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Article

LOCALIZATION CONFIGURATIONS AND MARKET OUTCOMES OF CHINESE NEW ENERGY VEHICLE BRANDS IN THAILAND: A COMPARATIVE CASE STUDY OF BYD, MG, AND GWM

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Abstract: Thailand has become a strategic production and sales base for Chinese new energy vehicle (NEV) manufacturers, yet firm-level evidence on how localization configurations differ and how they correspond with market outcomes remains fragmented. This study compares BYD, MG (SAIC Motor–CP), and Great Wall Motor (GWM) through a structured documentary case-study design. Evidence from peer-reviewed studies, Thai policy documents, industry statistics, and corporate disclosures was triangulated and coded across five dimensions: production, supply chain, product, marketing and service, and human resources. The analysis distinguishes verified observations from managerial inference and uses 2025 company-wide Thai vehicle sales as a transparent, comparable outcome rather than unreported profitability or brand-equity measures. The cases reveal three configurations. BYD combines a large newly built manufacturing base with rapid product and channel deployment; MG combines an early Thai joint venture, established manufacturing, and high workforce localization; and GWM combines acquisition-led production with a multi-powertrain, multi-brand portfolio. In 2025, BYD sold 39,856 vehicles in Thailand, MG 27,007, and GWM 18,096, equivalent to approximately 6.42%, 4.35%, and 2.91% of the total new-vehicle market, respectively. These descriptive outcomes are consistent with, but do not prove, a relationship between deeper host-country commitments and market access. Policy-contingent production obligations, supplier capability, charging and service coverage, resale confidence, and cross-cultural coordination remain important constraints. The study extends the ownership–location–internalization perspective by treating localization as a portfolio of interdependent managerial choices rather than a single investment decision, and it proposes an auditable localization information dashboard for industrial managers. The findings are bounded by public-data availability and should not be interpreted causally.
Keywords: Chinese new energy vehicles; Thailand; localization configuration; comparative case study; industrial management; BYD; MG; GWM

1. INTRODUCTION

The international expansion of Chinese new energy vehicle (NEV) manufacturers is changing the industrial geography of Southeast Asia. Thailand is a particularly important host economy because it combines a long-established automotive manufacturing base with recent incentives for battery electric vehicle (BEV) adoption and local production. The International Energy Agency estimated that approximately 140,000 electric cars were sold in Thailand in 2025, about 70% more than in 2024 and close to one quarter of new-car sales [1]. This expansion has occurred within an industrial system that already possesses assembly capabilities, component suppliers, logistics

infrastructure, and export connections. A recent regional comparison accordingly identifies Thailand's existing automotive ecosystem and policy coordination as central sources of sustainable manufacturing competitiveness [2].

Policy design makes localization strategically consequential. In July 2025, Thailand's Board of Investment reported that investment in the domestic EV supply chain had exceeded THB137 billion and adjusted the EV3 and EV3.5 production-compensation rules to support exports and manage oversupply [3]. EV3.5, approved in 2023, combines purchase subsidies, reduced import duties for eligible completely built-up vehicles, lower excise tax, and subsequent domestic production obligations [4]. These mechanisms encourage foreign producers to move from import-led market testing toward host-country production, supply-chain development, and longer-term operational commitments. At the same time, revisions to production-credit rules show that localization is exposed to policy timing and demand uncertainty rather than being a one-way progression.

Regional evidence suggests that electric-mobility transitions in Southeast Asia are shaped by industrial inheritance, state capacity, market structure, and the sequencing of policy interventions [5]. The emerging ASEAN BEV production network is likewise distributed according to national endowments, policy support, and integration with global value chains [6]. These conditions make Thailand an appropriate setting for examining how multinational manufacturers combine firm-specific capabilities with host-country advantages.

Existing discussion often treats localization as a binary choice between importing and producing locally. This view overlooks important differences in plant ownership, supplier development, product adaptation, route-to-market design, service capacity, and local managerial participation. It also encourages performance claims based on non-comparable indicators. The available public evidence does not permit defensible comparisons of profitability, brand recognition, or model-level BEV share across all three firms. A more rigorous approach is therefore to compare documented configurations and transparent market outcomes while stating the limits of causal inference.

