

GUIDELINES FOR DEVELOPING COMPETITIVENESS OF ELECTRIC VEHICLES ENTREPRENEURS

Papassara SAMRANLERTTRIT¹

1 Graduate School, Suan Sunandha Rajabhat University, Thailand

ARTICLE HISTORY

Received: 10 May 2024

Revised: 31 May 2024

Published: 9 June 2024

ABSTRACT

This was aimed to 1) study competitive level of electric vehicle entrepreneurs, 2) study causal factors influenced to competitive level of electric vehicle entrepreneurs, and 3) present an approach of development of competitive level of electric vehicle entrepreneurs. The research was mixed method, the quantitative samplings were; 1) Tier1 Engines, Drivetrains, Steering, Suspension, Brake, Wheel, Tire, Body, Electronics and Electrical systems, which were the multi-national corporation, joint venture, and large size enterprises (LSEs), and 2) Tier2 and Tier3 Stamping, Plastics, Rubber, Machining, Casting, Forging, Function, Electrical, Trimming, which were small- medium enterprise, (SMEs), The Proportional stratified random sampling has been used with 320 samplings, the questionnaires and data analysis (Structural Equation Modeling: SEM) were used. The qualitative samplings were 15 of administrative experts in electric vehicle, and the content analysis. The research findings 1) the competitive level of electric vehicle entrepreneurs as whole was in medium level, 2) the factors in policy promotion of electric vehicles, electric vehicle entrepreneurs potentials, an organizational management, and electric vehicle innovation, influenced the competitive level of electric vehicle entrepreneurs, and 3) an approach of development of competitive level of electric vehicle entrepreneurs, were in 4 approaches; 1) the electric vehicle entrepreneurs potential development, 2) electric vehicle policy development, 3) the electric vehicle innovation development, and 4) an organizational management development. The research findings suggested public, private sectors and communities concerned can apply the resolution in practice and develop future competitive level of electric vehicle entrepreneurs.

Keywords: Development, Competitiveness, Electric Vehicle Entrepreneurs

CITATION INFORMATION: Samranlertrit, P. (2024). Guidelines for Developing Competitiveness of Electric Vehicles Entrepreneurs. *Procedia of Multidisciplinary Research*, 2(6), 16.

INTRODUCTION

The promotion on utilizing EV cause nationwide was not only caused by the pressure of environment trends of energy saving. The trends of nations goals that aimed of no automobiles in next 25 years, still severely affect supply chain infrastructure. Thailand was headed to be world EV production base and spare parts. The National Electric Vehicle Policy Committee (EV Board) committed an approach of EV promotion as 30@30 that was emission free vehicles at least 30% of production in 2030, the other mechanism that will lead to low carbon society. (The Office of Policy and Planning, Ministry of Energy, 2023)

An important of public policy leads to the competition in EV industry as in literature review, the status of competition in EV operation organization depended on the existed status of competition. (Isaak, 2020) The entrepreneurs need to develop the competitive ability development by creating new innovation and enhance industrial ability by reduce production costs, making the differentiation in goods and services, cost leadership, and quick response. (Porter, 2005) The competitive ability will occur when the company create the business value and less competitors. The returns higher than expectation make the company in advantage over the competitors. (Wiggins & Ruefli, 2002) The conceptual theories and research from worldwide academics as the competitive ability strategy and key success factors as Porter's Generic Strategies and five forces model of competition theory as Porter's model were the analysis of domestic producer competition, and the study of Saxena and Vibhandik (2021) founded dynamic ability of leader, an executing different strategy and creative innovation can achieve sustainable advantage in competition. The leadership conceptual theories supported by research of electric energy innovation. (Lemphers et al., 2022) Differentiation in development of special characteristic products differ from competitor products or more value added than competitor products, quick response will be competitive advantage and the heart of strategy focus on sustainable competitive advantage. (Albrecht et al., 2016)

From literature review, the researcher found that the academic scholars in EV give precedence to organization management. For EV promotion policy, an organization management and EV innovation can affect competitive advantage of EV entrepreneurs to consistent with the direction of Thai automobile which heading to EV market by applying available strategy to cope with rapid and severe change in 21st century.

