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Gaining future competitive advantage through corporate foresight value creation: A case study on local affiliate companies in ASEAN's automotive industry

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MANAGEMENT | RESEARCH ARTICLE

Gaining future competitive advantage through corporate foresight value creation: A case study on local affiliate companies in ASEAN's automotive industry

Jaka Purwanto^{1*}, Reza Ashari Nasution¹ and Yudo Anggoro¹

Abstract: Local affiliate companies (LACs) in the ASEAN automotive industry play an important role in corporate foresight implementation by collaborating with the principal company (PC) who deal with the local market. As the movements in the local environment become more dynamic and complex, and competition becomes more intense, the role of LACs becomes more demanding. Hence, it is essential to understand value creation in LACs, especially because literature on this topic is still lacking. This study aims to explore the value created from the practice of corporate foresight in automotive LACs. A qualitative method was employed, which consisted of in-depth, semi-structured interviews with 27 respondents. Eight LAC cases were selected based on their functional availability, accessibility, and acceptance. The results show that corporate foresight positively affects organisational learning,



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Jaka Purwanto is a doctoral student of School of Business and Administration, Institut Teknologi Bandung. He is a practitioner in automotive local affiliate company, Toyota Motor Manufacturing Indonesia. His research interest is strategic management focusing on corporate foresight. The research is to respond the practical concern, how company can move in front of the change under the complex and dynamic of business environment. Reza Ashari Nasultion is a Professor in Digital Business Strategy at School of Business and Management, Institut Teknologi Bandung, obtained Doctor (research) in Business Information Systems and International Management from the University of Twente, Netherlands in 2005. His research interest is digital business strategy and marketing. Yudo Anggoro is the Director of Center for Policy and Public Management at School of Business and Management, Institut Teknologi Bandung. He obtained a PhD in public policy with minors in industrial policy and economic competitiveness from the University of North Carolina, Charlotte, US in 2015.

PUBLIC INTEREST STATEMENT

In the automotive industry, particularly in ASEAN, corporate foresight implementation is crucial for local affiliate companies (LACs), especially in collaboration with principal companies (PCs) because they interact with the local market. Hence, understanding its value creation is important. However, investigations on value creation in LACs are still limited. Therefore, this study explores the question: what value is created from the practice of corporate foresight in automotive LACs? To do so, we employed a qualitative method comprising case studies and in-depth semi-structured interviews with 27 respondents. The eight cases included LACs from Indonesia, Thailand, Malaysia, and the Philippines. The results show that corporate foresight positively affects organisational learning, agility, and ambidexterity capability, which facilitates a competitive advantage. The findings can provide decision-makers and practitioners with the best corporate foresight approach for optimum value creation. The novelty of our hypothesis lies in the theoretical framework of corporate foresight value creation.







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agility, and ambidexterity capability. In addition, organizational learning capability plays an important role to amplify its value creation. As such, this study provides insight into the mechanism through which organisational values are created and organisational capability influences competitive advantage. The findings can enable decision-makers and practitioners to consider the best corporate foresight approach to implement for optimum value creation. This study's novelty lies in our theoretical framework hypothesis of corporate foresight value creation.

Subjects: Technology; South East Asian Studies; Business, Management and Accounting;

Keywords: automotive industry; competitive advantage; corporate foresight; local affiliate company; value creation

1. Introduction

The automotive industries face increasing challenges due to the complexity and volatility of the external environment in recent decades. These rapid changes have impacted key driver movements, including emerging technologies, socio-cultural shifts, and political and legislative environments (Rohrbeck, 2012). Such high level of uncertainty in the industry's business environment is driven particularly by CASE (connected, autonomous, sharing, and electrification) and megatrend technological development (Adler et al., 2019). These uncertainties become even more challenging when the automotive industry's principal companies (PCs) must consider the long lead-time required for vehicle development and its market lifespan. Ruff (2015) described that the lead-time required for new car development varies. Passenger cars required 5–7 years, while commercial vehicles need 7–10 years. The average longevity of a vehicle in the market is 10–20 years, depending on the size and type of car.

Rohrbeck (2012), Ruff (2014), and Iden et al. (2017) emphasized that companies require strategic approaches, such as corporate foresight, to respond to such challenges. Rohrbeck (2012) emphasised that the practice of corporate foresight can create a fundamental source for developing future competitive advantages. Ruff (2015) added that corporate foresight fulfils a long-term need to identify issues, employ forward-looking techniques, and provide critical insight into the opportunities and risks in making strategic decisions. Iden et al. (2017) confirmed that corporate foresight facilitates critical activities in directing support, the levelling-up of planning, and the early detection and quick response of external movements. Corporate foresight plays an essential role in enhancing a company's strategic analysis to lay the foundation for future competitive advantage ((Ruff (2014), Rohrbeck (2012) and Iden et al. (2017)). Ruff (2006) further elaborated the need for corporate foresight tools for the long-term success of automotive companies.

The automotive industry faces increasing challenges when the PCs develops cars for the overseas market, as overseas automotive sales are significantly higher than domestic sales. Figure 1 shows that the sales (grey bar charts) of five famous brands are much higher overseas than in the domestic market (orange line chart). For instance, one Japanese brand's PCs has an overseas market in ASEAN countries such as Indonesia, Thailand, Malaysia, the Philippines, and Vietnam, thus they prioritize developing their overseas market because the market potential is much greater. Regarding overseas market sales, Ruff (2006) argued that a firm's targeted global presence requires an analysis of future regional or local market developments in short-, medium-, and long-term horizons. Facing different development stages, internationally oriented business environment research must explore both local and regional diverging business environments and market developments. Consequently, the PCs must grasp the external environment movement to understand the demands of the overseas market. However, due to geographical distance, PCs might encounter daily barriers to the latest movements.

Practically, PCs collaborate with the automotive local affiliate companies (LACs) to understand local environment movements, as shown in Figure 2. The automotive LACs can capture and analyse the local external environment movement due to its proximity. Ruff (2006) and Rohrbeck (2012), stated that these movements include macro movements such as technology disruption, socio-political, macro-economic, and government regulation and mezzo movement such as industry attractiveness such as competition, customers, suppliers, new entries, and product substitutes.

The LACs are acknowledged to capture local environment movement as part of a corporate foresight process with the PCs. However, previous literature on this topic has mainly focused on PCs case studies. For example, Ruff (2006), Kuklinski et al. (2014), Ruff (2015), Akakpo et al. (2018), and Schweitzer et al. (2019) researched the adoption of corporate foresight. Zimmermann et al. (2012), Förster (2015), and Winkler and Moser (2016) studied the approach of corporate foresight, while Thomas (2015) examined its outcome. Research focused on the LACs has been insufficient. Therefore, this study explores the practice of corporate foresight activities in automotive LACs.

