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Based on Competitive Strategy to Discuss the Effect of Organizational Operation on Business Performance in High-Tech Industries

Qiujin ZHENg¹, Anxin XU², Huiping DENG³, Jingjing WU⁴, Qianqian LIN⁵

Abstract

Under global economic and trade liberalization as well as the pursuit of sustainable development, the reinforcement of technology and the balanced development of humanities and society could promote national competitiveness. High-tech industries, as knowledge-intensive technology-oriented industries, could drive the rapid development of national economy and lead domestic economic development and industrial upgrading that it is the necessary road for economic redevelopment. The maintenance of competitive advantage of an enterprise lies in constructing and maintaining strategic resources conforming to industrial attributes. The correlation among organizational operation, competitive strategy, and business performance is therefore the research motivation of this study. Aiming at a high-tech company in Fujian Province, San’an Optoelectronics Co., Ltd., the employees and supervisors are distributed 300 copies of questionnaire in this study. Total 227 valid copies are retrieved, with the retrieval rate 76%. The research results reveal significantly positive correlations between organizational operation and competitive strategy, competitive strategy and business performance, and organizational operation and business performance. According to the result, suggestions are finally proposed, expecting to help domestic high-tech industries making competitive strategies for the acquisition of competitive advantage to create excellent business performance.

Keywords: high-tech industries, organizational operation, competitive strategy, business performance.

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Introduction

Under the trend of global economic and trade liberalization and the pursuit of sustainable development in past years, reinforcing technology and the balanced development of humanities and society could enhance national competitiveness. It is the policy planning points for domestic government stepping to technological nation. High-tech industries, as knowledge-intensive technology-oriented industries, could drive the rapid development of national economy and lead domestic economic development and industrial upgrading. Meanwhile, domestic traditional industries are facing great business bottlenecks. Most owners in traditional industries tend to diversification, and the business in high-tech industries is an essential road for economic re-development. Entering “high-tech industries” is a goal of many traditional industries. Nevertheless, how to enter the rapidly changing, high-risk, short-life cycle, largely competitive, and talent-shortage high-tech industries is the consideration of high-level management teams. High-tech industries and traditional industries present different industrial attributes, while the goal to acquire excellent business performance is consistent. Some research results reveal remarkable relationship between business performance and competitive strategy, competitive advantage. An enterprise has to match the strategic attributes with industrial attributes to form persistent competitive advantage. The maintenance of competitive advantage of an enterprise lies in constructing and maintaining strategic resources conforming to industrial attributes. The correlation among organizational operation, competitive strategy, and business performance is therefore the research motivation of this study. It is regarded a primary issue for high-level management teams in traditional industries considering the management (operating organization), the acquisition of competitive advantage, the formulation of competitive strategy to create excellent business performance when facing high-tech industries with completely different industrial characteristics.

Literature review and research hypothesis

Organizational operation

Hernandez & Grayson (2012) pointed out the key items of corporate operation as organization and planning, leadership and recruitment, incentives and control, communication model, and power distribution. Such operation items were related to leaders’ personality traits, human nature and attitudes, organizational structure design, and corporate culture and value (Gallent & Robinson, 2013). Zopiatis et al. (2014) mentioned that organizational operation had to match organizational members’ characters, and work environment, industrial characteristics, and set goals of an organization were completed through the hierarchical structure. In this case, any organizational design would change with tasks, technologies,
environment, and compositions. Banwo, Du, & Onokala (2015) contained structural dimension and contextual dimension in organizational design. Structural dimension covered 1. formalization: referring to the number of official files in an organization, including the operation processes to define behaviors and activities, job descriptions, regulations, and policy manuals. 2. specialization: referring to the specialization of work division in an organization; with higher level, employees merely did small-coverage work; otherwise, employees had to do diverse work. 3. standardization: referring to completing similar work with the same method. 4. hierarchy of authority: referring to the superior-subordinate relationship and control range reported by each manager. 5. complexity: referring to the number of activities or sub-systems in an organization; the vertical complexity was the number of hierarchies, the level position or the number of departments was the horizontal complexity, and the number of geographic positions was the spatial complexity. 6. centralization: referring to the hierarchy to make decisions; merely high-level being able to make decisions was a centralized organization; otherwise, it was a decentralized organization. 7. professionalism: the degree of employees receiving formal education or training, and 8. personnel ratio: personnel allocation in various departments.