As mentioned above, the researchers who ran the automotive business then interested in development approach of EV entrepreneur competitiveness, in order to keep up with the energy saving and environmental change. The EV promotion policy, entrepreneur potential, organization management, and EV innovation, led to the research problem. This to find the guidelines for the entrepreneurs to cope with the change context in-time, and develop the personnel potential of competitiveness and can apply innovation technology for EV organization management successfully.

Objectives

- 1) To study competitive level of EV entrepreneurs, EV promotion policy, EV entrepreneur potential, EV innovation and organization management.
- 2) To study an influence of causal factors of EV promotion policy, EV entrepreneur potential, EV innovation and organization management, that affect EV entrepreneur competitiveness.
- 3) To present the guidelines for developing competitiveness of EV entrepreneurs.

Hypothesis

- 1) EV entrepreneur competitiveness was directed influenced from causal factors of competitive level of EV entrepreneurs, EV promotion policy, EV entrepreneur potential, EV innovation and organization management.
- 2) EV innovation was directed influenced from causal factors of EV promotion policy, EV entrepreneur potential, EV organization management.

- 3) EV organization management was directed influenced from causal factors of EV promotion policy, EV entrepreneur potential.
- 4) EV entrepreneur potential was directed influenced from causal factors of EV promotion policy.

LITERATURE REVIEWS

- 1) The conceptual theories of competitiveness mean the EV entrepreneur ability in creating new innovations, differentiation in goods and services, and create higher returns, then make the company in competitive advantage and led to better operation, differ in strategy and creative innovation to achieve the sustainable competitiveness which consist of cost leadership, differentiation, and quick response. (Fedotov, 2022; Yusgiantoro et al., 2022; Chen, 2023)
- 2) The conceptual theories of competitiveness mean the guidelines of EV promotion according to public policy in infrastructure development to cope with EV industry promotion in order to be production base and EV promotion policy both tax and non-tax measurement which will be the mechanism of future low-carbon society that consist of EV infrastructure preparation, EV productive promotion, Ev utilizing promotion. (Setiawan et al., 2022; Razmjoo, Ghazanfari, Jahangiri, Franklin, Denai, Marzband & Maher, 2022)
- 3) The conceptual theories of competitiveness mean the entrepreneur ability in effective management; human resource management, production management, financial management, technology development. (Packard & Bylund, 2021; Harsanto & Firmansyah, 2021)
- 4) The conceptual theories of competitiveness mean EV entrepreneur management successfully effectively as objectives for organization advancement in the era of change and adapt to an environment, consist of; knowledge management, risk management, and logistics management. (Christensen et al., 2021; Imre et al., 2021)
- 5) The conceptual theories of competitiveness mean EV entrepreneur development into creative innovation such as product innovation, service innovation and marketing innovation.

Conceptual Framework

Conceptual framework consists of Endogenous latent variables; EV entrepreneur potential, EV innovation and organization management and competitiveness, and Exogenous latent variables; EV promotion policy as in fig.1.

