USING M-GE MODEL TO ANALYZE THE COMPETITIVE STRATEGY UNDER LOCALIZATION POLICY

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Abstract: Localization (local content) policy is a tool to support industrial growth with the domestic market. Many countries had promoted their local content policy. The heavy electro-mechanical industry in Taiwan has been supported by localization policy for years. The participation into the GPA (Government Procurement Agreement) under WTO (world trade organization) in 2008 sees Taiwan facing even more competition. To keep the existing edge held by domestic industry, the authorities and enterprises should enact related policies to face it. Therefore, this paper from a M-GE model modified from GE model to analyzes the competitiveness of electro-mechanical products that are supported by the localization policy. And then recommendations are made regarding localization and the future development of the industry. Hopefully, the authorities fine-tune the localization policy and the industry adjusts its own policies, leading to enhanced global competitiveness.
Keywords: localization policy, electro-mechanical industry, WTO

INTRODUCTION

In general, the localization policy is to utilize the procurement of stated own enterprises to develop the domestic industry. The heavy electro-mechanical industry (HEMI) in Taiwan has been developing for 40 years. Such market of HEMI products has seen steady growth with the rapid development of the economy and investment in public projects, even becoming a fundamental industry. The HEMI has evolved from the early days of simple fabrication and maintenance to one where the local demands are met with a turn key solution of power-generation, power-supply, and power-distribution.

Taiwan Power (TaiPower) is a state own enterprise which is a monopoly under the Ministry of Economic Affairs (MOEA). TaiPower's considerable purchases for on-going mega-projects also readily support the development of local HEMI. Hence to support the HEMI in Taiwan, the MOEA has been advocating localization policy, which encourages the priority use of locally-made items for state enterprises. TaiPower set up in 1984 a Localization Promotion Committee (LPC) to promote the localization policy.

The LPC recognizes HEMI products as a strategic category to be aided along three basics: (1) A fundamental industry that impacts national well-being and industrial growth, and one that must be protected from foreign competition under GPA (government procurement agreement) of WTO (World Trade Organization). (2) An industry that has economical benefits if developed domestically. (3) The existing technology in Taiwan is readily adaptable. To provide tangible support for localization policy, the PLC has drafted the promoted procedures as follows:

Step 1: The LPC lists items which TaiPower would like to purchase from oversea company and holds meetings to screen prospective suppliers.
Step 2: If these items are in the localizable-product list, then go to 6 otherwise go to step 3.
Step 3: If the stocking schedule is tight, then go to step 7 otherwise go to step 4.
Step 4: Openly ask local suppliers to develop this product; if a willing supplier is found, then go to step 5 otherwise go to step 7.
Step 5: Suppliers begin to develop this product, as per TaiPower's specifications, a product in-house or co-develops with a foreign maker via technological transfer. Once this product is developed successfully, a supplier's product is tested and certificated by the LPC, the criteria of which include production capacity, operational qualifications, qualitative control and type & aging tests. Then a certification is given, with the item name and manufacturer entered in the localization list.
Step 6: Domestic (on the localization list) tender.
Step 7: Foreign and domestic (on the localization list) tender.

TaiPower adopts "acceptable quality, reasonable price and timely delivery" as the three basics of following the above-mentioned localization policy. Also the LPC regularly asks TaiPower's used unit for feedback. Contractors are asked to remedy the deficiency or risk the revocation of their competency certificate if the Taipower's used unit reply the product quality is not good.

MOTIVATION

Despite the enhanced competitiveness of the domestic HEMI under continual localization policy, Taiwan not has better compete in terms of cost against imports after joining the GPA in 2008 under WTO structure, which reduce tariffs. Therefore, most domestic suppliers of HEMI products are small or medium scale. The increasingly liberalized economy see such producers face

considerably more competition; especially considering that TaiPower has, through localization policy, allowed the formation of different cost-efficiencies between local and foreign contractors, where the latter is relatively superior in economies of scale. Hence it is critical that the government come up with ways to aid the local producers to keep their current edge. Therefore, this paper examined the competitiveness of the products procured by TaiPower under the localization policy. Based on the findings, recommendations aimed at localization policy and industrial development strategies are offered. This analysis looks mainly at heavy electrical products such as transformers, distributors, switches and cables, etc.