Cameron (2014) pointed out the coverage of contextual dimension as (1) size: the number of personnel in an organization; (2) organizational technology: the essence of production sub-system, containing the motion and skills from import to export, (3) environment: components external the organization, e.g. industry, government, customers, suppliers, and financial conditions; (4) goals and strategies: a goal was the paper statement of an organization intending to achieve, and a strategy was the plan describing resource allocation and environment strategy for achieving organizational goals; the definition of goals and strategies was covered in organizational operation and the relationship of employee competitors and customers. 5. culture: the important value, belief comprehension, and regulation of employee sharing (Nujjoo & Meyer, 2012). Referring to Lam & Chen (2012), formalization, centralization, and professionalism are used as the dimensions of organizational operation in this study.

**Competitive strategy**

Hughes & Brush (2011) regarded strategy as a plan, the guidance of future action, the channel with projects to achieve corporate goals, and the consistent and comprehensive overall plan designed to provide guidance for an organization achieving basic goals (Gidorn & Hasenfeld, 2012). Lee & Ok (2014) mentioned that making strategies aimed to understand and satisfy customer needs, while real strategies were to create satisfactory value for customers. Boss (2012) stated that a strategy was to apply limited resources, maximize opportunities, minimize threats, and control each step to complete as planned. Liu & Tsaur (2014) regarded strategies as 1. to evaluate and define corporate survival niche, 2. to establish and maintain competitive advantage for corporate success, 3. series of major activities
to achieve corporate goals, and 4. guidance to form internal resource allocation process. Jang & George (2012) divided strategies into four types. (1) Defender: To actively prevent from competition and segment the market in limited niche market, aiming to pursue the stability. (2) Prospector: To devote to the opportunities for developing new products and new markets and pursue innovation better than profitability. (3) Analyzer: To pursue minimal risks and maximal profits between defenders and prospectors, with good short-term performance. (4) Reactor: No ability to do prevention but being exhausted afterwards to result in bad performance. Gurr (2011) considered that an enterprise with persistent competitive advantage could present advantageous status in the industry. Porter proposed three types of competitive strategy. (1) Low-cost strategy: To seek for efficient facilities, grasp special technology and key materials, and the advantage of scale economy to reduce business costs down to the lowest and to enhance market share with the cost lower than it of competitors. (2) Differentiation strategy: To segment products or service from other companies in the same industry, make different products with product characteristics, service quality, brand image, or new technology, bring unique value for buyers, and be loyal to company brand. (3) Centralization strategy: To focus business on specific regional markets or purchase groups or products, attempt to achieve low-cost or segmental advantage in small markets (Sanchez-Hernandez & Miranda, 2011).

Based on competitive strategy proposed by Chang (2012) and taking competitive strategy with different industrial attributes, cost orientation, quality orientation, and marketing orientation are the dimensions for this study.

**Business performance**

In the book “Strategic Management”, Gursoy, Boylu, & Avci (2011) indicated that comprehensive strategy effectiveness should be taken into account for measuring organizational performance, as a strategy meant how an organization did to achieve goals from the overall aspect. For this reason, a broader indicator was required for the measurement of performance. Javadein et al. (2011) divided performance into profitability, goal achievement, market share improvement, and size growth. Ingamells, Napan, & Gasquoine (2013) indicated that performance was often measured with economic dimension in strategic management, and return on assets (ROA) and sales growth rate were common indicators. Boubakri (2011) divided performance into earning before tax margin, return on total assets, return on constant assets, and goal achievement. Lee & Kotler (2011) considered that manufacturing performance would eventually responded to financial and marketing performance that pre-tax return on assets, market share, and growth rate were considered for measuring performance. Manzoor (2012) proposed to measure business performance from (1) financial performance - profitability, sales quota, growth rate, (2) corporate performance - the sum of financial performance and operation performance, which referred to market share and product quality,
and (3) organizational effectiveness—the most general definition of organizational performance. Business performance should take the overall effectiveness of an organization into account. Referring to Chen (2013), the subjective measurement, according to business conditions internal a company and the average level of the industry, is applied to this study. This study intends to measure an organization’s business performance with profitability, turnover growth, productivity, market share, corporate image, high-level teams’ leadership, organizational flexibility, and overall competitiveness (Smith & O’Sullivan, 2012). Financial performance and non-financial performance are used for evaluating an organization’s business performance in this study.

