CITY CAR CONCEPT: A NEW CATEGORY IN THE THAILAND AUTOMOTIVE INDUSTRY

by

Ms. Busaporn Tangchitnopakoon

A Final Report of the Three-Credit Course
CE 6998 Project

Submitted in Partial Fulfillment
of the Requirements for the Degree of
Master of Science
in Computer and Engineering Management
Assumption University

November, 2001

CITY CAR CONCEPT:
A NEW CATEGORY IN THE THAILAND AUTOMOTIVE INDUSTRY

by
Ms. Busaporn Tangchitnopakoon

A Final Report of the Three-Credit Course
CE 6998 Project

Submitted in Partial Fulfillment
of the Requirements for The Degree of
Master of Science
in Computer and Engineering Management
Assumption University

November 2001

Project Title	City Car Concept: A New Category in the Thailand Automotive Industry
Name	Ms. Busaporn Tangchitnopakoon
Project Advisor	Dr. Chawapol Jariyawiroj
Academic Year	November 2001

The Graduate School of Assumption University has approved this final report of the three-credit course. CE 6998 PROJECT, submitted in partial fulfillment of the requirements for the degree of Master of Science in Computer and Engineering Management.

Approval Committee:

(Dr. Ch apol ariyawiroj) Advisor	(Prof Dr. Srisakdi Charmonman) Chairman
Rel 70z:;j (Dr. Chamnong n irapanich) Dean and Co-advisor	V (Assoc.Prof Somchai ThayarnSfong) MUA Representative

November 2001

ABSTRACT

This project presents "city car concept" which will be a new category in Thailand automotive market. The city car could be a new alternative to Thai consumers in order to cope with rising fuel prices, traffic congestion and infrastructure conditions in major cities like Bangkok, Chiangmai, Pattaya, etc.

Gathering information on Macroeconomic evaluations by analyzing Economic Situation, Demographics Situation, Social Situation, Legal/Political Situation and Technology from the year 1995 to the present, it is found that this information can be used to create in obvious city car concept in Thailand. Moreover, Thailand Automotive Analysis 1999-2000 is done to show that it has a growth of 20 percent compared to the year 1999, so it is possible that the market of car will grow next year. Furthet more, this report is shown in vehicle tax calculation for both CKD and CBU vehicles.

The report is prepared more realistically by doing in-depth interview under market research analysis. In order to conduct a "Testing concept" research on city car category in Thailand, I select "smart" car as dummy model to get clear idea on city car vehicle.

Market research analysis, focused on "Testing concept", is used to create marketing concept on market segmentation, market targeting, market positioning and marketing mix.

The results of all analysis and research guide us to create "city car strategy proposal" related to the macroeconomic factors, and assume an example of marketing concept for introducing 'city car' under marketing mix by using 'smart' as dummy model. It helps to understand 'city car concept' and makes it more affordable.

ACKNOWLEDGEMENTS

I am greatly indebted to the following people who advised and supported me. Without them, this report would not been possible.

I wish to express my sincere gratitude to my advisor, Dr. Chawapoj Jariyawiroj. His patient assistance, guidance, and constant encouragement have led me from the research inception to the research completion.

Many thanks to all Mercedes-Benz sales managers in each dealer and ABAC students who help in giving me a chance to interview fulfilled in the research part.

Special appreciation is due to my family for their fervent and continuous encouragement. Above all, I am forever grateful to my parents and my brother, Mr. Cherdkiat Tangchitnopakoon whose willingness to invest in my future has enabled my to achieve my educational goal. Thank you very much once again.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

I. INTRODUCTION

1.1 Background of 'City Car" Concept in Thailand

There have been efforts by the Thai government to promote more fuel-efficient and space saving vehicles, known as 'city cars,' since October 2000. 'City car' could be the alternative to the Thai consumers in order to cope with rising fuel prices and traffic congestion in major cities like Bangkok, Chiang Mai, etc.

In order to attract both Thai consumers and car companies to participate in this concept, the Excise Department proposes to add 'city car' category to the existing tax system, which in fact, is classified by engine sizes' displacements and / or the generated engine horse-power. It would be considered as a new vehicle category, which would comply with the proposed lower excise tax (approximately 12%) compared to 35%, the lowest existing excise for vehicles whose engines do not exceed 2,400 c.c.

Even after the discussion among the government officials, Thai Automotive Industries Association and executives from car companies, no conclusion has been reached regarding the definition of city cars. This is because car companies have different opinions and interests, especially from Japanese and European companies. Although some criteria could be initially agreed upon (i.e. the engine should not exceed 1,100 c.c. and should have a fuel consumption of at least 15 km / liter), car companies are trying to lobby the government authorities to define definitions of 'city cars' according to their individual interests.

1.2 Project Objective

This project is targeted not to focus on the car companies' interests, but to investigate public interest and possibility to offer 'city cars' in the Thai market. To enhance the idea of city car concept to public is also a main objective. However, it is

necessary to set some premises for this project since the 'city car' category does not exist in the Thailand automotive market.

II. MACROECONOMIC ANALYSIS

2.1 Economic Situation

Year 2000 results

Thai economy was still recovering from the crisis with the growth of 4.0-4.5 percent in 2000. The growth moderated in line with private consumption. Domestic demand expanded at a slow rate with the estimated growth of only 4.0-5.0 percent, while the private consumption grew at 4.0-4.5 percent, reflecting a recovery in the private sector compared with the situation in 1999. The major indicators included sales of motorcycles and passenger cars, retail sales, imports of consumer goods, etc. (anonymous, The economic and monetary conditions in 2000, Bank of Thailand).

By the end of December, there were some indicators showing more stability in the financial sector. The non-performing loans (NPL) were down more than half from their peak in mid-1999 as a result of the asset transfer to AMC. A low interest rate policy had been used by the Bank of Thailand in order to accommodate financial sector's restructuring. It had fueled a rush by local companies to refinance their foreign obligation, both to save costs and reduce their currency risks. (Economy, Cholada Ingsrisawang, Bangkok Post) It was obvious that the inflation remained subdued throughout the year though the oil prices rose in the second half of the year.

Manufacturing in 2000 expanded at a slow pace from 1999. The utilization of the manufacturing capacity focused on export-oriented products, which grew in line with the world economic growth.

The surplus in trade balance declined compared to the 1999 results. Export recorded a 19.6 percent growth, equivalent to US$67.9 billion. Strong growth in global trade was one major factor behind Thailand's strong performance, which was led by

electrical appliances, electronics equipment, and computer parts. Meanwhile, imports grew by 31.3 percent for the year, hitting the record over 62.4 billion baht. Balance of payment shifted from a surplus to a deficit of US$ 2.0 billion. In addition, the international reserves marked at US$ 32.7 billion, which declined by 6 percent compared to 1999. The exchange rate on average weakened due to unstable conditions of currencies and political situations in the region. On average inter-bank exchange rate, the exchange rate stood at 40.16 baht per US$, compared with an average of 37.84 Baht per US$ in 1999.

Economic Outlook 2001

The Thai economy is expected to expand at a slow pace, 2.5-4.0 percent GDP growth rate. The greatest concerns are the slowdown in the economies of the major trading countries, especially Japan and the United States of America, affecting Thailand's economic growth, especially when the Thailand growth depends over 20% of the total exports.

Moreover, the new government administration may face difficulties in terms of reorganizing and restructuring existing processes. It is expected that the clear economic policies will not be obvious until the second half of 2001. Although Thai domestic sentiment has improved markedly since the general election on January 6, 2001, memories among the Thai consumers of recent economic crisis are never far away. Higher energy costs and weakening of Thai Baht will also increase inflationary pressures, resulting in lower domestic consumption and eventual slow-down of the economy.

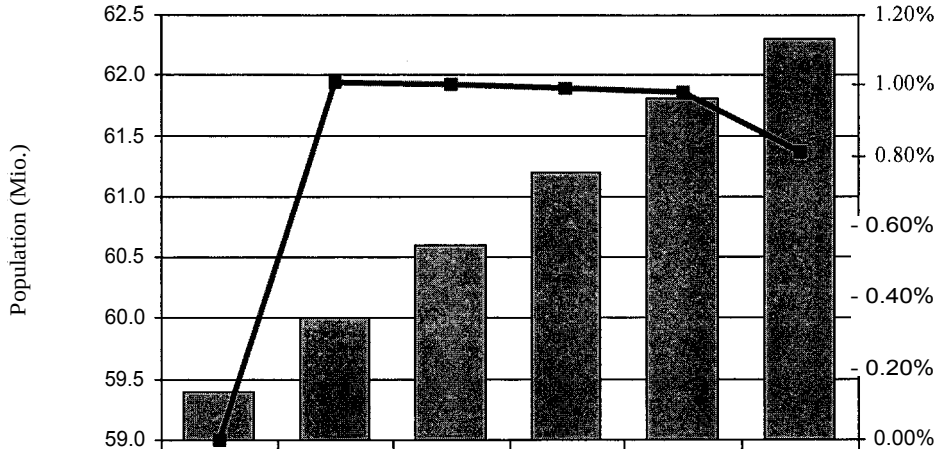
Since the domestic growth will underline the country's economic status in 2001, it is necessary to closely monitor the government's policies in order to steer the domestic sentiment, which remains fragile and susceptible to negative news.

Table 2.1. Thailand Economic Key Figures on 1998-2001 (Anonymous, Bank of Thailand, 2001).

	1998	**1999**	**2000P**	**2001 1/**
1. Population (mio.)	61.2	61.8	62.3	63.0
2. GDP/GNP				
❑ GDP at 1988 price (% ch.)	(10.8)	4.2	4.3	2.5-4.0
❑ GDP per capita (Baht)	73,012	72,630	n.a.	n.a.
3. Inflation				
❑ Headline inflation (% ch.)	8.1	0.3	1.6	1.7
❑ Core inflation 2/ (% ch.)	7.2	1.8	0.7	1.1
4. External Account (billions of US$)				
❑ Export	52.9	56.8	67.9	20.7
(% ch)	*(6.8)*	*7.4*	*19.6*	*(2.7)*
❑ Import	40.6	47.5	62.4	20.8
(% ch)	*(33.8)*	*16.9*	*31.3*	*9.5*
❑ Trade balance	12.2	9.3	5.5	(0.1)
❑ Current account balance	14.3	12.5	9.2	1.5
(% ch.)	*12.8*	*10.2*	*17.5*	*n.a.*
❑ Balance of payment	1.7	4.6	(2.0)	0.1
❑ International reserves (billions of US$)	29.5	34.8	32.7	32.1
5. Exchange rate				
❑ Baht : US$ (EEF) average **9/**	41.37	37.84	40.16	45.46

2.2 Demographics Situation (Empower Your Business with Dr. Chira, Dr. Chira Hongladarom, 2001).

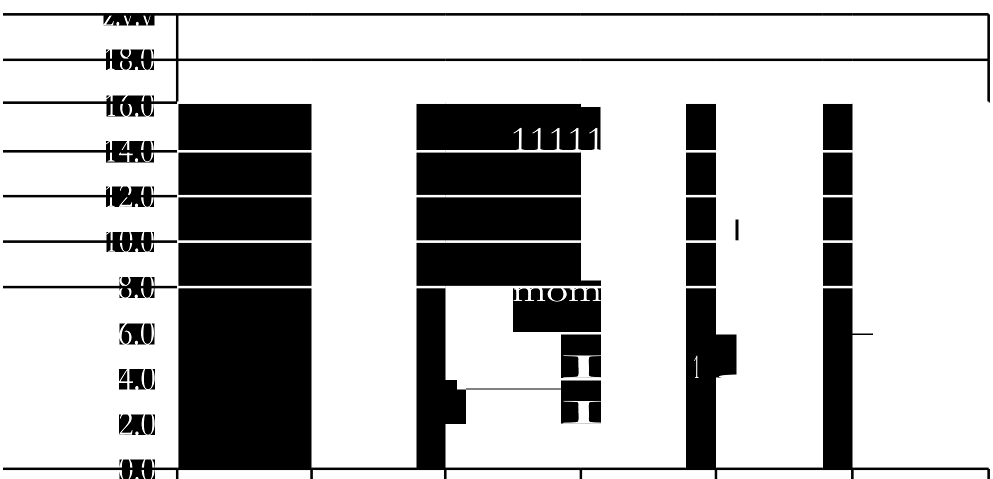
The population of Thailand reached 62.3 million in 2000, with the growth rate of 1 percent from the previous year. The growth rate has remained moderate for the past five years, showing a declining trend.



	1995	1996	1997	1998	1999	2000
Population (Mio.)	59.4	60.0	60.6	61.2	61.8	62.3
Growth	0.00%	1.01%	1.00%	0.99%	0.98%	0.81%

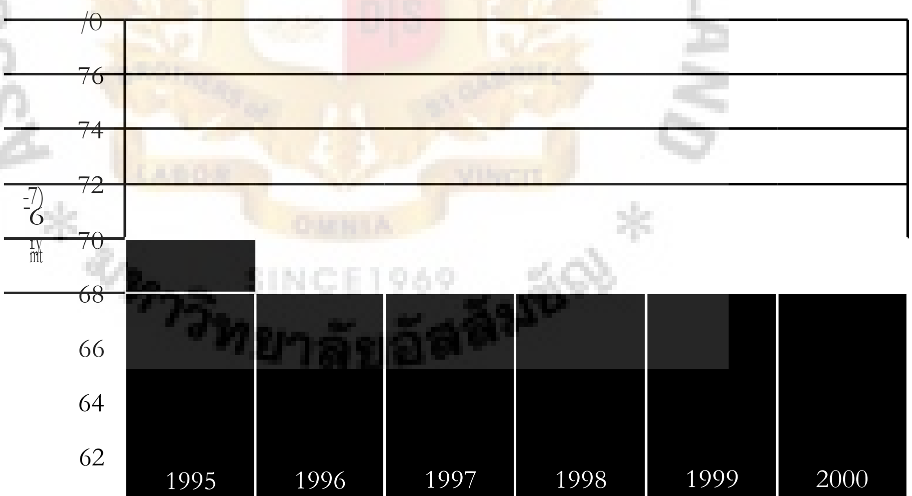
Figure 2.1. Population 1995-2000.

It is also confirmed by the declining birth rate (births per 1,000 population) and death rate (deaths per 1,000 population), which accounted for 16.3 percent and 5.9 percent respectively. Life expectancy also showed upward trend for male and female. Female seemed to live longer than male. For male, it stood at 71.0 years old whereas, it reached 76 years old for female.



	1995	1996	1997	1998	1999	2000
Birth rate	19.0	18.2	17.8	17.3	17.0	16.3
Death rate	7.0	7.3	7.4	7.8	7.9	5.9

Figure 2.2. Birth Rate and Death Rate (per 1,000 Population) 1995-2000.



	1995	1996	1997	1998	1999	2000
Male	67	67	67	67	68	71
Female	71	72	72	72	72	76

Figure 2.3. Life Expectancy 1995-2000.

In addition, it has been known for the past decades that there are geographical shifts in population i.e. movement from rural to urban areas. This is due to the fact that people move to big cities like Bangkok, Chiang Mai, Nakorn Ratchasrima, etc. where one can expect such advantages as faster pace of living, more job opportunities, higher income, and more variety of goods and services. These shifts make the cities more crowded and congested with people, resulting in higher social and environmental concerns.

2.3 Social Situation

Many Thais still suffer from the economic crisis. As mentioned earlier, the domestic sentiment is still fragile and very sensitive to negative news. One question mark looming in the minds of the public is whether the government, under Mr. Thaksin Shinawatra's administration, will be able to put its election promises into practice. Whenever there is a high expectation, the likelihood of getting disappointed is high if the promises could not be fulfilled.

In addition, drug trafficking becomes one of the major social problems. It also leads to an international dispute between Thailand and Myanmar. Drugs-related problems grip several social groups - not only less educated ones, but also the highly educated social groups. The issue is now being considered as the national problem, which receives high attention from all government and public bodies. If the drug problems cannot be eliminated from the society, it would cost the country a fortune in order to minimize social problems.

Pollution is one of the environmental threats of the country. The urban areas have suffered substantially from air pollution problem. The capital city of Bangkok stands out as the worst among urban areas in Thailand in every pollution category. (Anonymous, Thailand: Environmental Issues, Energy Information Administration, July

2000). Bangkok was once reported by the United Nation Environment Program (UNEP) as the most air-polluted city in the world in 1992.

Current trends in air pollutants show an alarming situation for lead and particulates. It is estimated to cause thousands of premature deaths and several cases of pollution-related sicknesses. In the Bangkok Metropolitan Region in early 1990s, about 8%-10% of urban annual income was used for the health care programs due to public's poor air quality exposure.

r Traffic congestion in big cities has been a major concern of any government body. This is due to lack of structured city plans and unfinished mass transportation projects. Bangkok is considered as one of the most congested cities in Asia. With the BTS system, an elated rail system, together with the up-coming Bangkok subway system, the traffic congestion has been partially eased. The prices of the services are critical for the consumers since they do not provide substantial benefits compared to other modes of transportation such as using private cars, public buses, etc. Apart from Bangkok, other big cities like Chiang Mai, Kon Kean, Had Yai are following Bangkok in the same course. The local governments are trying to avoid such problems by investigating the alternatives for public transportation such as the subway projects in Kon Kean and Chiang Mai.

There have been efforts employed by the government and related parties such as the World Bank trying to reduce congestion and emissions from vehicles. In February 2000, the World Bank initiated the project in Bangkok as a prototype in order to manage air pollution. This project was funded by the World Bank aiming at curbing the emissions of motorcycles and buses in Bangkok Metropolitan Area.

2.4 Legal / Political Situation

/After January 6, 2001, the populist Thai Rak Thai party swept to power with an absolute majority in the parliament. Mr. Thaksin Shinawatra was elected by the parliament to be a Prime Minister leading the coalition parties. Since his government consists of several parties, which have different interests, it is important for the premier to balance the power of the government without jeopardizing its stability.

The Prime Minister was on trial with the Constitution Court for tax evasion through asset concealment. The favorable verdict of the court made him remain in his office. It gained the confidence of Thai consumers, affecting the recovery of the economy. However, he still has a big task to fulfil his promises and to stabilize his coalition parties. At this stage, only time can answer the future of the premier in his political career.

2.5 Technology

Due to the financial crisis, the Thai government made significant progress towards liberalization to attract foreign investment. Foreign investment regulations are relaxed, prompting a significant rise in foreign investment. Hence, some technologies and know-how have been transferred to enhance productivity and effectiveness in the manufacturing and service sectors.

In addition, based on the results of Uruguay Round, some categories of imported goods and services are regulated to be cut and "bind" customs duty rates or even with zero tariff rates. Hence, manufacturing and service enterprises must adopt and adapt their business environment with the latest technologies and processes, which can strengthen their competitiveness, in order to be able to compete in the world market place.

