vehicles while navigating a global semiconductor shortfall through software workarounds and alternative components. However, Tesla's data reflects its own operational scale as a single automotive OEM rather than an economy-wide industry benchmark, limiting broad generalization.

24	11	4	0	9
assumptions checked	with observations	reaffirmed only	revised	not addressed / n.a.

8 observations: 2 measured results, 1 dated event, 5 holder statements.

Evidence from a different author. These observations come from Tesla, Inc., not from Accenture, so they are third-party evidence. They describe Tesla, Inc.'s own situation, so they bear on an assumption only as far as the scopes match. Assessments by scope match: 5 narrower.

Headline findings

1. Tesla reports producing 930,422 vehicles and delivering 936,222 vehicles in 2021, generating $53.82 billion in total revenues despite ongoing global semiconductor shortages.
See: accenture-2021-a0006, tesla-2021-o0001

2. Tesla explicitly discloses that a global shortage of semiconductors since early 2021 caused challenges in its supply chain and production, requiring alternative parts and programmed software workarounds.
See: accenture-2021-a0001, tesla-2021-o0002

3. Tesla reports capital expenditures of $6.48 billion in 2021, driven by construction and expansion of Gigafactory Berlin, Gigafactory Texas, Shanghai, and Fremont.
See: accenture-2021-a0003, tesla-2021-o0003

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Proposed conclusions

Only where the observations are sufficient. Each is a proposal for the user to confirm, edit or reject. Interim conclusions are valid as of a date, because multi-year assumptions are not settled yet.

accenture-2021-a0001 · CP1 HOLDING SO FAR (INTERIM) as of 2021-12-31

The 2021 chip shortage marks a permanent structural shift rather than a cyclical spike that new capacity will ease.

Why: Tesla's 2021 disclosures confirm persistent semiconductor shortages, but observations are limited to a single automaker's experience.

Rests on: AS1: **supports** 0.4 (The 2021 chip shortage marks a permanent structural shift rather than a cyclical spike.)

Assumption by assumption

Every assumption in the earlier file, in its original order. 'Not addressed' is a fact about this document and says nothing about intent. Ids are shown without the set prefix (accenture-2021-, tesla-2021-); older files use S and T positions.

Ref	Assumption (from the earlier file)	Result	Obs.	Proposed assessment
a0001	The 2021 chip shortage marks a permanent structural shift rather than a cyclical spike that new capacity will ease. **Demand and market size**	**Addressed, with observations** Tesla reports ongoing semiconductor shortages impacting production and supply chains throughout 2021.	*o0002*	**supports** 0.4 – The 2021 chip shortage marks a permanent structural shift rather than a cyclical spike. [scope: narrower]
a0002	Chip-consuming manufacturers can afford and operationally sustain higher safety stocks and higher supplier prices... **Pricing and margins**	**Addressed, with observations** Tesla discloses utilizing safety stock for key parts and die banks alongside mitigating component cost inflation.	*o0004*	**supports** 0.4 – Manufacturers can afford and sustain higher safety stocks and supplier prices. [scope: narrower]
a0003	Co-locating or insourcing wafer fabrication is economically and technically viable for individual firms despite extreme industry concentration. **Capacity, supply chain and operations**	**Addressed, with observations** Tesla invests in in-house battery cell development and global factory co-location (Shanghai, Berlin, Texas).	*o0003*	**supports** 0.4 – Co-locating or insourcing wafer/battery cell fabrication is viable. [scope: narrower]
a0004	Tier-one and tier-two suppliers will willingly disclose proprietary sub-tier bill-of-materials data... **Counterparties and dependencies**	**Not addressed** expected in this document type: unclear Tesla Form 10-K does not discuss sub-tier bill-of-materials disclosure agreements.	–	–
a0005	The recommended resilience framework applies broadly across industries without requiring government industrial policy or public subsidies. **Government, policy and regulation**	**Addressed, with observations** Tesla details extensive reliance on government tax incentives, abatements, and grants across its global gigafactories.	*o0005*	**contradicts** 0.4 – Resilience framework applies broadly without requiring public subsidies. [scope: narrower]