**Research on organizational operation and competitive strategy**

Gursoy, Chi, & Karadag (2013) indicated that the task of a management team was to have the organization adapt to changing environment and evaluate the strength and weakness of an enterprise to define the advantage. Besides, corporate goals and strategies were made by matching external opportunities, and organizational design was preceded according to strategies for the practice and execution of strategies (Fang & An, 2017). Nevertheless, decisions were often made with the current structure of an organization, while current organizational design would limit strategies, and organizational goals and strategies were made based on environmental requirements. Lu et al. (2016) indicated that High-level managers attempted to reorganize through the organization to achieve the objective that an organization and strategies would mutually affect (Lam & Chen, 2012). Tan & Yeap (2012) mentioned that management teams interpreted environment from different aspects to develop various strategies for distinct results. A successful enterprise should have definite goals and focuses to achieve the company vision through the leadership of high-level management teams, rapidly respond to problems and opportunities aiming at environment changes, and understand the core value of the enterprise to satisfy customer needs (Namkung & Jang, 2014). Apparently, in face of changeable environment, high-level management teams have to consider competitive strategies, apply organizational operation, and create persistent competitive advantage of the enterprise to acquire the optimal business performance. Competitive strategy, organizational operation, competitive advantage, and business performance therefore exist in influence relationship (Wang, 2012). The following hypothesis is therefore proposed in this study.

**H1:** Organizational operation shows significantly positive correlations with competitive strategy.

**Research on competitive strategy and business performance**

On the business performance of group enterprises in Taiwan, Wolf (2012) discovered that any enterprises determining the strategies according to the invested
industrial attributes and internal resources would present positive effects on the business performance. Hasnelly (2011) proved the remarkable relationship between organizational performance and decision model, business strategies. Lin, Lai, & Chen (2015) also discovered that different types of management styles, corporate culture, and competitive strategy would show distinct performance. Accordingly, organizational operation of different high-level management teams with various competitive strategies and strategy advantages would reveal distinct business performance. The following hypothesis is therefore proposed in this study.

H2: Competitive strategy present notably positive correlations with business performance.

Research on organizational operation and business performance

Aiming at organizational operation characteristics of domestic major group enterprises, Muscalu et al. (2013) discovered that most group enterprises tended to low centralization, high autonomy, and high standardization that organizational structure was correlated with business performance. Hayati & Caniago (2012) found out the positive effects of transformational leadership and encouraging language on employees’ work satisfaction, while professionalism and organizational formalization would positively weaken work satisfaction. Yang, Wan, & Fu (2012) concluded the correlation between organizational operation and organizational performance that an organization changed with tasks, technologies, environment, and compositions and complete with the operation of the organization hierarchy (Wang, 2016). As a result, organizational operation existed in interaction with various dimensions. The following hypothesis is further proposed in this study.

H3: Organizational operation reveals remarkably positive correlations with business performance.

Sample and measurement indicator

Research sample and object

A high-tech company in Fujian Province, San’an Optoelectronics Co., Ltd., is studied. The employees and supervisors are distributed 300 copies of questionnaire. Total 227 valid copies are retrieved, with the retrieval rate 76%. San’an Optoelectronics Co., Ltd. is a full-color ultra-high brightness light-emitting diode and chip manufacturer with international influence. The head office is located in Xiamen, and the industrial bases are distributed in Xiamen, Tianjin, Wuhu, and Quanzhou. It is the “high-tech model projects to demonstrate their commercial viability” enterprise approved by National Development and Reform Commission, the “semiconductor lighting project leader” recognized by Ministry of Science and Technology of the People’s Republic of China, undertaking national “863”
and “973” programs, and national postdoctoral science research workstation and national enterprise technology center.