This study addresses three research questions:

RQ1. How do BYD, MG, and GWM configure localization across production, supply chain, product, marketing and service, and human-resource dimensions in Thailand?

RQ2. How do these configurations correspond descriptively with observable market outcomes in 2025?

RQ3. What industrial-management and policy implications follow from the cross-case similarities, differences, and constraints?

The study contributes in three ways. First, it operationalizes localization as a multidimensional configuration and links it to the ownership–location–internalization (OLI) logic. Second, it creates a transparent comparison that separates verified facts, calculated indicators, and interpretation. Third, it proposes a practical information architecture through which managers and policymakers could monitor localization commitments and outcomes. The analysis remains deliberately bounded: it identifies correspondences and mechanisms that warrant further testing, not causal effects.

2. LITERATURE REVIEW AND ANALYTICAL FRAMEWORK

2.1 OLI and localization as a configuration

Dunning's eclectic paradigm explains foreign production through the interaction of ownership, location, and internalization advantages [7]. Ownership advantages include technology, brands, organizational routines, financing capacity, and platform scale. Location advantages arise from host-country demand, institutions, incentives, labor, suppliers, infrastructure, and access to adjacent markets. Internalization advantages explain why a firm controls key activities rather than licensing or contracting them externally. For Chinese NEV firms in Thailand, vehicle platforms, batteries, software-enabled functions, procurement scale, and capital constitute potential ownership advantages; Thailand's industrial base and incentive system provide location advantages; and control over manufacturing, distribution, and service can protect quality, speed, and learning.

OLI explains why foreign direct investment may occur but does not, by itself, specify the operational pattern after entry. This study therefore treats localization adaptation as a set of interdependent managerial choices. Production localization concerns plant establishment, acquisition, assembly, and capacity. Supply-chain localization concerns local sourcing, supplier development, component production, and logistics. Product localization concerns portfolio, specifications, price-positioning, and adaptation to local use conditions. Marketing and service localization concerns dealers, maintenance, parts availability, customer communication, and resale support. Human-resource localization concerns local employment, managerial participation, skills development, and coordination between headquarters and the host operation.

The configuration perspective is important because one dimension can constrain another. A plant without qualified suppliers may remain import-dependent; an adapted product without parts and diagnostic capacity can weaken ownership experience; and a broad dealer network without data integration can produce inconsistent service. Conversely, a coordinated portfolio can create complementarity: local production may support incentive eligibility, local supplier development may reduce lead-time exposure, and local staff may improve institutional and customer knowledge. Performance should therefore be interpreted as the outcome of a system rather than a single localization ratio.

2.2 Thailand's EV ecosystem and firm localization

Research on Thailand's BEV sector emphasizes a policy-created window of opportunity. Intarakumnerd and Charoenporn show that Thailand's transition is shaped by interactions among industrial policy, incumbent automotive capabilities, and new technological entrants [8]. Ng identifies market size, investment promotion, industrial infrastructure, and regional positioning as location-based advantages attracting foreign EV firms [9]. These studies support a host-country explanation for the concentration of Chinese investment but leave room for firm-level differences in how entrants mobilize those advantages.

Demand-side studies add a second layer. Thai consumers' EV adoption is affected by economic, technical, environmental, infrastructure, and social factors [10]. Comparative evidence indicates that perceived purchase cost, charging availability, driving range, maintenance, and information differ between BEV users and internal-combustion-engine users [11]. Age-group analysis similarly shows that adoption determinants are heterogeneous rather than uniform across the market [12]. Earlier work identified policy consistency, battery and charging concerns, affordability, public knowledge, and grid and industrial preparedness as continuing barriers [13]. Localization is thus not only a factory decision; product, communication, service, and trust mechanisms must respond to varied user concerns.

2.3 From investment commitments to observable outcomes

The present framework distinguishes inputs, intermediate capabilities, and outcomes. Inputs are documented commitments such as plant capacity, ownership structure, local employment, and component facilities. Intermediate capabilities are inferred mechanisms, including production responsiveness, institutional access, customer learning, and after-sales reliability. Outcomes are observable indicators such as sales, growth, and market share. Because public evidence does not reveal equivalent Thai subsidiary profits, customer retention, warranty costs, or brand equity for all cases, those constructs are not used as measured outcomes.

