

Application of Strategic Matrix Analysis to the student recruiting strategies of technological and vocational universities

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ABSTRACT: The purpose of this study is to apply the Strategic Matrix Analysis to student recruiting strategies in order to derive practical reference information for technological and vocational universities. By means of case study, expert interviewing, literature review and conceptual description, the study analyses the dimension of the strategic posture and, from the viewpoint of marketing, deals with the dimension of the strategic objectives and the value units. As well, by scrutinising the linkages, interactions and interfaces between strategic points, the study tries to analyse the strategic essences which serve as guidelines to evaluate the present student-recruiting policies and direct the universities to more advantageous recruiting strategies. The result shows that recruiting students from a market-orientated perspective creates a new value of needs, reshaping competition boundaries as new markets are developed. Also, in the university recruiting market, network relationship management leads to views such as *creating new value and making profits with your partners*, offering satisfying solutions for needs, and thus constructing a chain of value.

INTRODUCTION

Business strategy, the decision-making vital to business functions, is examined in this article. Also taken into account is how, in practice, business strategy operates in accord with the overall policy of the enterprise, directs the departments towards functional policy orientation, and endows the enterprise with competitive advantage.

According to Drucker, management theories cannot be effective forever, although some are powerful enough to prevail for a long time [1]. New mechanisms, new tools and new sources of competitive advantage must be considered in order to develop new strategies. The Strategic Matrix Analysis, advanced by Dah-Hsian Seetoo in 1994, conceives the integrative framework of policy analysis and decision-making essential in business strategy.

Modularising subtle considerations or theories, it envisions different views and scenarios with graphic thinking. Such a method of analysis is practical for strategy analysers and developers; it also can be used in industry analysis and help strategy makers gain more fruitful outcomes from the analysis.

The declining birth-rate and the radical change in the education environment are having a great impact on higher education. According to the statistics collected by the Taiwan Ministry of Education (MOE), the 2007 pass rate of the entrance exam for all the 162 colleges and universities was up to 96.28% [2]. Colleges and universities compete for students as supply exceeds demand. On the other hand, such competition gives universities the incentive to provide higher quality in response to the needs of society [3][4].

This article intends to probe the decision-making model and its inner logic as universities make recruiting strategies. To ensure competitive advantage, universities need to adopt ideas of business management and shape suitable strategies to keep innovative and maintain advantage. The Strategic Matrix concept helps evaluate present recruitment performance and provide suggestions and directions for future recruiting strategies. This article attempts to offer practical reference information on recruiting strategies by examining the strategic ideas (essences) and portfolios in order to help technological and vocational universities initiate, enforce or modify their recruiting policies.

This study takes the recruiting strategies of a certain technological university in Taiwan as an example. By interviewing experts and by analysing industrial strategic dimensions and the recruiting value units in the Strategic Matrix, it tries to discover the hidden logic behind the recruiting strategies in order to:

- understand the present situations and difficulties of student recruitment in technological and vocational universities;
- offer information for the development of recruiting strategies.

LITERATURE REVIEW

The Strategic Matrix Analysis was developed by Seetoo in Management Review in 1994 [5]. Derived from the Strategic Posture Analysis, it comprises and cross-analyses the strategic posture dimension and the industry value chain. The industry value chain, composed of value units, comes from the business process, which contains every process unit in input and output.

The strategic posture is the type of business strategy being considered and it comes from the embodiment of, or changes in, strategy. Each cell in the matrix is a strategy point related to a certain value unit and a strategic dimension aspect; the correlation between strategy points reveals the strategic *idea*; the modularised thinking behind the strategy. In other words, the outer evident strategy points disclose the inner implicit strategic essences.

Moreover, the various selections and combinations of strategic essences in the matrix develop new workable strategies supported by theories and are highly innovative. If they meet the criteria of environments, conditions and objectives, the three aspects closely relevant to strategy development, these strategies unveil different strategy visions and lead to future strategic essences [5][6].