**Reliability and validity test**

Validity refers to a measuring tool being able to really measure the problem which a researcher would like to measure. Generally speaking, validity is divided into content validity, criterion-related validity, and constructs validity. The questions used in this study are referred to domestic and international researchers’ research questions and the pretest is preceded before the distribution of formal questionnaire that this questionnaire shows content validity. This study tests the casual relationship of the overall structure with organizational operation, competitive strategy, and business performance. Linear structure relationship model is used for the analysis, and the data registry is based on the correlation coefficient matrix of above observed variables. The result reveals the overall model fit achieving the rational range that it presents favorable convergent validity and predictive validity.

Reliability and validity are further analyzed in this study. The higher Cronbach’s α shows the better reliability. The formal questionnaire is developed according to the standards, the measured Cronbach’s α reliability coefficient appears in 0.79~0.92 that apparently conforms to the reliability range.

**Empirical result analysis**

LISREL (linear structural relation) model combines factor analysis and path analysis in traditional statistics and added simultaneous equation in econometrics for simultaneously calculating multi-factor and multi-casual paths. The model fit is evaluated from preliminary fit criteria, overall model fit, and fit of internal structural of model.

**LISREL model evaluation indicator**

Item-to-total correlation coefficients are used in this study for testing the construct validity of the questionnaire content, i.e. reliability analysis. The calculated item-to-total correlation coefficients are to judge the questionnaire content. The item-to-total correlation coefficients of various dimensions in this study are higher than 0.7 that the questionnaire presents certain construct validity.

The data results in this study are organized in Table 1. The overall model fit is further explained as followings. The overall model fit standards $\chi^2/\text{DF}=1.866$, smaller than the standard 3, and RMR=0.005, revealing the proper results of $\chi^2/\text{DF}$ and RMR. Moreover, chi-square value is sensitive to sample size that it is not suitable for directly judging the fit. However, the overall model fit standards
GFI=0.981 and AGFI=0.924 reach the standard 0.9 (the closer GFI and AGFI to 1 showing the better model fit). This model therefore presents good fit indicators.

*Table 1: Analysis of overall model fit*

<table>
<thead>
<tr>
<th>Evaluation item</th>
<th>Parameter/evaluation standard</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>overall model fit</td>
<td>$X^2/Df$</td>
<td>1.866</td>
</tr>
<tr>
<td></td>
<td>GFI</td>
<td>0.981</td>
</tr>
<tr>
<td></td>
<td>AGFI</td>
<td>0.924</td>
</tr>
<tr>
<td></td>
<td>RMR</td>
<td>0.005</td>
</tr>
</tbody>
</table>

Note: * stands for p<0.05, ** for p<0.01, and *** for p<0.001.

*Preliminary fit criteria analysis*

The data results in this study are organized in *Table 2*. The preliminary fit criteria of the model are explained as below. The dimensions of organizational operation (formalization, centralization, professionalism) achieve the significance ($t>1.96$, $p<0.05$) in the explanation of organizational operation; the dimensions of competitive strategy (cost orientation, quality orientation, marketing orientation) reach the significance ($t>1.96$, $p<0.05$) in the explanation of competitive strategy; and, the dimensions of business performance (financial performance, non-financial performance) achieve the significance ($t>1.96$, $p<0.05$) in the explanation of business performance. Apparently, the overall model appears favorable preliminary fit criteria.

*Table 2: Preliminary fit criteria analysis*

<table>
<thead>
<tr>
<th>Evaluation item</th>
<th>Parameter/evaluation standard</th>
<th>Results</th>
<th>$t$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preliminary fit criteria</td>
<td>organizational operation</td>
<td>formalization</td>
<td>0.762</td>
</tr>
<tr>
<td></td>
<td></td>
<td>centralization</td>
<td>0.744</td>
</tr>
<tr>
<td></td>
<td></td>
<td>professionalism</td>
<td>0.753</td>
</tr>
<tr>
<td></td>
<td>competitive strategy</td>
<td>cost orientation</td>
<td>0.802</td>
</tr>
<tr>
<td></td>
<td></td>
<td>quality orientation</td>
<td>0.796</td>
</tr>
<tr>
<td></td>
<td></td>
<td>marketing orientation</td>
<td>0.813</td>
</tr>
<tr>
<td></td>
<td>business performance</td>
<td>financial performance</td>
<td>0.773</td>
</tr>
<tr>
<td></td>
<td></td>
<td>financial performance</td>
<td>0.786</td>
</tr>
</tbody>
</table>