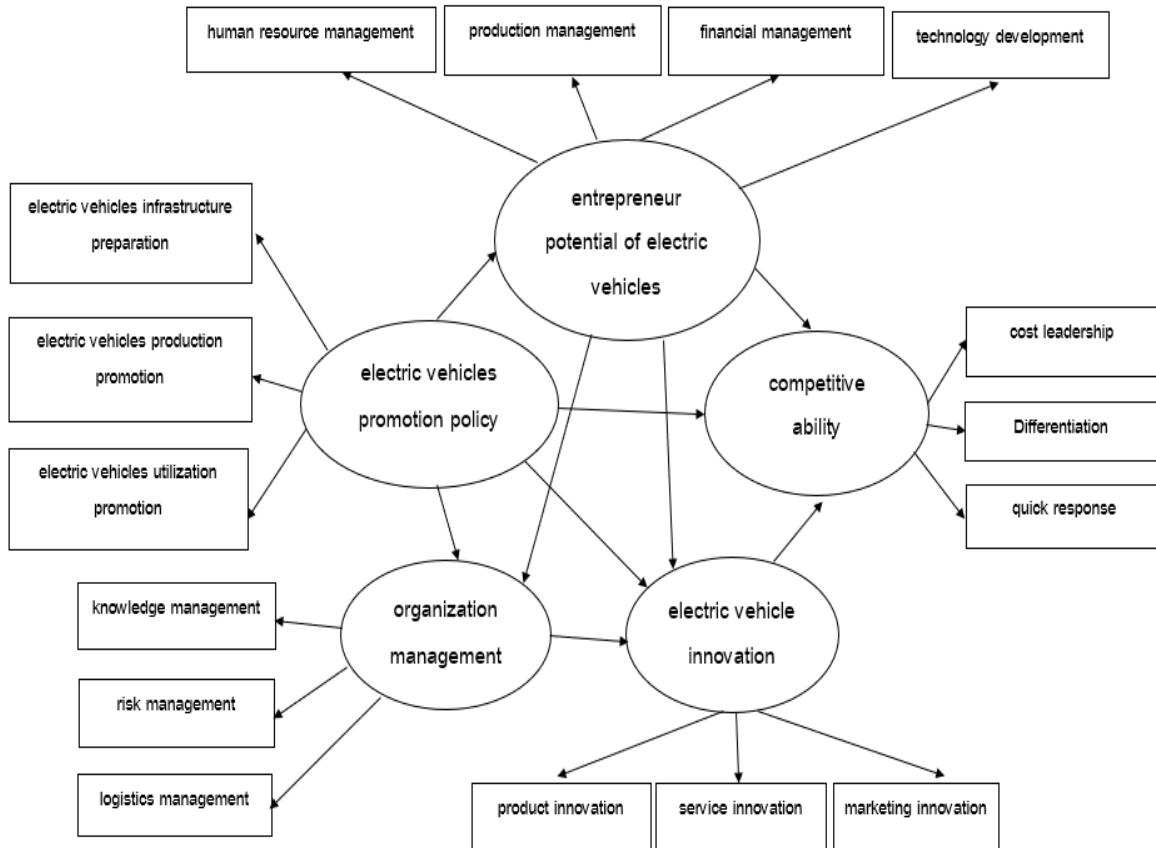


Fig. 1. Conceptual Framework

RESEARCH METHODOLOGY

Mixed Methods Research was used in this research; Quantitative Research and Qualitative Research

Population and samples: Quantitative samples were 1) parts manufacturer: Tier1 Engines, Drivetrains, Steering, Suspension, Brake, Wheel, Tire, Body, Electronics and Electrical systems which was multi-national corporation, (MNCs) joint venture, (JV) and large size entrepreneurs (LSEs) and 2) parts manufacturer; Tier2 and Tier3 Stamping, Plastics, Rubber, Machining, Casting, Forging, Function, Electrical, Trimming, who were small and medium (SMEs). The 320 Proportional stratified random sampling have been used. Research tools were the questionnaires with percentage, standard deviation, structural equation modelling SEM, were used in data analysis.

Qualitative samplings were EV entrepreneurs in administrative level which were accepted as the experts or high-level administrators, purposive samplings in-depth interview with 15 informants were used with context data analysis.

Research Instrument

The questionnaires were divided into 7 sections as: 1) basic information of informants 2) EV competitive ability, 3) promotion policy, 4) EV entrepreneur potential, 5) organization management, 6) EV innovation, and 7) additional suggestions and interview questions for data collection by in-depth interview.

Data Collection

For quantitative research, the researcher coordinated with EV entrepreneur in distribute and collect questionnaires. For qualitative research, the researcher prepare readiness issues of interviewing by interview questions and appointment date, time, location to 15 key informants, and time used 30-60 minutes/person.