III. THAILAND AUTOMOTIVE ANALYSIS

3.1 Vehicle Demand Outlook 2000

Thailand automotive industry can be segmented into 5 categories, namely passenger cars (PCs), sport utility vehicles (SUVs), multi-purpose vans (MPVs), one-ton pick ups (PUs), and commercial vehicles (CVs). (This report focuses all categories, except the commercial vehicle segment).

Despite a sharp slowdown in the GDP growth, a weakened stock market, flat customer demand, and rising inflation in the second half of the year, the total vehicles sales reached 262,250 units, a growth of 20.0 percent compared to the previous year of 218,428 units.

The composition of the vehicle categories was 30.8 percent, 4.8 percent, 1.1 percent, 57.4 percent, and 5.9 percent respectively. The sales of most categories increased in-line with the total vehicle market, except the SUVs category.

Table 3.1. Thailand Automotive Situation 1999-2000.

Vehicle Category	1999	2000	% change
1. Passenger Cars	66,630	80,865	21%
2. Sport Utility Vehicles (SUVs)	16,063	12,664	-21%
3. Purpose Vans (MPVs)	594	2,765	365%
4. One-ton pick ups	124,219	150,469	21%
5. Commercial Vehicles (CVs)	10,922	15,487	42%
Total market	218,428	262,250	20%

Source: DaimlerChrysler (Thailand) Limited

3.1.1 Passenger Car Segment

In 2000, the passenger car demand remained strong. It marked the sales at the level of 80,865 units, an increase of 21% compared to 1999 result. Although the growth looked impressive, but it was a lot lower than what had been projected in early 2000 by many industry's experts. Political uncertainty, slow progress in financial reforms, slum in the stock market contributed to sluggish performance in 2000.

The majority of the passenger cars (59,734 units), accounted for 74 percent of the total passenger car market, were sold at the price level below Bht 1.0 million in 2000. Japanese makes namely Toyota, Honda, Nissan, and Mitsubishi have been dominating the passenger car segment for the past ten years since all of them have already industrialized their supply chains in Thailand.

Toyota has been a market leader in the passenger cars segment. Its performance reached over 36 percent in 1999 due to the face-lifted Toyota Collora and good reception of the locally assembled Toyota Camry, which replaced Toyota Corona. However, the market share of over 36 percent was not sustainable due to new launches by several OEMs in 2000. The Toyota's share dropped from 36.2 percent to 33.1 percent. It recorded 24,278 units and 27,298 units in 1999 and 2000 respectively. Honda challenged Toyota in this segment by securing its market share just over 30 percent in 1999 and 2000. Honda's sales reached 25,226 units in 2000 compared with 20,302 units in 1999.

With the success of the launch of the new Nissan Sunny Neo in the last quarter of 2000, Nissan's market share in the passenger car market rose from 12.7 percent in 1999 to 15.5 percent in 2000. Nissan's sales rose by 50 percent from 8,542 units in 1999 to 12,825 units. It is very interesting to note that Nissan's market share has doubled since 1998. Sales of the mid-size car like Nissan Cefiro also increased strongly. This was

because Nissan tried to streamline its sales and distribution channels as well as to extend a more favorable financial-supports to its dealers.

On the other side of the token, Mitsubishi lost its ground from 6.0 percent to 4.5 percent due to lack of new models. It still offered phasing out model 'Mitsubishi New Lancer' with minor equipment modifications. By comparing with comparable models from other makes, Lancer could not win over competition without having very attractive financial schemes.

In the upper market where most European car manufacturers have participated, the battle between Mercedes-Benz and BMW continued. BMW gained more ground from its local production of the 3-Series (E46) from BMW's factory in Rayong while Mercedes-Benz was busy reorganizing its retail network and trying to improve its relationship with its former general distributor, Thonburi Automotive Assembly Plant.

BMW's sales totaled 2,415 units, 29.6 percent increase compared with 1999 result (1,864 units). More than half of BMW's sales was 3-Series, followed by 5-Series and 7-Series respectively. Meanwhile, Mercedes-Benz over doubled its sales from 1,070 units in 1999 to 2,355 units in 2000. Volvo's share (1,484 units) remained stable around 1.8 percent in 2000.

Table 3.2. Passenger Car Market Share (%).

Make	1999	2000	2001E	2002E
Toyota	36.2	33.1	30.5	27.8
Honda	30.3	30.6	26.7	24.3
Nissan	12.7	15.5	14.8	13.4
Mitsubishi	6.0	4.5	6.1	7.8
Mercedes-Benz	1.6	2.9	3.4	3.3
Hyundai	2.4	0.9	1.5	1.7
BMW	2.8	2.9	3,2	3.1
Volvo	1.7	1.8	2.0	2.0
Daewoo	1.0	0.4	0.5	0.5
Peugeot	2.0	0.7	0.6	0.8
Mazda	0.6	1.8	2.1	2.2
Chrysler	0.0	0.1	0.1	0.1
Others	2.7	5.0	8.4	13.0
Total	**100.0**	**100.0**	**100.0**	**100.0**

3.1.2 Multi Purpose Van Segment

For the MPV segment, sales increased substantially by 365% compared to 1999, from 595 units in 1999 to 2,765 units in 2000. This was due to new models' launches such as Chevrolet Zafira, Honda Oddysy, etc.

3.1.3 Sport Utility Vehicle Segment

On the other hand, the SUVs segment showed a declining trend, decreasing from 16,063 units in 1999 to 12,664 units in 2000. It was expected that the sales of SUVs were heavily affected by the rising fuel price and changing demand in vehicle categories towards MPVs.

3.1.4 One-ton Pick Up Segment

The commercial vehicles demand also increased substantially by 42% due to growth in exports and imports of goods and services.

3.2 Vehicle Types

Despite the fact that types, size, engine displacement, etc. of vehicles are used to categorize types of vehicles, the vehicles are also separated into two main types:

(1) Completely build-up (CBU): Completely build-up (CBU) is a vehicle, which is fully assembled and imported into the country.

(2) Completely knock-down (CKD): Completely knock-down (CKD) is a vehicle, which is required to be assembled in the country. It is imported as a CKD kit. Such a CKD kits together with parts supplied locally are used in the production line during the assembly in order to complete the vehicle.

The CBU vehicles are meant to supply the market for any car distributor, which does not have the CKD production program; likewise, they sometimes serve as bridging units until the CKD production is available.

However, it is interesting to note that when comparing the CKD with the CBU vehicle for the same model and the same equipment level, the CKD vehicle seems to have cost advantages over the CBU unit due to taxation benefits.

3.3 Vehicle Assembly Sector

Thailand continues to be the most promising vehicle and component production base in the Association of South-East Asian Nations (ASEAN) (DRI March 2001). However, the delays in implementation of AFTA put Thailand on hold to become a regional automotive hub for a few years.

In the short-term, the slower than expected pace of recovery in domestic and international demand will limit increases in production levels. In the long-term, Thailand still has a potential to fulfil its desire to be a regional production base for key models as many manufacturers, especially the Japanese continue to select Thailand as their production base. Having announced plans to invest in Thailand by all

manufacturers, component suppliers are also stepping up investments in order to serve those manufacturers.

Due to weakening Baht, the pressure to increase vehicles' prices is also rising dramatically for both CKD and CBU categories. Hence, all car manufacturers are trying to increase local content of their Thai-built vehicles in order to balance the optimum price elasticity.

3.4 Thailand Vehicle Tax Structure

Thailand is a signatory of the General Agreement on Tariffs and Trade (GATT) and a party to several regional trade and economic co-operation pacts. The principal trading bloc to which Thailand is a signatory is the Association of South-East Asian Nations (ASEAN) (Anonymous, Trade Regulations, Thailand, www.abisnet.com).

The current government continues to maintain existing policies that favor free trade and liberalization. Under the ASEAN Free Trade Area (AFTA) agreement, the automotive products fall under such an agreement, which is set to a 15-year elimination (or reduction to minimal levels) of intra-regional tariffs on manufactured, processed products.

However, Thailand still considers the automobile as luxury goods. Therefore, the government has imposed several taxes on automobiles, namely import duty, excise and municipal taxes, and value-added tax (VAT).

In order to promote the automotive and part supply industry in Thailand, the government has offered the favorable tax scheme for any CKD vehicle to all car manufacturers. The scheme is in a form of the tax incentive promoting them to invest in their vehicle production facilities in Thailand. The tax benefits of CKD vehicles over the CBU vehicles are subject to the knock down degree. The knock down degree will determine the amount of the local part required to manufacture the vehicle locally. The

more the local content parts are used in the production processes, the less import duty burdens the manufacturers have to bear. This will not only give benefits to manufacturers, but it will also help the relevant industries as well.

The taxes imposed by the government can be categorized into three major vehicle categories i.e. passenger cars, off-road passenger vehicles, and pick-up categories (refer to Table 3.3).

Table 3.3. Thailand Vehicle Tax Structure.

Vehicle Categories	Import Duty (%)		Excise Tax (%)	Municipal Tax (%)	VAT (%)
	CBU	CKD			
Passenger cars					
Li Engine < 2,400 c.c.	80	33	35	10	7
Li Engine 2,400-3,000 c.c.	80	33	41	**10**	7
a Engine > 3,000 c.c.	80	33	48	10	7
Off-road Passenger vehicles					
Li Apply to all engines	80	33	29	**10**	7
Pick-up categories					
o Pick-up passenger vehicles (PPV)	60	33	18	10	7 7
Li Double cab passenger vehicles	60	33	12	**10**	7
Li Converted pick-up vehicles	60	33	20	10	7
a Light pick-up specialty	80	33	18	10	7
u Pick-up truck	60	33	3	10	7

It is also interesting to note that the tax calculation is based on the unique formulas used by the government, applying to both CKD and CBU product categories. The import duty is a factor of the cost-insurance-and freight cost (CIF). The excise and municipal tax calculations (luxury taxes) are based on the CIF with the inclusion of import duty.

The formulas can be described as follows:

Premises:

(a) Cost-insurance-and freight cost (CIF) = (A)

(b) Local costs (local content + labor) = (B)

(c) Import duty (%) = (C%)

(d) Excise tax (%) = (D%)

(e) Municipal tax (%) = (E%)

Table 3.4. Tax Calculation Formulas.

Category	**Formula**
Import duty (ID)	(A) x (C%)
Excise tax (EX)	**D%** / 1 — [(E% +1) x D%[**x [(A) + (B) + (ED)]**
Municipal tax (MT)	E% x (EX)

3.4.1 Example 1

The CBU vehicle (1,600 c.c. engine displacement) costs Bht 80; meanwhile, the freight and insurance costs are Bht 20. Hence, the total cost-insurance-and freight cost (CIF) is Bht 100. The tax burdens when importing the vehicle can be calculated as follows:

Premises:

(a) Cost-insurance-and freight cost (CIF) = Bht 100

(b) Local costs = 0

(c) Import duty (%) = (80%) for a CBU vehicle

(d) Excise tax (%) = (35%) for less than 2.4 liter engine displacement

(e) Municipal tax (%) = (10%)

Table 3.5. Tax Calculation for CBU.

Tax category	**Calculation**	Result
Import duty (ID)	100 x (80%)	Bht 80.00
Excise tax (EX)	$\frac{35\%}{1 - [(10\% + 1) \times 35\%]} \times (100 + 80)$	Bht 102.44
Municipal tax (MT)	10% x (1.02.44)	**Bht** 10.24
Total tax		Bht 192.68

Therefore, the tax burdens which the importer has to pay to the government offices (Customs Department and Excise Tax Department) when importing the CBU vehicle (1,600 c.c. engine displacement) are Bht 192.68. Hence, the total costs borne by the importer are Bht 292.68 (Bht 100 + Bht 192.68). In case the vehicle is sold to another party, the value-added tax (VAT 7%) must be applied on the total costs.

3.4.2 Example 2

The CKD kit for a vehicle (1,600 c.c. engine displacement) costs Bht 40. Meanwhile, the freight and insurance costs for the CKD kit are Bht 10. Therefore, the total cost-insurance-and freight cost (CIF) is Bht 50. However, it would require additional Bht 30 (local costs paid after) for the local content and assembly costs in order to have the same equipment level as the vehicle in the Example 1. The tax burdens when importing the vehicle can be calculated as follows:

Premises:

(a) Cost-insurance-and freight cost (CIF) = Bht 50

(b) Local costs = Bht 30

(c) Import duty (%) = (33%) for a CKD kit

(d) Excise tax (%) = (35%) for less than 2.4 liter engine displacement

(e) Municipal tax (%) = (10%)

Table 3.6. Tax Calculation for CKD.

Tax category	**Calculation**	Result
Import duty (ID)	50 x (33%)	Bht 16.50
Excise tax (EX)	$\frac{35\%}{1 - (10\% + 1) \times 35\%} \times (50 + 16.5 + 30)$	Bht 54.92
Municipal tax (MT)	10% x (54.92)	Bht 5.49
Total tax		Bht 76.91

Therefore, the tax burdens which the importer has to pay to the government offices are Bht 76.91 compared with Bht 192.68 for CBU import.

The above examples show how the government uses taxes as a means to regulate the automotive industry in Thailand. The bigger the engine displacement is, the higher the tax burdens will be for the importer. In addition, the Thai government is trying to promote the industrialization of the complete knock down vehicle since it helps to promote the relevant industries in the country in terms of technology transfer, job generation, local content-part development, etc.

IV. MARKET RESEARCH ANALYSIS

Effective market research for "testing concept" on city cars concept has been done by "In-Depth Interview". In this research, "Smart" car product of DaimlerChrysler group is selected as dummy model through out the research. "Smart" will be helped to create more picture and idea to all interviewees.

4.1 Market Research Objective

(1) Get all idea on price and product from research to create the actual city car concept.

(2) Define market segment and target group of city car concept by using "smart".

(3) Acknowledge the suitable model, type of engine and equipment to be chosen for Thai market by "smart", dummy model.

(4) Find out the best range of retail price that can be accepted by customers.

(5) Get the first impression on city car concept considered by "smart."

In Depth interview with Mercedes-Benz dealers, working groups, and students from ABAC university.

Personal interview is part of contact methods. Arranged interview is used for Mercedes-Benz authorized dealers. Respondents are contacted by appointment. Intercept interview is used for working women and ABAC students. Because of "Testing Concept" project on the city car concept, in-depth interview is the best market research to create various ideas. Open-ended questions, which allow respondents to answer in their own words, are selected for this market research.

Sample Group:

(1) Group I: 8 Mercedes Benz authorized dealers:

Benz TTC, Benz Rajchakru, Benz Thonglor 55, Benz BKK group, Benz Talingchun, Benz Rama III, AIM Motorsport, Thonburi Automotive Assembly Plant(TAAP). Dealers have great experiences in automotive market and understanding for their customers' need, which are the reasons for the selection of this respondent's group.

(2) Group II: 5 working women and 5 working men in business area: Silom, Siam Square, Sathorn.

(3) Group III: Students from ABAC university: 15 males and 15 females - all aged between 18 — 22 years old.

Group 2 & 3 are the potential targets who give almost correct results.

4.2 Positioning of the City Car Concept by Using 'Smart'

From the Opinion of Mercedes-Benz Authorized Dealers

Having been engaged in the vehicles business for a long time, they know their customers' need better. This is the reason why we went to interview them to study trends and potential in this market.

Target Group. It is divided into 5 groups:

(1) Rich students who have just been admitted to the university

(2) The second or third car for housewives to go shopping or send their kids to school

(3) The second car for rich kids. Only for fun, not for going to the university because it has only 2 seats and is inconvenient for carrying fellow students.

(4) The first car for young employees who have good income.

(5) Collectors as exclusive niche products (like watch collectors), if price is not so high (as 1 million baht)

Age: 18 —35 years old

Gender: Male 50%/ Female 50%

From Working Adults' Opinions

Working adults group also has high purchasing power but takes more time to spend. Most of them think that they will buy city cars if the price is reasonable. So we went to interview working adults in such business areas as Silom, Sathorn, Siam Square by dividing 5 males and 5 females.

Target Group from Working Group Opinion.

(1) University students from rich families.

(2) Early graduate students who can pay.

(3) Housewives.

(4) Any one who uses car for shopping, going to cinema, or fresh market.

(5) The second car for employees or couples who have worked with high purchasing power.

Age: 18 — 30 years old

Gender: Male 33% / Female 67%

From ABAC Students' Opinions

Students are very interesting group who have high purchasing power, high frequency in buying, are easy to feel bored and are paid by parents. Randomly 15 male and 15 female students are chosen from Assumption University to be interviewees.

Target Group from the Students Opinion

(1) Young age

(2) Young Female

(3) Working beginners aged between 20 - 30

(4) Students aged between 18 - 25

Age: 18 — 25 years old 57%, 25 — 30 years old 26% and 30 — 40 years old 17%

4.3 Classification Target Group by Gender

From students' market research, target group has been classified by gender. Regarding the male-students group analysis, the city car is suitable for each group with the following ratios:

Car for Female: 55%

Car for male: 10%

Car for both genders: 35%

Figure 4.1. Classification Target Group by Gender by Male Students.

Regarding the female-students group analysis, the city car is suitable for each group with the following ratios:

Car for Female: 40%

Car for male: 35%

Car for both sexes: 25%

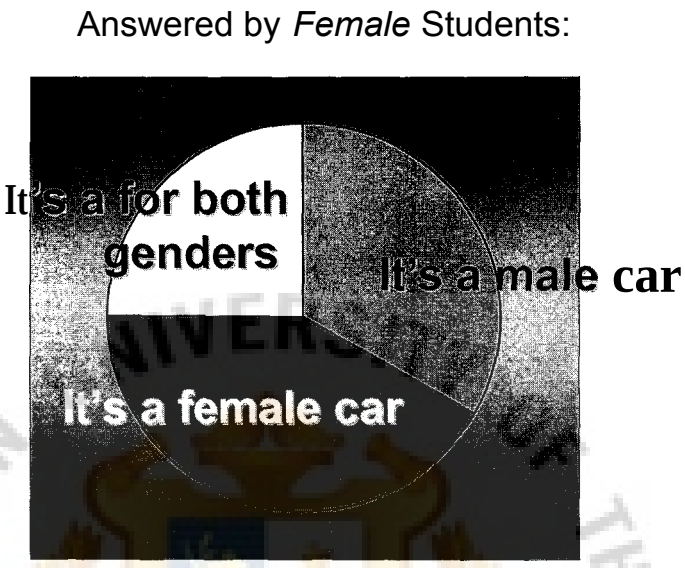


Figure 4.2. Classification Target Group by Gender by Female Students.

So the city car by "smart" seems to be a car for both genders with a tendency to be more affiliated to women.

4.4 Product Guideline

Characteristic of City Cars from Market Research

All respondents' first impressions of smart city car on

Nice look/ design; 41%

Too small; 37%

Like colors (and can be changeable); 33%

Match for using city; 30%

Modern/up-to-date; 22%

Safety; 11%

Market research on city car was presented by 'smart': the first impressions are on design, exchangeable body panels, suitability and modernity but it is quite small from interviewees' attitude.