Note: * stands for p<0.05, ** for p<0.01, and *** for p<0.001.
**Internal fit analysis**

The data results are organized in Table 3. Internal fit of model is further explained. Organizational operation shows positive and significant correlations with competitive strategy (0.846, \( p < 0.01 \)), competitive strategy reveals positive and remarkable correlations with business performance (0.839, \( p < 0.01 \)), and organizational operation presents positive and notable correlations with business performance (0.851, \( p < 0.01 \)) that H1, 2 and 3 are supported.

Table 3: Internal fit analysis

<table>
<thead>
<tr>
<th>Evaluation item</th>
<th>Parameter/evaluation standard</th>
<th>Results</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>internal fit</td>
<td>organizational operation (\rightarrow) competitive strategy</td>
<td>0.846</td>
<td>23.57**</td>
</tr>
<tr>
<td></td>
<td>competitive strategy (\rightarrow) business performance</td>
<td>0.839</td>
<td>21.36**</td>
</tr>
<tr>
<td></td>
<td>organizational operation (\rightarrow) business performance</td>
<td>0.851</td>
<td>27.69**</td>
</tr>
<tr>
<td>research hypothesis</td>
<td>correlation</td>
<td>empirical result</td>
<td>(P)</td>
</tr>
<tr>
<td>H1</td>
<td>+</td>
<td>0.846</td>
<td>(P&lt;0.01)</td>
</tr>
<tr>
<td>H2</td>
<td>+</td>
<td>0.839</td>
<td>(P&lt;0.01)</td>
</tr>
<tr>
<td>H3</td>
<td>+</td>
<td>0.851</td>
<td>(P&lt;0.01)</td>
</tr>
</tbody>
</table>

*Note: * stands for \(p<0.05\), ** for \(p<0.01\), and *** for \(p<0.001\).*

**Conclusion**

The research results reveal that high-tech businesses could choose corporate culture, organizational operation, and competitive strategy suitable for the industry, maintain the competitive advantage to optimize the business performance. Under the overall industrial environment with global economic structure adjustment, national competitiveness and industrial upgrading policy enhancement, and high-tech industries facing business bottlenecks, the empirical results of this study could provide high-tech industries for the optimal resource allocation and decision-making, reducing risks, achieve the optimal business performance by more correct knowledge of industrial business in the transformation or diversification process. The research results provide opportunities for further discussions in the academia and introspection of high-tech industries. High-level and high-capability high-level management teams, excellent corporate culture, flexible organizational
operation, effective competitive strategy, and persistent competitive advantage, but not coordinating, cooperating, harmonizing, and efficiently operating various dimensions, could not guarantee good business performance. The harmonious action is the goal of enterprises.

**Suggestion**

The important results and findings are organized in this study, and practical suggestions are proposed as below.

1. The final goal of business is to pursue the maximization of profits. The achievement of excellent business performance is related to competitive strategies and competitive advantage of high-tech businesses. A high-level management team in high-tech industries must clearly realize the industrial attributes, business environment, and uniqueness of the enterprise. Exclusive and fuzzy strategic resources are expected to effectively apply advantageous resources and make progressively competitive strategies. Apparently, management teams in high-tech industries must present industrial experience, professional background, high sensitivity, and logic reasoning ability. Besides, it is critical to cohere with high-level management team members in high-tech industries.

2. Management teams in high-tech industries should be able to rapidly respond to changing business environment, have company develop, encourage the employees to make changes with innovation, take risks, seek for breakthrough, present corporate culture with autonomous management, adopt flexible organizational operation, enhance R&D teams’ levels and new product development capabilities, as well as enhance product quality and customer relationship to acquire good performance with differentiation strategy.

3. A management team in high-tech industries encouraging innovative and cooperative corporate culture in the enterprise could have the enterprise naturally develop the basic capabilities for adjustment and improvement, rapidly respond to changing business environment, review material sources, cost structure, process update, and market needs, as well as evaluate the integration of strategic alliance and diversification practicability. It therefore could construct new vision of the enterprise to present booming development opportunities.

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