To probe the logic behind the strategy of the case studied here and to clarify the competitive advantages in the market, the *environment-condition-objective* criterion proposed by Seetoo was considered; the industrial structure from the environmental viewpoint was discussed; and a search undertaken for the factors that create value in the market.

As time is an inevitable element in between environment and value, the Strategic Matrix encompasses the concepts of environment, time and value and uses them as the basis for analysing and evaluating strategic essences. The matrix probes into:

- Elements of environment and time: the environment of present strategies, the degree of agreement between present strategies and resources, the participants in the activity, connection of inner and outer resources, industrial network relationships and the environmental trends of future strategic intents.
- Elements of value and time: the common needs of the participants, the degree of agreement between the present operation area and the customer's needs, the trend and presupposition of the customer's needs, the exchange of information on industrial environment and resources, future strategy planning and value co-creation with customers.

The Student Recruiting Strategic Dimension

The strategic dimension is induced from the Strategic Posture Analysis proposed by Seetoo [5][6]. It concretely demonstrates strategy logic and business operation mode, and embraces different aspects of the dimension in a well-thought-out framework, which can trace the development of strategy and, thus, envision the future strategy outlook.

This study combines the ideas of Strategic Matrix Analysis by Seetoo, the philosophy of educational marketing by Tang [3] and the university recruiting strategy by Zhang [7], pointing out five aspects of the strategic dimension with the aim of providing adequate recruiting strategies to help universities attract students and their parents:

1. Distinctive departmental features: In the 2002/2003 school year, the Department of Technological and Vocational Education of Taiwan MOE started to place emphasis on the department-based curriculum planning of the universities with an eye to building up their own distinctive features in teaching and research [8][9]. Distinctive features consist of adopting the concept of product positioning in school education services and in developing departmental features for the service of the target market. Establishment of distinctive features leads to competitive advantage and attracts outstanding students, who, in turn, infuse more competitive advantage into the school [10].
2. Market segmentation and targeting: A market niche lies in a market divided into segments that share specific consumer habits and preferences, and it also lies in targeted groups of customers related to the business scope [11]. Drucker [1] holds that ascertaining the reasons why the non-customers do not purchase the product or service would urge the company to carry out changes, and by understanding the commonality of the non-customers and exploring the potential needs, the company creates new customer value to accommodate customer differences, thus diminishing the scale risk for creating new market space [12]. In the educational market, the needs of students, parents and the society should be considered and satisfied right from recruitment planning [7]. Educational market segmentation is done by analysing social trends and competitive configurations and, furthermore, by positioning students for favourable future developments. After the market segmenting is done, marketing should concentrate on students and their parents in the target market [13]. The school strategies should not only meet the needs of recruiting but also connect knowledge of higher education and technology of industries [14]. Market segmentation helps position the school more competitively to meet various talent demands [15].
3. Vertical integration: Creating profits and value in collaboration with business partners strengthens the power of management and innovation [16]. The Taiwan MOE encourages strategic alliances and resource sharing between technological universities and vocational high schools. Vertical integration conducts technological and vocational

education into the industrial value chain as the schools cooperate with industries in fostering talents and improving technology.

4. Geographical coverage: Studies on distribution of university student geographic origins show more competitive universities enrol more non-local students [7][17]. With the narrowing of the gap between urban and rural areas, and increasing employment opportunities in central and southern regions, about 70% of graduates in Taiwan intend to build their careers in their hometowns. Therefore, universities are supposed to cooperate, share resources and create a win-win situation with regional industries [18][19].
5. Competitive advantage: Adaptability is vital as markets evolve, and a learning organisation will actively seek new abilities to suit the market instead of passively waiting to be accepted (Peters and Waterman).

School competitiveness consists in high quality, efficiency, customer satisfaction and distinctive features in the aspects of student effectiveness, teacher effectiveness, administrative effectiveness and parental support [10].