Table 1 summarizes the coding framework. It also shows the evidentiary rule applied throughout the study: numerical claims require a cited source; cross-case interpretation must follow from at least two independent evidence types; and missing disclosure is recorded as unavailable rather than estimated.

Table 1. Localization coding framework

Dimension	Observable evidence	Proposed managerial indicator	Expected mechanism

Production	Entry mode, plant location, start date, stated annual capacity	Capacity utilization; local output by model	Incentive access, shorter replenishment cycle, operational learning
Supply chain	Local component facilities, sourcing disclosures, supplier programs	Local procurement value; supplier quality and lead time	Cost control, resilience, industrial embeddedness
Product	Powertrain and model portfolio, segment and price coverage	Model-level sales; local feature changes; warranty claims	Fit with heterogeneous demand and use conditions
Marketing and service	Dealer/service presence, parts and repair support, customer channels	Geographic coverage; repair time; satisfaction and retention	Trust, accessibility, lower ownership uncertainty
Human resources	Local employment and disclosed workforce ratio, training	Local management share; technical certification; turnover	Institutional knowledge, adaptation, coordination capability
Outcome	Company-wide sales, year-on-year change, calculated market share	BEV-model share, margin, retention, resale value when disclosed	Descriptive test of market access and acceptance

3. MATERIALS AND METHODS

3.1 Research design and case selection

The study uses a comparative documentary case-study design. Case studies are appropriate when the research question concerns how a contemporary strategy is configured within its institutional context and when the boundaries between phenomenon and context cannot be cleanly separated [14]. Cross-case comparison can improve construct clarity by combining within-case understanding with replication-oriented pattern searches [15]. No interviews or consumer survey were conducted for this study; consequently, the paper does not claim primary perceptions or confidential operational data.

BYD, MG, and GWM were selected through theoretical rather than statistical sampling. All are Chinese-controlled automotive groups with significant Thai market activity, but they entered local production through different routes and at different times. BYD represents a recent greenfield manufacturing commitment; MG represents an earlier joint venture between SAIC Motor and Thailand's CP Group; and GWM represents acquisition and conversion of an existing vehicle plant. Their contrasting routes provide variation suitable for examining localization configurations while holding the national policy setting broadly constant.

3.2 Evidence collection

The evidence base covers material available through August 2026 and prioritizes four source classes. First, peer-reviewed articles were used to establish theoretical constructs and Thai adoption or industrial context. Second, Thai government documents were used for incentives, investment, and production obligations. Third, corporate releases were used only for company-specific facts such as plant capacity, opening dates, and disclosed workforce characteristics. Fourth, industry statistics were used for the common sales denominator and firm-level outcomes. Search and verification were conducted by title, author, outlet, year, and DOI where available. Sources that could not be independently located or that contradicted primary disclosures were excluded.

The temporal outcome window is calendar year 2025, the latest complete year for which all three firms and the total market could be compared on a consistent basis. Company-wide sales were used because a comparable, independently reported model-level BEV series was not available for all cases. This choice avoids mixing

registrations, bookings, deliveries, or selected powertrains, but it means that results capture each company's entire Thai portfolio rather than BEVs alone.

3.3 Coding, calculation, and triangulation

Evidence was coded into a case-by-dimension matrix corresponding to Table 1. Each claim was assigned one of three statuses: verified observation, derived indicator, or interpretation. A verified observation appears in a traceable source. A derived indicator is calculated from verified observations; for example, market share equals company sales divided by total Thai new-vehicle sales. An interpretation explains a plausible mechanism but is not presented as a measured effect.

Triangulation proceeded in three stages. Within each case, corporate disclosures were checked against government or industry information when possible. Across cases, equivalent constructs and the same outcome period were used. Finally, the emerging patterns were compared with OLI and Thai EV scholarship. Conflicting or incomparable evidence was resolved conservatively: unverifiable partnership or supplier claims were excluded, plant locations were checked against current disclosures, and profitability, brand-recognition scores, or local-content percentages were not compared when equivalent evidence was unavailable.

