

The Current Situation and Future Development of Japanese Universities

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Abstract— The current situation of Japanese universities are discussed. The university ranking data are shown. The problems to which Japanese universities are facing are pointed out and Japanese universities are making efforts to solve them. Examples which achieved by own university are shown. Finally, another problems for Japanese university are also noticed.

Keywords— university, situation, development, Japanese, ranking, problem, OIC, CCDL, e-learning, copy-right, privacy

1 Introduction

Although strongly dependent on an opinion of the present author, the current situation of Japanese universities is discussed from the view in the world and that in Japan. First, we show that evaluations of the Japanese universities are actually low at the standpoint of contribution of research areas. The university ranking data in Japan are also shown. Second, problems to which Japanese universities are facing are pointed out. Decreasing of population in young ages is one of the most severe to improve the financial difficulties of Japanese university. Recession in 90's is also influenced to private universities. Next, to solve these problems, Japanese universities are making efforts by various ways and activities. One of the powerful way achieved by Japanese universities is to use information technology (IT) for education by partnership with universities for all over the world. Recent developments and introduction of IT at our university are shown. Finally, we notice that copy right and privacy protection are important to universities as well as to industries.

2 University Ranking

In 70's, people in the U.S.A. like to indicate the ranking of universities based on the numbers of Nobel Prize winners, of Presidents in business society and of contributed papers. Such criteria are somewhat reasonable to calculate the ranking. However, now in Japan, there are many ranking data shown in books, magazines and websites computed by preparatory schools for university entrance examination or universities themselves.

2.1 Positions of Japanese Universities in the World

In Table 1, a part of the Gourman Report [1] calculated by the total capability of the university is shown.

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Table 1: University ranking in the world : Gourman Report [1]

Rank	University	Country
1	Princeton	U. S. A.
	Paris	France
3	Harvard (Radcliffe)	U. S. A.
4	Ocsford	U. K.
	Michigan	U. S. A.
6	Cambridge	U. K.
	Yale	U. S. A.
8	Stanford	U. S. A.
	Heidelberg	Germany
10	Momperial (first-third)	France
	Cornell	U. S. A.
12	Munich	Germany
	California (Berkeley)	U. S. A.
14	Lyons (first-third)	France
	Chicago	U. S. A.
16	Wisconsin (Madison)	U. S. A.
17	Calfolnia (Los Angeles)	U. S. A.
	Rife (first-third)	France
19	Edinburgh	U. K.
	M.I.T.	U. S. A.
⋮	⋮	⋮
101	Tokyo	Japan

Table 2: Ranking in each research area (The number of referred papers) [2]

Table 2 (a) : Physics

Rank	Organization	Number
1	AT&T	98,264
2	Tokyo University	92,058
3	IBM	87,982
4	M.I.T.	85,292
5	E. O. N. R.	85,319

Table 2 (b) : Chemistry

Rank	Organization	Number
1	UC Berkeley	57,039
2	Kyoto University	56,981
3	Tokyo University	56,860
4	University of Texas	50,919
5	University of Cambridge	48,634

Table 2 (c) : Mathematics

Rank	Organization	Number
1	University of Paris 6	6,220
2	Stanford University	6,071
3	UC Berkeley	6,059
4	University of Minnesota	5,947
5	Harvard University	5,850

Table 2 (d) : Computer Science

Rank	Organization	Number
1	IBM	11,781
2	AT&T	8,451
3	Stanford University	8,051
4	M. I. T.	5,768
5	University of Illinois	5,753

No one in Japan can find within ranking 100 in the table, and only the University of Tokyo can be found at ranking 101. By the restriction of research areas, another ranking data are shown in Table 2. We see that the characteristics of nations appear in the table. Politics of Japan in research areas was to follow new results obtained by another countries and not to recommend developing original works, which led to a technical power but research power. Recently, it is going to improve in almost all areas, which can be seen later in an incline distribution of budget by the Ministry of Education and Science of Japan.

2.2 Positions of Japanese Universities in Japan

Japanese seems to like ranking. Table 3 indicates the ranking of Japanese universities for various areas. Politics and strategies of the universities appear as their identity. One university would like to strengthen sports activities of the students (Table 3 (a)). Another university derives for contribution of research activities (Table 3 (b)). The other university tries to improve the degree of satisfaction of students for education (Table 3 (c)). In Japan, they are partitioned into three categories but not exclusive.