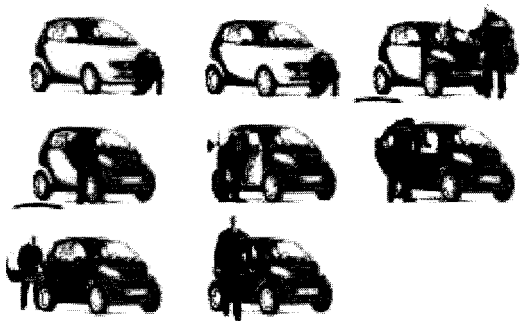


Figure 4.3. 'Smart' Exchanging Body Panels Process.

Exchanging Body Panels

The research indicates that more than 60% would like to change panels whereas about 15% think panels may need to be changed. Less than 25% would not like to change panels.

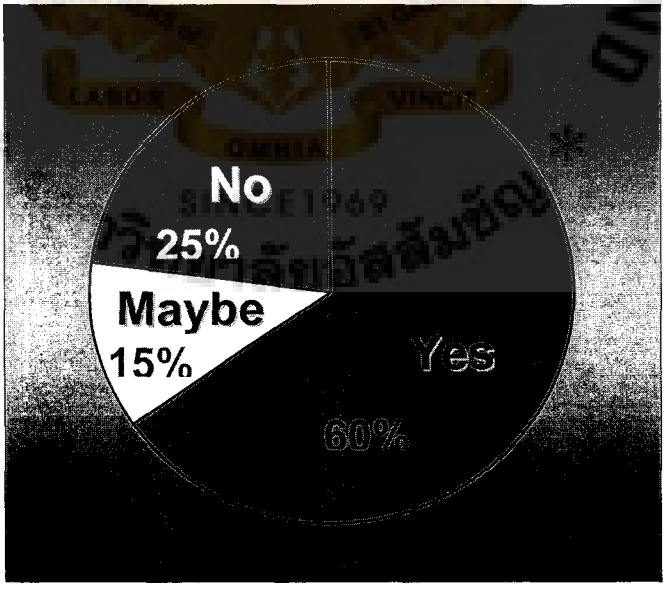


Figure 4.4. Ideas of Exchanging Body Panels.

Customers prefer to exchange body panels to create varieties of look and feel enjoyable.

From Dealers

The Smart car model has various types of model range and equipment. So from this point of view, all dealers suggested to launch in 40 kW engine with these following equipment:

Normally, various options are selected by each person. Some convenience options are still chosen in city cars, for example, air conditioning, cockpit clock, radio with cassette, alloy wheels, glass roof, side air bag, fog lamps, etc.

From Working Groups

Prefer to use 45 kW engine with air conditioning system, automatic transmission, CD player, radio with cassette and glass roof.

From Students

Almost all interviewees suggested for the 40 kW engine, with air conditioning system as standard. Other options such as radio cassette with CD, side airbags, breakdown kit with compressor can be installed in their city car. Students being potential customers, they prefer to use car for fun and high power so they would like to install breakdown kit with compressor engine.

4.5 Respondents' Verdicts

Finally, all respondents concluded that smart concept, is liked by many. Most of the students like city car concept as far as design, color, smallness of size (exterior) and easy parking are concerned, but the 2 seaters are disliked.

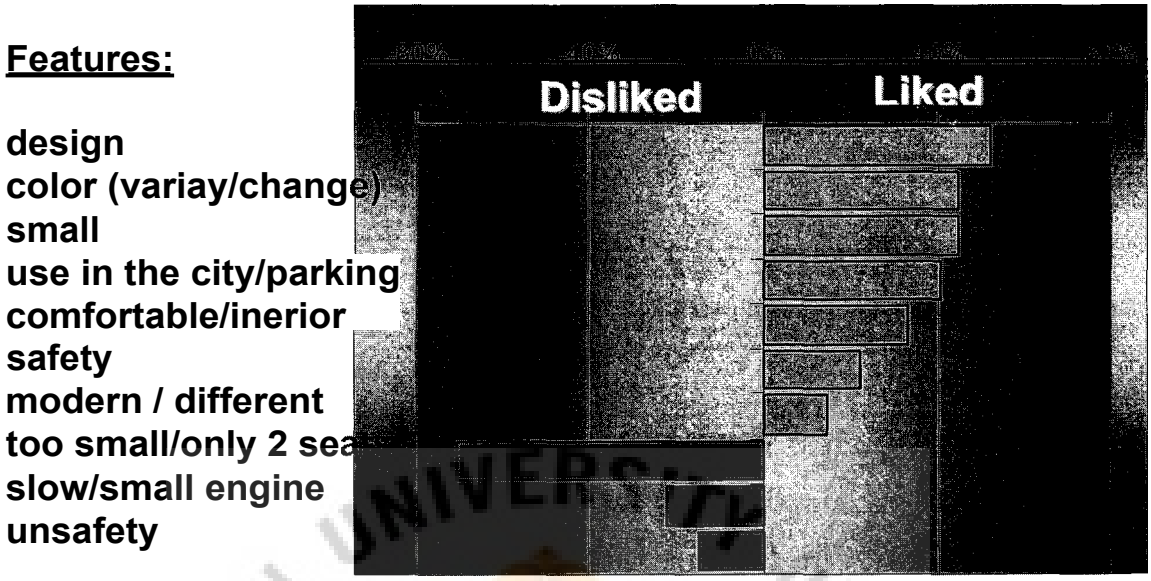


Figure 4.5. Respondents' Final Verdict on Options.

4-Seater Version

Most of them thought that it is more usable if city car has more seats. Design must be different from small sedan cars. However, some stated that stretching the car to add 2 extra doors, will lose its unique shape and become less attractive.

4.6 Pricing Suggestions Derived from Market Research

Dealers and working adults suggest the retail price should be between 550,000 to 850,000 baht for the city cars. Price Estimation from students' view is between 650,000 and 1,100,000 baht.

4.7 Limitation of Market Research

(1) It is very difficult to set 20 interviewees together as mentioned in the proposal so in-depth interview is also a good research of the testing concept.

(2) Only parts of the target groups were covered.

(3) Personal aspects; high ambition of dealers by expecting only sales volume.

(4) Abstract material has been presented. Interviewees can not touch the car / test drive, not being familiar with this product.

V. SWOT ANALYSIS

Strengths

(1) 'City car' can serve a basic need for transportation, commuting from one place to another place. It can be a new solution for commuting in cities where traffic congestion is a problem.

(2) 'City car' consumes less fuel compared to normal sedan.

(3) 'City car' can be parked easily due to its size. In addition, it will be easier for 'city car' to find a parking space.

Weaknesses

(1) Due to its size and dimensions, 'city car' must be proven in terms of safety standards. Consumers also presume that small cars offer less safety in case of accident.

(2) 'City car' has a limited space, especially for the trunk and for carrying stuff

(3) Although 'city car' has enough power, it is considered as lower performance car when compared with traditional 1,300-1,600 c.c. 4-door sedan like Toyota Collora, Toyota Soluna, Honda City, etc.

Opportunities

(1) Most economical factors, such as decrease in consumer's purchasing power, slow economic growth, rising fuel price, decrease of disposable income, etc., drive demand for a car, which is affordable, workable as a mode of transportation, with a minimum maintenance requirement.

(2) Limited and expensive parking spaces in large cities are also one of the key drivers for a demand of small cars.

(3) Government is interested to promote and support the use of small cars since it would reduce import of fuel and produce less emission.

Threats

(1) Consumers generally value a vehicle by size, horse power, and a retail price. Utility and fuel-efficiency are less important factors compared to the above mentioned criteria.

(2) There is no segment defined for 'city car.' Without clear direction of the government in order to establish the 'city car' segment in Thailand, the implementation of 'city car' will be very difficult.

(3) Since every manufacturer and distributor have vast interests in 'city car,' it will be very difficult to come to conclusion to balance every party's interest about 'city car.'

(4) In case the volume of city cars cannot justify the CKD investment and development e.g. local content development, retail network infrastructure, etc., the 'city cars' will be only available in CBU. The CBU price will be less attractive compared to locally assembled vehicles like Toyota Soluna, and Honda City.

VI. KEY SUCCESS FACTORS

By analyzing macroeconomic factors, the automotive market development, the project objectives and the primary research results, the following key criteria for success are defined to ensure success implementation of the 'city car' concept:

Household Income Trend

Income distribution is highly skewed in favor of the richest (about 20% of the population). The **GDP** per capita is projected to have a moderate growth while the projected inflation and consumer price index are increasing. The spending pattern of disposable income of consumer will be more scrutinized and be more conservative. Spending will be towards goods and services, which serve the basic needs.

Since a car is one of the most important modes of transportation, it is expected that consumer's demand for cars will follow the economic development. However, the idea of 'city car' concept has not been in existence in Thailand. It is necessary to identify the proper 'city car' concept and strategy, which can be promoted and be appealed to conventional car buyers in Thailand. If the 'city car' scheme is correctly executed, the disposable income, which is reserved for buying vehicle for anyone, can be spent and expanded to city car models.

Product Availability and Access

Currently, there is no conclusion about the definition of 'city car.' Speculation continues that the government is considering taking steps to promote the use of small fuel-efficient and affordable cars through a reduction in excise duties.

In order to effectively promote 'city car' to the market, it is critical to firstly give definitions and specifications of 'city car.' The Federation of Thai Industries' Automotive Industry Club is also trying to finalize such specifications for 'city car.'

Current indications are that a combination of criteria, including engine displacement (below 1,100 cc.), fuel efficiency (better than 15 km per liter) and the body shape will be used to define such a vehicle category.

Generally, vehicle manufacturers with interests are lobbying the government to come up with the general definitions and specifications of 'city car.' This will ensure that their product will receive favorable treatment. However, at the current status, none of vehicle manufacturers have a CKD product which can be offered to the market. Without a reduction in excise tax, which should be in favor of a new city car category, it will be very difficult for consumer to justify prices of city cars since they are available only in high priced CBU units.

If the lobby is successful, the government should decide which excise rate should be applicable to small cars. The rate should be much lower than the existing excise tax bracket. For instance, the proposed excise rate for city car could be at about 10%-15% compared to the existing 35% of the passenger cars (with the engine less than 2,400 cc.). The lower excise rate would definitely lower retail price level of city cars and eventually make city cars easier to be accessed and processed.

Vehicle Prices

Pricing of vehicles are subject to several factors such as imported costs of vehicles or kits, local content costs, relevant taxes, wholesales and retail margin structure of vehicle manufacturers and distributors, etc. It is expected that pressure to increase vehicle retail prices becomes stronger and stronger due to devaluation of Thai baht, rising manufacturing costs, and slowdown of the world economy.

Price will be the key success factor for city car since price elasticity and vehicle's utility concept have to match consumer's expectation. Currently, the majority of the passenger cars (about 74%) is priced from THB 450,000 to THB 1 million. Most of

them are CKD units manufactured in Thailand which enjoy CKD tax benefits. They offer decent space for four passengers including a driver, decent trunk space, etc.

If city car is priced correctly, it would make city car accessible and affordable among consumers. It could boost demand in the Thai automotive market by creating a new market segment in the industry. City car should be priced below larger sedan models such as Honda City and Toyota Soluna, which have previously been perceived as 'city car' according to consumer's perception. The city car's utility must be translated into a new mode of transportation, especially for commuting in urban areas. Price of city car can be justified by its concept of being small, having high fuel-efficiency, and being good enough for commuting from place to place. Then 'city car' will overcome such deficits it may have.

Availability of Consumer Finance

One of the main demand drivers of the vehicle is the retail finance of vehicles. Credit availability has improved since the Asian crisis; however, the credit approval process is getting tougher. Non-performing loans are still a major concern of any finance company.

Slow market growth in the automotive industry since 1999 has forced all vehicle distributors to adopt aggressive promotional campaigns in order to support growth. Car dealers together with financing firms try to provide attractive financing options for customers who are able to make a minimum down-payment.

When launching city car, it should target to have attractive fmance for customers in order to attract them to buy city car. The availability of finance will definitely help to make city car accessible and affordable. In addition, it can leverage level of motorization by shifting from two-wheel motors to four-wheel motors.

Level of Multi-motorization

Level of multi-motorization in Thailand is relatively low. Motorcycle and low efficiency pick-up play a major role in Thailand. This is due to the low purchasing power of consumers. Agricultural income is a key determinant of the motorcycle and pick-up demand.

It is expected that during the period 2003-10, the current tax distortions, which favor pick-up category, will gradually disappear. Hence, demand will move towards passenger vehicles. A small car like 'city car' will have an opportunity to expand its base and segment.

Traffic and Infrastructure Conditions

Traffic congestion is reaching chronic proportions. It will act as a major constraint to growth in all big cities, especially in Bangkok. Although infrastructure has improved substantially, it is important for the government to promote other modes of public transportation like buses, subway and MRT in order to ease increasing number of vehicles and unfavorable traffic conditions.

With the size and utility of city car, it serves a basic need of transportation. It could help the traffic conditions by demanding less parking space, generating less polluted emissions, and widening driving space on road, etc.

Social Concerns

The government has started promoting 'Thai Nationalism' scheme in order to overcome the country economic crisis. Deficits in trade balance contribute also for the import of energy resources such as crude oil, etc. Vehicle's fuel consumption becomes a concern among motorists. Alternative types of fuel are under investigating in order to reduce imports of oil. There are some discussions concerning the use of vehicles. It

intends to reduce the use of personal vehicles since it is believed that it causes high fuel demand, resulting in high import volume of oil.

As mentioned earlier, air pollution as a result of traffic congestion, especially in big cities, has raised the public concern. If city car can prove that it pollutes less, consumes a lot less, it may have a high chance to get support from the government authorities and from the public.

VII. MARKET SEGMENTS AND TARGET MARKETS

7.1 Marketing Segmentation

`Marketing segmentation is identifying and profiling distinct groups of buyers who might require separate products or marketing mixes.'

According to the DRI Passenger Car Segmentation, it is identified by set of products and consumers recognize within each competing categories. Segmentation is divided into 5 product types upon size and price/market positioning. The categorization is subjective, combining judgement on several items of vehicle specifications consumers' perceptions. No single attribute defines any segment. City car concept now is niche marketing, means more narrowly defined group, typically a small market whose needs are not well served.

Table 7.1. The DRI Passenger Car Segmentation.

E	Executive Class
D	Upper Medium Class
C	Lower Medium Class
B	Super compact Class
A	Small/City Car Class

As we know only few models of city car type were sold in Thailand. In the year 2000, 41 units of A type models and 818 units of **B** type models were sold in Thailand.

Table 7.2. Sales Volume of City Cars in Thailand 2000.

	A type	B type
Markets	**Small/City Car Class**	SUPERCOMPACT CLASS
Sold in Thailand(in 2000)	Daihatsu Mira Daihatsu Cuore Daihatsu Move Rover Mini	Ford Fiesta Ford Ikon Hyundai Accent Renault Clio Opel Corsa
Relevant players in other markets	Smart Daewoo Tico Daewoo Matiz Fiat 600 Hyundai Atoz Suzuki Alto VW Lupo	Fiat Punto Suzuki Swift Toyota Vitz Opel Tigra Kia Pride
Units sold in Thailand (2000)	41 units*	818 units*

* estimated in 2000

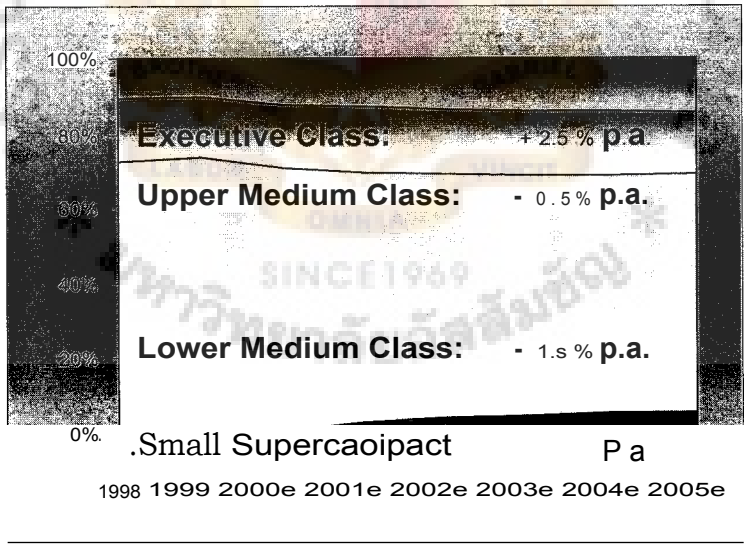


Figure 7.1. Forecasted Development of the Respective PC Segments — Relatively to Each Other (Annual Growth).

The growth of the potential in cities car market is gradually increasing along with the annual growth rate of the respective passenger car segments. The executive class, E type, will grow approximately 2.5%. **D,** upper medium class is reduced by 0.5%. C type, lower medium class, will decrease by 1.6%. And A and B type, Small/Supercompact will be increased approximately 31.0%. So city car or small cars will have more potential in PC markets. As a result, there will be limited area, limited route, increasing rate of drivers, increasing number of cars in Thailand. To make it reasonable and workable and to reduce consumption of fuel and energy, we can expand city car concept to the existing market and new potentials.

Sales Volume of Segments A and B

To broaden idea in this city car concept, we need to pull B type (Supercompact) segments to create more picture with A type (small/cities car).

Type B forecast Sales volumes ranged from highest Renault Clio, Opel Corsa, Hyundai Accent and Ford Ikon respectively.

Type A, Small and city cars are Daihatsu Move, Daihatsu Mira and Rover Mini respectively

Other City Cars Brands

We do research with dealers, students and working groups and get the result below:

(1) There is no direct competition between city car companies.

(2) Price should be the same as Japanese cars such as Corolla, Civic.

(3) If we talk about small car, VW Beatle, 10%, is the first brand in students' idea, Soluna, Corolla and Mira each 10% segments respectively.

(4) Students thought competitors are Toyota Soluna, Honda Civic, Honda City, Nissan Sunny, Ford Espire, Ford Laser, Daihatsu Mira, Opel Corsa and Audi A3.