The total 2025 market was 621,166 vehicles. Market shares were calculated as 39,856/621,166 for BYD, 27,007/621,166 for MG, and 18,096/621,166 for GWM. Percentages are rounded to two decimal places. These calculations are transparent but descriptive; no statistical causal model is applied because the sample comprises three strategically selected cases and several unobserved factors may influence sales.

3.4 Reliability, validity, and limitations

Construct validity was strengthened by defining dimensions before cross-case interpretation and using multiple source types. Reliability was supported through a common coding template and reproducible calculations. External validity is analytical rather than statistical: the purpose is to refine an explanation of localization configurations, not to estimate an average treatment effect for all foreign manufacturers. Corporate disclosures may emphasize favorable facts, and the absence of disclosure cannot be interpreted as absence of activity. The study also lacks comparable data on model-level profitability, supplier spend, warranty outcomes, dealer density, management nationality, and customer retention. These boundaries are carried into the findings and conclusions.

4. RESULTS

4.1 Thai market and policy conditions

Thailand's EV policy combines demand stimulation with industrial compensation. EV3.5 provides lower subsidies than the preceding EV3 program but retains reduced excise tax and conditional import-duty benefits, accompanied by local production requirements [4]. The 2025 adjustments allowed eligible exports to count toward production obligations and modified accounting rules to reduce the risk of domestic oversupply [3]. For manufacturers, the location advantage is therefore conditional: benefits are tied to verified production behavior, timing, and administrative compliance.

Market growth is substantial but should not be confused with an unconstrained path. Electric-car sales reached approximately 140,000 in 2025 [1], while the broader new-vehicle market totaled 621,166 units [16]. Financing conditions, price competition, charging access, residual-value expectations, service quality, and policy changes can still affect adoption. The combination of rapid growth and implementation risk increases the value of responsive local operations and reliable information systems.

4.2 Production and supply-chain localization

BYD inaugurated its Rayong plant on 4 July 2024. The company reports annual capacity of 150,000 vehicles and an integrated process covering stamping, welding, painting, final assembly, and component production; it also

projected 10,000 jobs [17]. This is the largest stated annual capacity among the three cases. The public evidence supports a significant greenfield commitment but does not provide a comparable current local-content percentage or evidence of battery-cell production in Thailand; neither is therefore used in the cross-case ranking.

MG operates through SAIC Motor–CP, combining the Chinese manufacturer's technology and portfolio with a Thai conglomerate partner. Its modern plant is in Chonburi and has stated annual capacity of 100,000 vehicles. A 2024 company announcement reported an EV battery production facility, an industrial-park expansion program, and a workforce that was up to 98% Thai [18]. The joint-venture structure and earlier local presence plausibly support institutional familiarity and cumulative operating learning, although their separate effects cannot be isolated from public data.

GWM entered production by acquiring General Motors' Rayong facility and opened it as its second full-production base outside China in 2021. The plant has stated annual capacity of 80,000 vehicles [19]. GWM described the site as covering manufacturing processes and supporting regional production. Public corporate information has referred to an initial localization rate of approximately 40%; because the definition and later comparable rate are not consistently disclosed, this figure is treated as a starting-point statement rather than a current audited measure. GWM's first locally produced BEV, the ORA Good Cat, rolled off the line in January 2024, demonstrating conversion of the acquired plant to electrified output.