Iden et al. (2017) classified corporate foresight research into three categories: adoption, approach, and outcome. Studies on corporate foresight adoption discussed the usage of, motivation for, and experience of adopting foresight. Whilst studies on corporate foresight approach explored the organisation of foresight activity, and the methods/tools/techniques used. In addition, studies on corporate foresight outcome focused on corporate foresight value creation/contribution and innovation.

Figure 1. Comparison of country origin domestic and worldwide car sales.

Source: Marklines (2021). Automotive Sales Data. https:// www.marklines.com/en/statis tics/flash_sales/automotivesales-by-month-2021.

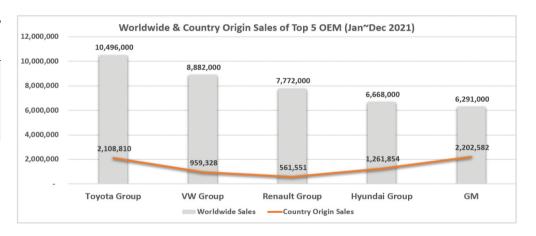
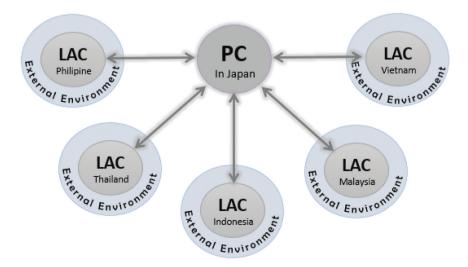


Figure 2. PC collaborates with LACs to conduct corporate foresight activities (image).





The present study seeks to answer the following question: what value is created from the practice of corporate foresight in automotive LACs? Accordingly, we prioritize examining the value created by corporate foresight activities in automotive LACs for two reasons. First, behind increasing interest, corporate foresight implementation remains limited. This could be attributed to doubts regarding whether a return on investment will be received or uncertainty on the value creation of its activities (Rohrbeck & Schwarz, 2013). Second, Vecchiato (2015) and Iden et al. (2017) indicated that most scholars have failed to define the corporate foresight values created and to provide empirical evidence of its contribution to sustain firm advantage. Therefore, by proposing hypotheses regarding a theoretical framework on corporate foresight value creation in automotive LACs, this study attempts to determine what value is created from the practice of corporate foresight in enhancing organisational capability to gain competitive advantage. Accordingly, this study explores the insights and experiences of practitioner experts in LACs in the automotive industry.

The novelty of this study lies in the theoretical framework of corporate foresight value creation in automotive LACs, which will be confirmed through qualitative methods. Thus, it fills the theoretical gap in the literature on this theme, especially regarding LACs. Consequently, this study can assist decision-makers or foresight practitioners in understanding the benefits of implementing corporate foresight in automotive LACs.

This paper is structured as follows; section 1 focuses on the extent to which the literature and theoretical propositions link corporate foresight and future competitive advantage through the mediation of organizational value creation. Section 2 describes the research methodology, including the research design, instruments of data collection, and the analysis. Section 3 presents the results. Section 4 provides the discussion. Section 5 presents the conclusions, limitations, and suggestions for future research.

2. Theoretical background and propositions

2.1. Corporate foresight

Notwithstanding intense competition and accelerated uncertainty in the global business environment, corporate foresight has been discussed as the dominant logic for successful organizing (Sarpong & Maclean, 2014). Iden et al. (2017) added that corporate foresight involves understanding the future and applying future-oriented insights to an organisation's strategic activities and decision-making. Rohrbeck and Kum (2018) defined three processes of corporate foresight: perceiving, prospecting, and probing. Various terms have been used to relate foresight thinking to strategic decision-making in corporations (Iden et al., 2017). Slaughter (1997) used the term strategic foresight on the fusion of futures methodologies and strategic management. Thomas (2015) argued that corporate foresight is a company's capability to detect external information and analyse and reflect on its actions. It comprises activities of grasping external information to potentially create future patterns according to a company's vision or goal.

Daheim and Uerz (2008) argued that corporate foresight is increasingly employed to provide input for strategic planning, research, technology development, and innovation, and is used for corporate communications and identity. Moreover, corporate foresight is known as a tool for future shaping, rather than a reaction to trends. Iden et al. (2017) specified its dual role in integrated process as: 1) observing, perceiving, and capturing factors that induce future changes, and 2) deciding on appropriate organisational responses. By processing this, organisations can see the changes before trends, recognise patterns before events, and grasp the impacted social changes. Heger and Rohrbeck (2012) confirmed that implementing strategic foresight in a company will improve its ability to capture future potential risks and opportunities concerning possible changes in the micro, mezzo, and macro environment.



2.1.1. Value creation in corporate foresight

To motivate foresight practitioners, studies on corporate foresight value contribution were conducted. Rohrbeck and Schwarz (2013) argued that a firm could expect some value contributions from adopting corporate foresight, namely, the enhanced ability to perceive, interpret change, and respond, as well as an enhanced capacity for organisational learning and influencing others. The highest contribution is achieving an enhanced perception through insights gained from external environment changes or reducing uncertainty (Schwarz et al., 2019). According to Ruff (2006), current interest in corporate foresight is the result of two key drivers. First, organisations want to understand the potential implications of new business models and emerging technological trajectories to prepare for an unknown future. Second, empirical evidence suggests that corporate foresight could lead to desirable organisational outcomes on value creation. The outcome of value creation includes adaptive/organisational learning, innovation, ambidexterity, and strategic agility.

2.1.1.1. Corporate foresight affects organisational learning. Battistella (2014) argued that corporate foresight positively impacts personal or organisational collective learning and capacity building. A related unit can continuously update knowledge about future needs (Ruff, 2006). Therefore, according to Vecchiato (2015), it allows future scenarios creation, while experiential knowledge enables the development of past memories. Corporate foresight can continuously scan the external technological and competitive environment regarding customer behaviour and needs (Rohrbeck, 2012). Thereafter, summary reports are disseminated through internal collective processes. Vecchiato (2015) elaborated on the collective processes of socialization, articulation, combination, and internalization. In other words, team members continuously gain new knowledge, and then update the organisation's future scenarios. Iden et al. (2017) summarised that corporate foresight can generate value through the following contexts: (1) an enhanced capacity to perceive the change, (2) an enhanced capacity to interpret and respond to the change, and (3) an enhanced capacity for organisational learning.