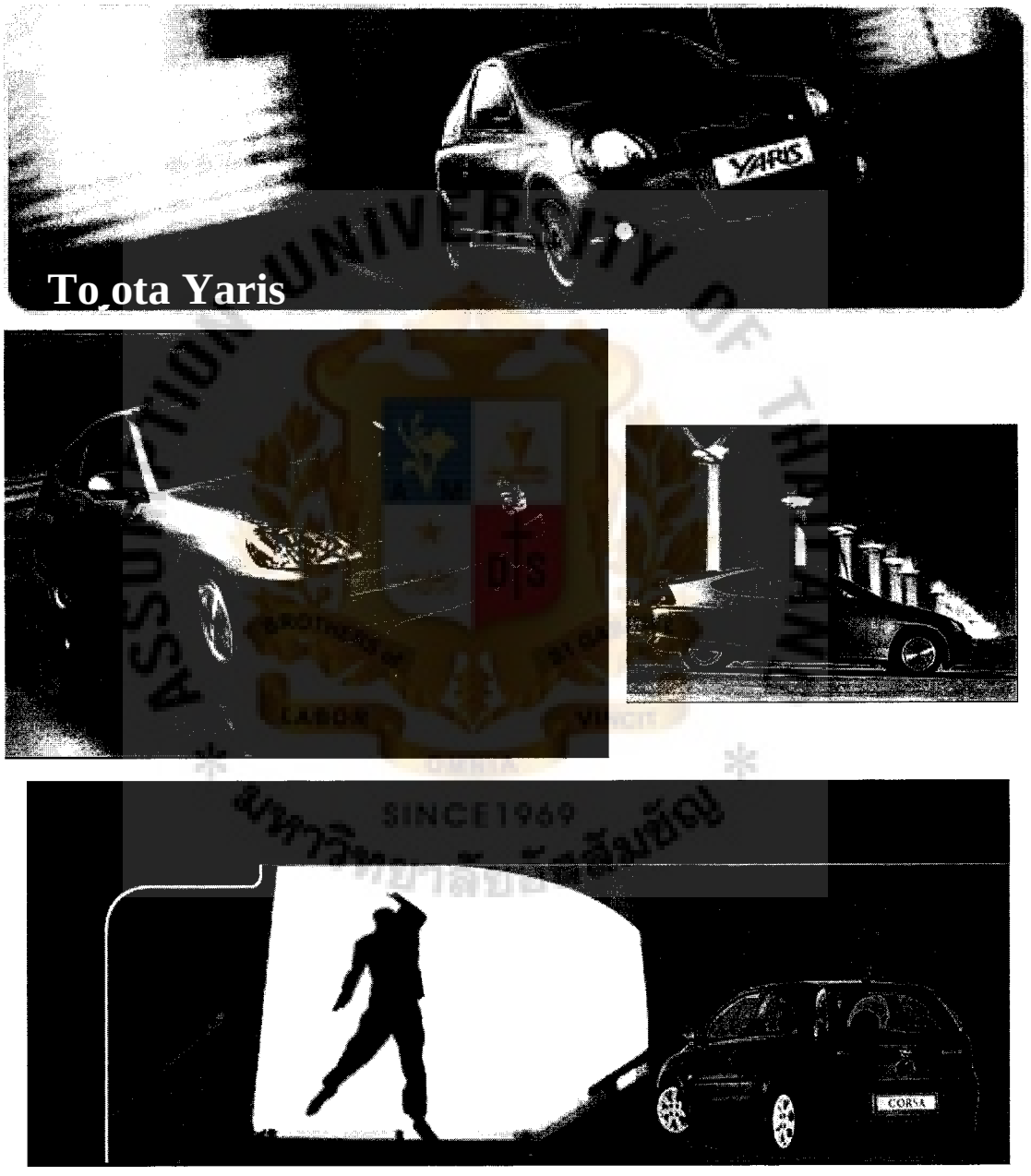


Figure 7.2. Other City Car Models in Thailand.

7.2 Market Targeting

Definition of market targeting is to select one or more market segments to enter. From market survey by in-depth interview, targets of city cars concept under the presentation of 'smart' are found as follows:

(1) Rich students in university

(2) The second or third car for housewives to go shopping or to send their kids to school

(3) The second car for rich kids

(4) Young good-income employees

(5) Rich couples with no kid.

The actual city cars are run by several brands. If government supports with 10% - 15% lower excise tax, the price of products will not be so high. So target market will expand to variety groups.

7.3 Market Positioning

`Market Positioning is to establish and communicate the products' key distinctive benefits in the market.'

As the city car concept is not launched in real market, it cannot find out the actual market positioning. If used 'smart' as dummy model to create positioning map under brand valuation in vertical axis and selling price in horizontal axis, it is possible to compare with existing brand in the market. It means any vehicles that customers pay for between 300,000 baht to 1,000,000 baht will be created in this map.

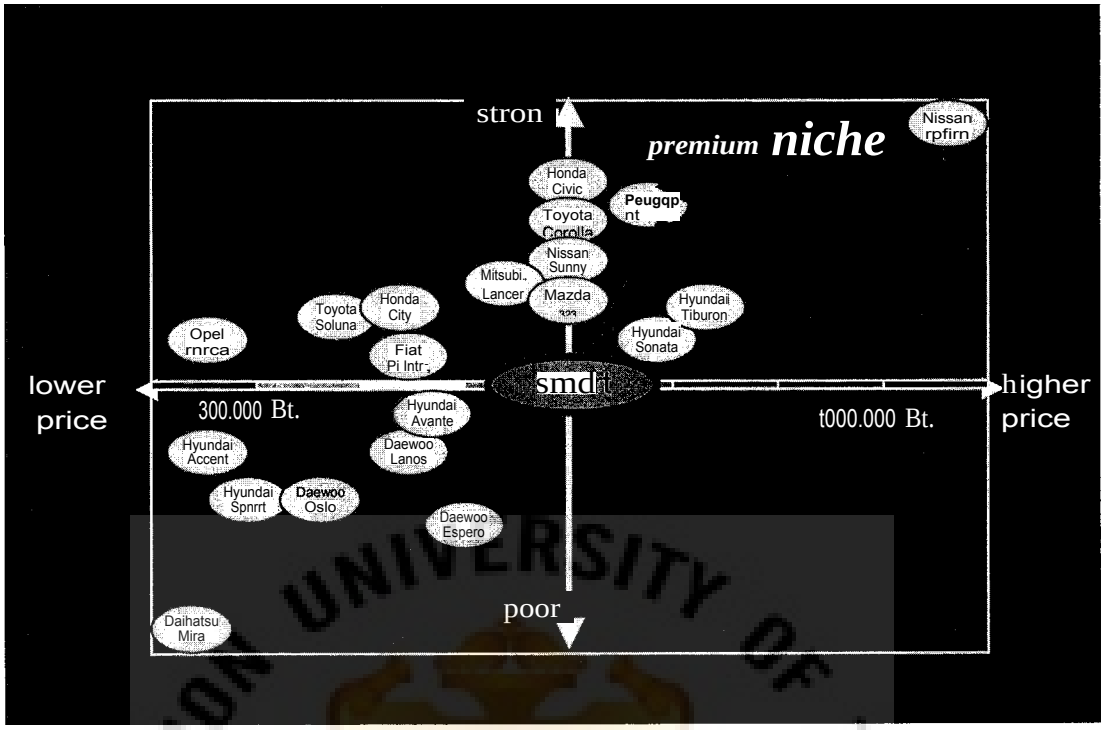


Figure 7.3. Conceptual Map of Brand Perceptions.

Under Conceptual Map of Brand Perceptions, estimated from in-depth interview with Mercedes Benz sales managers in Aug 2001, price position is subject to model entry price.

"Strong brand value" with "lower price". They are Opel Corsa, Toyota Soluna, Honda City, Fiat Punto and Mitsubishi Lancer.

"Strong brand value" with "Higher price". Honda Civic, Toyota Corolla, Nissan Sunny, Mazda 323, Peugeot 306, Hyundai Tiburon, Hyundai Sonata and Nissan Cefiro are considered within this map.

"Poor brand value" with "Lower Price". They are Daihatsu Mira, Hyundai Accent, Hyundai Sprint, Hyundai Avante Daewoo Cielo, Daewoo Lanos, Daewoo Espero.

VIII. RECOMMENDATIONS: CITY CAR STRATEGY PROPOSAL

`City Car' Strategy Proposal

The proposal is divided into two main parts. The first part is related to the macroeconomic factors. The second part is an example of marketing concept for introducing 'city car' by using 'smart' as a dummy product.

To promote the use of a small car like 'city car', it is crucial that not only the government has to be convinced about the advantages of introducing the city car to the society, but related automobile stakeholders such as manufacturers, consumers, etc. have to be involved. The direction for offering a new vehicle category in the Thai society must be clear among relevant parties. The new category must justify all efforts required not only from the economical point of view, but also from the social point of view. The following issues and steps have to be taken:

8.1 Lobbying

The most difficult part is to convince relevant parties such as the government and the car manufacturers about benefits from all aspects of small fuel-efficient vehicles and eventually create a new vehicle category, 'city car.' Therefore, it is crucial to lobby all involved parties to ascertain such information not only from the manufacturers, but also from the society as it is the most important stakeholder in the country. The benefits and advantages of using a small car in big cities have to be raised and addressed to the cabinet and the parliament as well as to the public. This will create social awareness among major stakeholders. The issues are listed below:

(1) Traffic congestion in big cities

(2) Rising fuel price

(3) Need for saving energy

(4) Pollution generated from motor vehicles

(5) Limited parking space

(6) Efficiency of vehicles in terms of usage, utility

The targeted parties, which should be lobbied, are as follows:

The Ministry of Industry

The Ministry of Industry is the office which determines directions on how Thailand would develop industries. The automotive industry is one of the major industries that the Ministry targets to expand. In addition, it is also the one, which sets regulations for all industries in Thailand.

The Ministry of Finance

There are two major departments under the supervision of the Ministry of Finance playing an important role to the automotive industry, namely the Customs Department and the Excise Tax Department. It will be a big step if the both departments would consider to reduce and provide some privileges for a 'city car' type of vehicles. The Customs could lower import duty for both CBU and CKD imports, which would make the basis for lowering excise duty calculation. On top of the import duty, the excise tax is another large portion by which the government could generate its revenue. It imposes excise tax on luxury goods; likewise, it imposes on vehicles. Therefore, it is necessary to lobby the Excise Department to reduce the excise rate on the 'city car' category.

The Federation of Thai Industry's Automotive Industry Club

Since all vehicle manufacturers and distributors participate in this club, it is important to find a consensus about how to define common specifications and definitions of 'city car.' Since every government has normally consulted with the Federation of Thai Industry's Automotive Club in order to obtain better knowledge and

insights of the automotive industry, it is important to channel the idea of implementing the city car concept via this club to the government.

The Bangkok Metropolitan Authority

Since Bangkok has faced most of the problems concerning traffic congestion, air pollution, etc., it is worthwhile to start implementing the city car concept in Bangkok. If it succeeds, other big cities like Chiang Mai, Kon Kean, etc. can follow steps taken in Bangkok. It will be very crucial to identify benefits and advantages of having city cars running in the Bangkok Metropolitan areas. It would increase driving space in congested areas, generate less polluted emission compared to other types of vehicles, etc. In addition, it is advisable to get the public opinions from people who live in Bangkok. Raising the issues of traffic congestion, polluted air, etc. would give ideas how city cars would ease the situation and would improve the living conditions in Bangkok. If the majority of the people see such values and benefits, it may be easier to convince the governor of Bangkok and to influence the government to offer the city car in Thailand.

8.2 Definitions and Specifications of 'City Car'

The government together with relevant parties such as representatives of the automotive industry, Ministry of Industry, Ministry of Finance have to identify the criteria to determine definitions and specifications of the vehicles to categorize 'city cars.' It is not just to create and to use a new vehicle category within several government offices such as the Land Transportation, Excise, Customs Departments, etc. Any relevant government offices concerning the automotive products and industry must agree upon criteria categorizing this type of vehicles. Likewise, the information proposed by the industry experts, the Federation of Thai Industries' Automotive Industry Club, must be considered. All specifications and how to define 'city car' must

be clear and applicable to all manufacturers and distributors. The following criteria are proposed as parts of the definitions for 'city car' vehicles.

(1) Engine displacement must be under 1,100 c.c.

(2) Fuel efficiency must be better than 15 km. per liter.

(3) The vehicles must be shorter than 2.80 meters.

(4) Emission standard must comply with EU3 standard.

8.3 Introducing 'City Car Concept' to the Public

Due to new ideas, product concepts, and new utility of city cars, it would take time to make consumer accept such new things. As the concept is very new to consumer, it is, therefore, important to introduce the concept of using small and fuel-efficiency vehicles to consumer, especially in big cities. The city car will serve as a decent mode of transportation since it can bring one from one place to a destination. Waste of energy and fuel when using larger cars will be compared with a rate of energy required and consumed of the city car.

Moreover, to have the vehicle which can serve the basic need while helping the traffic condition, country's trade balance, and pollution is a new element which the government and car manufacturers and distributors can promote to the public. Eventually, public interest will definitely drive the demand of city car.

8.4 Making the 'City Car' Affordable

To make the city car attractive to consumers, it must be affordable; otherwise, consumers will not consider city car since it offers less tangible benefits compared to other types of vehicles. The government should reduce the tariffs for the city car since it consumes less fuel, resulting in less pollution of the environment. Once it consumes less fuel, the demand for fuel will be also less. As a member of WTO, Thailand will eventually reduce the trade barriers, resulting in more openness for imported products.

However, with the current excise duty rates, it would be impossible to make the city car affordable.

Therefore, the reduction of excise tax duty is required. With the 35% excise tax for the vehicles which are installed with engines below 2,400 c.c., the tax burden will be too high. The recommended excise tax percentage for the 'city car' category should be about 10% with the restrictions that all criteria as stated in the previous item must be complied and fulfilled. This also means that the Excise Department may obtain less tax from vehicles under this city car category. However, this sacrifice of the government income will be compensated in the mid- and long-term with the reduction of budgets required to solve the pollution, trade balance, and health care problems, especially in big cities.

IX. RECOMMENDATIONS: MARKETING MIX

Marketing Mix is the set of marketing tools that the firm uses to pursue its marketing objectives in the target market. The four P's of marketing consist of Product, Price, Place and Promotion. This report is created idea in the city cars concept by using "Smart" as dummy model. Product strategy is selected "Smart & Pulse, 45 kW". Pricing is full in CKD and CBU with 35% excise tax and proposed 10% city car excise tax. Place is obviously in city or town where roads are crowded with people. Promotion uses many tools: advertising, direct mail, personal selling and public relation.

9.1 Product Strategy

The project is targeted not to focus on the car companies' interests, but to investigate public interest and possibility to offer "city cars' in the Thai market. However to complete marketing strategy, product strategy must be selected in a model to create views and detail information to prospect customers. So "Smart & Pulse with 45 kW" is selected.

Figure 9.1. 'Smart & Pulse' and 'Smart & Passion'.

Selected model: Smart & Pulse

Engine: 45 kW

Color: Metallic Color (Exchangeable)

Figure 9.2. 'Smart' Interior Color.

Table 9.1. Smart & Pulse Technical Specifications.

Engine/type	3-cylinder rear-mounted engine with turbocharger and charge cooling
Capacity in cc	599
Maximum output in kW/rpm	45/5250
Maximum torque in Nm/rpm	88/2250-4500
Bore x hub in mm	63.5 x 63
Boost pressure control	Electronic
Max. boost pressure in bar	1.0
Compression ratio	9.5 : 1
Injection control	Multipoint, e-gas
Exhaust gas cleaning//standard	3-way catalytic converter//EU 3
CO2 emission in g/km	118 (SOFTOUCH: 122)
Top speed in km/h	135
Acceleration 0-100 km/h in seconds	16.8 (SOFTOUCH: 17.1)
Fuel type	Super unleaded
Fuel consumption as per 93/116/EC in $^{1}/_{1}$00 km	
In town	6.1 (SOFTOUCH: 6.3)
Long journeys	4.3 (SOFTOUCH: 4.5)
Combined	4.9 (SOFTOUCH: 5.1)
Engine	Rear-mounted
Transmission	Automatic, sequential 6-speed transmission (SOFTIP)
Breakes	Automatic gear programme (SOFTOUCH) (ABS) with electronic braking power

Table 9.1. Smart & Pulse Technical Specifications. (Continued)

	distribution, brake booster, front disc
Wheels/tyres, front	brakes, rear drum brakes
Wheels/tyres, rear	4 J x 15 // 145/65 R 15
Vehicle length, width, height in mm	5.5 J x 15//175/55 R 15
Turning circle in m	2500/151$^{5}/_{1}$549
Track width front/rear in mm	8.7
Wheelbase in mm	1272/1354
cw coefficient	1812
Unladen weight (without driver)/load which can be	0.37
added in kg	720
Permissible laden weight in kg	
Volume of luggage compaitment up to waist	980
levelfiroof in 1	150/363//260
Fuel tank volume3/reserve in litres	
Total driving range in km	22/5
Service interval in km/years	449 (SOFTOUCH: 431)
Warranty in years/km	15,000/1
	3/40,000

9.2 Pricing Strategy

With the proposed reduction of excise tax for 'city car category, the price of the smart should be set at THB 610,000 for CKD unit whilst the CBU unit would be priced at THB 961,000.

Price Calculation (CBU)

Premises:

(1) Exchange rate (EURO/Baht): EURO 1/ THB 42

(2) Freight: EURO 600/unit

(3) Insurance: 0.20% of FOB

(4) Custom duty: 80%

(5) VAT: 7%

(6) Excise Tax: 35% (Base scenario), and 10% (City Car scenario)

(7) Overhead wholesales company: THB 50,000/unit

(8) Wholesales margin: 5%/unit

(9) Dealer margin: THB 30,000/unit

(10) Discount from origin to wholesaler: 20% of base price

Table 9.2. Steps on CBU Price Calculation.

	Content	Excise Tax Scenario			
		Base scenario (35%)		City Car scenario (10%)	
		EURO	THB	EURO	THB
1	Base price	9,862.21		9,862.21	
2	**Price after discount (FOB)**	**7,889.77**		**7,889.77**	
3	Freight	600.00		600.00	
4	Insurance	15.78		15.78	
5	**CIF**	**8,505.55**	**357,233.00**	**8,505.55**	**357,233.00**
6	*Custom duty*		*285,768.40*		*285,768.40*
7	*Tax (Excise + municipal)*		*402,540.60*		*79,474.31*
8	**Subtotal before OH**		**1,045,559.99**		**722,493.70**
9	Overhead wholesaler		50.000.00		50,000.00
10	**Subtotal after OH**		**1,095,559.99**		**772,493.70**
11	Wholesales margin		54,778.00		38,624.69
12	**Net transaction price to dealer**		**1,150,337.99**		**811,118.39**
13	*VAT (7%)*		*80,523.66*		*56,778.29*
14	**Selling price to dealer**		**1,230,861.65**		**867,896.67**
15	Dealer margin		30,000.00		30,000.00
16	**Subtotal**		**1,260,861.65**		**897,896.67**
17	*VAT (7%)*		*88,260.32*		*62,852.77*
18	**Retail price**		**1,349,121.96**		**960,749.44**
19	**Retail price (Round-up)**		**1,350,000.00**		**961,000.00**

389,000.00

Price Calculation (CKD)

Premises:

(1) Exchange rate (EURO/Baht): EURO 1/THB 42

(2) Freight: EURO 400/unit

(3) Insurance: 0.20% of FOB

(4) Custom duty: 33%

(5) VAT: 7%

(6) Excise Tax: 35% (Base scenario), and 10% (City car scenario)

(7) Overhead wholesales company: THB 50,000/unit

(8) Wholesales margin: 5%/unit

(9) Dealer margin: THB 30,000/unit

(10) Discount from origin to wholesaler: 20% of base price

(11) Local content: 54% of FOB; CKD kit: 46% of base price

(12) Local content cost: 70% of (54% of FOB) due to lower production costs

Table 9.3. Steps on CKD Price Calculation.