- (1) Research University
- (2) Professional University
- (3) Liberal Arts College

Universities, especially private ones, have their own identities that are strongly dependent on their history such as established spirit and they grow up to their school colors.

3 Problems Faced to Japanese Universities

There are many problems faced to Japanese universities. One of the most influenced important problems for universities is degradation in Japanese population. A small population in younger ages or a low birth rate implies to decrease candidates for entering universities and will lead to financial difficulties of universities. It

Table 2 (e) : Engineering

Rank	University	Country
1	M. I. T.	21,919
2	UC Berkeley	20,322
3	NASA	18,167
4	University of Illinois	17,835
5	Stanford University	17,174

Table 3: University ranking in Japan [2]

Table 3 (a) : Sports player's alma mater (baseball)

Rank	University	Number
1	Hosei	20
2	Tohoku Fukushi	15
3	Asia	14
	Meiji	
5	Aoyama Gakuin	13
6	Komazawa	12
7	Tokai	11
8	Toyo	10
	Ritsumeikan	
10	Waseda	9

is well known that in 2007 the capacity of the total universities in Japan will exceed the number of candidates. Although it will not happen in famous universities, a low rate birth will make some universities closed down. Fortunately, the situation of the universities in Taiwan is different from that of in Japan as shown in Table 4, depending on understanding of importance of education. In Japan, many younger become NEET (Not in Employment, Education or Training).

As the similar financial problem, the recession will influence the finance of private universities. Although school fees for private universities are approximately twice as large as those for national universities in average as shown in Table 5. A case that students will choose the public universities increases due to the load of their parents, if the universities do not have their inviting and impressive identities.

Universities in Japan including public ones are growing up to like companies which means that universities

Table 3 (b) : Rate of going to graduate school of science

Rank	University	Number
1	Tokyo	86.90%
2	Kyoto (agricultural)	79.50%
3	Tohoku	78.90%
4	Tokyo Institute of Technology	78.70%
5	Tohoku (agricultural)	78.50%
6	Kyoto	78.40%
7	Osaka	72.00%
8	Tokyo (agricultural)	70.00%
9	Hokkaido	69.40%
10	Osaka City	68.10%

Table 3 (c) : National government employee I

Rank	University	Number
1	Tokyo	454
2	Kyoto	191
3	Waseda	128
4	Hokkaido	74
5	Keio	73
6	Tohoku	59
7	Kyushu	54
8	Nagoya	47
9	Osaka	46
10	Tokyo Institute of Technology	45

Table 4: Comparison of universities between in Japan and in Taiwan [3]

Table 4 (a) : The number of universities and students

Japan		Taiwan	
Universities	Students	Universities	Students
726	3,508,091	159	1,285,867

Table 4 (b) : The number of population and ratio
Ratio implies that ratio of students per population.

	Japan	Taiwan
Population	127,757,000	22,710,000
Ratio	0.0275	0.0567

Table 5: School fees in Japan

A measure is Yen.

Type (Univ.)	Area	Entrance Fee	Tuition etc.
National (Tokyo)	Humanities	282,000	535,800
	Science	282,000	535,800
Public (Yokohama)	Humanities	141,000	645,000
	Science	141,000	645,000
Private (Waseda)	Humanities	290,000	936,000
	Science	290,000	1,405,000

- Major Targets
 - Educational system for integrated university
 - Strength the deployment for a lifelong study
 - Creating research development and new industry that coordinate with the society
 - Reinforcement for internationalization and computerization
- Specific Plans for a Project
 - Rearrange the faculty education
 - Enhancement of graduate school education
 - Development of open education
 - Development of lifelong education and remote learning
 - Reorganization and activation of research system

Figure 1: Design for educational research of 21st century

have to make effort in not only education and research, but in management such as self control, information release including the finance, law compliance, improvements on decision making systems of the university and so on.

4 Recent Developments in Japanese Universities

There are many trials to solve the above problems. For instance, a lot of private universities have introduced:

- (1) Graduate school university
- (2) Open education system
- (3) Law school
- (4) Establishment of new graduate schools
- (5) Introduction of IT for education
- (6) Life time education
- (7) Reconstruction of schools etc.

(1) implies the graduate school without under graduate school. (2) is cooperation within own university and also with the other universities. Recently, since qualification system for justice has changed, new law schools (3) have been established. New graduate schools (4) with under graduate schools have also increased. Information technology has introduced for education (5) such as e-learning, e-school, On demand Internet Class (OIC), Cross-Cultural Distance Learning (CCDL), cyber lecture system and cyber seminar, and so on. Although IT in Taiwan is more advanced than that in Japan, we will mention the cases of our university later. (6) is focused upon business men and old persons such as retired. (7) has often introduced so that the education and research activities of the universities adjust the needs of industries.