Proposition 1 (P1) Corporate foresight activity in automotive LACs positively influences organisational learning.

2.1.2. Organisational learning affects organizational agility

Stronger learning culture fostered by managers makes better corporate positions for identifying market shifts and learning from experience (March, 1991). In addition, organisational learning has a favourable impact on organisational innovation, success, and sustainability (Quinn, 2006). Cetindamar et al. (2021) added that employee's motivation to transfer learning and to adapt their attitudes toward change, activates the environment's adaptive space. Developing adaptability will result in organisational agility. Support for learning capability mechanisms leads to organisational performance and organisational culture creates agility (Zollo & Winter, 2002). Teece (2016) and Winter (2003) argued that organisational agility is a dynamic learning for recognising problematic routines and reacting to changing market conditions. Skills are needed to establish, integrate, and reconfigure internal and external competences in a rapidly changing environment. Felipe et al. (2017) added that the capacity to detect and adapt to environment changes create long-term competitive advantages and allow companies to survive in highly dynamic circumstances.

Proposition 2 (P2) Organisational learning in automotive LACs has a positive effect on organisational agility.

2.1.3. Organisational learning affects to organizational ambidexterity

Organisational learning generates the renewal strategy that balances continuity and change at the organisational level. Renewal requires businesses to investigate and learn new approaches while



using the current model (Crossan et al., 1999). The concept of balancing exploration and exploitation exists between improving current technologies and developing new ones. Exploring new options slows the speed of mastering old ones, as proficiency advances in existing techniques make other techniques less appealing (March, 1991). This balance is influenced by organisational strategy, and physical and intangible resources. Using Taiwan's 204 strategic business units, Lin et al. (2012) proved that organisational learning has a positive effect on innovation, ambidexterity, capability, and business performance.

Proposition 3 (P3) Organisational learning in automotive LACs has a positive effect on organisational ambidexterity.

2.1.3.1. Corporate foresight affects to organizational agility. Corporate foresight encompasses internal stakeholders. It adds value by enabling a company to access crucial resources for change before the competition, and to take proactive steps towards the future (Arokodare & Asikhia, 2020). Strategic foresight functions as one of the precursors of strategic agility—discovering, analysing, and interpreting the change variables in the organisation; assessing potential consequences; and evoking the necessary reactions (Rohrbeck et al., 2015). Understanding and anticipating the future are the two basic components of corporate foresight; predicated on the tenet of plausible futures; recognised and understood change, and affected future (Bereznoy, 2017). Vecchiato (2015) elaborated on the relationships between corporate foresight and agility; by building future organisational scenarios, corporate foresight enhances managers' strategic sensitivity to recognise and interpret changes in the external environment. By exploring the rising sources of first-mover advantages, it fosters the organisation's capability to efficiently redeploy its resources to achieve and benefit from such an advantage. In addition, by evaluating future collective scenarios, it sustains the cohesion and sharing of long-term aims that enhance the team's collective commitment.

Proposition 4 (P4) Corporate foresight activity in automotive LACs positively influences organisational agility.

2.1.4. Organisational agility affects to competitive advantage

According to Walter (2020), organisational agility is a permanently accessible dynamic skill with quick and efficient performance, needed in a challenging market context. Teece (2016) emphasised agility as the skill to readily and efficiently recognise and then apply. Walter (2021) elaborated the four components of agility: drivers, enablers, capabilities, and dimensions. Agility drivers are environmental shifts towards a new and vulnerable position in seeking competitive advantages. Agility enablers are the methods, techniques, and practices to achieve requisite organisational capabilities. Agility capabilities refer to responsiveness, flexibility, speed, and competence. Responsiveness is characterised as the capacity to recognise changes, respond either proactively or reactively, and recover from them. The related sub-capabilities include sensing, perceiving, and predicting changes; reacting immediately and recovering. Flexibility is defined as the ability to apply various tasks and achieve goals with the same resources. Flexibility can be implemented on product volume, product configuration, organisational issues, and people. The capacity to complete activities and operations in the shortest time is speed agility capability. According to Zhang and Sharifi (2000) three sub-capabilities include speed when bringing new items to the market: speed and timeliness in product and service delivery, and speed in operations. Similar to Teece (2016) and Walter (2020), El Nsour (2021) agility is the essential potential and dynamic capability for achieving sustained competitive advantage regarding capabilities such as flexibility, responsiveness, and speed.

Proposition 5 (P5) Organisational agility in automotive LACs positively influences a firm's competitive advantage.



2.1.4.1. Corporate foresight affects organizational ambidexterity. Organisations, as a fundamental process, can scan the environment to increase ideas that drive innovation, even if only a few creative ideas are executed (Paliokaite & Pačesa, 2015). Strategic selection capabilities help to identify new possibilities according to a company's strategy. As a result, more advanced organisations scan the external world and select relevant prospects, thus finding exploratory and exploitative breakthroughs.

A previous study on ambidexterity emphasised the external information acquisition required for exploration (Paliokaite & Pačesa, 2015). Therefore, firms must continually evaluate business environments to preserve competitiveness, and develop new potential technologies for their growth (Thom & Rohrbeck, 2009). Then, Rosenkopf and Nerkar (2001) emphasised that exploration beyond organisational limits has a greater impact than exploration within an organisation. Von Der Gracht et al. (2010) added that organisational foresight may support the innovation process in two different contexts: before the concept is conceived and after its establishment. First, it is used as a concept to motivate and generate fresh ideas for innovation (Paliokaite & Pačesa, 2015). According to Rohrbeck and Gemünden (2011), foresight is the initiation process that offers insight into changing existing markets and customers. Moreover, it inspires and generates new ideas for innovation in current product ranges or company operations. The empirical study of Paliokaite and Pačesa (2015) revealed a positive correlation between corporate foresight and ambidexterity.

Proposition 6 (P6) Corporate foresight activity in automotive LACs positively influences organisational ambidexterity.

2.1.5. Organisational ambidexterity affects competitive advantage

Most successful organisations in a dynamic environment have organisational ambidexterity or alignment between organisational design and today's business demands, as well as adaptation to changes for future exploration (O'Reilly & Tushman, 2008). Amniattalab and Ansari (2016) named two characteristics of ambidexterity to gain competitive advantage. The first is explorative innovation. This includes creating new products and services in new fields, often, with new technologies. The second is exploitative innovation, which encompasses enhanced or new products and services within the current field. Gibson and Birkinshaw (2004) defined ambidexterity as a simultaneously aligned behaviour that refers to coherence and adaptation such as reconfiguring activities across an entire business unit, and adapting firm size and industry. Gibson and Birkinshaw (2004) found that the ambidextrous units of an automotive company had developed adaptability skills along with their traditional model of alignment. For instance, the unit of an oil and gas company focused on adaptability and created alignment around it, while the unit of a software firm deliberately combined the two abilities. A firm's engagement in exploration will lead to radical innovation, while exploitative activities will lead to incremental innovation, therefore improving business performance and sustaining competitive advantage. For organisational practice, creating a behavioural context, characterised by the interaction of stretch, discipline, support, and trust will balance the pursuit of exploitation-exploration and alignment-adaptability. Amniattalab and Ansari (2016) concluded that a firm can gain a competitive advantage through corporate foresight capability mediated by ambidexterity. Corporate foresight enhances their exploitation and exploration innovation abilities.