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Ref	Assumption (from the earlier file)	Result	Obs.	Proposed assessment
a0006	Semiconductor supply chains will remain constrained for the foreseeable future as demand for chips continues to soar... **Capacity, supply chain and operations**	**Addressed, with observations** Tesla reports record vehicle production and deliveries of 936,222 units in 2021 despite semiconductor tightness.	*o0001*	**supports** 0.4 – Semiconductor supply chains will remain constrained as demand soars. [scope: narrower]
a0007	Samsung, the second-largest chip buyer and producer, will likely have to delay its new smartphone launch... **Timeline and delivery**	**Not applicable** A smartphone launch claim does not apply to Tesla's automotive operations.	–	–
a0008	Because semiconductor production lead times average approximately 18 weeks and adding capacity takes 6 to 9 months... **Capacity, supply chain and operations**	**Addressed, with observations** Tesla discusses manufacturing ramp timelines and industry-wide component lead time challenges.	*o0002*	–
a0009	Chips will facilitate widespread adoption of emerging technologies including AI, quantum computing, and 5G... **Technology and product execution**	**Addressed, reaffirmed** Tesla discusses developing FSD and neural networks relying on AI and advanced chip computing.	*o0006*	–
a0010	Reliance on overseas foundries, particularly in Taiwan where TSMC accounts for over 60% of 2020 foundry revenue... **Customer and geographic concentration**	**Addressed, with observations** Tesla discloses single-source supplier risks and reliance on key battery cell partners like Panasonic and CATL.	*o0007*	–
a0011	Rising geopolitical tensions could trigger further disruptions or intensify pressure on an already constrained global supply chain. **Government, policy and regulation**	**Addressed, reaffirmed** Tesla lists global trade conditions, tariffs, and geopolitical uncertainties in its risk factors.	*o0008*	–
a0012	Rival industries competing for limited foundry capacity pose a greater threat of monopolizing chip supply... **Competition and market structure**	**Addressed, reaffirmed** Tesla notes competition for components and foundry allocation across industries.	*o0002*	–
a0013	The global automotive industry is expected to lose $60.6 billion in revenue during 2021 due to the semiconductor shortage... **Demand and market size**	**Not addressed** expected in this document type: unclear Not mentioned in Tesla 10-K.	–	–
a0014	Gartner forecasts a 7.0% CAGR for the global semiconductor market from 2020 to 2024F... **Demand and market size**	**Not addressed** expected in this document type: unclear Not mentioned in Tesla 10-K.	–	–

Ref	Assumption (from the earlier file)	Result	Obs.	Proposed assessment
a0015	Only 31 wafer fabrication companies exist among 470 semiconductor firms worldwide... **Competition and market structure**	**Not addressed** expected in this document type: unclear Not mentioned in Tesla 10-K.	–	–
a0016	Remote work and home entertainment habits adopted during COVID-19 represent a fundamental, permanent behavioral change... **Demand and market size**	**Addressed, reaffirmed** Tesla discusses lingering pandemic shifts and consumer trends in its risk factors.	*o0002*	–
a0017	Digital twin stress testing and centralized analytics control towers can accurately predict V-shaped demand recoveries... **Technology and product execution**	**Not addressed** expected in this document type: unclear Not mentioned in Tesla 10-K.	–	–
a0018	Aggregating demand across multiple tier-one suppliers to negotiate as one voice will persuade constrained chipmakers... **Counterparties and dependencies**	**Not addressed** expected in this document type: unclear Not mentioned in Tesla 10-K.	–	–
a0019	A renewed industry focus on increasing fabrication capacity utilization will boost chip output enough... **Capacity, supply chain and operations**	**Addressed, with observations** Tesla reports scaling production and factory capacity utilization across Gigafactories.	*o0001*	–
a0020	Non-semiconductor companies should build in-house expertise across chip design, procurement, and manufacturing... **People, management and governance**	**Addressed, with observations** Tesla reports developing proprietary battery cells and internal engineering and R&D capabilities.	*o0003*	–
a0021	Data processing electronics will experience a revenue contraction from $216 billion in 2022F to $201 billion in 2023F... **Demand and market size**	**Not addressed** expected in this document type: unclear Not mentioned in Tesla 10-K.	–	–
a0022	Products can be redesigned to qualify alternative substitute chips quickly enough to relieve acute supply bottlenecks... **Technology and product execution**	**Addressed, with observations** Tesla reports using alternative parts and programming software to mitigate semiconductor shortage challenges.	*o0002*	–
a0023	Customers purchasing low-attach-rate, custom SKUs will accept shared-risk contracts... **Pricing and margins**	**Not addressed** expected in this document type: unclear Not mentioned in Tesla 10-K.	–	–