5 Introduction of IT for Education

In this section, we will show the cases for which we introduced IT for education [7]. For these ten years, we invested IT systems for education as stated in section 4. based on grand design of our university as shown in Fig. 6. The amount of investment in total information systems has been approximately 4B/year for these ten

Table 6 (b) : An amount of investment in Stanford university [5].

Item	Investment (U. S. \$)
IT Service (Networking security, Helpdesk, ..)	42.5 million
Communications Services (voice,video,and datacommunications)	31 million
Stanford Data Center (hosting, operations)	7 million
Computer Resource Center (desktop and server installation,and maintenance)	5 million
Technology Training (lecture,hands-on,classroom,and web-based training)	1 million
Sum	86.5 million

Table 7: Finace ratio of major 9 private university (dynamic ratio). A measure of money is Yen.

University	Imputed incomes (a)	Education research (b)	=(b)/(a) (d)	Rank of (d)	Students (c)	(=(b)/(c) (e)	Rank of (e)
Aoyama	31,290,542,453	10,161,393,687	32.47%	5	25,658	396,032	8
Keio	117,013,454,173	50,546,323,967	43.20%	1	52,257	967,264	1
Tokyo Sci.	33,394,340,444	11,885,641,427	35.59%	3	18,081	657,355	2
Hosei	43,606,892,837	11,942,566,272	27.39%	9	34,154	349,668	9
Meiji	44,787,081,167	14,348,425,174	32.04%	6	29,808	481,362	5
Waseda	90,619,192,898	32,278,306,347	35.62%	2	56,282	573,510	3
Doshisha	48,130,372,417	14,846,237,648	30.85%	8	36,060	411,709	6
Ritsumeikan	62,223,865,393	21,160,965,280	34.01%	4	43,141	490,507	4
Kansei	26,296,253,058	8,291,471,360	31.53%	7	20,174	410,998	7

Table 6: Comparison of informationization investment amount (private universities in Japan and major universities in the world)

Table 6 (a) : An amount of investment in Japanese private universities [4].

The rank of Waseda university is 11 (in 19 universities).

The average is 73,000 yen.

Rank	Univ.	Investment (Yen)
1	A	114,000
2	B	104,000
3	C	96,000
	⋮	
10	D	71,000
11	Waseda	70,000
11	E	70,000
13	F	63,000
	⋮	
19	G	38,000

Table 6 (c) : An amount of investment in M. I. T. [6].

Item	Investment (U. S. \$)
Academic Computing	4
Administrative Computing	8.1
Client Support Services	6.6
Operations and Infrastructure	13.7
Telephony	4.6
IS&T Shared Services	1.7
Sum	38.7

years. We have the plan called an introduction program of IT. However, it is not enough compared to another universities. Table 6 shows the amount of investment for IT per student in Japan together with that in U.S.A.. The investment at Stanford University is 9 times larger compared to that of our university. Table 7 also shows the amount of investment for education and research activities for main private universities in Japan.

5.1 The Introduction Program of IT

An outline of the program is depicted in Fig. 2. Starting in 1997, 3 terms have passed, where each term has 3 years. Based on this program, we have improved the quality of education by IT.

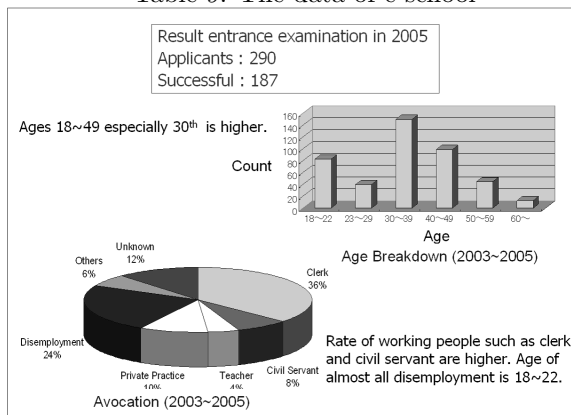
Table 8: The number of On demand Class

Year	By going school			By communication system	
	Full On demand	Hybrid Class	Students	Class	Students
2001	7	-	926	-	-
2002	17	-	2,062	-	-
2003	45	82	12,792	40	3,045
2004	53	140	17,651	93	4,670
2005	74	291	37,529	194	6,091

