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Optimizing Internal Management of the New Energy Vehicle Companies Under the Background of the Oil Crisis

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Abstract:The purpose of this study is to examine what factors Chinese consumers consider when choosing traditional and new energy vehicles (here below as NE or NEV), and to what extent. This paper hopes that the research findings can give new energy vehicle companies some scientific insights, allowing them to better understand the real needs of customers. In this way, enterprises can optimize management, seize customers to occupy market share, and make better use of the opportunities brought by the oil crisis to new energy sources. This study adopts the method of qualitative analysis, draws on the main forms in the TPB model, and adjusts the variables appropriately, to further fit the characteristics of the Chinese market. The study found that self-identity, risk concerns and environmental concerns have a positive impact on purchase decisions; it is suggested that companies can use this finding to actively adjust their team awareness, so that organizations and teams can fully understand the huge difference between new energy and traditional automobile markets (Bricknell, 2021), consumers' purchasing behavior, and make corresponding coping strategies, and ultimately achieve corporate strategic goals.
Keywords: Opportunities; New Energy Vehicles; Optimize Management

1. Introduction

1.1 Background of the Study

Before the outbreak of the Military Conflict between Russia and Ukraine, Russia as a big energy exporter, delivered coal, oil, natural gas and other resources necessary for the economy and life to many countries. Oil price accelerated with the arrival of the war, and has now hit the highest price of the past decade. The energy crisis has affected the supply and production of several industries, with perhaps the biggest impact being on vehicles that consume gasoline or natural gas. Accordingly, as an alternative to fuel vehicles, new energy vehicles will step into accelerated development phase. New energy vehicles here refer to vehicles with a new structure formed by using unconventional vehicle fuels (gasoline or diesel) as power sources and integrating vehicle power control and drive technologies. New energy vehicles include four types of hybrid electric vehicles (HEV), pure electric vehicles (BEV), and fuel cell electric vehicles (FCEV).

1.2 Problem Statement

Most of Chinese NE companies are losing money. They are mainly developed from traditional auto companies that have been in business for many years and have very formed management systems and institutional processes, which are nowadays somehow out of date because they were developed early years to cope with the traditional fuel cars.

1.3 Research Objectives

1) Study the key factors that influence Chinese consumers' purchase intention of new energy vehicles;
2) Combine research findings with corporate problems to help companies establish management systems related to industrial upgrading.

1.4 Significance Of Study

The research findings will be able to develop new undiscovered business growth points for new energy companies. Additionally, focusing on the research of the new energy industry and helping related companies to expand the market has a very positive environmental protection significance. It also reduces dependence on oil.

2. Literature Review

2.1 Overview Of Theoretical Underpinning

2.1.1 Purchase Preference Model In Developing Country：Contextual Requirements for Electric Vehicles in Developed and Developing Countries

In this research report, the author believes that the development and breakthrough of new energy vehicles has always been driven by the combined action of the following three factors: the rising fuel prices, and the worsening climate have caused public attention and vigilance. It finds in developing countries, manufacturers Tends to target the low-end market as a proliferation strategy for new products.

2.1.2 New Product Concern Model (Evaluate the sustainable marketing strategy to optimal online leasing of new energy vehicles under the background big data economy）

This study uses Portugal's new energy vehicle (electric and hybrid) market as the research background, and aims to explore the way consumers can clarify doubts and complete purchasing decisions, under the trend of increasing popularity of new energy vehicles world-wide. Variables include eco-friendly lifestyles, perceived symbolic value of EVs, risk aversion, consumer perceptions, and supporting infrastructure. The study found that consumers' perceived value of new energy vehicles has a positive impact on the choice of electric vehicles.

2.1.3 China’s New Energy Vehicles-Value And Innovation

This paper specifically analyzes and introduces the broad strategic approach of two industries within the new energy vehicle industry, the pure electric vehicle (EV) and low-speed electric vehicle (LSEV) industries, and explores the relevant data for further comparison and research. The findings shows high level EVs have wider support than the low-speed EV industry, but sales lag significantly behind the latter.

2.2 Theoretical Background

This study first considered several factors in the TPB model. Theory of Planned Behavior (TPB) The theory of planned behavior was proposed by Icek Ajzen (1988, 1991), which can help people understand how people drive their behavior patterns and how they change. In the following, we will discuss in detail which variables are used, and their characteristics and meanings in this study.