Assisting students to get professional certificates, participate in inter-university competitions and take internship courses adapts students to future workplaces and creates good brand images for universities. According to a survey, frequent participants of inter-university competitions gain more advantages in entering workplaces, and internship courses help introduce students to industries [19][20].

The Value Chain of Student Recruiting Strategies

A value chain describes a method, as well as a process in business management, and each value unit indicates an asset, as well as an activity. Combining value activities and core resources, a business builds the value chain with the following strategic thinking process: finding customers and creating satisfying products, associating competitive advantage of core resources with customer value, and taking strategic behaviour and evaluating the performance in accordance with the market structure. As the educational industry involves overlapping markets, it is necessary to do the value activity segmentation to find the niche.

Presented in this study are six value units of the value chain of student recruiting strategy, according to School Management by Zhang [7]:

1. Recruitment targeting: To find a niche market with limited resources, it is essential to reconstruct the means and technology of production in order to enhance the market attractiveness. Seeking the *unfound* needs in the market and creating new value by redefining the existing issues will change the market operation, reform the competition boundary and strengthen the strategic position [21]. The recruitment staff are supposed to redefine the recruitment issues and needs with new eyes, decide on the recruitment target and discern the major and minor markets in order to enrol appropriate students [7][22][23].
2. Concrete recruiting plans: Good customer service that is outstanding in the competitive market calls for vigorous action to respond to customers' suggestions and needs and to solve their problems [24]. The purposes of school marketing, new value creation, market targeting and customer orientation are to establish the confidence of the target market in the school. First, in the recruitment phase, attention should be directed to the quality of the recruiting procedure, and resources should be used to heighten the visibility of the school in the market. Second, in the enrolment phase, speedy notification to, and frequent contact with, the freshmen will arouse approval and increase the enrolment rate. Lastly, as the students study at the university, their satisfaction, academic performance and retention rate should be taken into consideration to see if the recruitment goal is reached. In addition, for students who are admitted but do not enrol, their impression of the school should be evaluated as reference information [3][7][10][25].
3. Departmental arrangement: Adjustability is vital in the ever-changing market, and products failing to arouse instant interest and satisfaction are doomed to be weeded out [24]. The idea of value innovation advanced by Kim [12] means actively developing new abilities to meet the needs of markets instead of finding a market to suit the existing abilities. University departments must be arranged and integrated to provide the knowledge and technology constructive for industry-academy cooperation, and by performing the function of technology transfer, the departments highlight the features of the university [14]. The Taiwan MOE started in 2002 to encourage the development of department-based curriculum in technological universities with the aim of making universities offer students practical knowledge and training, which amply satisfy the needs of industries. Therefore, a department should define its position in industries before setting its educational goal. It recruits appropriate students, points them in the right direction, and thus shapes its distinctive features with competitiveness and good images.
4. Refined environment: An open and communicative environment breeds team cohesion. Members of an organisation are immersed in its distinctive organisational culture, and the more they are in agreement with the culture, the more they show cohesion, loyalty and obedience [25]. Campus culture encompasses all the tangible and intangible teaching materials in school and *teaches* students and faculty behaviour norms, with its subtle management and control mechanism [26]. A good teaching environment contains fair salaries and benefits along with a sound system and promising development. As a good school image attracts students, a good teaching environment attracts good teachers. Moreover, good teachers cultivate good students who, in turn, construct a good school [7][27].