	Content	Excise Tax Scenario			
		Base scenario (35%)		City Car scenario (10%)	
		EURO	THB	EURO	THB
1	Base price	9,862.21		9,862.21	
2	CKD kit price	4,536.62		4,536.62	
3	**Price after discount (FOB)**	**3,629.30**		**3,629.30**	
4	Freight	400.00		400.00	
5	Insurance	7.26		7.26	
6	**CIF**	**4,036.55**	**169,535.29**	**4,036.55**	**169,535.29**
7	*Custom duty*		*55,946.65*		*55,946.65*
8	**CID costs**		**225,481.94**		**225,481.94**
9	Local content costs		156,592.45		156,592.45
10	**Subtotal before excise taxes**		**382,074.39**		**382,074.39**
11	*Tax (Excise + municipal)*		*239,184.78*		*47,222.66*
12	**Subtotal before OH**		**621,259.16**		**429,296.89**
13	Overhead wholesaler		50,000.00		50,000.00
14	**Subtotal after OH**		**671,259.16**		**479,296.89**
15	Wholesales margin		33,562.96		23,964.84
16	**Net transaction price to dealer**		**704,822.12**		**503,261.74**
17	*VAT (7%)*		*49,337.55*		*35,228.32*
18	**Selling price to dealer**		**754,159.67**		**538,490.06**
19	Dealer margin		30,000.00		30,000.00
20	**Subtotal**		**784,159.67**		**568,490.06**
21	*VAT (7%)*		*54,891.18*		*39,794.30*
22	**Retail price**		**839,050.85**		**608,284.36**
23	**Retail price (Round-up)**		**840,000.00**		**609,000.00**

231,000.00

9.3 Channel of Distribution Strategy

The main focus of the channel of distribution strategy mainly lies on the location of distributing channel. In large cities like Bangkok, it may be suitable to set up a showroom where most traffic of potential customers can be expected.

Since 'city car' will be associated with established car companies, just as smart is associated with DaimlerChrysler, it is advisable to sell smart through DaimlerChrysler

authorized outlets. The advantages gained from combining smart retail operations with Mercedes-Benz are the following:

(1) Well established image of Mercedes-Benz products, which can draw customer's attention into smart product

(2) Technical expertise of workshop's mechanics and technicians

(3) High customers' traffic

9.4 Promotional Strategy

Most of the vehicle promotions are implemented by using the following tools:

(1) Advertisement

(2) Personal selling

(3) Direct mail & catalogs

(4) Public relations such as sponsorship, test drive program, press release.

The above-mentioned communication will be applied in this report to make the special marketing promotional strategies on City car concept successful. In some parts, smart car product is selected as dummy model for clarification. Market promotions are planned as follows:

9.4.1 Advertising

`Advertising is any paid form of non-personal presentation and promotion of ideas, goods, or services by an identified sponsor' said Philip Koller. Advertising is one key to create vision and audio to customers so selection ads in newspaper, radio and internet are most possible for city cars product. Marketing Managers make the major decisions in developing an advertising program below:

Advertising Objective:

(1) To build up primary demand in city car and propose its benefits.

(2) To enhance a long-term image for city cars' potentials in the sense of smaller car, fuel saving, easy parking, etc.

(3) To create motivation and persuade targets in additional benefits (i.e. various model types, many colors, several power of engines, other accessories and more safety with environmental concerns.)

Advertising Media for Smart car are used as follows:

(1) Advertorials: print advertising to use in newspapers and magazines. It is possible to apply 'smart' in several advertorials' targets.

(a) Newspaper, good local market coverage and broad acceptance, is selected Daily news, Bangkok Post, or The Nations by product articles and picture ads. Advertising Target: General, Working men or women / entrepreneurs.

(b) Magazine, long-life, credibility and prestige, good pass-along readership, selected:

(1) Woman magazine; Cosmopolitan, Di-chan, Ploil Kam Phet. By picture ads. Advertising Target: Rich married women, young better earning employees

(2) Car magazine; GM car, Grandprix and Car Automobile by picture advertising and product articles. Advertising Target: Working adults, young better earning employees

(2) Banners: small sign on Web pages advertising to reach product by clicking on the banner. Applied on Internet, high selectivity, interactive possibilities, relatively at low cost. Post banners into different car web sites or target web sites. Co-Banner is also selected to reduce cost.

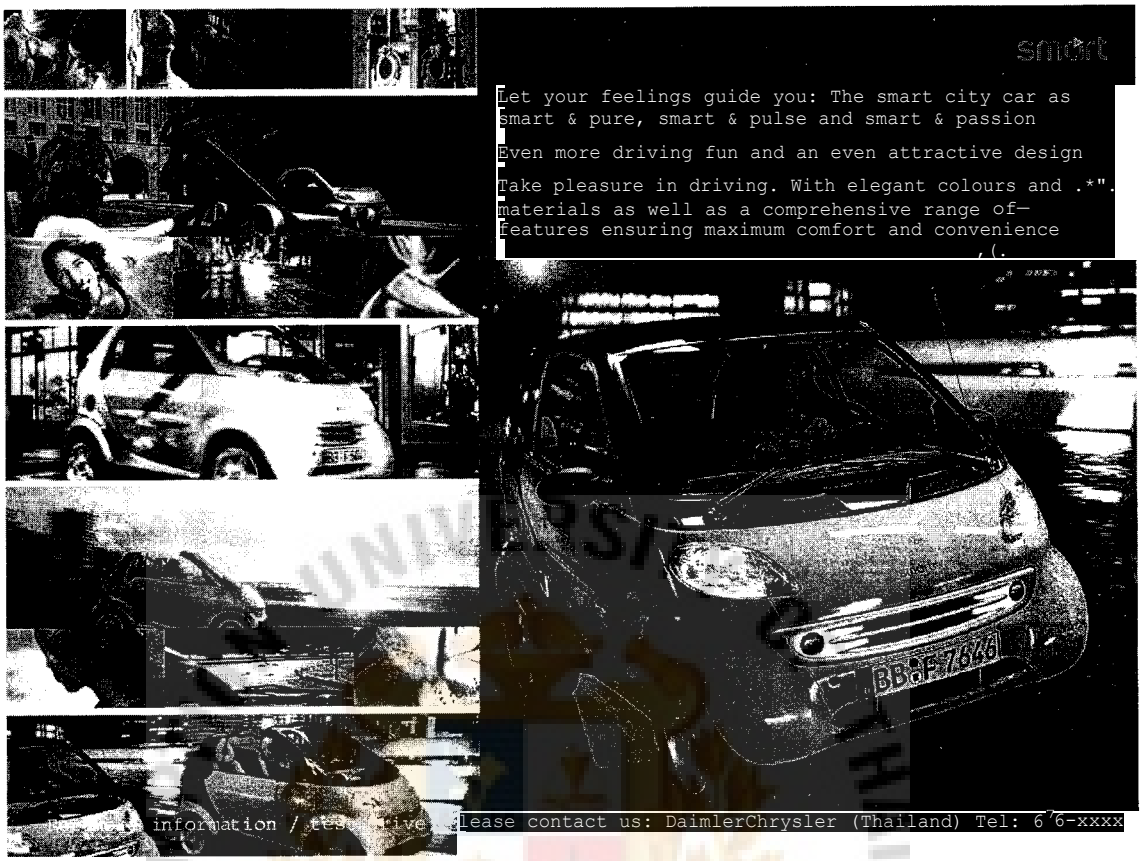


Figure 9.3. Sample of Launch Ads I.

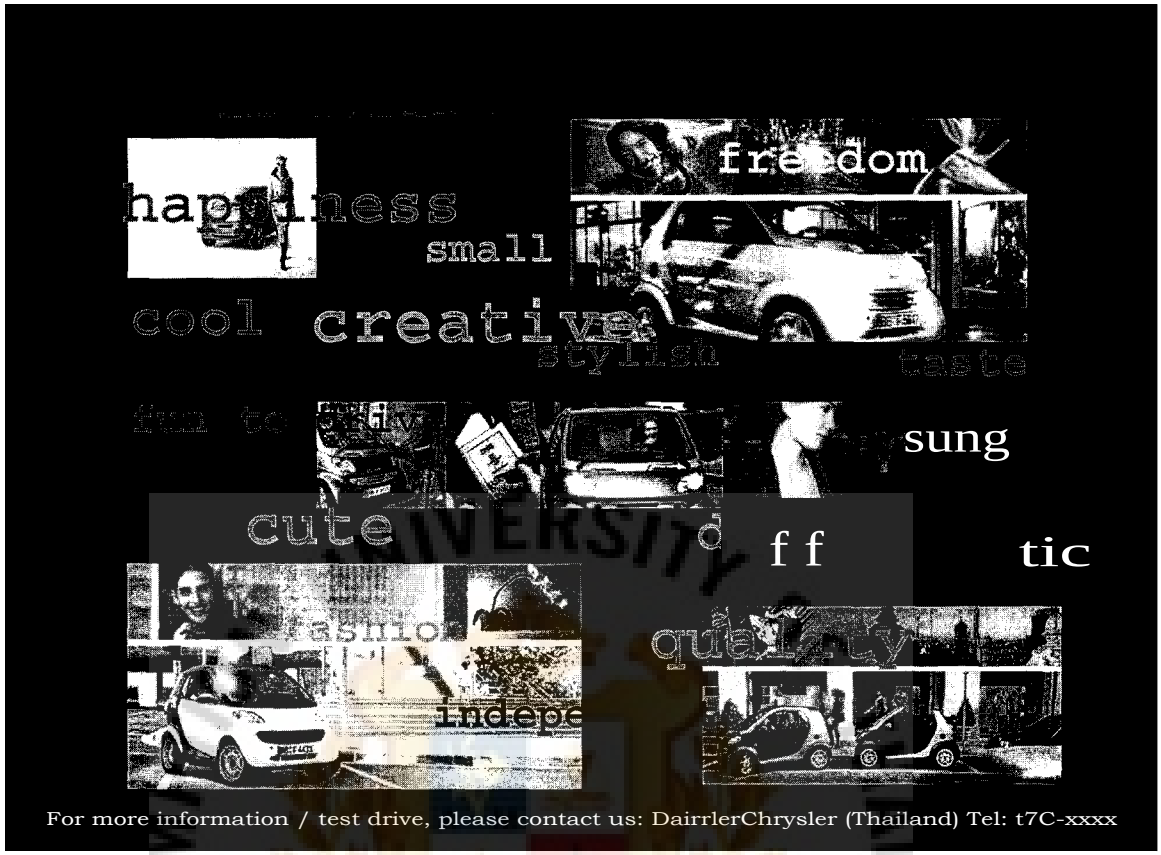


Figure 9.4. Sample of Launch Ads II.

9.4.2 Personal Selling

Personal selling is face-to-face interaction with one or more prospective purchases for the purpose of making presentations, answering questions, and procuring orders. In automotive area, personal selling is the most popular especially in trade show.

Trade Shows

Generating new sales leads, maintaining customer contacts, introducing new products, meeting new customers, selling more to present customers, and educating customer with publications, videos, and other audiovisual materials.

To focus on car consumers, trade show is one of the best tools to sell products and services to a particular group of consumers. "International Bangkok Motor Show" and "Motor Expo" every year are set for all vehicles motor shows and exhibitions. Incredibly there are 1.1 million visitors in International Bangkok Motor Show. Last year sales volume of cars was 6 billion baht for motor show. So to promote City car concept in the type of trade show has to be done.

9.4.3 Direct Marketing

Use of mail, telephone, fax, e-mail, or Internet to communicate directly with or solicit a direct response from specific customers and prospects. Direct Mail and Catalogs are sent to potential customers by the following means:

(1) Give set of catalogs and direct mail to dealers for distribution to their own customers accordingly.

(2) Before the product is launched, company will create direct mail of city car concept like invitation card to existing customers and distribute at the Grand Opening under city cars concept.

Objective of Direct mail and catalogs: providing customers about product information with various options and prominent benefits of city cars.

Target: Existing customers, VIP, Diplomats and special group of customers

9.4.4 Market Public Relations / Publicity

Variety of programs of public relations such as press relations, product publicity, corporate communication and lobbying are selected to build goodwill and promote company's image and city car concept.

The City car plays on Market Public Relation are as follows:

(1) Launching of new products

(2) Building interest in this product category

(3) Influencing specific target groups

(4) Building the corporate image in a way that reflects favorably on its products.

MPR Objectives

(1) Build awareness and credibility on City car product.

(2) Stimulate the sales force and participant dealers on city cars.

(3) Build marketplace excitement before media advertising breaks.

(4) Influence the influential.

Corporate image and product promotion are done by MPR as follows;

(1) Publication:

Company Magazine/Newsletter

The cheapest way of publication is company magazines. All details of selected city cars for example model, engine, technical data, options, accessories, safety, benefits and environmental concerns can be posted on company magazines or newsletters in special articles.

(2) Events:

Test Drive program

Objective:

(a) To promote understanding in city car product and car performance.

(b) Know how it is different from sedan/saloon type in fuel saving, smallness of size, being easy to drive and to park and mobility concept.

(c) Learn how to drive efficiently, to save fuel consumption, safety and legitimate driving.

Attendants:

Press, Dealers, Potential customers from dealer's demonstrational units

(3) News:

Press Kits

Press kits are arranged for press to get all information and product details from companies. See the model of city car before others. The press will get some souvenir. Press can ask questions and moderator will answer to clarify all doubts before articles will be written in each publication.

(4) Public-Service activities

Sponsorship

Sponsorship helps to promote car, better than advertising sometimes. Film production allows producer to borrow demonstrational units from car owner to make film or series production. It helps to create good image on products by actors or actresses and product feature and vision will be seen by the audiences on special occasions such as International Bangkok Motor Show, golf tournament, etc.

Kid Safety Driving

Set special event for kids by teaching them how to drive and learn about dangerous signs, traffic light and some precautions when they are passenger and driver.

Sample of advertising and Test Drive program schedule will be posted in below:

Figure 9.5. Sample of Test Drive Ads I.

Figure 9.6. Sample of Test Drive Ads II.

X. CONCLUSIONS

10.1 Project Summary

Actually 'City Car' concept is not new to the Thai Automotive industry; however, all stakeholders have vast interests. It is also not clear in which direction the government wants to regulate the 'city car.' This is due to the fact that the government, as a policy maker, has changed key persons too often. The minister of finance and minister of industry play the most important role in order to identify the scope of 'city car.'

It is crucial to be convinced that the 'city car' can help to ease many traffic and economical problems. Not only it consumes fuel less, but it also produces less polluted emission. Hence, the government should really identify 'city car' benefits and advantages and eventually come up with the specifications and definitions of 'city car.' It should be used as a platform, which is beneficial for consumer as a whole. It should not be beneficial only for specific groups of stakeholders. Consumer's benefits must be the priority of the legal and industrial regulation establishment of 'city car' concept.

Once all details of the specifications and definitions of city car category are clear and determined, it is important to promote consumer the concept and to convince them about benefits they would get. It would gradually change consumer's attitudes and perceptions towards a small fuel-efficient vehicle like city cars. Switching behavior from considering only traditional sedans like Toyota Soluna, and Honda City to city cars same as 'smart' or 'Toyota Yaris' would definitely ease many problems in large cities. It may take time to convince consumers to consider 'city car' and change their attitudes and buying behaviors, but it is worthwhile to do so.

Consequently, to conclude the 'city car' concept, many areas are still in need of further investigations and evaluations such as possibility and feasibility of assembling city car in the country, consumer's acceptance of the concept, etc. However, some ideas to sacrifice some of the personal benefits, which may help the society as a whole, must be raised by every stakeholder. If they want to live in a better environment, city car may be a wise alternative to choose. It will not only serve basic need for transporting whilst sacrificing some comfort, but it would deliver many direct and indirect values to our society.

10.2 Future Research

Other researchers may use the focus group research to define in more specific details about city car; which type of engine and equipment should be suitable for Thai consumers and which retail price levels city car should be. Focus group research is a gathering of six to ten people who are invited to spend a few hours with a skilled moderator to discuss about the city car concept or other marketing entity.

Focus groups can be used for variety of purposes:

(1) To generate hypothesizes about the way consumers think or behave.

(2) To generate or evaluate new idea for products or uses.

(3) To find explanation for results of other studies.

Focus groups are very flexible, which allow much greater probing than the research analysis in this report. Since they are flexible, they can take advantage of expected responses and probe area previously thought unimportant.

There are six-step procedures for conducting group discussions of the city car concept:

(1) Problem / Need Identification

(a) To identify what kind of problems and unmet needs that customer have experienced with existing vehicles.

(b) To identify what kind of vehicles that customers would like to see / have.

(2) Presentation of City Car Concept

(a) Show statement of city car concept.

(b) Detailed discussion of city car features / capabilities.

(3) Evaluation of city car concept

(a) Range the most / least attractive feature.

(b) Solicit reactions feature by feature.

(4) Determination of price level

(a) Suggest potential retail price.

(b) Have group suggest an appropriate price.

(5) Extensions to the Product

(a) Address specific strategic concerns.

(b) Determine whether option could enhance product.

(6) Suggestion for Improving the Products

(a) Summary group reaction.

APPENDIX A

PRODUCT INFORMATION & SOME LIST OF QUESTIONS IN MARKET RESEARCH

SMART

The smart is 2.5 metres in length. A number of great ideas that make city driving a whole lot of fun have gone into it. One of these is the 3-litre smart CDI. With its economical and ecological features, it's a technological mini-masterpiece. Although the smart is still quite young, it's based on experience and know-how from more than a century of car manufacture. After all, smart is a DaimlerChrysler Group brand. With the smart, there is no need to search for a parking spot. The smart's safety concept makes the drivers feel as safe as in a mid-range car. On the average, there are 1.2 people sitting in cars going to work. It is generous and built to hold 2.0 commuters.

Model: Smart & pure, Smart & pulse, Smart & passion

Type: City-Coupe or Cabrio

Engine: Petrol or Diesel engines

Smart City-Coupe

The smart's door is wide. The Smart is fitted with similar gears to those in Formula 1 racing cars or sports cars. With its SOFTIP 6-speed sequential transmission, it can change gear without using the clutch. And in SOFTOUCH automatic mode, the smart changes gear itself. It leaves behind fewer emissions, is economical with gas and its maintenance costs are quite low.

Smart Cabrio

A push on the button is all it takes to make adjustable canvas TRITOP top fold back electrically. Removing the top frame saves space by safely storing it in the tailgate. All of the smart's standard safety features include the TRIDION safety cell, and the smart cabrio comes with a roll bar made of high-strength steel. It reinforces the

car's torsion stiffness and ensures that the TRIDION remains stable even when the top frame is removed. The robust fabric top is weather-proof and handles car washes well. Each of its 3 variations has a unique character of its own:

The Smart & pure offers standard equipment that you will not find in other compact cars or would normally cost extra. The Smart & pulse causes a stir, whereas the Smart & passion is bewitching with its luxurious fittings.