Data Analysis

The descriptive statistic, frequency, percentage, mean, standard deviation, were used to explain the level of EV entrepreneur competitive ability, organization management, and EV innovation. The inferential statistics were used in analysis structural equation modelling SEM, to test the relation between latent variable and observed variable, and between latent variable and latent variable, and to find the influence of factors on conceptual framework. The qualitative data analysis by triangulation, induction structural interpretation, and present in the form of content analysis combination with quantitative data. (Kalaya Vanichbancha, 2017)

RESEARCH FINDING

The result according to no. 1 objective were:

- 1) The study of competitive ability, EV promotion policy, EV entrepreneur potential, organization management, and EV innovation, the results came out as table 1

| VARIABLE | \bar{X} | S.D. | RESULT |
|-------------------------------|-----------|------|--------|
| 1) EV competitive ability | 3.09 | 0.96 | Medium |
| 2) EV promotion policy | 3.08 | 0.96 | Medium |
| 3) EV entrepreneur potential | 3.15 | 0.99 | Medium |
| 4) EV organization management | 3.07 | .96 | Medium |
| 5) EV innovation | 3.07 | 0.90 | Medium |

2) The study of causal factors affects the entrepreneur competitive ability the results came out as innovative causal factors in EV innovation influence directly to the EV entrepreneur competitive ability in highest level 0.84. The next lower was EV entrepreneur potential 0.39, the EV promotion policy 0.25. For the indirect influence the EV competitive ability was an organization management 0.83.

3) The study of EV entrepreneur competitive ability guidelines results in 4 ways; 1) EV innovation development, 2) EV entrepreneur potential development, 3) EV promotion policy development, and 4) EV organization management development.

DISCUSSION & CONCLUSION

1) The study of competitive ability, promotion policy, entrepreneur potential, organization management and innovation, the results came out as whole in medium level. The EV entrepreneur potential variable, especially in financial management was in highest average as the flexibility help in reduce operation losses in all steps, and prevent an organization resource damage, according to Rajesh and Rajasulochana (2022), the factor affects the EV perception in India was financial motivation and infrastructure of billing.

2) The causal factors of EV promotion policy, entrepreneur potential, organization management, and EV innovation, affect EV entrepreneur competitive ability, the results came out as; EV innovation causal factors influence directly to EV entrepreneur competitive ability, these were because the EV innovation was the product creation or development which was the creation of the competitive advantage as the existing resources were used limitedly for the maximum benefit, as according to Murugan and Marisamynathan (2022) which study the marketing mix in EV innovation, resulted as the consumers influence the EV purchasing, the entrepreneur can apply the marketing strategy in pricing, marketing channel, products, and marketing promotion.

3) The EV competitive ability development guidelines the conclusion came out in 4 ways: 1) EV innovation development, 2) EV entrepreneur potential development, 3) EV promotion policy development, and 4) Organization management development. The researcher considered such guidelines will help enhancing the continuity of the EV entrepreneur competitive ability

as the competitive ability need the differ strategic executing and the creative innovation then achieve the sustainable competitive advantage, as Du et al. (2018) that stated the competitive ability in view of supply chain management in multi-dimensions; price and cost, profitability and performance, responsibility, time to market, quality, delivery and distribution, product and process innovation.

Suggestions

Policy suggestion

- 1) Public sector should give precedence to the entrepreneur competitive ability development policy by modifying executive policy, strategic planning, to consistent with present context in order to enhance the EV entrepreneur skills and competitive ability concretely.
- 2) Public and private sectors also the units concerned should think creatively about the supporting projects in competitive ability from community to provincial and country levels for the strength and sustainable forever
- 3) The study of EV entrepreneur competitive ability guidelines in other dimensions or the other affecting factors should be executed for driving the effective EV business.

REFERENCES

Albrecht, C. M., Hattula, S., Bornemann, T., & Hoyer, W. D. (2016). Customer response to interactional service experience: the role of interaction environment. *Journal of Service Management*, 27(5), 704-729.