5. Parental satisfaction: Respecting the needs and suggestions of customers in order to provide satisfying products, a customer-orientated business ensures its position in the market [24]. In providing products, the business thinks for the customers, respects their differences, helps them evaluate the products, wins their trust and attachment, and thus enhances the value of the products. Only with strong loyalty do customers advocate a product, and the growth of businesses lies in changing customers into advocates [28]. When recruiting students, it is easier to win parental trust and acceptance if schools take the role of advisers who offer assistance and suggestions, and lead students to appropriate schools or departments. Free flow of information, good services for students and efficient communication among teachers, students and administrators also gain parental approval [15].
6. Students' competitiveness: Competitiveness consists in beating competitors to the core competency. Core competency comes from integration of assets and abilities, and is heightened when used and shared. The school serves the function of developing students' core competency, enhancing their abilities to learn, create, apply knowledge, adjust to the environment and work in a team [29]. Employment rate and working performance of university graduates are key factors in evaluating a university. In addition, the abilities most valued in workplaces are the abilities to solve problems, cooperate with others, take risks and think lucidly [30]. A survey by the Taiwan National Youth Commission shows the employability skills emphasised by business employers are, in order of importance, good work attitude, stress resistance and stability, communication ability, learning willingness, professional knowledge and technology, teamwork ability, basic computer skills and abilities to find and solve problems [31]. Technological and vocational education is aimed at fostering technological talents for national industrial development. The Taiwan MOE launched a project in 2008 to promote cooperation between industries and the universities, prompting universities to endow students with professional skills and employability advantages constructive for industries. Ideal technological and vocational universities meet the needs of industries and society, save industries the cost of staff training, and attract students who want to improve their employability prospects.

Elements of the Strategic Matrix

The complexity of an industry cannot be exemplified by mere incidents and, unless detailed information is provided, it is hard to achieve a penetrating case study [32].

The SWOT (strengths, weaknesses, opportunities and threats) analysis, though a convenient analysis tool, ignores some aspects of strategy forming because of its presuppositions. It analyses strategies in view of environments and conditions, yet it neglects strategies in progress and in change and, thus, diminishes its applicability. It overlooks the fact that the complication and instability of environments would lead to obsolescence of already set strategies [33][34].

To transcend the limitations of SWOT analysis, Dah-Hsian Seetoo proposed in 1994 the concept of the Strategic Matrix Analysis, which, based on the Strategic Posture Analysis, attempts to reach a more penetrating and comprehensive analysis to deal with the business strategy. Connecting the concepts of strategic posture and the industry value chain, the analysis method probes into the framework of strategic and competitive advantage, and, in analysing and evaluating strategies, develops and integrates theories and practices. As every enterprise is a unique entity, different frameworks should be used to deal with strategies of different enterprises [5][6].

Elements of the Matrix

- Modularised thinking: A module comprises separate components and constitutes a complete system. The Strategic Matrix Analysis integrates relevant theories and expresses implicit or abstract strategic concepts in modularised and graphic thinking. Each cell in the matrix is a strategic point that represents a strategic connotation. Strategic points, or the correlations between them, reveal the strategic essences, which indicate certain strategic ideas or practices. Moreover, strategic portfolios formed by combining strategic essences make the analysis even more practical and penetrating.
- The time element: The form and the forming of a thinking framework should be both taken into consideration; the form induces forming, which, in turn, introduces the next form. The static strategic posture indicates strategies at a time point, while the dynamic strategic move expresses the changing of strategies as time passes. Business management should be viewed in a dynamic perspective, and strategic actions should be placed in proper sequence and priority.
- Steps in strategic thinking: Strategic Matrix thinking starts with the description of the existing strategic posture, and, with rationality and concreteness, leads to practical aspects instructive to future strategic postures. Future strategies are presupposed by discerning the change of existing strategic dimension aspects, in view of environments, conditions and objectives, and the thinking process becomes a learning system which, if organised and internalised, becomes a competitive advantage and an important asset for the company [35].
- Probing the logic behind strategies: The Strategic Matrix may not definitely inspire strategic innovation, yet it effectively and systematically presents strategies and the presuppositions. It points out possible opportunities and threats for future strategies and makes presuppositions according to the environment or condition of the present strategic posture, equipping strategic thinking with analyses that are more specific interpretations, comparisons and records.