2.2.1 Subjective Norm

Subjective Norm refers to the social pressure that individuals feel about whether to take a certain behavior, that is, when predicting the behavior of others, those individuals or groups that have an influence on the behavioral decision of individuals (salient individuals or groups). The size of the effect on whether an individual takes a particular behavior. Social groups, especially peers and others close to consumers have a greater influence on consumers’ purchasing decision (“Index to

Medical Decision Making," 2005).

2.2.2 Self-identity

The meaning of self-identity refers to how an individual perceives his/her self-perception. Self-identification tends to assign the things in life to the thoughts that relate to them. For example, the purchased goods should represent their heart, spirit, belief in deities and values. Clearly, self-identity affects consumers' purchasing decision patterns.

2.2.3 Environmental Concerns

Due to the rise of the middle class in China, the improvement of population quality and education level, people began to show more altruism and altruistic behavior. Especially when you start to buy green products yourself.

2.3 Gaps

A lot of research on new energy vehicles in China has been done. However, the research direction is a little too biased from the manufacturer's point of view. In fact, there are signs that more and more consumers are willing to consider social responsibility. Some groups even regard environmental awareness as a fashion label.

2.4 Research Framework And Research Model

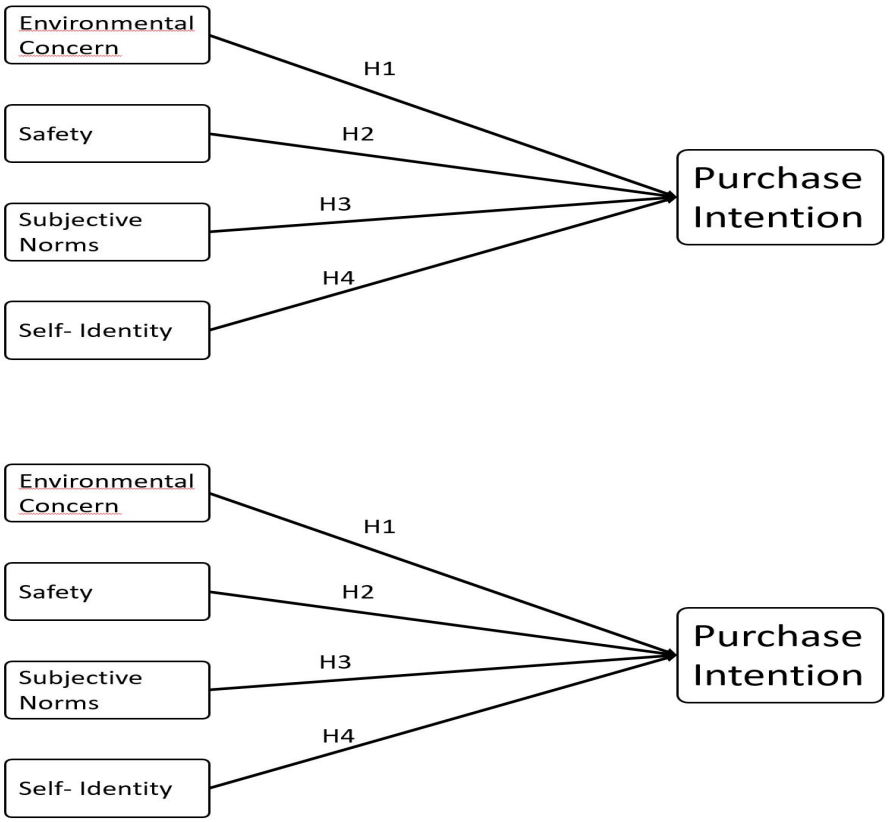

Figure 2.4 Purchase Intention

2.5 Summary of Hypothesis

H1: Environmental concern has a positive correlation to purchase intention

H2: Security concern has a positive correlation to purchase intention

H3: Subjective norms has a positive correlation with purchase intent

H4: Self-identity has a positive correlation to purchase intention

3. Methodology

3.1 Research Paradigm

As a social science research, this paper will adopt interpretivism (qualitative) in the basic research paradigm; at the same time, to better reveal the essence of the problem, it will also adopt positivism (quantitative) in a small number of verification parts (Grim et al., 2015).