Table 2. Verified production and organizational localization evidence

Case	Entry/ownership configuration	Thai production evidence	Stated annual capacity	Workforce/local content evidence	Evidentiary interpretation
BYD	Greenfield, company-controlled plant	Rayong plant opened July 2024; stamping, welding, painting, assembly, and components	150,000	10,000 jobs projected; comparable Thai workforce/local-content ratio unavailable	High-capacity commitment and strong internalization; depth of local sourcing remains undisclosed
MG	SAIC Motor–CP joint venture	Chonburi plant; EV battery facility and industrial-park expansion disclosed in 2024	100,000	Up to 98% of workforce reported as Thai	Long local tenure and partner embeddedness; stronger public evidence on workforce localization
GWM	Acquisition and conversion of former GM plant	Rayong full-production plant opened in 2021; local ORA Good Cat BEV production began in 2024	80,000	Initial localization rate reported at about 40%; no consistent current rate	Faster asset-based entry and multi-powertrain flexibility; current sourcing depth requires disclosure

The three routes involve different trade-offs. Greenfield investment gives BYD greater scope to design facilities around its production system but requires new supplier and workforce integration. MG's joint venture distributes local-market knowledge and has had a longer period to accumulate operating routines. GWM's acquisition reduces the time needed to obtain physical production assets and preserves manufacturing knowledge, while conversion to new

platforms creates integration demands. None of these routes is inherently superior; their value depends on capacity utilization, supplier quality, portfolio demand, and organizational coordination.

4.3 Product, marketing and service, and human-resource localization

Product localization is visible primarily in portfolio configuration rather than in publicly documented engineering changes. BYD's Thai expansion emphasizes BEVs and plug-in hybrid models across several passenger-vehicle segments. MG maintains a mixed portfolio built over a longer local operating period, combining electrified and other models at multiple price points. GWM deploys a multi-brand and multi-powertrain strategy involving ORA, HAVAL, and TANK products. The portfolio differences matter because 2025 company sales are not pure-BEV measures: GWM's particularly high growth, for example, cannot be attributed solely to BEV localization.

The demand literature indicates that range, charging, price, perceived risk, and after-sales support remain salient [10-13]. Accordingly, localization performance requires more than a product launch. Dealers and service centers translate firm capabilities into availability of test drives, financing support, maintenance, software diagnosis, collision repair, and spare parts. Public sources confirm that all three firms operate Thai sales and service channels, but contemporaneous and methodologically comparable outlet counts were not available. The analysis therefore avoids ranking network size. A defensible future comparison would measure population-weighted service coverage, appointment lead time, first-time repair rate, parts fill rate, charging interoperability, complaint closure, and resale support.

Human-resource disclosure is similarly uneven. MG's reported Thai workforce share is informative, and BYD's job projection signals scale, but neither is equivalent to the proportion of Thai managers, engineers, or decision-makers. GWM's acquisition route likely retained some local production experience, yet the available evidence does not support a quantified management-localization claim. Headcount should therefore not be treated as a proxy for local decision authority. The more relevant industrial-management question is whether Thai personnel participate in product, procurement, quality, service, and market decisions and whether headquarters-to-subsidiary data flows enable timely adaptation.

Table 3. Cross-case localization configurations beyond production

Dimension	BYD	MG	GWM	Cross-case assessment
Supply chain	Integrated Thai plant includes component processes; comparable current local-sourcing ratio unavailable	EV battery facility and industrial-park expansion publicly disclosed	Initial local-content statement available; current comparable sourcing ratio unavailable	Disclosure is insufficient for a defensible supplier-depth ranking
Product	Strong BEV/PHEV orientation across passenger segments	Longer-standing mixed portfolio with electrified offerings	Multi-brand, multi-powertrain portfolio	Portfolio breadth supports segment coverage but confounds BEV-only interpretation of sales
Marketing and service	Rapid market and channel deployment	Cumulative local presence and partner-supported market knowledge	Brand-specific portfolio and network development	Comparable service-quality and geographic-coverage data are unavailable

Human resources	Large job creation commitment; composition not disclosed comparably	Up to 98% Thai workforce reported	Local manufacturing base; management share not disclosed comparably	Workforce nationality alone does not measure local authority or capability
Dominant configuration	Greenfield scale and internalization	Joint-venture embeddedness and cumulative learning	Acquisition-led flexibility and portfolio differentiation	Different routes can access the same location advantages through different governance choices

4.4 Observable 2025 market outcomes

Thailand recorded 621,166 new-vehicle sales in 2025, an increase of 8.5% from the preceding year [16]. BYD sold 39,856 vehicles, up 47.5%; MG sold 27,007, up 56.7%; and GWM sold 18,096, approximately 146% above its prior-year result [16]. Dividing these totals by the national market yields shares of approximately 6.42%, 4.35%, and 2.91%, respectively.