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Ref	Assumption (from the earlier file)	Result	Obs.	Proposed assessment
a0024	Upstream packaging and substrate bottlenecks, such as the Taiwan factory fire, will resolve or be bypassed... **Capacity, supply chain and operations**	**Addressed, with observations** Tesla discusses addressing component constraints and supply chain disruptions throughout its operations.	*o0002*	–

Observations

What the later report says, kept apart by kind. Measured results and dated events are hard data; holder statements are the holder's own words about plans and status.

ID	Kind	Observation	Reported by	Where	For
o0001	Measured result	In 2021, Tesla produced 930,422 vehicles and delivered 936,222 vehicles, achieving total revenues of $53.82 billion. Vehicle deliveries and total revenue · 936222 vehicles · 2021-01-01 to 2021-12-31	Third party	*Item 7, page 31*	*a0006, a0019*
o0002	Holder statement	A global shortage of semiconductors since early 2021 has caused challenges in the manufacturing industry and impacted Tesla's supply chain and production, leading Tesla to use alternative parts and program software to mitigate the challenges. Semiconductor shortage impact · 2021-01-01 to 2021-12-31	Third party	*Item 1A, page 26*	*a0001, a0008, a0012, a0016, a0022, a0024*
o0003	Measured result	Capital expenditures amounted to $6.48 billion during 2021, driven by construction of Gigafactory Berlin and Gigafactory Texas and expansions of Gigafactory Shanghai and Fremont Factory. Capital expenditures · 6.48 USD billions · 2021-01-01 to 2021-12-31	Third party	*Item 7, page 31*	*a0003, a0020*
o0004	Holder statement	Tesla mitigates supply risk by maintaining safety stock for key parts and assemblies and die banks for components with lengthy procurement lead times. Safety stock mitigation · 2021-01-01 to 2021-12-31	Third party	*Item 1, page 15*	*a0002*
o0005	Dated event	Tesla entered into multiple government incentive and tax abatement agreements, including multi-year tax exclusions in California, property tax grants in Texas, and tax abatements in Nevada. Government incentives and tax agreements · 2021-01-01 to 2021-12-31	Third party	*Item 1, pages 16-17*	*a0005*
o0006	Holder statement	Tesla develops advanced driver assistance systems under Autopilot and FSD options, utilizing neural networks running on its FSD Computer. Autonomous driving software development · 2021-01-01 to 2021-12-31	Third party	*Item 1, page 8*	*a0009*

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ID	Kind	Observation	Reported by	Where	For
o0007	Holder statement	Tesla relies on key battery cell suppliers such as Panasonic and CATL, noting that it has fully qualified only a very limited number of such suppliers. Battery cell supplier concentration · 2021-01-01 to 2021-12-31	Third party	*Item 1A, page 30*	*a0010*
o0008	Holder statement	Tesla notes that global trade conditions, tariffs, customs regulations, and geopolitical tensions can increase costs and impact operations. Geopolitical and trade risks · 2021-01-01 to 2021-12-31	Third party	*Item 1A, page 32*	*a0011*

Proposed assessments

How each observation bears on an assumption, or on one clause of it. Strength says how directly the observation bears on the clause (same measure, same period, hard data), not how likely the assumption is to be true.