3.2 Research Design and Process

Research design is to create an action plan and framework for the research of the paper (Sekaran & Bougie, 2016). The following figure outlines the steps and process of the research. (figure 3.2).

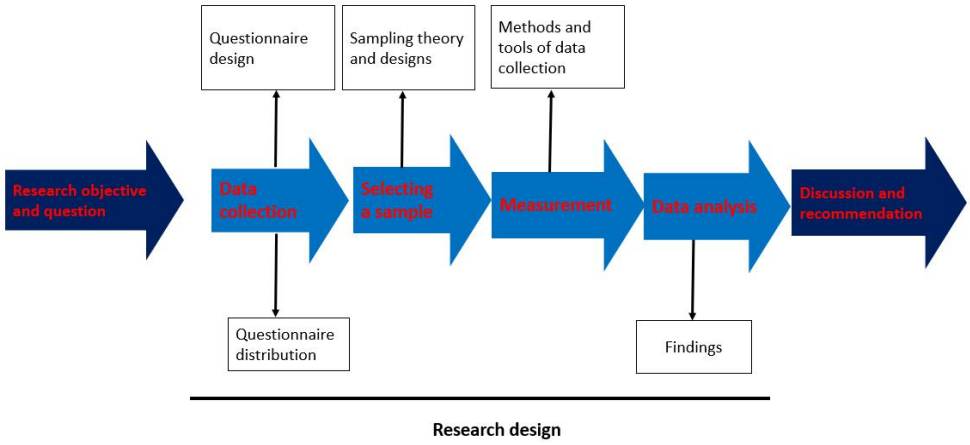

Figure 3.2 Research Design

3.3 Sampling and Data Collection

This study was a random sampling. The minimum sample threshold set was 200 copies. First, send the questionnaire link to a representative WeChat group. The survey is then self-administered and completed by survey participants. Screening questions, such as annual household income, are set in the preface of the questionnaire and in demographic information. Because the scope of the research will also cover potential consumers. Therefore, random sampling was used in the survey questionnaire.

3.4 Questionnaire Design

The questionnaire is divided into three parts. The first part is related to demographic information. The second part aims to measure the independent variables of this study,

Including low variability, perceived value, price sensitivity, safety, and environmental awareness.The third part is related to the dependent variable of this study. That is, consumers' willingness to buy new energy vehicles.

3.5 Measurement Instrument

Using nominal scales to subdivide non-numeric data mainly in demographic information, including gender, occupation, and place of residence. Numerical attribute data such as age, annual household income, etc., will be subdivided into 4-5 levels within the numerical range.

For the second part of the questionnaire, the assessment of variable questions, a 75-point Likert scale was used, i.e. 1 = "strongly disagree", 5 = "strongly agree", 3 = “neutral”).

4. Data analysis

4.1 Preliminary Data

Assessment

Characteristics	N(309)	(%)
Age		
20-30	119	38%
30-40	132	43%
36-45	48	16%
40-50	10	3%
Education		
Intermediate	41	13%
college degree	172	56%
Some post-graduation degree bachelor	132	43%
Master and above	26	8%
Approximate annual income (INR)		
Less than RMB100k	54	18%
100K – 200K RMB	65	21%
200K – 500K RMB	168	54%
Above 500K RMB	22	7%
Gender		
Male	204	66%
Female	105	34%

Figure 4.1 Preliminary Data Assessment

4.2 Statistical Analysis

The fitted regression method of Excel will be used for modeling and analysis. The correlation regression coefficient is divided into four scales representing 4 four types of Relevance. They are: 0-25%, means correlation; 25-50% 25-50% means weak; 50-75% indicates a strong correlation; >75% indicates a very strong correlation.

4.3 Self-Identity And Purchase Intention

Self-identity and purchase intention showed a strong positive correlation. The correlation coefficient reaches 84% (the figure below shows 0.8423...), and the R square is 70% as shown in Figure 4.31 below, indicating that 70% of the data in the sample conforms to this rule.

The Figure 4.32 below shows this linear trend more intuitively.

