

# On University Striding Development Through Academic Organization Structure Innovation: the Case of the University of Tsukuba\*

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**Abstract:** The paper uses the case of university of Tsukuba that developed rapidly and earned a glowing international reputation. Based on the introduction of academic organization structure, the paper analyzed how the institutional innovation of academic organization to influence on the university striding development, and put forward that matrix academic organization structure is the carrier of university striding development, the flexible academic organization structure is key to university striding development, which are the experience and enlightenment for building world class university in China.

**Key words:** University of Tsukuba; Academic; Organization Structure; Striding Development

## 1 Introduction

Organization structure acts as the correlation among composing parts of organization interiors in order to ensure the effective actualization of organization goals. The organization structure is operational carrier and support. In the same organizational elements, different fabric structure will present a different form of organization, and produce different organizational effectiveness, even impact for the organizational competitive advantage directly. University is no exception. Tsukuba University realizes striding Development through academic organization structure innovation is a good example. Tsukuba University, founded in 1973, although less than 40 years, enjoys a high reputation both at home and abroad. In 2008, Tsukuba University was number 10 in the ranking of all Japanese University comprehensive strength was published by the Asahi Shimbun newspaper; Its faculty have produced 3 Nobel laureates; The number of foreign students is second in Japanese national university; In 2009, University of Tsukuba attempts at 174 in “world university rankings” announced by The Times higher education supplement. Based on great-leap-forward development of the University of Tsukuba, Michio Nagai, the former Japanese ministry of education called it “the Shinkansen university”. The study takes university of Tsukuba as a case, depth analysis its striding development from the perspective of academic Organization Structure Innovation in order to provide experience and enlightenment for building world-class university in China.

## 2 Profile of Tsukuba University Academic Organization Structure

With the development of the 3rd science and technology revolution, science and technology are advancing rapidly<sup>[1]</sup>. The science and technology present both high differentiated and high unification, various categories, criss-crossing and mutual penetration of the network structure. Facing the new trend of development of science and technology, the act of university of Tsukuba in 1973, clearly put forward the aim to aims to establish free exchange and close relationships in both basic and applied sciences with educational and research organizations and academic communities in Japan and overseas, to pursue education and research to cultivate men and women with creative intelligence and rich human qualities, while developing these relationships, by the criticism the teaching and research of the university in the past often constrained narrow professional research, which lead to conservatism, and broke away from the social reality. It is under the guidance of this new running-school idea that university of Tsukuba made the reform and innovation of educational organizations and research organizations, establishing international, diversity, flexibility teaching, and research units, and corresponding management operation system.

### 2.1 Educational organizations: cluster of colleges and schools

University of Tsukuba designed “Cluster of Colleges and schools” educational organization according to the development of the Times need based on summing up the experience of past university lecture system, referring to cluster college of the university of California at San Diego's. In 1973, The

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University of Tsukuba was founded with the First Cluster of Colleges, Schools of Medicine, School of Health and Physical Education. The First Cluster of Colleges was the most basic academic field, also may be called basic Cluster of Colleges, including literature, sociology and nature science 3 schools; Schools of Medicine integrated basic, clinical and social medicine; School of Health and Physical Education is to educate “sports director” of owning practical ability. The Second Cluster of Colleges and School of Art and Design were established in April, 1975. The Second Cluster of Colleges is a certain applied subjects, including Comparative Culture, Japanese Language and Culture, Humanities, Biology, and Biological Resources study 5 schools. Follow on 1977, The Third Cluster of Colleges was established, which was applied branch of engineering application area, including the social engineering, international comprehensive science, Informatics, Engineering Systems, and basic engineering 5 schools. Special Cluster of Colleges didn't set school, whose role was the same as school. Cluster of Colleges was a small comprehensive university, which enabled the student to contact with extensive different kinds of disciplines, understood the relationship between different majors the specialty, played a very important role to break the solid barriers between subjects, strengthen discipline of mutual connection, and implement comprehensive education. The talents educated in the interdisciplinary Cluster of Colleges and schools largely adapted the need of inter-disciplinary talent of society and industry, therefore, the graduate of the University of Tsukuba had obtained a high valuation in educational communities and been widely welcomed by private enterprise. According to statistics in 1977, more than 250 large and small enterprise of Tsukuba made an appointment of more than 2000 graduates, which is four times of the graduates. In the Japan's national physician test of the years of 1980, there entered 80 students of university of Tsukuba for the examination, 79 students passed the examination, which is the best results in the national university medicine department<sup>[2]</sup>.