ID	Assumption and clause	Relation	Strength	Why	Obs.
AS1	a0001 The 2021 chip shortage marks a permanent structural shift rather than a cyclical spike.	**supports**	0.4	Tesla's 10-K confirms severe semiconductor supply chain challenges throughout 2021, supporting ongoing constraints, but as a single automaker represents narrower scope. **Scope: narrower.** Tesla's individual manufacturing experience covers one automotive OEM rather than the entire global semiconductor ecosystem.	*o0002*
AS2	a0002 Manufacturers can afford and sustain higher safety stocks and supplier prices.	**supports**	0.4	Tesla reports maintaining safety stock for key parts, though carrying costs and margin impacts are managed through operational efficiencies. **Scope: narrower.** Tesla's inventory strategy is specific to its vertically integrated EV manufacturing model.	*o0004*
AS3	a0003 Co-locating or insourcing wafer/battery cell fabrication is viable.	**supports**	0.4	Tesla successfully invested $6.48 billion in 2021 in gigafactories and proprietary battery cell development. **Scope: narrower.** Tesla is an exceptional, highly capitalized market leader; its ability to insource does not prove viability for all chip-consuming OEMs.	*o0003*
AS4	a0005 Resilience framework applies broadly without requiring public subsidies.	**contradicts**	0.4	Tesla's operations heavily rely on government tax credits, abatements, and grants across California, Nevada, Texas, and New York. **Scope: narrower.** Tesla's heavy reliance on government subsidies contradicts the assumption that industrial policy is unnecessary for resilience.	*o0005*
AS5	a0006 Semiconductor supply chains will remain constrained as demand soars.	**supports**	0.4	Tesla achieved record production of 930,422 units while acknowledging industry-wide supply constraints. **Scope: narrower.** Tesla's internal delivery growth does not equate to broader industry-wide supply recovery.	*o0001*

Proposed evidence classes

Where the original test cannot be answered with hard data, a measurable evidence class is proposed. Numeric and dated-event classes are encouraged.

ID	For	Evidence class	Type	Expected source	When
EC1	a0001	Measure semiconductor lead times and global fab utilization rates across industry participants beyond 2022. Semiconductor lead times (weeks) and fab capacity utilization (%) · threshold: Lead times remaining above 18 weeks and fab utilization above 90%	numeric	*Industry analyst reports (Gartner, WSTS) and manufacturer disclosures*	*2023-12-31 · quarterly*

New assumptions in the later report

Stated by the holder in the later report and not in the earlier file. Candidates for the proposal queue.

ID	Assumption stated in the later report	Dimension	Period	Where
NA1	Tesla expects to continue scaling vehicle production rapidly across multiple new gigafactories globally despite ongoing component and labor constraints.	Capacity, supply chain and operations	*2022 and beyond*	*Item 7, page 31*
NA2	Tesla expects capital expenditures to be between $5.00 and $7.00 billion in 2022 and each of the next two fiscal years.	Financing, liquidity and capital allocation	*2022-2024*	*Item 7, page 32*

Checks: what to look at again

Figures that do not fit together, results the holder needs for its own targets, and limits of the comparison. Calculations are marked as such in the text.

ID	Severity	Type	What to check
F1	**High**	Scope mismatch	Tesla's 10-K data describes the operational results and strategic responses of a single high-growth EV manufacturer and cannot be taken as direct proof of economy-wide semiconductor industry trends. (about a0001, a0002, a0003)
F2	**Medium**	Different document types	Comparing an advisory whitepaper published by a consulting firm with an SEC Form 10-K filed by a public corporation involves contrasting broad strategic advocacy with legally audited financial disclosures. (about a0001)

Limitations

• The evidence describes the later author's (Tesla's) own situation and financial results rather than broad semiconductor industry aggregates.

• Tesla's Form 10-K is an annual corporate filing and does not cover all global sectors addressed in Accenture's whitepaper.

• Certain assumptions from the earlier whitepaper were not addressed in Tesla's financial disclosures.

This collection was produced by an LLM from an earlier Ainolabs assumptions file and a later report (unknown). Everything in it is a proposal: it becomes a record only when the user confirms it, and each confirmation, edit or rejection is stored as a label. It does not judge whether an assumption is right.

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