Limiting Factors

Such a thinking framework has its limitations. Dah-Hsian Seetoo thinks that the complicated analysis framework, which requires great amounts of information and research, imposes oppressive burdens on planning staff and calls for group brainstorming along with the company's empowerment and tolerance for errors. Besides, the logic behind the strategic posture dimension and value units built in to the Strategic Matrix is hard to trace – except for those who take part in the thinking and planning process.

RESEARCH METHOD

This study applies the Strategic Matrix theory to the analysis of the present student recruiting strategy of the research population. In addition to reviewing literature on student recruiting research and relevant theories, case study and expert interviewing has been adopted for the study to explicate the strategy formation process, find practicable strategic plans and arrive at reliable conclusions.

Research Design

Through the literature review, and presented in the study, is the student recruiting strategic dimension and the value chain, which constitute the framework of the Strategic Matrix as shown in Table 1.

Table 1: Framework of the analysis.

<div style="text-align: center;"> Value Chain Strategic Point Strategic Dimension </div>	Recruitment targeting	Concrete recruiting plans	Departmental arrangement	Refined environment	Parental satisfaction	Students' competitiveness
Distinctive features	A1	A2	A3	A4	A5	A6
Market segment/targeting	B1	B2	B3	B4	B5	B6
Vertical integration	C1	C2	C3	C4	C5	C6
Geographical coverage	D1	D2	D3	D4	D5	D6
Competitive advantage	E1	E2	E3	E4	E5	E6

Research Methods

Apart from the literature review, research for this study was conducted using the method of interviewing and descriptive case study:

- Expert interviewing: Interviews for this study are qualitative and semi-structured which, combining structured and unstructured interviews, start with predetermined questions and then shift to open ones to observe and capture complex and ever-changing phenomena [36][37]. To obtain first-hand and precise information, these interactive interviews invited comprehensive and meaningful responses on the research topic, and refrained from interferences unless the interviewees deviated from the topic. The outcomes of the interviews were interpreted, compared, supplemented and modified.
- Descriptive case study: Relevant information is collected on specific cases and reasonable cause-and-effect inference is derived, with the aim of proposing explanations, testing theories or generating new theories. The single descriptive case study approach was adopted for this study, with two expectations: 1) to understand the process and prerequisites of the occurrences, and 2) to bring about inspiring research findings which manifest the wholeness and instantaneity of the phenomena [36][38]. The major data sources are:
 - Documents: useful agendas and minutes of conferences on the research population.
 - Archives: records of relevant activities in a period of time.

- Interviews: open interviews, in which respondents offer facts or ideas for further exploration.

Research Scope and Object

The research object is a private technological university in southern Taiwan. The school was upgraded, with the approval of the Taiwan MOE, from a college to a university in 2000. The aim of this study was to examine the student recruiting strategies of its management college.

Expert interviewing was conducted, with an eye to probing the logic behind the recruiting strategies. The documents provided by the Public Affairs Office concerning the improvement of the school's ranking and reputation were studied to support the propositions and define the study brief.

FINDINGS AND ANALYSIS

Five aspects of the strategic dimension and six units of the value chain were identified in order to define the recruiting strategies of the case university. The correspondence between the value units and the strategic dimension aspects generates strategic points that delineate the present recruiting situation of the case university (Table 1). In addition, the semi-structured interviewing and the case study captured the logic constituting the strategic *ideas* or essences.

Strategic Points and Strategy Ideas (Essences)