Proposition 7 (P7) Organisational ambidexterity in automotive LACs positively influences a firm's competitiveness.

2.1.5.1. Competitive advantage. Rohrbeck et al. (2015) argued that corporate foresight activity enables an organisation to lay the foundation for future competitive advantage through value creation. Multiple stakeholders prepare for change, creating value by providing access to critical resources ahead of the competition, and proactively move toward their desired future. Pickering and Hill (2007) argued that critical resources utilisation should align with the concept of value, rarity, inimitable, and non-substitutable (VRIN) to face market competition.

Competitive advantage is the capacity to be in advance of present or potential competition. It refers to organisational superior performance in market leadership, product quality improvement, and cost competitiveness, or market share enlargement. It is superior positioning among competitors through creating different capabilities (Grupe & Rose, 2010). Grant and Baden Fuller (2004) added two strategies of cost leadership and product differentiation/value. Cost leadership is resources improvement management to reduce cost among competitors while maintaining equal benefits. Most companies reduce costs to lower product price rather than increasing sales prices. Creating product value and differentiating oneself from competitors are strategies to invest resources in adjusting the product to meet customer's needs. Firms must secure the delivery of a product with superior performance in three competitions: product value, cost competitiveness, and time to market, to become the frontrunner of the manufacturing industry. Thus, entering the market earlier provides frontrunner advantage (Belay et al., 2014).

2.1.5.2. Framework of theoretical proposition. Based on the initial propositions in P1~P7, the initial proposition was proposed for the conceptual framework of corporate foresight in the automotive LACs (Figure 3). Corporate foresight activity in automotive LACs has positive effects in creating value through enhancing organisational learning, agility, and ambidexterity capabilities. Organisational learning capability through individual, group, and institutional learning further mediates the enhancement of agility and ambidexterity. The Firms with agility and ambidexterity capability can lay the strong foundation to gain future competitive advantages.

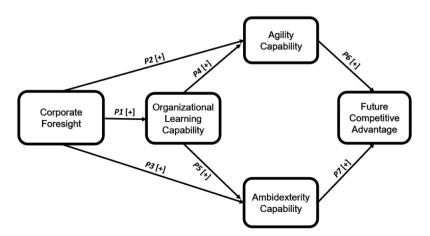
3. Methodology

This study followed the general steps for qualitative research on management suggested by Højland and Rohrbeck (2018) and Battistella (2014): identification of the theoretical foundation and proposition, selection of the research design, the data collection method, implementation of data analysis, and elaboration of aggregated data. In line with Højland and Rohrbeck's (2018) application, the initial propositions of conceptual framework *P1~P7* serve as the research lens for research methodology, data collection and analysis, and conclusion.

3.1. Research design

This study follows a cross-sectional research design by Saunders et al. (2019), comprising the research paradigm, approach, method, strategy, technique, and time horizon. It applied the pragmatism paradigm to explore contemporary experience and insights from experts based on the practice of corporate foresight in automotive LACs. Epistemologically, it aimed to obtain the reality of corporate foresight value creation to confirm the initial proposition of the conceptual framework. Therefore, a qualitative method and a case-study strategy were applied to meet our research objectives with an abductive approach, allowing the proposed conceptual framework as a research lens. As Saunders

Figure 3. The proposition of theoretical framework of corporate foresight value creation in automotive LACs.





et al. (2019) described, the abductive approach works by alternating deductive and inductive approaches, observing the real world, and working out possible theories on reality.

3.2. Data collection

To meet the research objective of obtaining the perspectives or experiences of practitioner experts from automotive LACs, eight case units of automotive LACs were selected. Participants consented to their company being used as a case unit for research. Five of the eight case units selected were in Indonesia and the other three were in Thailand, Malaysia, and the Philippines, respectively. All of the selected cases had a role as both a manufacturing and distributor company. To avoid bias, the participants were selected from four relevant functions of the research topic: External Affairs, Corporate Planning, and Marketing and Product Development. Based on participant criteria, eight were at the director level, nine were at the general managers level, and ten were at the senior managers level. In total, 27 participants were interviewed in depth. The author employed a multiple case-study approach involving the selected eight units' cases in the ASEAN region for sufficient data triangulation (See Table 1).

Table 1. The selected LACs as case-study					
No	Unit Case	Brand	Country	Role	Product output
1.	Unit case 1	Brand A	Indonesia	Manufacturing and distributor	Passenger car: segment A, B, C, D Commercial car: small & medium truck
2.	Unit case 2	Brand B	Indonesia	Manufacturing and distributor	Passenger car: segment A, B
3.	Unit case 3	Brand C	Indonesia	Manufacturing and distributor	Passenger car: segment A, B
4.	Unit case 4	Brand D	Indonesia	Manufacturing and distributor	Passenger car: segment A, B, C, D
5.	Unit case 5	Brand E	Indonesia	Manufacturing and distributor	Commercial car: medium & big truck
6.	Unit case 6	Brand A	Thailand	Manufacturing and distributor	Passenger car: Segment A, B, C, D Commercial car: small truck.
7.	Unit case 7	Brand A	Malaysia	Manufacturing and distributor	Passenger car: Segment A, B, C, D Commercial car: small truck
8.	Unit case 8	Brand A	Philippines	Manufacturing and distributor	Passenger car: Segment A, B, C, D Commercial car: small truck

Data were collected from February to May 2022 through semi-structured, in-depth interviews with 27 practitioner experts from automotive LACs in the ASEAN. All of the interviews were conducted online due to the COVID-19 pandemic. During the data collection period, the author was supported by two research assistants who managed the data collection process, which consisted of data recording, transcribing, English translation, and data filling management.

To ensure data validity and avoid bias, a research protocol for data collection (Table 2) was implemented during the data collection process, as suggested by Robert K. Yin (Yin, 2014). The protocol comprised substantive questions for evidence collection, procedures, and rules. Case study protocol is desirable under all circumstances and essential in a multiple-case study.