Table A.1. The Difference of Each "Smart" Models.

Models	Equipment variation	Wheels	Rear Lights	Cockpit	Upholstery colours	Specials
Smart & pure	Comes as a classic City-Coupe or as a sunny Cabrio. With 33 kW (not with the Cabrio) or 40 kW, petrol-driven, or 30 kW as a cdi-turbodiesel.	Steel wheels	The unique smart design	Cockpit comes in grey.	In smart & pure on subdued scodic grey	The 3-button comfort key. Including central locking via radio remote control.
Smart & pulse	As City-Coupe or Cabrio. As a petrol-driven, exclusively sporty 45 kW engine. Or as a cdi with 30 kW.	Sport on the go-with the dynamic "sportline" light alloy wheels	Design and safety element in one: the rear lights in a subdued bicolor red/grey/red	The leather steering wheel with silver seams. Matching it is the leather gear knob and the white combined instrument panel.	The smart & pulse is available with seats and door cladding in bright twister green or twister bluegrey.	the blue, tinted, heat-protected glass.
Smart & passion	Luxurious as a City-Coupe, as a Cabrio: the smart & passion. 40 kW, petrol-driven, or 30 kW as a cdi.	Chic four times over; the elegant "starline" light alloy wheels	Smart & passion's rear lights catch the interest and attention of the driver behind it.	Steering wheel and gear knob covered with the finest leather, the combined instrument panel is in black	Color on bungee red or bungee grey. As an option, we will outfit your smart & passion in leather.	The air-conditioning Plus in the smart & passion.

ENGINE

Smart CDI technology is also found in the V-8 diesel engines from Mercedes-Benz. The smart and the Mercedes engineers have truly turned the CDI technology into a mini-masterpiece. The smart CDI comes as standard with the world's smallest direct injection turbodiesel engine.

The smart CDI engine makes the smart the most economical 3-litre car. For example, with its 69 kg direct injection turbodiesel engine, it consumes an average of only 3.4 litres of petrol per 100 km (Directive 93/116/EC). The smart CDI consumes just as little as it leaves behind; 90 grams of carbon dioxide (CO_2) per kilometre. And change gears without having to engage the clutch. The smart is electronically set not to exceed 135 km/h.

Common Rail

CDI stands for common rail direct injection. As far as experts are concerned, cdi represents a quantum leap in engine technology; a high-pressure pump creates maximum pressure, in fact a powerful 1,350 bar, in the shared fuel line, the common rail, and on the injection jets. In addition to that, an electronic controller ensures that the fuel is injected into the combustion chambers in small doses. The turbodiesel engine with common rail direct injection develops high torque at low speed. It can even develop torque of up to 100 Nm at engine speeds of between 1800 and 2800 rpm.

SUPREX Turbo Engine

To run on petrol, it is recommended to go with smart & pure with its 33 or 40 kW of power, or the smart & pulse with 45 kW or the smart & passion with 40 kW. All three have a very compact SUPREX aluminium engine, weighing just 59 kg, with a cubic capacity of 599 cm^3, 3 cylinders and a turbocharger. The power development in

this engine can only be matched by significantly larger engines. With only 4.9 1/ 100 km (Directive 93/116/EC) it is considerably more economical.

Gear Centre

Before turning the ignition key and starting the engines, the smart has already done a few things. To put it more precisely; its 32-bit gear centre, the electronic brain of the smart, is connected to all of the important function carriers in the car and performs an on-board diagnosis in a fraction of a second. The smart will start only when everything functions smoothly. If any minor irregulartities that prevent the smart from being driven safely are detected, they are saved in the memory. The next time the car is serviced in the garage, they are analyzed by the off-board diagnosis system and corrected, if necessary.

SOFTIP — change gear without a clutch.

The smart & pure and smart & pulse come with SOFTIP transmission. You can switch up and down automatically through the sequential 6-speed transmission by gently pressing the gear stick. When the car is stationary, the transmission automatically changes into first gear.

SOFTOUCH — The Automatic.

The smart & passion comes with the automatic transmission programme, SOFTOUCH. It is perfectly adapted to suit the drive. It can switch over to SOFTIP at the push of button. This will enable you to change gear manually without having to use a clutch pedal.

SAFETY

The crash management system and TRIDION safety cell give passive protection even if in a collision with a much bigger car. There are the ABS with EBV and TRUST-PLUS to actively avoid damage. There are a number of useful safety elements, including the smart integral safety seats and full-size airbags. While the smart is a lightweight vehicle, it can take as well as it gives in crashes. The TRIDION safety cell and the crash management system make the smart one of the safest in its class.

TRIDION Safety Cell

The TRIDION safety cell protects its sensitive contents. With high-strength steel and the lateral and transverse struts of the TRIDION distribute the crash energy evenly over the safety cell.

Sandwich-Type Construction

Sandwich-type construction and raised seat position help the passengers to be outside the direct danger zone in the event of a side impact.

Crash Boxes

The smart has a front crash box reinforced with transverse struts and slip tubes, and rear crash box with an aluminium support. In a collision at up to about 15 km/h, they serve as a crumple zone and guarantee that the TRIDION remains undamaged. Damaged parts can be replaced quickly. The fuel supply is stopped in case of a crash and the central locking opens automatically.

Wheel as a Safety Element

Smart has reinvented the wheel. Due to its short wheelbase, the other car will always hit a wheel, with the suspension directly behind it. This absorbs crash energy. The passenger cell remains rigid and the doors open easily.

TRUST-PLUS

Smart comes as standard with an electronic traction and stability control system: TRUST-PLUS. The smart's 32-bit computer uses ABS wheel speed sensors and a transverse acceleration sensor to constantly analyze the stability of the car. The fuel flow is stopped and the clutch is electronically controlled to retain stability.

Airbags

The smart comes with full-size airbags as standard. With option, side airbags is for protection from side impacts.

Seat Position

The passenger seat can be pushed back 15.5 cm further back than the driver's seat. If the smart is struck from the side, this prevents the driver and passenger colliding into one another. The belt guides are integrated into the seat backrests. Therefore, the 3-point seat belt system allows seat positions to suit any passenger.

Self-tensioning Safety Belt and Belt Force Limiter

If there is any slack on the belt, the self-tensioning safety belt reduces this in a matter of a few milliseconds if a crash occurs. The belt force limiter releases more belt carefully before too much pressure is exerted on the chest. At the same time, the airbag and knee protectors ensure that the impact of the passengers is cushioned as much as possible.

Integral Safety Seats

Smart seats comprise a modular metal structure backed with sheet steel shells. The headrests are fixed parts of the integral safety seats and thus are always in the correct position. If the smart is hit from behind, the rear crash box, the TRIDION transverse and lateral supports and the engine, which is fitted in the back, absorb much of the crash energy. If the car is in a head-on crash, the safety steering column recoils

like a telescope, if necessary. The rest of the crash energy is compensated by the seats with their tear-resistant covers.

Table A.2. Standard Equipments of 'Smart & Pulse'.

Engine
SUPREX 3-cylinder turbo engine (599 cm^3) with charge cooling (rear-mounted)
3-cylinder cdi turbodiesel engine (799 cm^3) with charge cooling (rear-mounted)
45 kW petrol-driven
30 kW cdi diesel
Electronic accelerator (e-gas)
Dual ignition unit (petrol)
SOFTIP — automatic, sequential 6-speed transmission
Chassis
TRUST — PLUS — electronic traction and stability control
McPherson front axle with anti-roll bar
DeDion rear axle with cross arms, anti-roll bar, coil springs and dampers
Rack-and-pinion steering with damper
Hydraulic dual-circuit brake system with brake booster
Wheels/Tyres
Tyres — front: 145/65 R 15 (cdi 135/70 R 15); rear 175/55 R 15
"Sportline" light alloy wheels — front: 145/65 R 15 (cdi 135/70 R 15); rear 175/55 R 15
Exterior fittings
TRIDION safety cell in black
Radiator mask in silver
Outside mirror frame in black
Exchangeable bodypanels
Heat reflecting windows in blue
Front spoiler (only for cdi diesel)
Laminated front windscreen
Glass roof (not for 33 kW)
Solid roof (no cost option)
Rear windscreen wiper/intermittent
Twin-section tailgate
Interior switch for tailgate release
Interior features
Sun screen for glass roof (not for 33 kW)
Emergency switch for interior central locking
Exchangeable fabric for door cladding
Fold-down passenger seat backrest
Storage
Storage net in doors
Storage net, right, in luggage compartment
Cockpit
Digital gear display with gear recommendation
Fuel gauge
Exchangeable decorative caps and trim for switches and instruments
Leather steering wheel and leather gear knob
Audio
Radio base
Safety
TRIDION safety cell
Crash elements front and rear
Crash management system
Front log lights
ABS anti-lock braking system with electronic braking force distribution
Safety steering column
Full-size driver and passenger airbag
Integral safety seats with belt guide
Self-tensioning safety belts with belt force limiter
Hazard triangle
Child safety
Base for child seat brackets
Child seat recognition sensor (airbag deactivated)
Functions/electrical system
3-button comfort key
Central locking and immobiliser with radio remote control
Air circulation/fresh air switch
Power windows
Lights-on warning buzzer
Heated rear window

Bodypanels

The Smart bodypanels come in 9 different colours. Made from through-dyed plastics, they are completely exchangeble and recyclable, do not rust and do not leave any dents behind after slight knocks.

TRIDION Colours

Smart & pure leaves the factory with the TRISION in black. Smart & pulse is on request with the TRIDION in silver, whereas this colour comes as standard on the smart & passion.

Cubic Printings

Aqua vanilla or numeric blue; with this paint system. In special process, a unique pattern is printed onto the bodypanels and then painted over with a clear lacquer, making each smart a unique gem.

Interior Colours:

Smart & Pure

Scodic grey with matte grey decorative features.

Smart & Pulse

Twister green with semi-transparent, green decorative features.

Twister bluegrey with semi-transparent, blue decorative features.

Black leather with semi-transparent, blue decorative features.

Smart & Passion

Bungee red with shiny, red decorative features.

Bungee grey with shiny, silver decorative features.

Black leather with shiny, silver,decorative features.

Table A.3. 'Smart' Options.

Engine SOFTOUCH — automatic gear programme
Wheels/Tyres Set of "jetline" light alloy wheels
Exterior fittings TRIDION safety cell in silver Bodypanels phat red, Metallic special varnish: true blue, bay grey, river silver, Special Varnish: aqua vanilla, numeric blue Glass roof (not for 33 kW or Cabrio)
Interior features Leather upholstery for seats Loackable drqwer under driver's seat (Cabrio only)
Audio Sound system upgrade (2 tweeters, 2 bass reflex speakers, frequency switcher)
Safety Front fog lights Side airbags
Functions/Electric system Outside mirror, electrically adjustable and heatable Air-conditioning Plus (with outside temperature guage) Seat heater Remote control to open to top (Cabrio only)

Table A.4. 'Smart' Accessories.

Cockpit Cockpit Clock Rev counter	Audio/Navigation RDS radio RDS radio with cassette player CD Changer Navigation system	Interior features Sun screen for glass roof Mirror on driver's visor Standard floor mats All-weather floor mats Velour floor mats Wind protecting bulkhead
Exterior features Bodypanel fresh-up in; Lite white Jack black Phat red True blue metallic Bay grey metallic Aqua vanilla Numeric Blue	Transport Basic rack Bicycle rack Ski rack Protective net between luggage and passenger space Luggage/shopping net Luggage compaitment cover Luggage fastener	Wheels/tyres Set of "jetline" light alloy wheels Set of winter wheels Anti-theft wheel protection Wheel rims Snow chains Breakdown kit with compressor
Communication Nokia 7110 and 6210, WAP mobile , With hand-free installation, mount, antenna and console. Telephone console	Storage Door storage nets Storage drawer under driver seat Drinks holder Cassette holder CD holder	Child safety Brackets for baby seat and child seat Baby seat Child seat Child seat booster Backrest for child seat booster
Functions/Electrical systems Air-conditioning Plus Parking heater Combined filter	Safety Fire extinguisher First aid kit Reflective west Breakdown kit	

ENVIRONMENT

The basis for this is the commitment towards ecological product responsibility, taking in all stages, i.e. development, production, and the entire service life as well as recycling.

No Detours

Many parts for the smart are manufactured by system partners who are integrated into the factory. This means that transport and emissions are down by up to 95% in some areas. Manufacture by just in time concept, without having to maintain a store. More flexible and can quickly apply new research findings to the product.

There are 11 highly qualified system and service partners integrated into the smart production works. Every single one of them is committed to the spirit of the smart: top quality with due regard for economic and ecological requirements, which, by and large, are significantly more stringent than current EU standards.

Pure Principle

None of the buildings in the industrial park in the French town of Hambach are exposed to harmful substances like formaldehyde, CCFCs and asbestos. 80% of the facade linings comprise quick growing European woods. The company operates its own biological treatment plant and heat recovery system in plastics processing.

A trailblazing car production concept has been put into operation at factory. State-of-the-art technology and minimized working process times are essential factors for achieving a model ecological balance.

World first

Smart is the first car manufacturer in the world to coat its steel bodies exclusively with top quality powder paints which are free of harmful substances. This does away

with solvent emissions, paint sludge and waste water; moreover, energy consumption is also considerably lower than in conventional painting processes.

QUESTIONNAIRE

List of some questions in in-depth interview

- Which sentences describe you most?
  - I drive my own car
  - I drive my family car
  - I don't drive
  - My family doesn't have car
- Do you pay for car or by member in the family?
- Do you like city car concept? What do you think?
- As you see city car "Smart", who should be the target groups?
- Which age range should the targets be?
- Which gender will use the city car? What percentage each?
- Which characteristics of city car concept, will you prefer? Nice Look/design, colors, modern, size, safety, etc.
- Which size of engine do you like? What options will you select in "Smart"?
- What are the LIKE and DISLIKE in "Smart"?
- Which range of pricing do you suggest for city car concept?
- Some comment? Seats, size, styles, etc.

APPENDIX B

THAILAND VIHECLE FIGURES AND TABLES

List Price nio.)	Vehicles' lengths (meters)						Units	% of the total
	< 3.5	3.50-3.84	3.85-4.29	4.30-4.64	4.65-4.89	> 4.90		
More than THB 2.0			14	933	1,451	414	2,812	4.22%
1.81-2.00			8	358	209		575	0.86%
1.61-1.80				1,115	75		1,190	1.79%
1.41-1.60			12	102	315		429	0.64%
1.21-1.40			62				62	0.09%
1.01-1.20			14	16			10,582	15.88%
Below TH13 1.0		7	42,009	8,754	210		50,980	76.51%
Total	0	7	42,119	11,278	12,812	414	66,630	100.00%
% of the total	0.00%	0.01%	63.21%	16.93%	19.23%	0.62%	100.00%	

Figure B.1. Thailand: Passenger Car Segmentation 1999.
Criteria: List Price vs. Lengths.

List Price (THB: mio.)	Vehicles' lenphs (meters) < 3.5	3.50-3.84	3.85-4.29	4.30-4.64	4.65-4.89	> 4.90	Units	% of the total
More than 111B 2.0			67	1,722	3,128	669	5,586	6.91%
1.81-2.00			2	892	94		988	1.22%
1.61-1.80		1	49	481	285		816	1.01%
1.41-1.60			164	60	417		641	0.79%
1.21-1.40			69	26			7,022	8.68%
1.01-1.20			71	414			6,078	7.52%
Below THB 1.0		5	47,454	12,032	243		59,734	73.87%
Total	**0**	**6**	**47,876**	**15,627**	**16,687**	**669**	**80,865**	**100.00%**
% of the total	0.00%	0.01%	59.20%	19.32%	20.64%	0.83%	100.00%	

Figure B.2. Thailand: Passenger Car Segmentation 2000.
Criteria: List Price vs. Lengths.

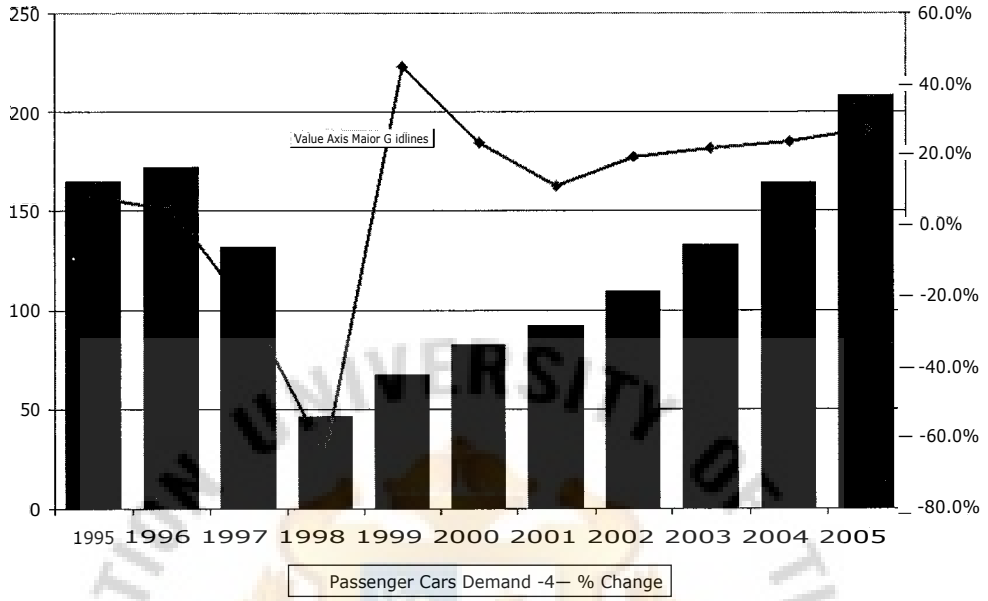


Figure B.3. Vehicle Market Summary — Forecast (000)s.

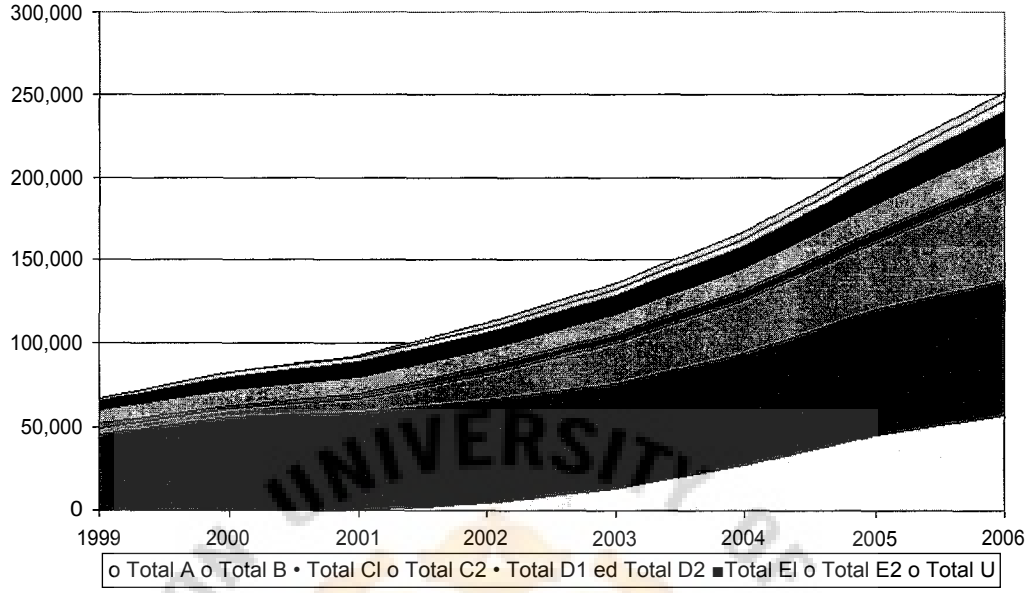


Figure B.4. Light Vehicle Sales in 1999 - 2006.