1. Recruitment targeting: Localisation of universities (D1) urges the university to decide in accord with its general policy on the characteristics and number of students (B1), build cooperation with secondary and graduate schools to enrol the target students (C1), pay attention to the needs of industries when setting recruitment goals (E1), and endow its students with competitiveness (E6).
2. Concrete recruiting plans: In view of low birth-rate and university localisation (D2), universities should value the needs of students and their parents (B2); take advantage of marketing tools to improve performance and establish reputation (A2); cooperate with upstream and downstream schools (C1) and develop a recruitment network with educational partners (C2) to elicit approval (E2). Moreover, for the *non-customers*, who are admitted but do not enrol, their ideas should be understood as reference information (B2).
3. Departmental arrangement: Departments are the immediate interface between universities and their customers (students and their parents) (A3)(B3). Departments properly set up (arranged) will continue to attract (A2); focus resources on the target market (B3); strengthen professional training to raise competitiveness (E3); develop distinctive features (A1)(A3); equip students with abilities to meet the needs of the industry (A6) and thus bridge the gap between schools and industries (E6). Strategic alliance with industries reinforces the vertical relationship (C3)(C6); transfers academic achievements to industries (E4); and advances the performance of higher education.
4. Refined environment: A good learning environment draws students into the university and benefits teaching and research on campus (E3). In a refined environment, the students are prepared for independent and lifelong learning (E4); the university shapes its values and distinctive academic culture (A4); and eminent teachers, brilliant students and competent administrators work together to attract more outstanding students and create excellence (B4). The virtuous circle leads to competitiveness (E4), and it helps win the understanding and approval of the parents (B5).
5. Parental satisfaction: In addition to arranging the departments to meet industrial needs (A5), as well as presenting a good learning environment and teaching quality (A4), universities should offer student counselling and efficient administration to enhance customer satisfaction (B5). Moreover, information platforms can be established with the help of mass media and computer networks to build mutual communication (C5) and to receive response and support (E5).
6. Students' competitiveness: A competitive university provides students with curricula and training in agreement and cooperation with development of industries (C6)(C3). It qualifies students to attain professional certificates along with academic degrees in order to upgrade their proficiency in their specialisation (E6). The campus culture inspires visions and missions that motivate vigorous learning (E4). The clear recruiting goals and departmental features (E1) invite resources and support (E5), and the accomplishments of its alumni in workplaces encourage fruitful recruitment of new students (E2).

Empirical Evidence and Analysis

Recruitment targeting: In targeting the market, consideration should be directed to the needs of students (suitable departments; help for employment or advanced study after graduation), of parents (short distance from home; generous scholarships; good teaching faculty and learning environment; help for employment), of upstream schools (continuance of education; qualified students) and of industries (cultivation of talented manpower; adoption of academic research).

It is important for universities to satisfy users (students), influencers (parents and upstream schools) and purchasers (students, parents, industries and the manpower market). The needs of all these customers indicate the customer value required to be enhanced with innovation, and they serve as the parameter to construct, emphasise, diminish or eliminate strategic plans (as shown in Figure 1).

Value Chain Strategic Dimension Point	Recruitment targeting	Concrete recruiting plans	Departmental arrangement	Refined environment	Parental satisfaction	Students' competitiveness
	Distinctive features	A1	A2	A3	A4	A5
Market segment/targeting	B1	B2	B3	B4	B5	B6
Vertical integration	C1	C2	C3	C4	C5	C6
Geographical coverage	D1	D2	D3	D4	D5	D6
Competitive advantage	E1	E2	E3	E4	E5	E6

Figure 1: Empirical analysis of recruitment targeting (dotted arrow denotes inference; lined arrow, empirical implementation).

Concrete recruiting plans: Value innovation depends on abilities to put strategies into practice. The needs and suggestions of customers should be highly valued, and their problems solved with fervent service mentality. The recruitment staff serve students by directing them to proper schools and departments. With common goals and values, the members of the case university strive for resources, maintain adaptability, create mutual benefits with *customers* and, thus, with more ease invite new students into the university (as shown in Figure 2).

Value Chain Strategic Dimension Point	Recruitment targeting	Concrete recruiting plans	Departmental arrangement	Refined environment	Parental satisfaction	Students' competitiveness
	Distinctive features	A1	A2	A3	A4	A5
Market segment/targeting	B1	B2	B3	B4	B5	B6
Vertical integration	C1	C2	C3	C4	C5	C6
Geographical coverage	D1	D2	D3	D4	D5	D6
Competitive advantage	E1	E2	E3	E4	E5	E6

Figure 2: Empirical analysis of concrete recruiting plans (dotted arrow denotes inference; lined arrow, empirical implementation).