- Programs for Computerized Promotion Part.1 (1997-1999)
 - Constructing information network
 - Offering all students to have an opportunity using network
- Programs for Computerized Promotion Part.2 (2000-2002)
 - Rearranging methods of education
 - Opening Research Education
 - Database, On demand class
 - Internationalization
 - Using English, Cross-Cultural Distance Learning (CCDL)
 - Programs for Computerized Promotion Part.2 (2003-2005)
 - For global university to creates wisdom in Asia Pacific region
 - Creating research development and new industry that coordinate with the society

Figure 2: Programs for computerized promotion

Table 9: The data of e-school



5.2 E-learning and E-school

From 2001, we have introduced On demand Class as shown in Table 8, and this led to open the e-school. These classes shown in Table 9 have opened for School of Human Science, Weasda University in 2003. The advantages for e-school are summarized in Fig. 3. and problems to be solved are shown in Fig. 4.

5.3 CCDL

It becomes possible by a spread of the e-learning that students lived in Janan can communicate with those lived in foreign countries. It gives the cross-culture to students.

We have achieved such activities as shown in Table 10, 11, and 12 and Fig. 5. Table 13 shows those between our university and universities in Taiwan.

Table 10: Results and scale of CCDL

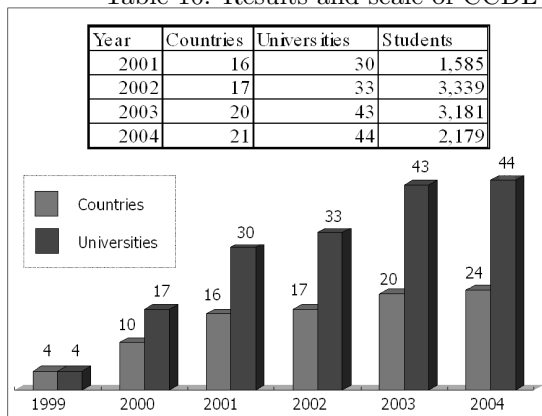


Table 11: Participating university list of CCDL
 The main participating universities by 2005.

- Korea University (South Korea)
- Ehara National Universities (South Korea)
- Hanyang university (South Korea)
- South Korean south university (South Korea)
- Sungkyunkwan university (South Korea)
- South Seoul National University (South Korea)
- Di La Salle university (Philippines)
- Philippines university (Philippines)
- MARAYA university (Malaysia)
- Singapore National Universities (Singapore)
- SEAMEO RELC (Singapore)
- Thammasat university (Thailand)
- CHURARON corn university (Thailand)
- Hanoi college of engineering (Vietnam)
- Beijing University (China)
- Qinghua University (China)
- Fudan university (China)
- Chehiang university (China)
- Metropolitan instructor university (China)
- Hong Kong Baptist university (China)
- National Taiwan instructor university (Taiwan)
- Tamkang university (Taiwan)
- Interchange Association Japanese center (Taiwan)
- Former Tomohiro study (Taiwan)
- Negara Brunei Darussalam university (Brunei)
- Zaid university (UAE)
- World economic university (Uzbekistan)
- Samarkand university (Uzbekistan)
- Auckland university (New Zealand)
- Waicat university (New Zealand)
- Russia and Far East and national and synthesis universities (Russia)
- Monashee university (Australia)
- New South Wales university (Australia)
- Adelaide university (Australia)
- Portland state university (United States)
- keel university (Germany)
- Berlin and Humboldt University (German)
- Lyons university (France)
- University of Utah (United States)
- Colorado university (United States)
- Orangemen university (United States)
- Rafayat university (United States)
- Oregon state university (United States)
- University of Hawaii Hiro school (United States)
- University of Hawaii Manoa school (United States)
- Nottingham (Britain)
- Torrent university (Britain)
- Edinburgh university (Britain)
- Essex university (Britain)

Table 13: The contents of the Taiwan (according to university) connection

Table 13 (a) : Usage of TV conference

University	Contents	Number	Time
National Taiwan Normal	Tele tutorial	35	56:15
National Taiwan Normal	Conference from 5 points using Chinese	10	15:00
Tamkang	New CCDL	10	7:30
Yuan Ze	TV conference using Japanese	5	7:30
National Taiwan Normal	Associate seminar	4	6:00
KDDI Taiwan	Remote interview	3	2:30
		67	94:45