RELATED WORKS

The authorities' industrial policies are to foster the industrial base, as well as resolve any related problems. Industrial policies must be set according to the following five basics: (1) Focus on the operations of the marketplace. (2) Popularize policy measures. (3) Keep reasonable competition between the enterprises. (4) Consider the short- & long-term growths of industry. (5) Consider contracting overseas & the principle of relative benefits. (Wu, 1997).

To help understand the substantial impact of industrial policy upon industrial competitiveness, Liu (1996) applied competitive strategy (Porter, 1983) to proposed as reference to the authorities an analytical model of official policy versus industrial development.

Regarding the examination of the electro-mechanical industry, Chou (1995) focuses on such sector in Taiwan to understand the status quo. He also analyzes its manpower and technology, and concludes by recommending the adoption of intelligent controls, and the unifying of electrical, electronic and electro-mechanical technologies to enhance product quality and industrial competitiveness. This study does not discuss industrial policy or operations, but does delve into the competitive analysis of electro-mechanical items protected by the localization move.

ANALYTICAL MODEL

The growth-share matrix (GSM), designed by the Boston Consulting Group (BCG) is one of the best known among the portfolio-planning matrices (PPM) by Charles and Gareth (1998). But according to PPM, the fall of market growth is not conclusively attributable to its eventual maturation, lest one may lose the pioneering spirit. Alternatively and according to statistical analysis, as enterprises take a bigger market share so do they reap more profits due to their cumulative experience and scale economies? This is an over-simplified explanation however. To overcome such hurdle, GE and the McKinsey corporation co-developed the "GE Nine-Cell Planning or GE's Business Screen," (Globis, 1997), which logically melds the various views. Such tools are now widely used by GE and all its businesses.

The analytical model is proposed by adjusting versions of the GE's Business Screen and sets as the cornerstone the market appeal (MA) and competitive position (CP), with the average values being the four strategic matrices and referred to as the M-GE Model (Figure 1). Regarding the MA concept, TaiPower's procurement decisions exact the heaviest toll on electro-mechanicals, a sector that mostly serve the domestic market, hence defined as TaiPower's Purchasing Value/Scale of Domestic Market. The CP concept evaluates the competitiveness of a variety of products supplied by domestic makers, which allows the understanding of impromptu capability of domestic suppliers, hence defined as "production value/production capacity." If a supplier's capacity utilization rate is high, then its existing manufacturing technological prowess is considerable, as its competitive caliber, while the contrary means a weakened competitiveness.

High (MA)	High MA and weak CP (I)	High MA and strong CP (II)
Low (MA)	Low MA and weak CP (III)	Low MA and strong CP (IV)
	Weak CP	Strong

Figure 1. Market appeal (MA) Vs competitive positions (CP)

Regarding market appeal, the data from a single year is not representative as TaiPower's procurement year-to-year varies markedly. So the "purchase value" is the mean value for the past five years as provided by TaiPower. The "domestic market scale" is defined as the mean of the estimates, which are the data collected from a questionnaire of local suppliers who were surveyed to estimate the market-share of their lines in Taiwan. Regarding competitiveness position, the production values and capacities are data derived via a questionnaire survey. The production value is the total of such value of all the factories. The production capacity is the total capacity of all the suppliers.

This study is framed upon the M-GE structure; whereby the items to be evaluated are first screened and then data collected via a questionnaire survey. Based on the surveyed data, the values of "market appeal" and "competitiveness position" are then calculated, with appropriate analytical models and core concepts established. As only one index is adopted to evaluate the competitive position in the M-GE model, its representation is insufficient. To adjust for such biases and at once resolve the inadequate data from surveying the suppliers, the findings are evaluated by experts, after which a forum is held and attended by the industry, government department, TaiPower and concerned parties. To reach a consensus is the final goal, as well as apt recommendations and conclusions.