Table 4. Comparable 2025 Thai market outcomes

Company	Company-wide sales (vehicles)	Year-on-year change	Share of total Thai new-vehicle market	Interpretation boundary
BYD	39,856	+47.5%	6.42%	Highest scale among the cases; sales include more than one electrified powertrain
MG	27,007	+56.7%	4.35%	Strong growth from an established local base; not a pure-BEV series
GWM	18,096	Approximately +146%	2.91%	Fastest growth from a smaller base; portfolio mix includes non-BEV vehicles

Source: Author calculations from MarkLines' compilation of Federation of Thai Industries data [16].

The outcome ordering is consistent with the proposition that production commitment, product availability, and market infrastructure can jointly support market access. However, the growth ordering shows why a simple "more localization equals higher performance" conclusion is inadequate. GWM grew fastest from the smallest base and with a diverse powertrain mix; MG combined a longer local presence with substantial growth; and BYD maintained the largest absolute volume after opening a high-capacity plant. Prices, model cycles, financing, promotions, supply availability, and portfolio composition are not controlled. The evidence therefore supports configuration comparison and mechanism identification, not causal ranking.

5. DISCUSSION

5.1 Cross-case configurations through the OLI perspective

The cases illustrate different ways to align ownership and location advantages. BYD's configuration emphasizes internalization: a large, integrated plant gives the firm control over production processes and supports transfer of its platform and manufacturing capabilities. Thailand's incentives, supplier base, labor, and regional logistics constitute location advantages, but the payoff depends on utilization and the gradual localization of inputs. The configuration can be described as greenfield scale with centralized capability transfer.

MG combines SAIC's ownership advantages with CP's local embeddedness. The joint venture can provide institutional navigation, distribution knowledge, and accumulated workforce experience while retaining access to

SAIC products and technology. Its long operating period and disclosed Thai workforce share distinguish organizational embeddedness from the simple nationality of capital. The configuration can be described as partnership-mediated localization and cumulative learning.

GWM internalized Thai manufacturing through acquisition rather than construction. This route can shorten entry time and preserve usable assets and workforce routines. The ORA, HAVAL, and TANK portfolio also spreads market exposure across segments and powertrains. The resulting configuration is acquisition-led flexibility. Its 2025 sales growth suggests commercial momentum, but because the result includes several powertrains it cannot establish that local BEV production was the primary driver.

These patterns refine the OLI interpretation in two respects. First, location advantages are conditional contracts rather than passive national attributes. EV3/EV3.5 benefits are tied to production, timing, reporting, and policy adjustment. Second, internalization is granular. A firm may internalize vehicle production while relying on imported components, external dealers, local partners, or global software systems. Localization should therefore be analyzed as an activity portfolio with governance choices at each interface.

5.2 Challenges and boundary conditions

Policy dependence is the first common challenge. Production-compensation rules accelerate investment but can also create timing mismatches between imported sales and domestic output. The 2025 adjustments demonstrate policymakers' effort to prevent oversupply and facilitate export crediting [3]. Firms require scenario planning for demand, export eligibility, inventory, and compliance rather than relying on a stable subsidy assumption.

Supplier depth is the second challenge. Thailand's conventional automotive base is a major advantage, yet EV-specific batteries, power electronics, semiconductors, software, and thermal-management systems require different capabilities. A factory opening does not establish that high-value components are locally sourced or that suppliers meet cost, quality, and volume targets. Joint supplier development, traceability, and transparent local-procurement metrics are needed to move from assembly localization to capability localization. The wider ASEAN production network offers scale and specialization opportunities, but also exposes firms to cross-border logistics and policy differences [6].

Market confidence is the third challenge. Evidence on Thai adoption repeatedly identifies cost, range, charging, knowledge, maintenance, and perceived risk [10-13]. Intense price competition can stimulate short-term sales while weakening residual values and dealer economics. Firms should coordinate pricing, financing, warranty, parts, repair competence, battery-health disclosure, and used-vehicle support. These mechanisms are especially important because rapid model turnover can create uncertainty about software support and resale value.