Table 2. Data Collection Protocol				
No	Protocol Item	Description		
1.	Interview schedule	Establish schedule for interview sessions.		
2.	Interview questions	Develop semi-structured interview questions in line with the research lens of the theoretical propositions.		
3.	Before interview session	Send interview questions prior to interview session, secure device and internet network, reconfirm interviewee availability.		
4.	During interview session	Build good rapport with the interviewee and create a conducive atmosphere for the session, embody a good attitude, and request participant feedback.		
5.	After interview session	Develop and follow a procedure for data processing and management.		

3.3. Data processing and analysis

The qualitative data processing method was based on guidance from Miles et al. (2014), and Højland and Rohrbeck (2018) who used a conceptual model as their research lens. Two rounds of data-reduction, data coding process, and data condensation were utilised. The first round was proceeded within-case analysis involving data reduction, data coding, and data condensation, where a deductive approach using a key construct was applied as a form of thematic coding. The second round of cross-case analysis consisted of data coding and further data condensation, where inductive reasoning was applied to review all the transcripts and to confirm possible new findings.

The analysis consisted of four steps:

Step 1: Within-case analysis.

Manual coding techniques were used for the thematic coding within each unit's case analysis based on the research lens of existing theoretical propositions for data processing and data analysis. After manual coding, the scripts were further condensed and their core was summarised.

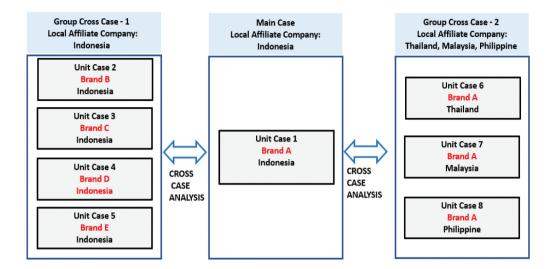
Step 2: Case analysis grouping.

Before conducting the cross-case analysis, all eight of the unit cases were first grouped into three parts (Figure 3). Part 1) consisted of unit case 1 only where case 1 was selected as the main case. Part 2) consisted of a group of cases from the Indonesian LACs (except unit case 1), consisting of unit cases 2, 3, 4, and 5 (called group case 1). Part 3) consisted of cases from other LACs in other ASEAN countries involving unit cases 5, 6, and 7 (called group case 2) with the same brand as unit case 1 but located in different countries. The scripts were continuously analysed, condensed, and summarised during this step.

Step 3: Cross-case analysis.

Based on the within-case analysis (Step 1) and group case analysis (Step 2), the cross-case analysis was continuously conducted, as illustrated in Figure 4. First, cross-case analysis was performed between the main case and group case 1, and then continued for group case 2. The purpose of the cross-case analysis was to explore similarities, plausible explanations, and new findings.

Figure 4. Multiple-case study and cross-case analysis.



Step 4: Drawing conclusions.

Conclusions were drawn for each construct based on the theoretical proposition. In this step, new empirical findings and plausible explanations were also summarised. The study was referred to Yin (2014) in drawing up the analysis and conclusion. Apart from the cross-case analysis, two other data analysis strategies were combined. First, an abductive approach was applied, which relied on theoretical propositions in line with the research approach. Second, plausible explanations were examined to confirm findings in support of the proposed theoretical proposition. The overall data processing and analysis were conducted from May to September 2022.

3.4. Focus Group Discussion (FGD)

Based on the data analysis results, an FGD was conducted to validate the interpretations and conclusions. Among the practitioner experts, four of the 27 key participants were selected for the in-depth interview and discussion based on their work experience, position, education background, and deep understanding of corporate foresight activity.

4. Results

4.1. Corporate foresight in automotive LACs

Corporate foresight activities in LACs allow organisations to maintain updated information and knowledge about future prospects in a local context. The scope of information collected by LACs varies depending on their business priorities. For example, one LAC in Indonesia focused on developing long-term strategic planning. Thereafter, they considered movements that could impact their future business planning such as government regulations, future technology development, and social and macro-economic movements. Another LAC in the Philippines focused on gathering movements related to customers, competitors, and regulations since they prioritize developing local design. Generally, most LACs are concerned about government regulations, customers, and competitors. Some LACs in Indonesia and Thailand, that have more production vehicles, are focused on a broader scope of movements, such as the movement of technology disruption, socio-political and macro-economic movements. Considering the abundance of updated information from LACs corporate foresight activities, organisations can foresee potential issues, thus enhancing organisational vision, the understanding of future prospects, and employ back-casting to identify the gaps.



We forced the organization to keep doing environmental scanning. It means we activate our antenna to scan for the change, and then understanding the change and implications towards our business and we take action towards the change. This is not only for top level, but actually in all organization level[s], then learning capability will be developed. (GM of unit case 1)

Based on the gaps identified, (1) LACs have sufficient inputs to explore new resources, skills, and knowledge for enhancing organisational learning, and (2) LACs can better understand how to prepare for the future with more agile and ambidextrous organisation. For example, concerning the urgency of responding to customers' demands, some LACs conducted innovative design modification locally to speed-up their responses through product refreshment. As such, corporate foresight in LACs contributes to identifying urgent issues that need to be responded to with speed (agile). One LAC from Indonesia, one from Philippines, and one from Thailand developed innovative added-on parts accessories for product refreshment based on customers' preferences. Another LAC in Indonesia, that produces commercial trucks, also conducted innovative design modification locally to anticipate and meet the local demand for higher pay-load where customers usually carried goods over capacity.

I see in this corporate foresight, because previously the spirit was the spirit of recovering as impact by COVID-19 and about how to comply to the regulation in the future, and how to respond [to] customers' demand quickly, that's what makes us have to change faster by our local modification, we have to quickly change, be flexible and responsive. (GM of unit case no 5)

Based on the corporate foresight activity results, LACs regularly held strategic coordination meetings with PCs or regional offices to obtain consensus on developing a course of action. It was common that LACs collaborated with PCs or regional offices for future product planning, because most vehicle development was conducted by PCs. Then, LACs collaborated with PCs to further analyse the local environment movement and reach a consensus about future product planning. Since PCs need to consider external environment movements in related countries globally, they find local environment movement input using LACs' corporate foresight activities. Accordingly, LACs corporate foresight activities play an important role for PCs by periodically providing input to develop a course of action from a short-, mid, or long-term perspective.

