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Research Report: MISI-2014-13
Evolution of Mega Suppliers in the Automotive Industry
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Evolution of Mega Supplier in Automotive Industry

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Summary: By using a comparison between two mega-suppliers in automotive industry, this research verifies the applicability of Evolution of Business Ecosystem (EBE) theoretical framework in the middle stream of automotive value chain, as well as proposes diversification as the new factor that should be considered when examining a firm's business architecture and its impact on performance of the firms in this stage of value chain.



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KEY INSIGHTS

1. As automotive, airlines, aerospace and steel industries have been studied, the superior firm performance in automotive component industry also relies on how the firm interacts with its environment, i.e. in the network architecture of the firm's extended enterprise, Modular and Integral are two fundamental business architectures firms follows when compete with each other.
2. The Evolution of Business Ecosystem (EBE) framework, which would help a firm to identify its business architecture, could be applied in the middle stream of value chain and explain the Mega suppliers' activities and firm performance.
3. Diversification as one of the key factors in product markets of business ecosystem should be evaluated when configures a firm's strategy aligning with its business architecture in the middle stream of the value chain due to the nature of product diversification in this stage.

Emergence of Mega Suppliers

The Mega supplier or “0.5 tier” supplier emerged in the background of the long boom in auto markets in Europe and the USA which created the long-overdue consolidation and alliances such as Daimler-Chrysler, Ford-Volvo, Renault-Nissan and GM – Fiat, who set an accelerating pace for change in cost reduction, a proliferation of niche models and shortening product life cycles. And under the new pressures, many new consolidation affected “tier 1” suppliers: Federal Mogul and TRW swallowing up smaller players like LucasVarity and T&N, Delphi bought Lucas Diesel Systems from TRW, Nissan reduced its supplier globally by 50%. And in this situation, some “tier 1” suppliers took on total design and market research as well as logistics integration for complete modules, assumed full responsibility for tooling and for warranty, who then evolved to “0.5 tier” suppliers or Mega suppliers. These firms supply major system to the assemblers, they designs, engineers and manufactures a wide variety of component, integrated systems and modules on a world basis. Such system also called “black-box solutions” which are solutions created by the suppliers using their own technology to meet the performance and interface requirements set by assemblers.

Players	Assemblers	Mega-suppliers	First-tier suppliers
Branding & Finance	Y	N	N
Innovation and design capabilities	Y	Y	Y
Global reach	Y	Y	Limited
Process-engineering	Y	Y	Y
Rudimentary engineering	Y	Y	Y
Major competency	Brand	Global reach & "Black box" solution	Design and innovation capabilities

Table 1: Mega-suppliers capabilities summary

Source: (Humphrey & Memedovic, 2003)

Under this specific background, this research is performed under the sponsorship from ZF Friedrichshafen AG, who is famous for their chassis and transmission technology, listed as

one of the top 10 global automotive supplier, aim to enhance their understanding of the future dynamics of the market to better position themselves for the potential challenge and opportunities.

Evolution of Business Ecosystem Theoretical Framework

In order to have a better understanding of the competition environment in automotive component industry, a theoretical framework was utilized in this research: *the Evolution of Business Ecosystem*. Piepenbrock¹ from London School of Economics proposes that the *architecture* of firms could be seemed as their most fundamental defining characteristic, based on two well-defined and largely immutable species **Integral** and **Modular**. Piepenbrock (2009) defines *Business Architecture* in terms of the strength, closeness and the specific morphology of relationships that exist between the core firm and the four markets that are its key stakeholders – Product Markets, Capital Markets, Supplier Markets and Labor Markets. **Integral** and **Modular**, also known as **Blue (Modular)** and **Red (Integral)** Architectural typologies, which are define around (1) the influence of a firm’s Objective Function (**Shareholder Value** vs. **Stakeholder Surplus**), and (2) Enterprise Boundaries (**Narrowly Defined** vs. **Broadly Defined**) to highlight the importance of *Architectural Leadership* as a key strategic capability in building and sustaining competitive advantage. Piepenbrock (2009) draws on Darwin’s theory of evolution of natural and biological ecosystems to examine and explain the *Evolution of Business Ecosystems*. The question of which architecture is inherently better is less important than which one is better suited to the prevailing environment, in which determines which species will prevail in the competition between species.