Table B.1. Passenger Car Sales by Manufacturer, Model and Segment.

MFR	SEG	MODEL	1999	2000	2001	2002	2003	2004	2005	2006	2011
NISSAN											
Cl		NV	1	0	0	0	0	0	0	0	0
C1		SUNNY	6,184	9,422	9,164	9,326	10,021	11,419	13,353	14,577	25,049
C2		TINO	0	0	0	1,896	3,482	4,606	5,187	5,635	10,420
El		CEFIRO	2,357	3,403	3,867	3,743	3,909	4,511	5,460	5,888	10,074
Total			**8,542**	**12,825**	**13,031**	**14,965**	**17,412**	**20,536**	**24,000**	**26,100**	**45,543**
OPEL											
B		CORSA	3	0	0	0	0	0	0	0	0
Cl		ASTRA	92	2	9	68	129	273	421	414	962
D1		VECTRA/CAL113RA	46	0	37	93	109	130	169	254	756
El		OMEGA	7	0	0	**4**	5	6	8	11	48
Total			**148**	**2**	**46**	**165**	**243**	**409**	**598**	**679**	**1,766**
OTHER											
E2		OTHER	1	10	23	28	40	42	69	95	364
Total			**1**	**10**	**23**	**28**	**40**	**42**	**69**	**95**	**364**
PERODUA											
B		KENARI	0	0	0	0	0	0	0	1,286	2,714
Total			0	0	0	0	0	0	**0**	**1,286**	**2,714**
PEUGEOT											
B	205		4	5	0	0	0	0	0	0	0
Cl	306		671	41	188	390	817	1,326	2,221	2,571	5,942
D1	405		253	46	0	0	0	0	0	0	0
D1	406		386	446	360	455	631	701	838	920	1,509
El	605		13	12	24	25	25	28	32	36	72
Total			**1,327**	**550**	**572**	**870**	**1,473**	**2,055**	**3,091**	**3,527**	**7,523**
PROTON											
C2		WAJA	0	0	0	0	0	0	0	3,810	14,212
C2		WIRA	0	0	0	0	0	0	0	4,678	15,462
Total			0	0	0	0	0	0	**0**	**8,488**	**29,674**
RENAULT											
B		CLIO	0	0	0	0	936	2,398	5,126	6,375	19,251
C2		MEGANE SCENIC	0	0	725	1,668	1,859	2,090	2,392	2,641	3,965
Total			0	**0**	**725**	**1,668**	**2,795**	**4,488**	**7,518**	**9,016**	**23,216**
ROVER											
Dl		600-SERIES	43	0	0	0	0	0	0	0	0
El		800-SERIES	20	0	0	0	0	0	0	0	0
El		MGF	8	0	0	0	0	0	0	0	0
Total			**71**	0	0	0	0	0	0	0	0

Table B.1. Passenger Car Sales by Manufacturer, Model and Segment. (Continued)

MFR/SEG	MODEL	1999	2000	2001	2002	2003	2004	2005	2006	2011
SAAB										
El	OTHER	20	38	35	34	34	38	45	53	116
Total		20	38	35	34	34	38	45	53	116
SEAT										
C1	CORDOBA	6	2	0	0	0	0	0	0	0
DI	TOLEDO	0	0	108	165	181	223	296	453	1,412
D2	ALHAMBRA	212	286	363	417	490	651	1,094	1,115	2,522
Total		**218**	**288**	**471**	**582**	**671**	**874**	**1,390**	**1,568**	**3,934**
SKODA										
DI	OCTO VIA	0	86	86	98	119	151	196	293	863
Total		**0**	**86**	**86**	**98**	**119**	**151**	**196**	**293**	**863**
SUBARU										
C1	IMPREZA	3	8	13	21	34	63	121	153	418
DI	LEGACY	4	14	21	46	84	159	193	271	701
Total		**7**	**22**	**34**	**67**	**118**	**222**	**314**	**424**	**1,119**
SUZUKI										
C1	ESTEEM	63	13	82	79	84	123	189	188	455
Total		**63**	**13**	**82**	**79**	**84**	**123**	**189**	**188**	**455**
TOYOTA										
B	VITZ	0	0	0	0	4,183	7,892	13,103	16,596	43,908
Cl	COROLLA	9,117	9,705	11,077	12,511	13,417	14,298	16,443	18,251	25,070
Cl	SOLUNA	10,327	12,186	12,698	13,534	13,255	15,978	14,064	13,615	0
C2	COROLLA MPV	0	0	0	0	1,783	3,455	6,069	6,982	13,025
Dl	CORONA	829	38	0	0	0	0	0	0	0
D2	CAMAY	3,869	5,181	4,536	4,672	5,203	5,792	6,974	7,741	13,016
D2	CELICA	7	52	0	0	0	0	0	0	0
El	CROWN	37	70	79	61	62	71	85	101	232
E2	LEXUS	92	66	96	97	119	143	179	230	631
Total		**24,278**	**27,298**	**28,486**	**30,875**	**38,022**	**47,629**	**56,917**	**63,516**	**95,882**
VOLVO										
DI	S40N40	236	352	484	715	811	911	1,082	1,189	1,944
El	800-SE1UES	116	631	719	853	1,061	1,172	1,410	1,564	3,142
El	900-SERIES/S90N90	410	0	0	0	0	0	0	0	0
El	S70N70	374	501	723	596	604	671	860	1,116	2,529
Total		**1,136**	**1,484**	**1,926**	**2,164**	**2,476**	**2,754**	**3,352**	**3,869**	**7,615**
VW										
C1	BEETLE	0	163	169	205	277	376	497	800	2,359
Cl	GOLF	8	34	38	51	69	105	169	382	1,127
C2	VENTO	16	0	0	0	0	0	0	0	0
DI	PAS SAT	194	409	725	761	923	1,079	1,356	1,567	3,154
Total		**218**	**606**	**932**	**1,017**	**1,269**	**1,560**	**2,022**	**2,749**	**6,6401**
Grand Total		**67,039**	**82,584**	**91,829**	**109,520**	**133,103**	**164,271**	**208,658**	**248,897**	**501,932**

Table B.2. Passenger Car and Commercial Vehicle Sales by Manufacturer, Model and Segment.

M FR/SEG	MODEL	1999	2000	2001	2002	2003	2004	2005	2006	2011
NISSAN										
4x4	TERRANO	2	1	0	0	0	0	0	0	0
4x4	X-TRAIL	0	10	620	705	1092	1732	2424	2945	7715
C1	NV	1	0	0	0	0	0	0	0	0
C1	SUNNY	6,184	9,422	9,164	9,326	10,021	11,419	13,353	14,577	25,049
C2	TINO	0	0	0	1,896	3,482	4,606	5,187	5,635	10,420
El	CEFIRO	2,357	3,403	3,867	3,743	3,909	4,511	5,460	5,888	10,074
MPV	SERENA		4	4	10	12	16	19	24	73
MVAN	URVAN	30	322	403	508	650	832	1,045	1,180	2,010
PUP	BIG M/NV	13,098	17,737	20,822	24,451	28,419	33,008	38,551	40,452	59,526
Total		**21,672**	**30,899**	**34,880**	**40,639**	**47,585**	**56,124**	**66,039**	**70,701**	**114,867**
OPEL										
B	CORSA	3	0	0	0	0	0	0	0	0
C1	ASTRA	92	2	9	68	129	273	421	414	962
DI	VECTRA/CALIBRA	46	0	37	93	109	130	169	254	756
El	OMEGA	7	0	0	4	5	6	8	11	48
PUP	CAMPO	99	1	0		-		-		-
Total		**247**	**3**	**46**	**165**	**243**	**409**	**598**	**679**	**1,766**
OTHER										
E2	OTHER	1	10	23	28	40	42	69	95	364
U	OTHER	-	-	905	788	853	914	895	968	1,414
Total		1	**10**	**928**	**816**	**893**	**956**	**964**	**1,063**	**1,778**
PERODUA										
B	KENARI	0	0	0	0	0	0	1,286	2,714	
Total		0	0	0	0	0	0	**0**	**1,286**	**2,714**
PEUGEOT										
B	205	4	5	0	0	0	0	0	0	0
Cl	306	671	41	188	390	817	1,326	2,221	2,571	5,942
DI	405	253	46	0	0	0	0	0	0	0
DI	406	386	446	360	455	631	701	838	920	1,509
El	605	13	12	24	25	25	28	32	36	72
Total		1,327	**550**	**572**	**870**	**1,473**	**2,055**	**3,091**	**3,527**	**7,523**
PROTON										
C2	WAJA	0	0	0	0	0	0	0	3,810	14,212
C2	WIRA	0	0	0	0	0	0	0	4,678	15,462
Total		0	0	0	0	0	0	**0**	**8,488**	**29,674**
RENAULT										
B	CLIO	0	0	0	0	936	2,398	5,126	6,375	19,251
C2	MEGANE SCENIC	0	0	725	1,668	1,859	2,090	2,392	2,641	3,965
Total		0	**0**	**725**	**1,668**	**2,795**	**4,488**	**7,518**	**9,016**	**23,216**
ROVER										
DI	600-SERIES	43	0	0	0	0	0	0	0	0
El	800-SERIES	20	0	0	0	0	0	0	0	0
El	MGF	8	0	0	0	0	0	0	0	0
Total		**71**	0	0	0	0	0	0	0	0

Table B.2. Passenger Car and Commercial Vehicle Sales by Manufacturer, Model and Segment. (Continued)

MFR/SEG	MODEL	1999	2000	2001	2002	2003	2004	2005	2006	2011
SAAB										
EI	OTHER	20	38	35	34	34	38	45	53	116
Total		20	38	35	34	34	38	45	53	116
SEAT										
CI	CORDOBA	6	2	0	0	0	0	0	0	0
D1	TOLEDO	0	0	108	165	181	223	296	453	1,412
D2	ALHAMBRA	212	286	363	417	490	651	1,094	1,115	2,522
Total		218	288	471	582	671	874	1,390	1,568	3,934
SKODA										
D1	OCTO VIA	0	86	86	98	119	151	196	293	863
Total		0	86	86	98	119	151	196	293	863
SSANGYONG										
4X4	MUSSO	34	3	21	83	210	450	768	1,030	2,544
Total		0	3	21	83	210	450	768	1,030	2,544
SUBARU										
4X4	FORESTER	7	18	43	71	144	309	547	774	3,948
CI	IMPREZA	3	8	13	21	34	63	121	153	418
DI	LEGACY	4	14	21	46	84	159	193	271	701
Total		14	40	77	138	262	531	861	1,198	5,067
SUZUKI										
4X4	VITARA	467		-	68	234	765	1,219	1,553	5,205
4X4	SJ/SAMURAI	628	1,293	1,324	1,626	1,611	2,115	2,742	3,222	6,537
C1	ESTEEM	63	13	82	79	84	123	189	188	455
Total		1,158	1,306	1,406	1,773	1,929	3,003	4,150	4,963	12,197
TOYOTA										
4X4	4 RUNNER	-		18	23	38	64	89	100	234
4X4	LAND CRUISER	49	90	101	121	182	291	379	401	822
4X4	RAV-4	4	11	12	53	1,120	1,841	2,694	3,580	11,034
B	VITZ	-	-	-	-	4,183	7,892	13,103	16,596	43,908
CI	COROLLA	9,117	9,705	11,077	12,511	13,417	14,298	16,443	18,251	25,070
C1	SOLUNA	10,327	12,186	12,698	13,534	13,255	15,978	14,064	13,615	-
C2	COROLLA MPV			-		1,783	3,455	6,069	6,982	13,025
DI	CORONA	829	38	-		-				
D2	CAMRY	3,869	5,181	4,536	4,672	5,203	5,792	6,974	7,741	13,016
D2	CELICA	7	52	-				-		
EI	CROWN	37	70	79	61	62	71	85	101	232
E2	LEXUS	92	66	96	97	119	143	179	230	631
HVAN	DYNA	77	66	78	104	143	190	245	318	837
MVAN	HIACE	3,555	5,219	4,960	4,049	4,486	5,146	4,713	3,858	5,281
PUP	H1LUX	46,328	38,616	42,836	49,639	55,006	63,698	74,149	82,392	147,133
Total		74,291	71,300	76,491	84,864	98,997	118,859	139,186	154,165	261,223
VOLVO										
4X4	FUV					239	471	763	990	3,568
DI	S40N40	236	352	484	715	811	911	1,082	1,189	1,944
EI	800-SERIES	116	631	719	853	1,061	1,172	1,410	1,564	3,142
EI	900-SERIES/S90N90	410	0	0	0	0	0	0	0	0
EI	570N70	374	501	723	596	604	671	860	1,116	2,529
Total		1,136	1,484	1,926	2,164	2,715	3,225	4,115	4,859	11,183
VW										
CI	BEETLE	0	163	169	205	277	376	497	800	2,359
CI	GOLF	8	34	38	51	69	105	169	382	1,127
C2	VENTO	16	0	0	0	0	0	0	0	0
DI	PAS SAT	194	409	725	761	923	1,079	1,356	1,567	3,154
MPV	SHARAN	6	-	-		-	-	-		
MPV	CARAVELLE	368	513	745	718	717	647	602	619	726
Total		592	1,119	1,677	1,735	1,986	2,207	2,624	3,368	7,366
Grand Total		67,039	82,584	91,829	109,520	133,103	164,271	208,658	248,897	501,932

Table B.3. Vehicle Market Summary - Forecast (000)s. (DRI Asian Automotive Industry Forecast Report, March 2001).

Category	1995	1996	1997	1998	1999	2000	2001	2002	2003
Passenger Cars (1)	164.8	172.0	131.7	46.2	67.0	82.6	91.8	109.5	133.1
% change	*8.0%*	*4.4%*	*-23.4%*	*-64.9%*	*45.0%*	*23.3%*	*11.1%*	*19.3%*	*21.6%*
Light commercial vehicles including 4 x 4 (2)	365.6	374.9	217.4	92.4	146.0	172.2	192.8	223.1	264.1
% change	*21.7%*	*2.5%*	*-42.0%*	*-57.5%*	*58.0%*	*17.9%*	*12.0%*	*15.7%*	*18.4%*
All light vehicles <6 tons GVW (1) + (2)	530.4	546.9	349.1	138.6	213.0	254.8	284.6	332.6	397.2
% change	*17.0%*	*3.1%*	*-36.2%*	*-60.3%*	*53.7%*	*19.6%*	*11.7%*	*16.9%*	*19.4%*
Heavy vehicles >6 tons GVW (3)	42.5	42.8	14.1	4.9	5.2	7.0	9.1	11.0	12.7
% change	*37.4%*	*0.7%*	*-67.1%*	*-65.2%*	*6.1%*	*34.6%*	*30.0%*	*20.9%*	*15.5%*
Total vehicle market	572:9	. . 3.9...7	363.2	143.5	218.2	261..8	. 293.7	*343.6*	409.9
% change	*!„..7%*	*· 2.9;x*	*-3,', I",*	*-60.5%*	*... 2.1',*	*-„0, 0%*	*1*	*1:'..OrA*	*79.3%*
NI ot orcycle '')	1.504.9	1a42.4	I	.490.8	593.8	796.3	1,035.2	1.356.1	1,790.0
	o.	*-17.4%*		*-47.1%*	*21.9',i,*	*_1-1%*	*$rtil";*	*31.0 ;;;;:*	*3_*

Remarks:

(4) Bank of ThaAand

(5) Forecast (2001-2005) is based on a moderate growth using 1995-2000 volume as a basis.

Table B.4. Thailand: Vehicle Assemblers Summary.