## 2.2 Research organizations: institute and special project research organization

University of Tsukuba reformed research organization, established new research organization that were Institute and Special Project Research Organization. Institute was a loose association consisted teachers whose specialty was related to match the needs of education and purposes of research. According to their respective specialty, the teacher belonged to an institute, that is, teacher registered in an institute. While in the research activities, the teacher could cooperate with other teacher, not limited by the institute. In order to promote the cooperation research of different teachers, University of Tsukuba reformed the system of research funding distribution. In the past, the lecture of Japanese university was both teaching and research unit. Research funding was directly assigned follow by government, university, department, and the lecture. Due to the lecture was held by professor, it was difficult for young teacher to get independent research funding, which seriously limits the research interest and enthusiasm of young teachers. University of Tsukuba reformed this research funding allocation system, and allocated the funds to all the teachers according to the academic title and research topic, which ensured that every teacher have the basic research of conditions. The establishment of institute coordinated the reformation of research funding allocation system, which promoted teachers engaging in research work, and achieving high quality research results.

**Table 1 1992 --- 2002 the Statistics of Published Papers by Japanese Research Institute**

Order	name	be cited	collected paper number	average cited number
1	Tokyo University	612,253	58,343	10.49
2	Kyoto University	433,354	42,450	10.21
3	Osaka University	383,734	36,997	10.37
4	northeastern University	245,250	33,615	7.30
5	Nagoya University	211,201	24,278	8.70
6	Kyushu University	196,850	25,070	7.85
7	Hokkaido University	157,909	22,497	7.02
8	Tokyo Institute of Technology	140,200	20,222	6.93
9	Physical & Chemical Research Institute	115,737	10,688	10.83
10	University of Tsukuba	111,067	14,601	7.61

Data Sources: ISI Essential Science Indicators

In addition, university of Tsukuba set up the Special Project Research Organization to replace research institute, which is another important characteristic of research organizations. The Special Project Research Organization is designed to undertake interdisciplinary research, and massive, comprehensive research that is in strong academic and social demand but which is difficult to conduct within a single institute. This organization is separate from the institute and is not limited to instructors

at the university but is composed of a wide array of invited researchers from through Japan and around the world. This research organization is not permanent but has a limited lifespan, usually 5 years. It is designed after a research objective is achieved, it can be immediately reorganized and converted for another purpose.

University of Tsukuba stimulated the teachers' initiative, and cultivate strong academic atmosphere by research organization innovation, ultimately made a fruitful achievements. University of Tsukuba ranked number 10 with honors in Japanese research institute according to the comprehensive evaluation and rankings with the indicators collected papers number, cited number and average cited number published by ISI from January 1992 to December 2002, which surpassed kobe University, Hiroshima University with longer history and so on (see table 1).

### **2.3 Research centers: university's inter-department education research institutes**

Besides educational organization and research organization, University of Tsukuba had set up Research Centers to provide services for teaching and research. The main functions of the research center were: one is responsible for maintenance of research activities necessary especially large, special Settings; the other is to improve efficiency by implementing centralized management of the common, extensive use of the equipment, specimen and auxiliary equipment relevant teaching and research. To realize the two functions of the center, any research center must implement the principle of the service. At the beginning of establishment, there were 18 research centers in The University of Tsukuba, such as Foreign Language Center, Agricultural and Forestry Research Center, Laboratory Animal Resource Center and so on.