Departmental arrangement: Traditionally, the market fixes attention on upstream schools, and the university ranking according to the general entrance exam score directs the choices of students. However, as employment is also a major concern for students, attention should be extended to industries, when arranging departments and targeting the market. High ranking of the university in industries manifests admiration from society and, by adjusting the focus, the university creates new value with its *customers* (as shown in Figure 3).

	Recruitment targeting	Concrete recruiting plans	Departmental arrangement	Refined environment	Parental satisfaction	Students' competitiveness
Distinctive features	A1	A2	A3	A4	A5	A6
Market segment/targeting	B1	B2	B3	B4	B5	B6
Vertical integration	C1	C2	C3	C4	C5	C6
Geographical coverage	D1	D2	D3	D4	D5	D6
Competitive advantage	E1	E2	E3	E4	E5	E6

Figure 3: Empirical analysis of departmental arrangement (all arrows denote empirical implementation).

Refined environment: Development of universities is closely related to the social environment. Cooperating with society by sharing resources and exchanging information is constructive for forming a refined campus environment. With satisfactory environments, universities attract good students and teaching excellence; enhance their competitive advantage in virtuous circles; and win social approval (as shown in Figure 4).

Value Chain Strategic Point Dimension	Recruitment targeting	Concrete recruiting plans	Departmental arrangement	Refined environment	Parental satisfaction	Students' competitiveness
Distinctive features	A1	A2	A3	A4	A5	A6
Market segment/targeting	B1	B2	B3	B4	B5	B6
Vertical integration	C1	C2	C3	C4	C5	C6
Geographical coverage	D1	D2	D3	D4	D5	D6
Competitive advantage	E1	E2	E3	E4	E5	E6

Figure 4: Empirical analysis of refined environment (dotted arrow denotes inference; lined arrow, empirical implementation).

Parental satisfaction: Recruitment can be even more successful through sincere and efficient communication with customers. Establishing information platforms is beneficial for mutual communication with students, parents and other educational institutions. Free flow of information helps customers understand advantages and risks of the product, helps the university discover concerns and unsatisfied needs of customers, and makes both sides more connected in emotion (as shown in Figure 5).

Students' competitiveness: In conducting the Last Mile Program, a career development programme in cooperation with industries, the case university merges the concept of vertical integration with the idea of creating new value with partners. A competitive university prepares students for workplaces, bridges the gap between schools and industries and helps students secure employment after graduation. Industry-academy cooperation helps industries cut cost of recruitment by introducing to them capable employees with novel management ideas and techniques [39]. In supporting

the needs of industries, university departments position their development, enrol proper students, improve their images and performances, and enhance the value shared by all participants in the value unit (as shown in Figure 6).

Value Chain Strategic Dimension Point	Recruitment targeting	Concrete recruiting plans	Departmental arrangement	Refined environment	Parental satisfaction	Students' competitiveness
	Distinctive features	A1	A2	A3	A4	A5
Market segment/targeting	B1	B2	B3	B4	B5	B6
Vertical integration	C1	C2	C3	C4	C5	C6
Geographical coverage	D1	D2	D3	D4	D5	D6
Competitive advantage	E1	E2	E3	E4	E5	E6

Figure 5: Empirical analysis of parental satisfaction (dotted arrow denotes inference; lined arrow, empirical implementation).

Value Chain Strategic Dimension Point	Recruitment targeting	Concrete recruiting plans	Departmental arrangement	Refined environment	Parental satisfaction	Students' competitiveness
	Distinctive features	A1	A2	A3	A4	A5
Market segment/targeting	B1	B2	B3	B4	B5	B6
Vertical integration	C1	C2	C3	C4	C5	C6
Geographical coverage	D1	D2	D3	D4	D5	D6
Competitive advantage	E1	E2	E3	E4	E5	E6

Figure 6: Empirical analysis of Students' competitiveness (dotted arrow denotes inference; lined arrow, empirical implementation).