¹ http://www.ii-sl.org/ii-sl/Theodore_%28Ted%29_Piepenbrock.html

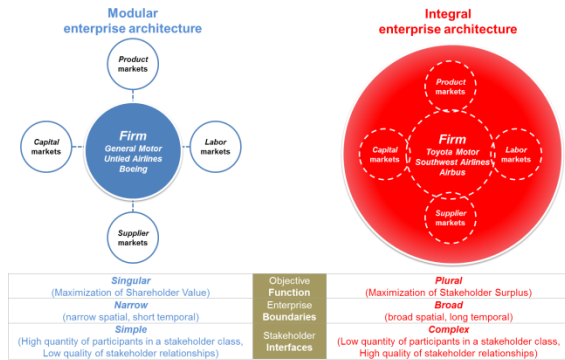


Figure 1: Modular vs. Integral summary
Source: (Piepenbrock, 2009)

The evolution cycle as illustrated in Figure 2, includes two main causal loops describe the co-evolution of the ecosystem and its constituent enterprises in terms of both product quantity (solid outer loop) and quality (dashed inner loop) that is demanded and supplied, with two clockwise revolutions of the causal loop diagram to describe how the ecosystem grows and eventually matures, and how concurrently incumbent firms' enterprises build the industry and are ultimately overtaken by late-entrant challenger firms' enterprises.

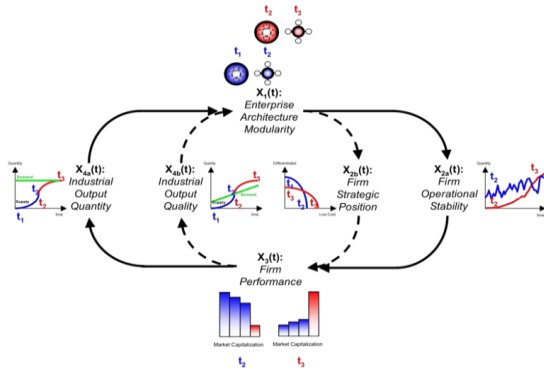


Figure 2: Evolution of Business Ecosystem Framework
Source: (Piepenbrock, 2009)

Diversification as a key indicator in middle stream of value chain

One major challenge as all Mega Suppliers are facing is that *the new mega-companies that have been and will be created through acquisitions and mergers might or might not be managed effectively from the center, as the scope and complexity of activities may simply be too great.* A further study in diversification is also required

for a better understanding in business ecosystem of automotive component industry.

Two key indicators were measured in the research to evaluate both the diversification status and the net synergies it gains from the different industries it diversified to.

- **The Herfindahl index** (also known as Herfindahl–Hirschman Index, or HHI) is a measure of the size of firms in relation to the industry and an indicator of the amount of competition among them, and in this research the HHI is used to understand the internal concentration of the business in different industry
- **The Excess Value** originates from the finance literature and can be used to examine whether diversified firms trade at a discount or premium relative to imputed values of portfolios of stand-alone firms. Thus, it promises high content validity in terms of capturing whether corporate wholes may indeed add up to more than the sum of their parts, i.e. if net synergies are realized.

Sample firms in this research

Thus four samples firms were compared based on the Evolution of Business Ecosystem theoretical framework as well as the diversification analysis.

Type	Company Name	Country	Company Type
Mega-Supplier; Diversified	Magna International Inc.	Canada	PUBLIC - PARENT
Mega-Supplier; Diversified	Aisin Seiki Co., Ltd.	Japan	PUBLIC - PARENT
Tier-1 Supplier; Diversified	ZF Friedrichshafen AG	Germany	PRIVATE - PARENT
Tier 1 Supplier; Focused	Wanxiang Group Corporation	China	PRIVATE - PARENT

Table 2: Samples firms

Source: Author

Key findings

The applicability of Evolution of Business Ecosystem in the middle stream of value chain,

the automotive component industry was evaluated in four different sets of comparison between the findings and Piepenbrock’s theory.