## **3 The Innovation of Organization Structure: The Way of Tsukuba University Striding Development**

The setting of University academic organization and its operating mechanism are important part of the modern university system, and the basic unit to fulfill the functions of teaching, scientific research and social service. Thus the university academic organization structure is the key factor that affects university educational level and development prospect. The striding development of the University of Tsukuba is profit from a series of reform and innovation of academic organization structure.

### **3.1 Matrix organization realize the separation and flexible combination of college function**

Matrix organizational structure is a type of structure in which people contact across by both horizontal functional departments and vertical business units, which attempt to combine the advantages of the pure functional structure and the product organizational structure. It is helpful for strengthening the collaboration between different units vertically and horizontally, which will reinforce division of work and cooperation. The greatest characteristic of matrix organizational structure is strong adaptability and elasticity, which can adjust according to the work, and not limit to by administrative and organizational system. Matrix organizational structure is mainly suitable for the organization working content frequently change, and the accomplishment of every task need the expertise and technology.<sup>[3]</sup>

To modern university, elective system as a regular measure enables every student is the master of learning, which put forward higher request for elastic and organizational curriculum. And on the other hand, a lot of problems are complex cross-discipline issue, which will be solved by many experts and scholars from different areas with interdisciplinary knowledge during the scientific research activities. While clear boundaries between discipline organizations in the past made it difficult to cooperate. The characteristics and development trend of modern university teaching and scientific research show matrix organizational structure is more suitable for the needs of modern university than the hierarchical academic structure in the past.

The academic organizational structure is matrix structure in fact, which organized undergraduate student by cluster of colleges and schools, faculty by institute. Matrix organizational structure did not rigidly adhere to established system in teaching, expanding the students' academic view, enriching the students' knowledge reserves through communication from different majors and specialities of the teacher and student. In the scientific research, teachers worked together according research program, which enabled university of Tsukuba realize the separation flexible coordination of teaching and research function at the same time. Thus it overcame the shortcomings of poor adaptability of graduates and research organization, stiffened structure, low efficiency for multi-goal and multi-function when the function of teaching and research focused on the same organization in the past, enhanced the adaptability and flexibility of the organization, and improved the efficiency of university of Tsukuba

(see Figure 1).