Table 12: The data of TV conference connection of joint semester and tutorial in 2005

Table 12 (a) : First semester

Country	Connection	Time
China	60	95:15
Australia	43	64:00
Thailand	23	50:00
Taiwan	29	43:45
Korea	19	29:00
Japan	8	10:45
Shingapore	7	10:00
Germany	5	5:30
France	1	3:30
USA	1	1:00
sum	196	312:45

Table 12 (c) : All year

Country	Connection	Time
China	140	230:00
Taiwan	67	94:45
Australia	66	100:15
Korea	65	108:15
Thailand	28	54:45
Shingapore	24	34:15
Japan	14	19:45
Germany	14	19:00
Philippines	12	17:15
Hong Kong	8	12:00
Malaysia	8	12:00
Canada	3	13:30
UAE	3	4:30
USA	3	4:00
France	1	3:30
sum	456	727:45

Table 12 (b) : Second semester

Country	Connection	Time
China	80	134:45
Korea	46	79:15
Taiwan	38	51:00
Australia	23	36:15
Shingapore	17	24:15
Philippines	12	17:15
Germany	9	13:30
Canada	3	13:30
Hong Kong	8	12:00
Malaysia	8	12:00
Japan	6	9:00
Thailand	5	4:45
UAE	3	4:30
USA	2	3:00
sum	260	415:00

Table 13 (b) : Usage of PC video conference

University	Contents	Number	Time
Tamkang	New CCDL	9	3:00

- Expansion of time / spatial flexibility of an educational function
- Expansion of time / spatial flexibility of the place of the study from a student side
- Improvement in the quality of the education by exhibiting teaching materials
- Realization of the individual study by BBS and the educational coach
- A mailbox of an educational coach is prepared for a graduate student, The incentive by both sides of a livelihood and studies is given.

Figure 3: The advantage of e-school

- Large Amount of Money for Tuition
- Coaching for Various Type of Lessons, such as Graduation Thesis
- High Charge on Educational Coach for Making Course Material and Supervising Lessons
- Promotion and Securing of Educational Coach
- Formation of Learner Manners

Figure 4: Problems for e-school

6 Copy Right and Privacy Protection

It should be noticed that problems on copy right and privacy protection are recognized by the people in Japan to say rather than extremely sensitive. The law of copy right was constituted in 1972. By restricted use for education at university, the copy of books, or papers were excluded from the law. Recently, however, even if the copy of our own papers are not excluded. Down loaded music contents by automatic multiple distributions, the movie copy and copy of website are strictly applied to the law to protect the authors right. University activities are not an exception to the law. We should keep clear the contents at website. The basic methods of treatment of the contents at university are shown in Fig. 6.

The law of privacy protection for individuals was constituted in April 2005. There are many incidents such as lost of data which contain personal information at industries. They have to pay money to indemnify loss for each person. Also at university, personal information of each student should be protected. It requires not to identify each student. Sometimes, it makes nothing to do, and even the purpose of education will be lost. As its reflection, moderate applications to the law are discussing now.

7 Conclusion

The current situations and recent (not future) developments of Japanese universities are discussed by depending on the opinion of the present author. We pointed out that it will be the key that solving the difficulties for Japanese universities is to effectively use

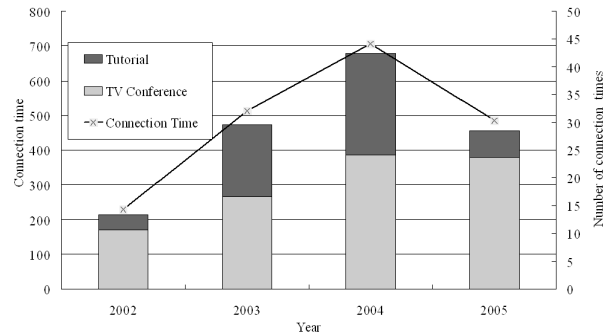


Figure 5: The usage of TV conference system

- About the handling of On demand contents, an agreement is required of between the persons concerned (such as a university, a teacher and a working company).
- ↓
- Until now in Waseda University, the following employment is carried out by exchanging a memorandum, etc.
 - Both the teacher and Waseda University hold the copyright (property rights) of lecture contents together.
 - Lecture contents are used by lesson of Waseda University.
 - About using lecture contents whose purpose is of outside (using other than a lesson of Waseda University), agreement of both the teacher and Waseda University is needed.

Figure 6: Handling the contents

IT for education.

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