- **Enterprise Architecture:** Magna International as Modular incumbent and Aisin Seiki as Integral late-entrant was identified and verified based on the corresponding quantitative data

<u>Magna</u>	<u>Aisin</u>
<p><i>All of our key stakeholders – investors, employees, management and society – continue to share a predetermined portion of our annual profits, as guaranteed by the Corporate Constitution. All Magna employees continue to enjoy the workplace rights guaranteed under the Employee’s Charter. And our decentralized and entrepreneurial operating principles remain the same, with day-to-day operating control in the hands of our divisional and group managers.</i></p>	<p><i>To make AISIN a preeminent global brand, we must acquire an unwavering level of trust from society, customers and business partners by ensuring that all employees engage wholeheartedly in mono-zukuri with a constant awareness of the obligations of trust we operate under. AISIN will become a truly powerful brand only when customers view us as being “totally reliable” and hold us in high esteem. As we move beyond this milestone, I believe that now is the best time to solidify our foundation so that we can resolutely pursue that contributes to the prosperity of society.</i></p>

Table 3: Sample qualitative data
Source: Magna & Aisin’s Annual books

- **Firm Operational Stability:** the operational relative instable of Modular firm compare to Integral firm was verified based on the revenue per vehicle production.

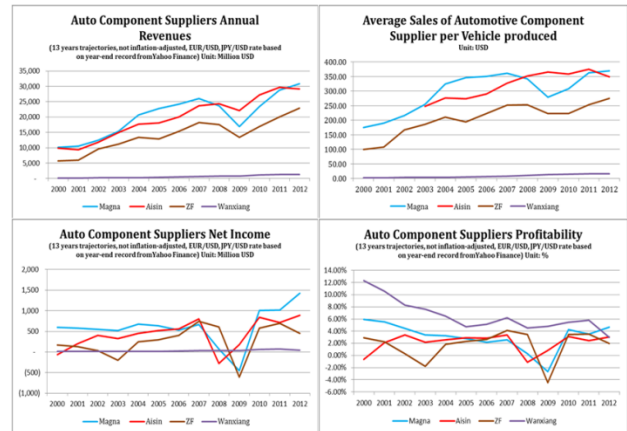


Figure 3: Key Firm Performance Comparison
Source: Author

- **Firm Performance:** Market Cap was used to evaluate the firm’s performance in business ecosystem while 2003 – 2009 data verified the pattern *concurrently incumbent firms’ enterprises build the industry and are ultimately overtaken by late-entrant challenger firms’ enterprises.* While year 2010 to 2012 data suggested the disruption / evolution from the market has a significant impacts on the inter species competition, which also bridging the further research in diversification.

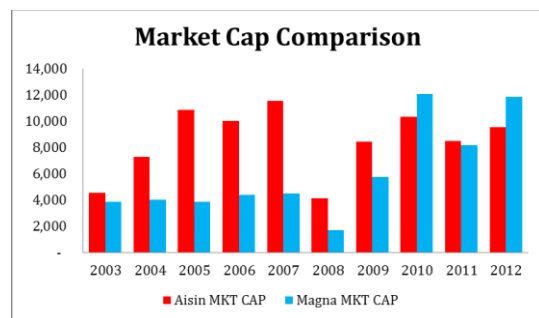


Figure 4: Market Cap Comparison
Source: Yahoo Finance²

- **Industrial evolution:** Two market evolution factors was identified that the 2008-2009 economy crisis and the geographical change (China became the number one automotive manufacture site around the world) change the competition environment.