4.2. Value creation on organisational learning capability

Corporate foresight activities help LAC organizations deepen their understanding of changes and potential future prospects. This allows LACs to identify the gap corresponding with their business focus. These gaps prompt LACs to enhance their learning cycle activities at the individual, group, and institutional level to further explore relevant issues. For example, one leading LAC in Indonesia applied two types of approaches. First, they applied the bottom-up approach for regular issues. This means that the working level grasped government regulation movements (safety or emission regulations) relevant to current business context. Then, working teams took the initiative to learn about and explore the issues further. The second was a top-down approach that is used for new strategic issues. In this case, management determined which new skills and knowledge needed enhancements, for instance, for future mobility business, electrification, or digital transformation. Thereafter, based on management's direction, working teams learned and explored the issues related to the focus items.

To do so, our teams conduct regular external environmental scanning, and based on the finding[s] they will explore and learn further with relevant function. Another side, we from management some time give direction to explore and learn the topic that will become new drivers or potential new business, such as mobility, electrification, or digitalization. (Director of unit case 1)



Organizational learning cycles in LACs enhance the understanding of local contexts' key changes, and emphasize the need to recognize urgencies that require the organization's response. Through organizational learning, an organization in an LAC can better explore new issues, knowledge, and learning items. For example, based on corporate foresight activities, one LAC in Indonesia identified mobility as a service (MaaS) for future business potential. Thereafter, they explored and learned detail-related issues in more detail, including future customers' or social behavior change in mobility, and technology development and its regulation.

Combining with external environmental scanning result[s], so, we are also collaborating with consultants to conduct some workshops with our selected teams to learn the future trend in next 10 years, what value we can contribute for Indonesia market. We launched "special project" based on the thinking that in the future maybe there will be any customers who no longer need car as an ownership. (Director of unit case 1)

Some LACs conducted MaaS studies on the potential of more advanced timing (more agile) compared to others and were able to prepare the new resources needed to anticipate MaaS for future business potential (ambidextrous organization). Thus, for LACs, the combination of corporate foresight and organizational learning is a key activity for a deeper understanding of local external environment changes.

4.3. Value creation on agility capability

Corporate foresight activities and organizational learning in LACs helped organizations to identify the gap between current and future business challenges. Based on the gaps identified, (1) LACs should better understand what is needed to prepare for the future (speed), (2) have more options for decision-making (flexibility), and (3) respond to changes in a timelier manner (responsiveness).

The LACs who demonstrated agile organization varied depending on need and priority and the activities they focused on were influenced by their values, wisdom, and challenges. For example, based on the corporate foresight activities results: LACs in Indonesia, Thailand, and Malaysia identified the potential future change of customers' behaviour from car ownership to usership. To respond to these potential changes, one LAC in Indonesia developed a new business model innovation to apply the good dominant logic (GDL) approach, and introduce the service dominant logic (SDL) approach, where they offered car rental scheme services.

We launched "special project" in advance based on the thinking that there may be any customer who no longer need[s] car as an ownership in the future, instead they will be only usership, so when they need a car, they will borrow one. (Director of unit case 1)

Since certain customers do not need to purchase a car for mobility, instead they might periodically rent one. Based on this, this LAC tried to anticipate this change in advance and before other companies. Therefore, corporate foresight activities in LACs contribute to identifying potential changes in customers' behaviour in advance using agility.

Another LAC in Indonesia that markets luxury cars, based on their corporate foresight activities, identified customer behaviour changes in the early stages of the COVID-19 pandemic, where people avoided using public transportation for mobility. They took advantage of these mobility behaviour changes with an attractive marketing package as they offered low interest and down payment on leasing. Consequently, their sales almost doubled while other brands saw a sales decrease by an average of half during the COVID-19 pandemic. As such, the LAC demonstrated their responsiveness capability (agility) toward the behaviour change, and their corporate foresight activities contributed to identifying customers' behaviour changes in mobility.

In contrast, established organisations like big multinational companies required more effort to enforce organisational agility. Generally, big companies involve more functional organisations in business



operations and coordination thus requiring more effort to communicate over business goals and targets. For example, concerning product planning, for a Philippines LAC, the PC played a significant role because they run the vehicle development activities. This made the LAC slightly less agile in responding to customers' demands regarding product planning, because the PC took a long-lead time on decision-making. However, to combat the situation, the LAC made a breakthrough using innovative local design modifications and developing parts accessories to face-lift the existing product.

So that's the reason we have a local design of conversion and accessory function, So that's agility, it really give some advantage to company in responding customer demand. In my experience if you are fast it gives advantage. (VP of unit case 8)

This facilitated a product face-lift with a shorter lead-time to respond to customer demands. In other words, corporate foresight activities contributed to identifying customer demands timely and triggered the LAC to respond to it with speed (agile).

4.4. Value creation on ambidexterity capability

Most of the LACs recognized that a typical business approach would not live up to future business that might be much more challenging. Therefore, they need ambidextrous organization that enables the parallel business practices to anticipate and balance short-/mid- and long-term factors simultaneously. Overall, LACs require a current competencies foundation based on the accumulation of long-term experiences in automotive manufacturing. Accordingly, they also need to explore new resources to connect with the future competencies needed.

As a result of corporate foresight, LAC management could get abundant strategic information to govern the organisation into two parallel business directions. The first is to align current business by exploiting resources to top-up current skills to maximise current business output. The second is to adapt new business models by exploring new resources to develop new skills and capabilities toward future businesses. For example, one Indonesian LAC proceeded two parallel business directions. First, to improve current production cost drastically (current business operations), they conducted kaizen by establishing a companywide activity of structural reform (SR) project, where they exploited current resources to obtain cost reduction ideas as much as possible while maintaining safety, quality, and other performances.

We often talk about front runner in our structural reform as our companywide project, actually one of our ultimate goals is how our company to be the front runner, actually what we frequently mention competitiveness. A company is called as a competitive company, it's the front runner. (PD of unit case 1)

This SR project resulted in significant cost reduction and brought the company to competitive cost pricing. Second, in parallel for future business, management established a unique team to explore new resources, skills, and knowledge to respond to new key drivers in automotive manufacturing business such as electrification, MaaS, and digitalization. The speed at which a decision is made is crucial during the exploration stage, and management provides special routes in the decision-making process where a unique team does not adhere to typical structures and proposal for management's decision-making. Instead, they use a special route to report and receive decisions directly from management (who represented the Board of Directors). The output of a unique team is the proposal of an innovative business model such as a car usership-based business model.