CONCLUSIONS AND SUGGESTIONS

Based on the literature review and the empirical analysis, conclusions were drawn in the study, and suggestions offered for technological and vocational universities concerning connotations and directions of student recruiting strategies.

Research Conclusion

Conclusions were drawn from the relationship between the value units and the strategic dimension aspects, explicating factors, connotations and tendencies in making strategies.

Recruitment targeting and market segmentation and targeting: Higher education now exists in a market-orientated environment where universities compete for students. When targeting customers, management members should look

beyond the present needs and explore potential needs, explore commonality of customers (and non-customers), and reach solutions that satisfy all needs. In thinking for customers and finding new value for them, universities constitute advantage in a competitive market.

Concrete recruiting plans and vertical integration: Vertical integration is related to networking strategies. What customers want is satisfaction of needs or higher value in use. As customers and environments change, the deeper the understanding of the consumption process, the higher the created value becomes. In recruiting students, clear strategy plans and networking with upstream and downstream schools draw attention and trust from students and thus build the competitive advantage.

Departmental arrangement and distinctive departmental features: The long-term development of a university depends on its performance and, in particular, the ranking of its departments. The principle of departmental arrangement lies in conceptual integration. Consideration should be directed not only to sources of students but also to their final destinations. By expanding the market in both directions, the departments create new value for all participants in value activities and, therefore, enhance competitive advantage.

Refined environment and market targeting: Refined environments mould good brand images which attract customers. Raising a cultivated atmosphere inside a university while drawing public attention to its distinctive features, the university achieves good positioning and successful recruitment.

Parental satisfaction and market targeting: A university should assume the view of customers in offering plans and solutions. Creation of new value with customers enhances their participation in, and reliance on, the university, and helps unveil the hidden needs in the recruitment market.

Students' competitiveness and competitive advantage: The purpose of technological and vocational education is to foster manpower for economic development and industrial upgrading. By empowering students with skills and creativity needed for industries, the university equips them with advantage in employment.

Managerial Implications

The following findings were derived from this study:

1. Strategic dimension aspects and value units of student recruitment derived from relative theories and literature review:
 - Strategic dimension aspects of student recruitment: Distinctive departmental features, market segmentation and targeting, vertical integration, geographical coverage and competitive advantage.
 - Value units of student recruitment: Recruitment targeting, concrete recruiting plans, departmental arrangement, refined environment, parental satisfaction and students' competitiveness.
2. Prerequisites for the present recruiting situation: As the population composition changes, needs change. In answer to the changing environment, new managerial directions must be found, and new needs and expectations of customers (all participants in the activity) must be explored, valued, and satisfied. Resources are put together to build a dynamic system in which feedback is appreciated to help make immediate adjustments.
3. Factors for deciding on a university: Composition of customer groups changes in an open market. It is important to recognise with a broad view, the role and influence of each participant in the managerial activity to discern the customer value chain, and to develop appropriate strategies. Customer loyalty comes from good customer experiences. Considerate of its customers, a competitive university provides total solutions to satisfy their needs, gives them valuable service, wins their approval and participation, and consequently enhances the effects of its strategies.
4. The tendency for future strategies of student recruitment: Technological and vocational universities aim at helping students develop workplace abilities. Departmental features and recruitment targeting are supposed to accord with the needs of students and industries. Considerations should be expanded, from upstream sources of students to downstream markets. By expanding the market in both directions, universities create new value for all participants in value units and succeed in increasing competitive advantage.

Suggestion for Follow-up Research

Follow-up research could be a vertical study of views of all participants in recruitment and examination of their practicality. Alternatively, it could be a horizontal study of some cases to determine differences and similarities in the logic behind recruitment strategies in order to constitute more practical matrix modes for industries.

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