MODEL EMPIRICISM

This study is based on the above-mentioned measures from which proposed model is described below. The data of questionnaire to be analyzed consists of relevant statistics on the localizable electro-mechanicals procured by TaiPower, such as production value, import & export values, import & export nations, and scale of domestic market. Then a panel of experts is consulted and a consensus is reached.

(1) Product lines screened & evaluated

First 114 items of localizable-product list named by TaiPower are categorized. Among them 31 of the most likely to be listed as reserved, mainly heavy electro-mechanicals and electrical cables, as agreed by the authorities are to be evaluated.

(2) Questionnaire Survey Analysis

The questionnaire is designed as per the definition of the M-GE model, whereby a popular survey was taken via mailed questionnaires to 46 suppliers who have been approved by TaiPower, including 31 suppliers of heavy electro-mechanicals and 17 electrical cables, with 20 effective surveys received at a return rate of 43.5%. Of those surveyed, 13 of the heavy electro-mechanical and 7 electrical-cable suppliers replied. The survey asked for the production values, production capacities and scale of local market for the 31 localizable items in a prior year.

The surveyed data and TaiPower's purchase values for the last years are tabulated and shown in Table 1, which is the database for analysis of the M-GE model. The following also distinguishes between the categories of heavy electro-mechanicals and electrical cables. Note that the two categories bear distinct production characteristics. The 8-hour (single-shift) and 24-hour (three-shift) units are used to figure production capacities.

Some 15 heavy electro-mechanical items were analyzed via the M-GE model, resulting in 0.302 as the mean MA value and 0.379 as the value of mean CP. Three items are weakly CP yet highly MA in the market. Five are strong in both CP and MA. Four are strongly CP yet weakly MA. Three are weak in both CP and MA. See Figure 2.

Some 16 electric cable and wire products were analyzed via the M-GE model, resulting in 0.175 as the mean-value of MA, 0.176 as the mean CP, with three items weakly CP yet highly MA, two strongly CP and MA, four strongly CP and weakly MA, and seven weakly CP and MA. See Figure 3.

Since the sizes of the local markets are derived from the estimates based on the polls, so the values in the Figure 2 and 3 would be prone to certain errors. For example it would be logical that TaiPower's mean procurement value for one year is less than the industrial productive value. Such does not bear out table 1, which show TaiPower's mean purchase value of ten items in one years are greater than the industrial productive value. While the MA value should reasonably be less than unity, which is inconsistent with that of the four items. The following further examines the above phenomena.

As figures 2 and 3 and to stringently evaluate the various products, a forum was held that invited 27 parties who were polled and studied, including the Industrial Bureau of the Ministry of Economics, the Energy and Resources Research Institute of the Ministry of Industrial Technology Research, Taiwan Electro-mechanical & Electronic Industrial Association, Taiwan Wire & Cable Industrial Association, TaiPower, 17 heavy-electromechanical makers, and five wire and cable makers. TaiPower reported its procurement plan for the next years and analyzed the future demand for the various items. After which the participants confirmed the CP and future MA of the items in figures 2 and 3 and set down, with adjustments, the consensus in figure 4.

ANALYSIS & SUGGESTIONS

Under the existing localization policy, it is long-term protection for the local suppliers if TaiPower to procure domestically anything that would have been ex-sourced but is now localizable and such items are approved by the Committee. However this leads to the four deleterious effects described in Motivation for Study. Hence to fine-tune the localization policy, one should proceed as per the following three aspects for better overall benefit. (1) Set protective-period: TaiPower shall only procure domestically within the protective-period and will allow foreign tenders after the expiry. (2) As TaiPower faces increasing liberalization and globalization, its procurement methods and policies should be consistent to create a fair and reasonable playing field. (3) The suppliers should be well aware of the necessity to adjust their operational strategies in the face of inevitably increasing globalization and liberalization.