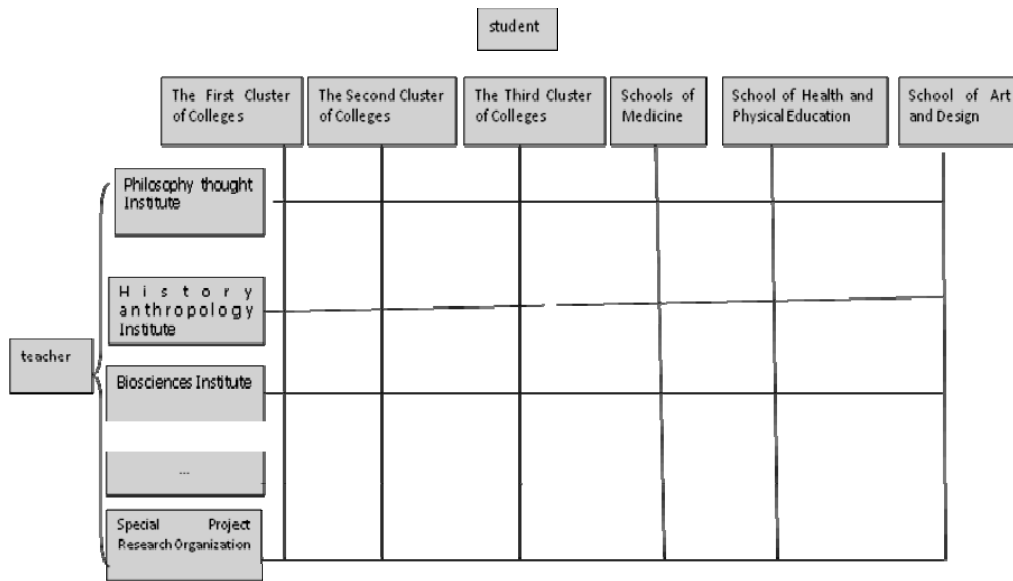


Figure 1 Matrix Organization of University of Tsukuba

**3.2 Heavy bottom organizational structure inspired university academic vigor**

As Burton R. Clark said university is heavy bottom organizational structure in the *higher education system: academic organization in cross-national perspective*, the discipline and institutions are mainly in the bottom of the matrix, and the change of bottom of the matrix is the key factor. [4] The "heavy" bottom is a relative concept. The academic power based at the bottom relative to the administrative power; as for academic profession, professor is in "head" relative the young teacher. The top-heavy organizational structure that academic power mainly mastered by the lecture professor, who controlled most of the teaching resources and research funding restricted the young scholars initiative and enthusiasm in the past Japanese university. University of Tsukuba broke the system which gave lecture professor too much academic power, and reformed the allocation of research funds to give young teachers academic power. Thus young teachers became "academic productivity" of the university, which aroused directly the university academic vigor.

**3.3 The flexibility of the organizational structure adapted the changes of internal and external university environment**

With the development of knowledge economy and the transformation to multi-university, organization transformation of their own to giant, university organization need to develop based on the dynamic cooperation individuals, groups and organizations, the coordination between internal and external environment. While the flexibility of the organization structure has become one of the most important factors for the survival and development of university in uncertainty environment. To cope with frequent change of the internal and external environment, University of Tsukuba took the following measures to build flexible organization structure. One is the establishment of Research Centers, whose service extended to many units, so it can break personnel and resource ownership barriers, achieve the collaborative sharing of resource, make full use of resources to improve the level of teaching and research eventually. The other is to set the mobile organization, such as special project research group, internal research group etc. which allow a teacher transfer from various kinds of academic organization according to research subject and personal ambition that ensure the interdisciplinary education and research to be able to develop smoothly. [5] Thanks to flexible structure, university of Tsukuba allocate resources quickly and efficiently according to the change of environment, make use of resource in order to solve the problems in the development, and remained a driving force in the university's development.

**4 Conclusions**

**4.1 Matrix academic organization structure is the carrier of university striding development**

The new educational and research organization structure in University of Tsukuba broke through

the drawbacks Japanese university organizational structure at that time. It made great efforts on the reformation of organization structure to form flexible mechanism by straightening relations of the teachers and the discipline, students and majors, teaching and research to inspire teacher's enthusiasm in teaching and research, which constantly improve the quality and level of university. In contrast, the university reform in China put more emphasis on external conditions, such as rewards and punishment, few on internal organization structure to look for solutions. The successful experience of University of Tsukuba reform internal academic organization is worth for reference.

#### **4.2 The flexibility of academic organization structure is the key for university striding development**

The matrix organization structure of University of Tsukuba shows flexible characteristics, these are strong adaptability, flexibility and elasticity and so on in dealing with internal and external environmental change, which effectively promoted the development of the interdisciplinary organization that not only cultivate talents widely welcomed by society, promote the knowledge innovation, but also boost the effective combination of scientific research and teaching. At present, there are stiffness discipline organization structure in Chinese university which present a closed, and rigid features, and hard to meet the diverse needs of society. Facing this dilemma, it is not theoretical problem but practical issue to be resolved urgently how to construct the flexibility of the university organization structure. The flexible organizational structure provides us timely and beneficial experience.

### **References**

- [1] <http://www.tsukuba.ac.jp/english/about/history.html>[EB/OL].[2011-06-23]
- [2] Zhou Yunshi. University of Tsukuba [M]. Press of Hunan Education, 1986 (In Chinese)
- [3] Wang Yihong. Reform on the Administration System of University of Tsukuba [J]. Journal of Graduates Sun Yet-sen University, 2000, (3)144-148 (In Chinese)
- [4] Burton R. Clark. The Higher Education System: Academic Organization in Cross-national Perspective [M]. University of California Press, 1983
- [5] Yuan Bentao. The Rebirth and Rise of One Hundred Years University ---University of Tsukuba [J]. Tsinghua Journal of Education, 2003, (3): 88-94(In Chinese)