SUMMARY OUTPUT FOR SELF IDENTITY AND PURCHASE INTENTION

Regression Statistics	
Multiple R	0.842302965
R Square	0.709474284
Adjusted R Square	0.708006983
Standard Error	0.042807456
Observations	309

Figure 4.31 Summary Output For self Identity and Purchase Intention(1)

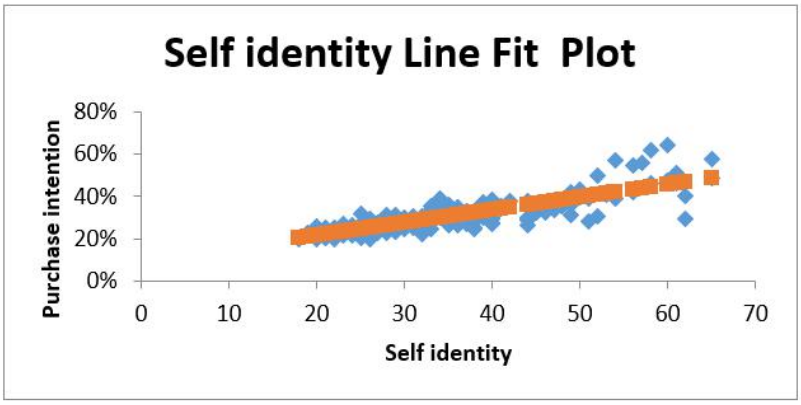

Figure 4.32 Self Identity Line Fit Plot

4.4 Safety Concern And Purchase Intention

The results of the study show that safety factors have a strong correlation with purchase intention, with a correlation coefficient of 81%. And 65% of the population fit this rule.

SUMMARY OUTPUT FOR SAFETY CONCERN AND PURCHASE INTENTION

Regression Statistics	
Multiple R	81%
R Square	65%
Adjusted R Square	65%
Standard Error	5%
Observations	309

Figure 4.4 Summary Output For self Identity and Purchase Intention(2)

4.5 Subjective Norms And Purchase Intention

When the unit linear regression analysis was performed on the variable of self-identity, it was found that the correlation between it and purchase intention was not obvious, just over 50%.

4.6 Environmental Concern And Purchase Intention

When the unit linear regression analysis was performed on the variable of environmental worry, it was found that it had a strong correlation with purchase intention, reaching 68%.

4.7 Multiple Regression Analysis - Multiple Factors Working Together

The figure below shows that the coefficients of each factor vary, with personal identification being the most influential, followed by environmental concerns. The figures for safety concerns and environmental concerns are not much different. Finally, the surprising result is that subjective norm has a slight negative effect on purchase intention (refer to figure 4.7)

SUMMARY OUTPUT

Regression Statistics	
Multiple R	85%
R Square	72%
Adjusted R Square	71%
Standard Error	4%
Observations	309

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	4	0.895529862	0.223882	165.5824	1.5105E-61
Residual	196	0.35334651	0.001803		
Total	200	1.248876371			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	0.11696795	0.014705572	7.953988	1.41E-13	0.08796649	0.145969
Self identity	0.004600449	0.000704396	6.531051	5.49E-10	0.00321128	0.00599
Subjective norm	-0.000427777	0.000801546	-0.53369	0.594161	-0.0020085	0.001153
Enviromental concern	0.003247789	0.000704396	4.251051	5.49E-10	0.00121128	0.00439
Safety concern	0.002215488	0.000997837	2.220291	6.41E-10	0.00024761	0.004183

Figure 4.7 Summary Output

5. Discussion

5.1 Discussion of Findings

The conclusion found that most of them verified our hypothesis. For example, self-perception, safety concerns and environmental concerns all have a positive impact on purchase intention, among which self-perception has the greatest impact.

5.2 Recommendation to enterprises

Something in common that all successful companies have is that they adopt professional management philosophy and process (LaRosa, 2010). According to the professional management process and the findings of this study, the following recommendations are made to the struggling new energy vehicle companies: Facilitate corporate leadership to developing right business strategy by Communicating the research finding. Customers pay more attention to the safety of the car, the driving experience, and the identification of the personal identity it brings to itself. Other recommendations include: Redefines corporate culture to accommodate this change, awareness training to the team with the new findings, action plan in line with the SMART principle, to make use of the findings, and to redesign the new kpi for better performance management.

5.3 Limitation and suggestion to research

The sample size in this research is not big enough. In addition, it would be better if the distribution of samples could cover multiple cities in China evenly.

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