Local Company / Assembler	Ovmers hip Structure	Passenger Car Models	Commercial Vehicle Models	Actual/Planned Production Capacity	Remarks
Toyota Motor Thailand	69.6% Toyota Motor 24.4% Toyota Auto Body, 3% Nippondenso, 2% First Tokai Co., Ltd	Corolla, Corona, Sokma Caney production started in 1999 Corona production stopped in April 1999 Possble Corolla MPV	Hinz (Hihos Tiger Launched in mid-1998) Double-cab Hilux from end of 2000	Samrong Plant 140,000 milts (Hilux) Gateway Plant 100,000 units (passsenger cars) At passenger car production being concentrated at Gateway Samrong Plant will be dedicated to	Toyota gradually nuking Thailand a key global source for the Hilux Toyota most likely to produce Viz/ Platz from 2003 for ASEAN Selma production will be transferred to Indonesia
Isuzu Motor Thailand Co., Ltd	48% Isuzu Motor (Japan) 51% Tri Petch Isuzu 1% Mitsubishi (Thailand)	Vertex assembled by Honda (based on Civic)	Isom Spacecab, Isom HCVs and buses New pick-up (Isom 190) expected in 2002	Current capacity is 150,000 units Construction of second factory at Gateway with capacity of 180,000 may be revived	Isom will make Thailand the global source for pick-ups Closer integration with GM expected in figure
MMC Sitipol Co., Ltd.	94% Mitsubishi Motor 6% Panchet family	Lancer, Galant Production of the small Z Car a possbility	L200 Pick-up, Canter, Fuso range of HCV	Plant #1: Lad Krabang: 52,000 (L200 for domestic markets) - Closed Plant #2: Lad Krabang #2: 15,000 (Heavy Vehicles) Plant *03:* Laem Chabang 72,000 (all passenger cars) Plant #4: Laem Chabang: 100,000 (L200 for domestic and export markets)	New plant at Laem Chabang originally expected to focus on production for export markets will become the only production facility Lad Krabang #1 plant closed in 1998 but could be used by DaimlerChrysler for assembly of the Dakota pick-up
Siam Motor and Nissan Co., Ltd	49% Nissan Motor 51% Siam Group	Sunup Cern, Almera in 2001	X-Trail from 2001	Sarnutprakan Total capacity of 140,000 following expansion in 1997	Assembly of Renault models being considered
Siam Nissan Automobile Co., Ltd	51% Siam Group 49% Nissan Motor		Big M and NV Pick-ups Double-Cab version launched in 2000		
Nissan Diesel Thailand	30% Nissan Diesel 30% Marubeni 40% Siam Motors		Medium and heavy trucks and buses	Sumulprakan - 4,000 units	Nissan Launched Asia Trucks in 1997 (12-21 t payload)
Honda Car Thailand	75.9% Honda Motor Japan 15.9% Asian Honda 4.1% Crown Property 4.1% SarasM	Civic, City, Accord Lively production of MK car from 200213 Possble production of Stream in 2001	CR- V Tourmaster pick-up, assembled by 'sum, has been discontinued	Ay ill 30,000 cars using a single shift of workers, and 60,000 using two shills. With small investment to the paint shop, maximum capacity can mach 100,000 units per amurn	Export of Accord, Civic and City Being stepped up Thai Honda will supply Accords to Australia. Recent capital restructuring and integration of production and distribution companies

Table B.4. Thailand: Vehicle Assemblers Summary. (Continued)

Local Company / Assembler	Ownership Structure	Passenger Car Models	Commercial Vehicle Models	Actual/Planned Production Capacity	Remarks
Bangchan General Assembly	66% Bangchan Holding Co. 34% Honda Cars (Thailand)	Hyundai Elantra from 2001 Santa Fe asst' a possibility in 2002 Fiat Pinto and some Alfa models from2000	Grand Cherokee	43,000 writs	Assembly of the Honda Accord transferred to Honda plant in Ayunhya in Late 1997. Assemby of Chrysler's Jeep Cherokee started in 1997
Sukosol and Mazda Motor Industry Co., Ltd	40% Mazda 36% Kijkamal Sukosol 24% Tomain Corp.	Mazda 323	Mazda B Series Ford Marathon (Courier)	30,000 units	Closed in 1998. Production of Mazda vehiclestransferred to Auto-Alliance
Auto Alliance Thailand	45% Ford 45% Mazda 5% Sukosol 5% KPN Group	Assembly o f Mazda 323 and Ford Laser to Commence in 2000 Possible assenbly of other Mazda and bird cars and SUV and MPV	Ford and Mazda badged pick-ups based on Mazda B series	Rayong-eventual capacity of 135,000 units Second shift cm..rerced in late 1999	Production contorted in 1998 Export shipments commenced in Dec 1998 and being stepped up in 1999
Thai Swedish Assenbly Co., Ltd	70% Volvo, 30% Swedish Motors	Volvo 400, 800 and 900 Series, S40N40	Volvo Bases	6,000 on 1 shill or 10,000 on 2 shills	Chrysler dissoved partnership with Thai Swedish in 1997
GM Thailand	100% GM	Zafira MPV based on the Astra platform, YGM from 2002	Assembly of !sum 190 Pick-up from 2003	Rayong - capacity esdrroted at 100,000 units	Production being ramped up in 2001. Most of production earmarked for exports to Europe. Will assembleIsom Pick-up from2003 (around 50,000 units 1 for LHD export markets. Possaae assently of Fiat models
Thonburi Autormtive Assembly Plant Co., Led	100% Viiyaphant funk	C-Class, E-Class, S-Class	Heavy Trucks and Buses	13,000 units. Low utilisation rate	Atter virtual shutdown ofroduction is 1999 relations with DaimlerClayskr improving Assembly of new C-Class from 2001
YMC Assembly Co., Le	100% Leenutapong	BMW 5-series, Peugeot 405, VW Passat and Audi A6 asserrbly from 2000		14,000 units	BMW has set up a plants **Rayong** YMC relegated to dealer status Assembly of 5-series will stop **soon.**
Thai Hine Industry	**36%** Hiss Motor **24% Mitsui** **37% Thai Hi.**		**Toyota Dyna**, Hiss **HCVs** and **buses**	**14,000 units**	Capital increase and restnicturig of **equity stakes in 1999** **Will increase exports post-AFTA**
BMW	**100% BMW**	**3-series (E46) in Phase 1** **5-series, Land Rover and Rover models in phase 2**		**Outputs expected to reach a modest** **10,000 units a year by 2004**	**Production outlook highly dependent on AFTA irmletrentation**

Table B.5. Light Vehicle Sales by Manufacturer, Model and Segment.

MFR/SEG		MODEL	1999	2000	2001	2002	2003	2004
4X4	**CHRYSLER**	CHEROKEE	203	349	413	479	1,428	1,585
4X4	**FORD**	ESCAPE	0	0	1,561	3,300	5,176	7,027
4X4	**FORD**	EXPLORER	0	3	17	25	47	95
4X4	**HONDA**	CR-V	4,294	4,724	4,989	5,494	6,989	7,909
4X4	**HYUNDAI**	SANTAFE	0	0	0	108	434	825
4X4	ISUZU	PUMO	0	2,556	3,425	4,243	5,608	6,417
4X4	**ISUZU**	TROOPER	68	41	125	156	245	406
4X4	**ISUZU**	VEGA	195	339	405	488	770	1,004
4X4	**MA**	SPORTAGE	454	0	0	0	0	0
4X4	**LAND ROVER**	DISCOVERY /DEFENDER	165	2	16	54	113	263
4X4	**LAND ROVER**	FREELANDER	0	0	0	72	546	914
4X4	**LAND ROVER**	RANGE ROVER	12	2	9	24	62	177
4X4	**MAZDA**	TRIBUTE	0	0	1,158	2,063	3,278	4,755
4X4	**MERCEDES-BENZ**	M-CLASS	0	0	39	63	154	193
4X4	**MITSUBISHI**	PAJERO	121	145	63	118	228	392
4X4	**NISSAN**	TERRANO	2		0	0	0	0
4X4	**NISSAN**	X-TRAIL	0	10	620	705	1,092	1,732
4X4	**SSANGYONG**	MUSSO	34	3	21	83	210	450
4X4	**SUBARU**	FORESTER	7	18	43	71	144	309
4X4	**SUZUKI**	SJ/SAMURAI	628	1,293	1,324	1,626	1,611	2,115
4X4	**SUZUKI**	VITARA	467	0	0	68	234	765
4X4	**TOYOTA**	4 RUNNER	0	0	18	23	38	64
4X4	**TOYOTA**	LAND CRUISER	49	90	101	121	182	291
4X4	**TOYOTA**	RAV-4	4	11	12	53	1,120	1,841
4X4	**VOLVO**	FUV	0	0	0	0	239	471
4X4	**CHRYSLER**	GRAND CHEROKEE	542	579	693	713	807	1,179
Total 4X4			**7,245**	**10,166**	**15,052**	**20,150**	**30,755**	**41,179**
A	**DAIHATSU**	MOVE	0	0	11	21	25	35
Total A			**0**	**0**	**11**	**21**	**25**	**35**
B	**CHEVROLET**	YGM	0	0	0	4,300	5,366	10,353
B	**FORD**	OTHER	0	0	0	0	0	0
B	**HONDA**	MK	0	0	0	0	3,275	6,602
B	**OPEL**	CORSA	3	0	0	0	0	0
B	**PERODUA**	KENARI	0	0	0	0	0	0
B	**PEUGEOT**	205	4	5	0	0	0	0
B	**RENAULT**	CLIO	0	0	0	0	936	2,398
B	**TOYOTA**	VITZ	0	0	0	0	4,183	7,892
Total B			**7**	**5**	**0**	**4,300**	**13,760**	**27,245**

Table B.5. Light Vehicle Sales by Manufacturer, Model and Segment. (Continued)

Cl	**CHRYSLER**	NEON	0	73	65	79	98	138
C1	**CITROEN**	720	14	0	0	0	0	0
Cl	**DAEWOO**	CIELO/NEXIA	176	12	0	0	0	0
Cl	**DAEWOO**	LANOS	54	146	225	302	400	598
CI	**FORD**	LASER	0	958	1,648	2,123	2,717	3,517
CI	**HONDA**	CITY	9,394	11,950	11,670	10,312	6,624	2,015
C1	**HONDA**	CIVIC	6,820	9,044	10,088	10,008	11,068	12,637
CI	**HYUNDAI**	ACCENT	1,165	307	0	0	0	0
CI	**HYUNDAI**	AVANTE	252	8	94	152	295	350
CI	**ISUZU**	VERTEX	439	130	152	136	0	0
Cl	**MIA**	SEPHIA	9	0	125	162	232	457
C1	**MAZDA**	323	372	1,485	1,780	2,290	2,717	3,167
C1	**MITSUBISHI**	CHAMP	10	5	0	0	0	0
Cl	**NISSAN**	NV	1	0	0	0	0	0
Cl	**NISSAN**	SUNNY	6,184	9,422	9,164	9,326	10,021	11,419
C1	**OPEL**	ASTRA	92	2	9	68	129	273
Cl	**PEUGEOT**	306	671	41	188	390	817	1,326
C1	**SEAT**	CORDOBA	6	2	0	0	0	0
Cl	**SUBARU**	IMPREZA	3	8	13	21	34	63
C1	SUZUKI	ESTEEM	63	13	82	79	84	123
C1	**TOYOTA**	COROLLA	9,117	9,705	11,077	12,511	13,417	14,298
C1	**TOYOTA**	SOLUNA	10,327	12,186	12,698	13,534	13,255	15,978
CI	**VW**	BEETLE	0	163	169	205	277	376
C1	**VW**	GOLF	8	34	38	51	69	105
Total Cl			**45,177**	**55,694**	**59,285**	**61,749**	**62,254**	**66,840**
C2	**AUDI**	A3	13	20	40	39	44	67
C2	**CHEVROLET**	ZAFIRA	0	1,463	1,648	1,971	2,300	3,625
C2	**CITROEN**	PICASSO	0	0	8	8	9	13
C2	**HONDA**	STREAM	0	0	0	2,350	3,482	3,742
C2	**HYUNDAI**	ELANTRA	0	0	725	986	1,529	2,015
C2	**HYUNDAI**	TIBURON	44	150	136	173	225	332
C2	**MITSUBISHI**	DION	0	0	0	834	2,717	3,646
C2	**MITSUBISHI**	LANCER	4,029	3,690	4,417	5,535	6,709	7,773
C2	**NISSAN**	TINO	0	0	0	1,896	3,482	4,606
C2	**PROTON**	WAJA	0	0	0	0	0	0
C2	**PROTON**	WIRA	0	0	0	0	0	0
C2	**RENAULT**	MEGANE SCENIC	0	0	725	1,668	1,859	2,090
C2	**TOYOTA**	COROLLA MPV	0	0	0	0	1,783	3,455
C2	**VW**	VENTO	16	0	0	0	0	0
Total C2			**4,102**	**5,323**	**7,699**	**15,460**	**24,139**	**31,364**

Table B.5. Light Vehicle Sales by Manufacturer, Model and Segment. (Continued)

DI	**CITROEN**	XANTIA	95	11	59	71	86	110
DI	**DAEWOO**	ESPERO	412	177	**0**	0	0	0
DI	**DAEWOO**	NUBIRA	0	0	247	272	306	357
DI	**HYUNDAI**	SONATA	154	242	463	479	536	638
D1	**MAZDA**	626	41		21	31	26	35
DI	**MAZDA**	PREMACY	0	0	24	59	76	102
DI	**MITSUBISHI**	GALANT	15	7	791	1,570	1,818	2,163
D1	**OPEL**	VECTRA/CALIBRA	46	0	37	93	109	130
D1	**PEUGEOT**	**405**	253	46	**0**	0	0	0
DI	**PEUGEOT**	406	386	446	360	455	631	701
DI	**ROVER**	600-SERIES	43	0	**0**	0	0	0
D1	**SEAT**	TOLEDO	0	0	108	165	181	223
DI	**SKODA**	OCTOVIA	0	86	86	98	119	151
DI	**SUBARU**	LEGACY	4	14	21	46	84	159
DI	**TOYOTA**	CORONA	829	38	0	0	**0**	0
DI	**VOLVO**	540/V40	236	352	484	715	811	911
DI	**VW**	PASSAT	194	409	725	761	923	1,079
Total D1			**2,708**	**1,829**	**3,426**	**4,815**	**5,706**	**6,759**
D2	**AUDI**	A4	171	110	615	761	964	1,192
D2	**HONDA**	ACCORD	4,083	4,232	3,969	4,203	4,689	5,233
D2	**SEAT**	ALHAMBRA	212	286	363	417	490	651
D2	**TOYOTA**	CAMRY	3,869	5,181	4,536	4,672	5,203	5,792
D2	**TOYOTA**	CELIC A	7	52	0	0	0	0
Total D2			**8,342**	**9,861**	**9,483**	**10,053**	**11,346**	**12,868**
El	**AUDI**	TT	10	20	19	16	16	18
El	**BMW**	3-Series	1,417	1,527	2,011	2,385	2,985	3,507
El	**BMW**	Z3	8	32	24	21	15	19
El	**CITROEN**	XM		1	3	6	7	9
El	**MAZDA**	929		0	0	0	0	0
El	**MERCEDES-BENZ**	C-CLASS	316	1,032	1,171	1,705	2,356	3,289
El	**NISSAN**	CEFIRO	2,357	3,403	3,867	3,743	3,909	4,511
El	**OPEL**	OMEGA	7	0	0	4	5	6
El	**PEUGEOT**	605	13	12	24	25	25	28
El	**ROVER**	800-SERIES	20	0	0	0	0	0
El	**ROVER**	MGF	8	0	0	0	0	0
El	**SAAB**	OTHER	20	38	35	34	34	38
El	**TOYOTA**	CROWN	37	70	79	61	62	71
El	**VOLVO**	800-SERIES	116	631	719	853	1,061	1,172
El	**VOLVO**	900-SERIES/S90N90	410	0	0	0	0	0
El	**VOLVO**	S70N70	374	501	723	596	604	671
Total El			**5,115**	**7,267**	**8,675**	**9,449**	**11,079**	**13,339**

Table B.5. Light Vehicle Sales by Manufacturer, Model and Segment. (Continued)

E2	AUDI	A6	239	250	547	682	813	952
E2	AUDI	A8	5	1	7	5	5	6
E2	AUDI	OTHER	0	0	25	19	19	21
E2	BMW	5-Series	306	628	703	854	962	823
E2	BMW	7-Series	133	229	194	184	197	222
E2	BMW	8-Series	0	0	1	1	1	1
E2	HONDA	LEGEND	0	0	12	9	9	10
E2	HONDA	NSX	4	0	2	1	1	2
E2	JAGUAR	OTHER	51	98	101	87	85	90
E2	MERCEDES-BENZ	E-CLASS	553	896	945	995	1,072	1,246
E2	MERCEDES-BENZ	S-CLASS	201	427	474	458	520	653
E2	OTHER	OTHER	1	10	23	28	40	42
E2	TOYOTA	LEXUS	92	66	96	97	119	143
Total E2			1,585	2,605	3,130	3,420	3,843	4,211
HVAN	ISUZU	ELF/BUDDY	3	1	5	32	230	349
HVAN	ISUZU	N-SERIES	950	1,299	1,447	1,531	1,495	1,497
HVAN	TOYOTA	DYNA	77	66	78	104	143	190
Total HVAN			1,030	1,366	1,530	1,667	1,868	2,036
MPV	CHRYSLER	VOYAGER	0	7	3	6	15	34
MPV	CITROEN	EVASION	0	0	48	42	68	112
MPV	HONDA	ODYSSEY	3	189	213	268	343	383
MPV	HYUNDAI	TRAJET	0	0	0	113	210	504
MPV	MITSUBISHI	FREECA	0	0	0	0	0	0
MPV	MITSUBISHI	SPACE WAGON	6	0	40	83	90	100
MPV	NISSAN	SERENA	0	4	4	10	12	16
MPV	VW	CARAVELLE	368	513	745	718	717	647
MPV	VW	SHARAN	6	0	0	0	0	0
Total MPV			383	713	1,053	1,240	1,455	1,796
MVAN	ISUZU	N-SERIES	934	1,035	1,325	1,762	2,379	2,902
MVAN	MERCEDES-BENZ	MB VAN	178	425	472	581	729	789
MVAN	MITSUBISHI	L300	48	0	115	186	322	503
MVAN	NISSAN	URVAN	30	322	403	508	650	832
MVAN	TOYOTA	HIACE	3,555	5,219	4,960	4,049	4,486	5,146
Total MVAN			4,745	7,001	7,275	7,086	8,566	10,172

Table B.5. Light Vehicle Sales by Manufacturer, Model and Segment. (Continued)

PUP	**FORD**	MARATHON	11	0	0	0	0	0
PUP	**FORD**	RANGER	7,736	15,609	15,506	17,546	20,206	23,265
PUP	ISUZU	RODEO	5,063	7,916	7,102	7,248	8,740	10,280
PUP	ISUZU	SPARK/SPACECAB	43,691	42,863	47,678	54,811	62,718	73,847
PUP	**MAZDA**	FAMILIA/FIGHTER	80	4	0	0	0	0
PUP	**MAZDA**	NEW FIGHTER	3,339	5,756	7,094	8,563	11,599	14,564
PUP	**MAZDA**	THUNDER	26	0	0	0	0	0
PUP	**MITSUBISHI**	L200	13,124	24,418	26,066	28,379	32,241	37,177
PUP	**NISSAN**	BIG M/NV	13,098	17,737	20,822	24,451	28,419	33,008
PUP	**OPEL**	CAMPO	99	1	0	0	0	0
PUP	**TOYOTA**	HILUX	46,328	38,616	42,836	49,639	55,006	63,698
Total PUP			**132,595**	**152,920**	**167,104**	**190,637**	**218,929**	**255,839**
U	**FIAT**	OTHER	0	0	0	0	476	729
U	**FORD**	OTHER	0	0	0	1,730	2,063	2,436
U	**FORD**	OTHER	2	0	29	32	40	69
U	**HONDA**	OTHER	1	0	4	3	3	3
U	**OTHER**	OTHER	0	0	905	788	853	914
Total U			**3**	**0**	**938**	**2,553**	**3,435**	**4,151**

BIBLIOGRAPHY

1. Clarke, Dana! G. Marketing Analysis and Decision Making: Text and Cases with Spreadsheets, Second Edition. Sanfrancisco, USA: The Scientific Press, 1993.

2. Dolan, Robert J. and Simon, Hermann. Power Pricing: How Managing Price Transforms the Bottom Line. New York, USA: The Free Press, 1996.

3. Kotler, Philip. Marketing Management: Analysis, Planning, Implementation, and Control. New Jersey, USA: Prentice-Hall, Inc., 1988.

4. Kotler, Philip. Marketing Management, The Millennium Edition. New Jersey, USA: Prentice-Hall, Inc., 2000.

5. Lehmann, Donald R. Market Research and Analysis. Illinois, USA: Richard D. Irwin. Inc., 1989.

6. Macdonald, Malcolm H. B. and Warren J. Keegan. Marketing Plans That Work: Targeting Growth and Profitability. Boston, USA: Butterworth-Heinemann, 1997.

7. Parmerlee, David. Developing Successful Marketing Strategies. Illinois, USA: NTC Publishing Group, 1992.

8. Parmerlee, David. Identifying the Right Markets. Illinois, USA: NTC Publishing Group, 1992.