² <https://finance.yahoo.com/>

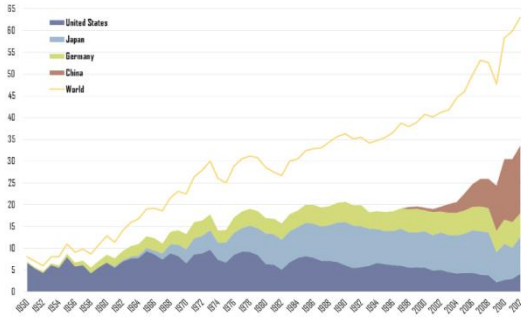


Figure 5: Global Vehicle production 1950 – 2012 by major countries of production
 Source: www.oica.net

- **Diversification bridging the Firm strategic position and industrial Output:** Modular and Integral firms made different diversification selection with different result and further study is required to verify the findings.

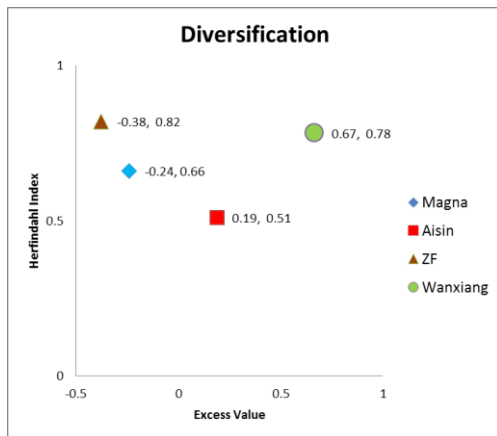


Figure 6: Diversification analysis
 Source: Author

Recommendations

The following managerial implications for both business architectures were proposed based on the analysis of Evolution of Business Ecosystem framework. It is highly recommended that the firm should not only understand its own business architecture, but also have a thorough understanding of its upstream and downstream of the value chain to identify the strategic partners and long term investment opportunities, such as the strategic supplier alliance by Integral firms and merger and acquisition by Modular firms.

Business Ecosystem	Integral	Modular
Product Market	Superior quality Technology leadership	Decentralized structure Work with Modular OEM
Supplier Market	Strategic alliance with Integral suppliers	Strategic M&A to reinforce core competency
Labor Market	Trust and life-long working relationship	Entrepreneurial culture, empowerment and ownership
Capital Market	Work with investors for long term returns	Maintain profitability to satisfy the stock market

Table 4: Recommendations for firms with different business architecture
 Source: Author

Further implications in the ZF as Integral firm based on the EBE analysis was proposed as follows.

- Understand the customer’s business architecture and put centric focus on Integral customers to develop long-term collaboration
- Scrutinize its business ecosystem to align the customer-centric focus to meet the diversified needs
- Leverage its technology leadership toward further growth in synergetic diversification
- Focus on China market to leverage the growth opportunity

Future Research

Thanks to the depth, width and intactness of the EBE theoretical framework and aforementioned research limitations, further research could be approached from different levels and different lens.

First of all, a wider research in the Automotive Component Industry could be further developed

from either expanding the total samples within the same sector or in-depth research based on the similar selection criteria in other top 10 suppliers to verify the EBE application findings such as the implications of the disruption and/or market evolution with new product evolving.

Secondly, a similar focus of middle stream of automotive value chain could be further explored in different industries such as food industry (Hershey's vs. Mars), computer industry (Intel vs. AMD), and Office supply industry (HP vs. Canon), and the impacts of diversification could be further evaluated in different cases.

Thirdly, a shifting in the stream of the value chain could be further explored, namely shifting from manufacturing sector to service sector such as financial service, consulting service and distribution service.

Finally, a further investigation between the diversification and business ecosystem could be further researched in all the aforementioned industries and in different streams.

Key Takeaways

The applicability of the Evolution Business Ecosystem in automotive component industry provided validated theoretical framework for firms to evaluate the competitions and firm strategies from a longitudinal aspect, while not only providing an explanation why firms in the middle stream of the value chain performs different and prepare the firm to better configure itself for the future dynamics. The findings of how diversification could better bridge the firm's strategic position and its growth opportunity shed a light on the importance of the synergetic diversification selection in the middle stream players. Last but not least that the disruption from the market evolution hopefully would trigger a further analysis toward the building of theory of evolution of business ecosystem.