It is impossible that we have come to think about it if we don't have ambidexterity capability as a company. So, in one side we have to be strong in short term, in selling the cars, the volume, the profit, we keep moving, then we can invest for the future, we invest the people, development side, and we also establish special teams together consultant to be able to explore the future business and future trend. Those teams have special route to propose and get decision from management. (Director of unit case 1)



By demonstrating ambidextrous organization, the LAC maximized current business performance by obtaining the most competitive cost, and, in parallel, preparing an innovative business model to anticipate future needs for business preparation. As such, corporate foresight activities in LACs contribute to identifying and anticipating the customers' behaviour change in mobility from car ownership to car usership in the future.

4.5. Value creation on competitive advantage

Challenges in the automotive industry are becoming more dynamic and complex due to emerging key drivers of new technology development, such as connected-autonomous-sharing-electrification (C.A.S.E), which significantly influenced behaviour changes at the industry level. The changes include industry level involved customer behaviours, competitors' movement, suppliers' response, and product substitutes. Therefore, becoming a frontrunner is critical for LACs to survive their competition, and innovative activities focusing on product value and cost competitiveness are key factors to making this happen.

In striving to become a frontrunner in product value, generally, LACs collaborated with their PCs to develop product planning schemes for either short-, mid-, or long-term goals. They made a plan to introduce a new face-lift and model changes to products based on their consensus model. Further, some LACs in Indonesia, Thailand, and the Philippines conducted local design modification to speed-up their response to customers' demands. Whilst, making an effort becoming a front-runner in cost leadership, LACs generally conducted continuous daily "kaizen" (cost improvement), and one LAC in Indonesia demonstrated structural reform to obtain more aggressive production cost reductions.

Considering the intense competition of the automotive industry, product value and cost competitiveness were no longer sufficient for the current business challenges. Moreover, business model innovation also became key factors for gaining competitive advantages in the automotive industry. This was reinforced by the reality that various innovative business models were applied by some LACs to attract and retain customers.

Becoming front runner is the key, but it should be clearer on what, should be front runner in value innovation including cost leadership and product innovation. And on top of those, business model innovation as demonstrated by several company conducting some innovative activity and approach to customers based on the transformation concept: from GDL (good dominant logic) to SDL. (service dominant logic) (Director of unit case 1)

For example, one LAC in Indonesia, Thailand, Malaysia, and the Philippines started to introduce business models focused on car usership instead of car ownership. This innovative business model aimed to facilitate customers who did not want to own cars for their mobility. In another example, the LAC in Thailand introduced new business models that sold electrified vehicles without factoring the battery cost into the vehicle price. Instead, the battery cost was charged as a leasing offer. This business model aimed to maintain affordable vehicle prices when customers were purchasing new electrified vehicles. These two examples show the importance of an innovative business model to attract and retain customers. Therefore, corporate foresight activity contributes to identifying the potential of customers' future behaviour change.

4.6. Additional finding

Through our inductive approach, this study also discovered an additional related findings. Since LACs had a vertical relationship with PCs on proceeding corporate foresight activities, corporate foresight value creation in automotive LACs was also influenced by the relationship between the two. Further, while some LACs carried out corporate foresight activities in a pro-active manner, others were lacking. Likewise, concerning PCs. The better and stronger the relationship between both companies in conducting corporate foresight activities, the more positive the effect on the organisational value creation in LACs. This indication could be identified through their behaviours



in conducting corporate foresight activities and responding to business challenges. For example, one LAC in Indonesia and its PC were both pro-active in conducting corporate foresight activities. LAC pro-actively grasped and analysed external environment movement concerning government regulations, and competitors and customers. Similarly, PCs also pro-actively joint analysed and discussed how to respond to these movements. As a result, they could respond to the regulations with speed (agile) and prepare the resources to anticipate changes (ambidextrous).

We have a sharing session regularly involving managerial level. From there we can get some inputs, then reviewing, we can analyse a potential of change for the company in the future. So, all elements in the company will move at the same time. Our PC or the regional company also update the change regularly, we take action on the change, the actions should be inline. (Senior manager of unit case 1)

In contrast, another LAC in Indonesia had a pro-active manner in conducting corporate foresight activities, but their PC was passive. As a result, they were slow to respond changes (less agile).

5. Discussion

The result of this study could address the research question: what value is created from the practice of corporate foresight in automotive LACs? The study results suggest that the practice of corporate foresight in LACs could create value through strengthening organizational capability in organizational learning, agility, and ambidexterity capability. Based on empirical finding, corporate foresight activity in LACs plays an important role in regularly grasping local environment movement due to LACs understand better regarding the local context rather than PCs, and PCs could utilize them as the input for developing future strategy such as product planning or other business strategies. An enhanced organizational learning in LACs is crucial, because it mediates the impact of corporate foresight activities to further strengthen organizational value creation. This result is aligned with Cetindamar et al. (2021), who indicated that organizational learning can facilitate the development of a positive adaptive attitude towards change. In addition, the finding aligned with Lin et al. (2012) in that organizational learning capability had a positive effect on innovation ambidexterity. In this case, LACs need to enhance their organizational learning progress continuously beyond the current business environment to cope with future challenges. Further, to ensure that organizational learning functions well, a "playground" or framework in automotive LACs is needed. Enhancing organizational learning capability enables value-added organization in an LAC to be more agile and ambidextrous organizational. Through enhanced organizational capability on agility and ambidexterity, LACs can lay strong foundation to gain future competitive advantage. This finding aligns with El Nsour (2021) and Amniattalab and Ansari (2016), where firms could achieve competitive advantage through balancing the capability to balance the alignment of current business and adaptation of future business challenges. These results could respond to the concerns of Vecchiato (2015) and Iden et al. (2017) that most scholars failed to define corporate foresight values and provide empirical evidence of its contribution to sustaining firm advantages.

In line with the above discussion, empirical findings suggest that organizational learning in automotive LACs plays a pivotal role in mediating the impact of corporate foresight to strengthen organizational value creation. Therefore, further discussion is needed on steps to enhance organizational learning capabilities, with one key factor being the influence of servant leadership style. In this regard, Zoghbi-Manrique de Lara and Ruiz-Palomino (2019) argued that servant leadership style creates an environment within the organization that supports the learning process, positively impacting social capital through bonding and bridging, thereby strengthening social interactions. Particularly, Prahalad and Ramaswamy (2004) from Harvard Business School emphasized that the locus of cocreation of value and value extraction lies in the social interaction process, with direct interactions among stakeholders considered crucial in the co-creation of value. Moreover, they stress that cocreation experiences form the foundation for value creation. Zoghbi-Manrique de Lara and Ruiz-Palomino (2019) further elaborated that by reinforcing bonding and bridging aspects, individuals or



groups gain access to resources within the social structure, ultimately strengthening organizational learning capabilities. Therefore, in the context of organizational learning in automotive LACs, further empirical investigation is crucial to understanding how servant leadership style can enhance organizational learning in automotive LACs, providing valuable insights for leaders or managements in automotive LACs aiming to strengthen organizational learning capabilities within their organizations. As discussed, enhanced organizational learning will have a positive effect on organizational value creation, including agility and ambidexterity capability.