Chen, S. (2023). *Brand Planning Competition*. National College Business Elite Challenge “Zhongtu Kexin Cup 2023”. Shanghai University of Medicine and Health Sciences (SUMSH).

Christensen, P. A., Anderson, P. A., Harper, G. D., Lambert, S. M., Mrozik, W., Rajaeifar, M. A., & Heidrich, O. (2021). Risk management over the life cycle of lithium-ion batteries in electric vehicles. *Renewable and Sustainable Energy Reviews*, 148, 111240.

Du, W., Fan, Y., & Yan, L. (2018). Pricing strategies for competitive water supply chains under different power structures: An application to the south-to north water diversion project in china. *Sustainability*, 10(8), 2892.

Fedotov, P. (2022). Critical Analysis of the Electric Vehicle Industry: Five forces and strategic action fields. *Exchanges: The Interdisciplinary Research Journal*, 10(1), 43-56.

Imre, S., Celebi, D., & Koca, F. (2021). Understanding barriers and enablers of electric vehicles in urban freight transport: Addressing stakeholder needs in Turkey. *Sustainable Cities and Society*, 68, 102794.

Isaak, A. (2020). An Explorative Study of Refugee Entrepreneurship and Start-up Consulting in German-Speaking Europe. *European entrepreneurship research and practice: A multifaceted effort towards integration of different perspectives*, 23-54.

Lemphers, N., Bernstein, S., Hoffmann, M., & Wolfe, D. A. (2022). Rooted in place: Regional innovation, assets, and the politics of electric vehicle leadership in California, Norway, and Québec. *Energy Research & Social Science*, 87, 102462.

Murugan, M., & Marisamynathan, S. (2022). Analysis of barriers to adopt electric vehicles in India using fuzzy DEMATEL and Relative importance Index approaches. *Case Studies on Transport Policy*, 10(2), 795-810.

Packard, M. D., & Bylund, P. L. (2021). From homo economicus to homo agens: Toward a subjective rationality for entrepreneurship. *Journal of Business Venturing*, 36(6), 106159.

Porter, M. E. (2005). *The Competitive Advantage Creating And Sustaining Superior Performance*. New York: The Free Press.

Rajesh, D., & Rajasulochana, D. M. (2022). A Study on Factors Influencing The Purchase of Electric Vehicles in Indian Auto Mobile Market. *Journal of Contemporary Issues in Business and Government*, 28(4), 968-979.

Saxena, N., & Vibhandik, S. (2021). Tesla's Competitive Strategies and Emerging Markets Challenges. *IUP Journal of Brand Management*, 18(3).

Setiawan, A. D., Zahari, T. N., Purba, F. J., Moeis, A. O., & Hidayatno, A. (2022). Investigating policies on increasing the adoption of electric vehicles in Indonesia. *Journal of Cleaner Production*, 380, 135097.

The Office of Policy and Planning, Ministry of Energy. (2023). *EV Promotion Guideline*. Retrieved from [http://www.eppo.go.th/index.php/en/component/k2/item/\(17415-ev-charging-221064-04](http://www.eppo.go.th/index.php/en/component/k2/item/(17415-ev-charging-221064-04).

Wiggins, R. R., & Ruefli, T. W. (2002). Sustained competitive advantage: Temporal dynamics and the incidence and persistence of superior economic. *Organization Science*, 13(1), 82-105.

Yusgiantoro, L. A., Hanan, A., Sunariyanto, B. P., & Swastika, M. B. (2022). *Porter's Five Forces Analysis: Battery as Alternative Transport Fuels in Indonesia*. In Mapping the Energy Future-Voyage in Uncharted Territory, 43rd IAEE International Conference, July 31-August 3, 2022. International Association for Energy Economics.

Data Availability Statement: The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Conflicts of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's Note: All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.



Copyright: © 2024 by the authors. This is a fully open-access article distributed under the terms of the Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0).