Organizational integration is the fourth challenge. Local employment creates economic and political value, but effective adaptation requires decision rights, knowledge transfer, and bilingual coordination. Headquarters speed may conflict with dealer feedback, regulatory interpretation, or local supplier constraints. Metrics should therefore examine how quickly local information changes product, procurement, service, and communication decisions—not merely how many local employees are hired.

Finally, portfolio breadth is both an advantage and an analytical complication. Multiple powertrains can hedge charging and demand uncertainty, while a concentrated BEV portfolio can sharpen brand positioning and operational focus. Company-wide sales capture commercial presence but do not reveal which technology or localization mechanism succeeded. Model-level registration, margin, incentive eligibility, and repeat-purchase data are required for causal evaluation.

5.3 Industrial-management implications: an auditable localization dashboard

The cross-case evidence suggests that managers need an integrated localization information dashboard rather than isolated factory, sales, and marketing reports. The dashboard should connect five layers. The policy layer should track incentive eligibility, production obligations, export credits, and compliance deadlines. The industrial layer

should track local procurement value, critical-component origin, supplier quality, delivery reliability, capacity utilization, energy use, and workforce skills. The market layer should track model-level registrations, order conversion, discount intensity, financing approval, and geographic demand. The ownership-experience layer should track charger availability, service lead time, parts fill rate, repeat repairs, battery health, complaints, resale value, and retention. The governance layer should record decision rights, data owners, review cadence, and corrective actions.

Such a system would address three weaknesses identified in the public evidence. First, it would distinguish commitments from realized localization—for example, stated plant capacity from actual output and local procurement. Second, it would separate company-wide growth from model- and powertrain-specific performance. Third, it would make adaptation observable by linking customer or dealer signals to operational changes. Access controls and standardized definitions would allow headquarters, Thai subsidiaries, dealers, suppliers, and regulators to share the minimum information necessary without treating all data as interchangeable.

For policymakers, reporting should reward capability formation rather than only output counts. Auditable indicators could include qualified local supplier value, engineering and technical training, battery traceability, service and recycling readiness, export performance, and productivity. The two-wheeler literature also shows that local production capacity and distribution must be considered together when assessing electric-mobility ecosystems [20]. Although passenger cars have different economics, the broader principle applies: industrial capacity creates value only when it is connected to distribution, use, maintenance, and end-of-life systems.

6. CONCLUSIONS AND FUTURE RESEARCH

This study compared the Thai localization configurations of BYD, MG, and GWM using verified public evidence and a common analytical framework. BYD represents greenfield scale and relatively high internalization; MG represents partnership-mediated embeddedness and cumulative learning; and GWM represents acquisition-led production flexibility and portfolio differentiation. Their 2025 company-wide sales were 39,856, 27,007, and 18,096 vehicles, respectively, corresponding to approximately 6.42%, 4.35%, and 2.91% of Thailand's total new-vehicle market. All three grew faster than the total market, but GWM's especially high growth came from a smaller and multi-powertrain base.

The main theoretical conclusion is that localization is better understood as a configuration of production, supply-chain, product, market-service, and human-resource choices than as a single local-content measure. OLI remains useful for explaining why Thailand attracts investment and why firms retain control over selected activities, but performance depends on the alignment and governance of those activities. The main managerial implication is to replace fragmented reporting with an auditable information system connecting policy commitments, industrial localization, model-level demand, ownership experience, and corrective decisions.

The conclusions are subject to public-data limitations and do not establish causality. Future research should combine model-level registration and pricing data with supplier procurement, plant utilization, warranty, service, charging, residual-value, and customer-panel evidence. Interviews with regulators, suppliers, dealers, Thai managers, and consumers could test the proposed mechanisms, provided that sampling, instruments, ethics, and analysis are reported transparently. Longitudinal comparison before and after major production or policy milestones would help distinguish localization effects from model cycles and macroeconomic conditions. Comparative extension to Indonesia, Malaysia, and Vietnam could also test how the same ownership advantages perform under different location conditions.

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