This study also unveils empirical findings that organizational value creation within automotive LACs is influenced by the corporate foresight relationship between LACs and PCs. As discussed and aligned with Rohrbeck and Kum (2018), corporate foresight activities in automotive LACs encompass perceiving, prospecting, and probing activities. These three activities are essentially a unified effort carried out collaboratively by LACs and PCs, creating inter-dependency. PCs rely on LACs for optimal insight into local environmental movements on a daily basis, while LACs depend on PCs to respond to changes in product planning, as product development is primarily the role of PCs. Therefore, the corporate foresight relationship between LACs and PCs influences corporate foresight activities in LACs, and as discussed earlier, these corporate foresight activities ultimately have a positive impact on organizational value creation within automotive LACs. Thus, both LACs and PCs should proactively utilize corporate foresight activities for optimal organizational value creation within the automotive LACs. This finding aligns with what Gencturk (2000) stated—that a vertically integrated company must apply the concept of a value-adding partnership for optimal strategic collaboration in the face of external environmental dynamism. Consequently, the authors suggest further exploration of the vertical relationship needed between LACs and PCs to influence value creation. This topic could be a focal point for future research by scholars or researchers interested in investigating corporate foresight value creation in automotive LACs

Concerning a competitive advantage, the empirical evidence underscores dynamic challenges in the automotive industry, propelled by connected-autonomous-sharing-electrification (C.A.S.E), impacting customer behaviors, competitors' strategies, and product dynamics. The influence of the C.A.S.E mega-trend intensifies the complexity of challenges in the automotive business. This aligns with Grant and Baden Fuller (2004) assertion that product value (differentiation), cost leadership, and business model innovation are essential, particularly with the intensified competition in the automotive industry due to key drivers like CASE. Consequently, conventional approaches to product value and cost competitiveness prove insufficient amid heightened competition. In addition to these two critical elements, automotive LACs embrace business model innovation, empirically observed in models prioritizing car usership and unique electrified vehicle pricing structures. Corporate foresight enhances understanding of customer behavior shifts, emphasizing the importance of value, cost, and business model innovation for sustained frontrunner status. Therefore, in the pursuit of competitive advantages, LACs must strive not only to become frontrunners in cost leadership and product value but also in the innovative realm of business models. These findings also resonate with Kukkamalla et al. (2020), who argue that firms cannot create value through products or services alone; instead, they need to establish a value constellation. This involves adopting the latest technology, continuous service integration, customer knowledge, and ensuring a more efficient and effective business model.

6. Conclusion

This study aimed to examine the value creation in automotive LACs in response to the research question regarding the value created from the practice of corporate foresight in automotive LACs. The study successfully empirically investigated the experiences and insights of practitioner experts on the value created through the practice of corporate foresight. The summary of the validation results of initial proposition is provided in Table 3.

With the results presented in Table 3., the proposition of theoretical framework proposes an answer to the research question of this study. As illustrated in Figure 3, the proposition suggests



No	Initial Proposition	Validation Result	
P1	Corporate foresight activity in automotive LACs positively influences organisational learning.	Proposed as proposition for theoretical framework	
P2	Organisational learning in automotive LACs has a positive effect on organisational agility.	Proposed as proposition for theoretical framework	
P3	Organisational learning in automotive LACs has a positive effect on organisational ambidexterity.	Proposed as proposition for theoretical framework	
P4	Corporate foresight activity in automotive LACs positively influences organisational agility.	Proposed as proposition for theoretical framework	
P5	Organisational agility in automotive LACs positively influences a firm's competitive advantage.	Proposed as proposition for theoretical framework	
P6	Corporate foresight activity in automotive LACs positively influences organisational ambidexterity.	Proposed as proposition for theoretical framework	
P7	Organisational Ambidexterity in automotive LACs positively influences a firm's competitiveness	Proposed as proposition for theoretical framework with additional dimension of busines model.	

that corporate foresight activities in LACs have positive effects on creating value by enhancing organizational learning, agility, and ambidexterity capabilities. Organizational learning capability, facilitated through individual, group, and institutional learning, further mediates the enhancement of agility and ambidexterity capability. The resulting enhanced agility and ambidexterity capability serve as the foundation for organizations in LACs to gain competitive advantages.

As discussed, this study has successfully identified three key findings. The first finding highlights that the value creation resulting from corporate foresight activities in automotive LACs is also influenced by the corporate foresight relationship between LACs and PCs. This can be understood through the recognition that the corporate foresight relationship between LACs and PCs impacts corporate foresight activities in automotive LACs, ultimately influencing the value generated from these foresight activities. The second finding underscores the crucial role of organizational learning in automotive LACs within the context of value creation. Organizational learning plays a significant role as it mediates the impact of corporate foresight activities in creating value on agility and ambidexterity capability. The third finding, within the framework of competitive advantage, emphasizes the importance of considering the business model in addition to the conventional elements of product and cost, especially in the increasingly complex automotive industry. In this context, besides prodcut and cost, focusing on the business model also becomes essential for achieving a competitive advantage.

The results of this study contribute to filling the theoretical gap regarding corporate foresight value creation, particularly within the automotive LACs. This area has been underexplored by scholars, making the findings of this study a valuable addition to the implications on the theory of corporate foresight value creation in automotive LACs. In terms of practical implications, the results can offer managers, decision-makers, and foresight practitioners in automotive LACs a deeper understanding of corporate foresight value creation. With an improved comprehension of corporate foresight value creation, managers, decision-makers, or foresight practitioners in automotive LACs should be more motivated to enhance corporate foresight activities within their

organizations. By strengthening corporate foresight activities in LACs, they can achieve greater value creation, ultimately securing a competitive advantage for their organizations in the future.

This study has several limitations. Firstly, aside from brand A, other brands in Thailand, Malaysia, and the Philippines were excluded from the study. Including additional brands in these countries could contribute to a more robust triangulation of the findings. Another limitation is that only automotive LACs in four ASEAN countries were investigated. Future studies could enhance the research scope by incorporating more countries in ASEAN or exploring other regions. Additionally, the future research agenda should follow up on the identified findings, particularly the need to further investigate the key factors that can strengthen the corporate foresight relationship between automotive LACs and PCs. Understanding these factors is crucial as they will potentially impact the reinforcement of value creation in automotive LACs.

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Supplementary data

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