Combining the M-GE model analysis of the 31 electro-mechanical items studied, the final consensus of the forum as shown in figure 5, and the above-mentioned directions, we offer the following strategic recommendations aimed at the localization policy. (1) The six items with strong market-appeal yet weak competitiveness are in urgent need of strategic support from the authorities, who should allow the suppliers a longer period to build competitiveness. The suggested term for localization-adjustment is four to five years. (2) Though the 13 items with strong appeal and competitiveness can already fend for themselves, but their suppliers are still at the mercy of TaiPower's purchasing decisions. So they must continue to bolster their industrial basics and need a suggested localization-adjustment of two to three years. (3) The 15 items with weak appeal yet are strongly-competitive are not susceptible to TaiPower's purchase decisions, so are ready to face a liberalized market. (4) The 10 items that are unappealing and uncompetitive should be taken off the shelf. As for the items not among the 31 localizable-products, it is suggested that TaiPowr and the suppliers meet to discuss the adjustment period after such items are fully developed.

Table 1. Surveyed Data on Items Studied Unit: NT$Million

	Item name	Production Value (pv)	Production Capacity (pc)	CP pv/pc	TaiPower's mean purchase value of 2009 (MP)	scale of local market (SLM)	MA (MP/SLM)	Quadrant	item no.
Electro-mechanical items	SPPMT(Single-phase, pole-mount transformer)	2103	2986	0.70	600	3271.67	0.183	II	1
	SSMT(Single-phase surface-mount transformer)	1283	2429	0.53	200	1763.73	0.113	II	2
	3PSMT(3-phase, surface-mount transformer)	67	992	0.07	40	281.18	0.142	III	3
	1ψ HTC(Hi-tension capacitor)	97	331	0.29	36	232.56	0.155	III	4
	HSFC(hydraulic-switch for capacitor)	4.42	100	0.04	13.8	17.68	0.781	I	5
	SMS(surface-mount switch)	26.92	124	0.22	108	443	0.244	I	6
	VCB(Vacuum circuit-breaker)	87.49	160	0.55	40	564.81	0.071	IV	7
	Staged switch	150	230	0.65	34	454.74	0.075	IV	8
	Lightening rod	24.00	50	0.48	20	67.2	0.298	II	9
	Fused-link switch	114.9	240	0.48	140	182.91	0.765	II	10
	0.3-grade SWSCT (Single-wound specific-current tool)	115.	220	0.52	40	121.43	0.329	IV	11
	0.3-grade SPT (Specific-pressure tool)	71.22	160	0.45	40	51.15	0.782	IV	12
	EUWM(End-user wattmeter)	500.5	1050	0.48	600	1430	0.420	I	13
	EUVM(End-user voltmeter)	0.14	250	0.00	106	720	0.147	II	14
	Receptacle	22.60	100	0.23	2	86.92	0.023	III	15
Wires & cables	BRCW(Bare, rigid copper wire)	3223	8337	0.39	17	10029.54	0.002	IV	16
	ALW(All-aluminum wire)	96.14	2537	0.04	19.8	183.93	0.108	III	17
	SCAW(Steel-cored aluminum wire)	431	2824	0.15	5.2	533.78	0.010	I	18
	ACSW(Aluminum-coated steel wire)	146.9	2739	0.05	5	228.16	0.022	III	19
	600V PVC wire	2589	4924	0.53	15.2	3779.39	0.004	IV	20
	600V PVC storm wire	144	1440	0.10	20	994.54	0.020	III	21
	15KV PE CLSW(Cross-linked storm wire)	840.4	3737	0.22	805	1638.23	0.491	II	22
	SCWW(Soft-copper wound wire)	26.67	1302	0.02	2.2	74	0.030	III	23
	PVC AWW(Aluminum wound wire)	0.75	1230	0.001	0.6	8.33	0.072	III	24
	AWW(Aluminum wound wire)	3.44	1122	0.003	0.6	18.8	0.032	III	25
	600V PE CLPC(Cross-linked power cable)	1426	3102	0.46	800	2682.6	0.298	IV	26
	15KV PE CLPC(Cross-linked power cable)	87.34	2951	0.03	2	406.47	0.005	III	27
	25KV PE CLPC(Cross-linked power cable)	1831	5090	0.36	3000	3935.77	0.762	II	28
	600V PVC PC(power cable)	1083	2929	0.37	3.6	2408.59	0.001	IV	29
	600V UC PC(power cable)	27.63	1379	0.02	22	77.33	0.284	I	30
	69KV PE Power Cable	317	3912	0.08	960	1450.4	0.662	I	31

	Highly MA and weak CP	High MA and strong CP
High	Items: 5(0.04,0.781)	Items: 10(0.48, 0.765), 11(0.52, 0.329), 12(0.45,0.782), 13(0.48, 0.420)
MA=0.302	Low MA and weak CP	Low MA and strong CP
Low	Items: 3(0.07, 0.142), 4(0.29, 0.155), 6(0.22, 0.244), 15(0.23,0.023)	Items: 1(0.70, 0.183), 2(0.53, 0.113), 7(0.55, 0.071), 9(0.48,0.298), 14(0.48, 0.147), 8(0.65, 0.075)

weak Mean (CP)=0.379 strong

Figure 2. M-GE model analysis of heavy electro-mechanicals

	Highly MA and weak CP	High MA and strong CP
High	Items: 31(0.08,0.662), 18(0.15, 0.010), 30(0.02, 0.284)	Items: 22(0.22, 0.491), 26(0.46, 0.298), 28(0.36, 0.762)
MA=0.175	Low MA and weak CP	Low MA and strong CP
Low	Items: 17(0.04, 0.108), 19(0.05, 0.022), 21(0.10, 0.020), 23(0.02, 0.030), 24(0.001, 0.072), 25(0.003, 0.032), 27(0.03, 0.005)	Items: 16(0.39, 0.002), 20(0.53, 0.004), 29(0.37, 0.001)

Weak Mean(CP)=0.176 Strong

Figure 3. M-GE model analysis of electric cable & wire items

	Highly MA and weak CP	High MA and strong CP
High	Items: 4(6.9KV or bigger), 5, 6, 11(dry-type), 31(69KV or bigger)	Items: 1(sealed-type & non-transistor iron-core), 2, 3, 7, 9, 10, 13, 14, 22, 28
MA	Low MA and weak CP	Low MA and strong CP
Low	Items: 15, 17, 19, 21, 23, 24, 25	Items: 8, 12, 16, 18, 20, 26, 27, 29, 30

Weak Competitive position Strong

Figure 4. Final an alysis of electro-mechanicals vi a M-GE Model

As TaiPower implements the localization policy, it is recommended that the rules of the game be made fair between the local and foreign suppliers, including the acceptance standards, tender information, after-sale service, transaction and bidding terms. Also we should abide by international accords and promote reciprocity so as to build fair and reasonable competition, as well as to fit into globalization.

The study led to the discovery that the existing industrial structure the electro-mechanical trade will certainly be impacted by the adjustment of the localization policy. So the industry has to pace itself to the new changes but the authorities are suggested to consider the following measures to lend a hand as the industry gets used to the new policy adjustments. (1) The local suppliers are small-scaled and should be persuaded to restructure and merge under official inducement and promotion. (2) While eyeing long-term development, the authorities should help the industry to build its own certification capability. (3) Provide strategic “support industries.” (4) Help the privately-run power-suppliers to adopt the localization policy so as to broaden its scope.

CONCLUSIONS & SUGGESTIONS

In light of the increasing liberalization and globalization, any protective or supportive measures are in theory anti-liberalization. But the GPA structure allows a degree of domestic protection. Hence to keep the edge held by the local electro-mechanical industry, the localization policy needs to be continued. The strategies should be shaped as follows. (1) The items under the localization policy should be given an orientation or grace period before opening the market to foreign tenders. Such grace allows the local suppliers to evaluate the economic benefits of their products to ready themselves for the impending competition, which not only induces the producers to build global competitiveness with a broad perspective, but also enables TaiPower to reduce their purchase costs. (2) TaiPower should as soon as possible set up fair and reasonable competition to face the inevitable globalization, reducing the disagreement on purchase. (3) The authorities should offer appropriate packaged measures to help producers to fit in, with the latter opportunely changing their operational policies to enhance global competitiveness. Finally one hopes that this study helps to continue the development of a healthy electro-mechanical industry in Taiwan, achieving the localization of indigenous technologies and enhancing industrial competitiveness.

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