

## **A Study of OECD Members and ODA Recipients Countries by Published Academic Papers form 1982 to 2012**

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### **Abstract:**

*This study is In this study, every OECD types were compared the growth rate of numbers of papers in countries. OECD's countries of above average growth rate at all periods were Italy, Spain, S Korea, Portugal, Turkey, Mexico, Vietnam, and China. Countries of except OECD of above average growth rate at all the periods were Singapore, U Arab, Oman, and Malta. OECD's countries of above average growth rate at five periods were Australia, Netherlands, Poland, Austria, Greece, Ireland, Estonia, Iceland, Luxembourg, Chile, Czech Rep, Slovenia, Nepal, Mali, Cambodia, Pakistan, Syria, Bolivia, Nicaragua, Turkey, and Iran. Countries of except OECD of above average growth rate at five periods were Qatar, Cyprus, Greenland, Croatia, and Monaco. Asian countries of above average growth rate at more than five periods were fifteen countries. African country was one country. European countries was eighteen countries. N&S Amercian were fore countries. UMICT is highest growth rate among all types. This reason of highest growth rate of UMICT was showed Chinese, Iran, and Turkey academic activity & research development.*

**Keywords: Bibliometrics, Number of Publication, Papers, Developed Countries, Developing Countries**

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## **1 INTRODUCTION**

The number of academic publications just keeps on increasing in the world (National Science Board, 2012) (Larsen, 2010). How much influence does development of country.

The purpose of this study was to show the development countries and based on articles published in Science Citation Index Expanded indexed periodicals between 1982 and 2012.

## **2 METHODS**

### **2.1 Publication**

Data used in this research were obtained from Science Citation Index (SCI), subscribed from the Web of Science database, an online index produced by Thomson Reuters, Philadelphia, PA, USA. Data in the 31-years period from 1982 to 2012 were downloaded. Documents types of data are article, biographical item, book review, correction, discussion, editorial material, item about an individual, letter, meeting abstract, note, and review. These data were called academic papers.

### **2.2 Developed Countries and Developing Countries**

A developed country is a sovereign state that has a highly developed economy and advanced technological infrastructure relative to other less developed nations. The Organization for Economic Co-operation and Development (OECD) member 34 countries are called developed countries. A developing country is a nation with a lower living standard, underdeveloped industrial base. Official Development Assistance (ODA) recipient countries are called developing countries. They can be classified into four types. First type is a group of the least developed countries (LDC). LDC is defined a group of countries that, according to the United Nations, exhibits the lowest indicators of socioeconomic development, with the lowest Human Development Index ratings of all countries in the world. LDC is composed of 49 countries. Second type is a group of the other low income countries (OLIC). The OECD defines OLIC as one in which Gross National Income (GNI) per capita is \$1005 or less. OLIC is composed of 5 countries. Third type is a group of the lower middle income countries and territories (LMICT). The OECD defines LMICT as one in which Gross National Income (GNI) per capita is \$1006 or over and \$3975 or less. LMICT is composed of 40 countries and territories. Fourth type is a group of the upper middle income countries and territories (UMICT). The OECD defines UMICT as one in which Gross National Income (GNI) per capita is \$3976 or over and \$12275 or less. UMICT is composed of 54 countries and territories. Turkey, Mexico, and Chile are OECD members and recipient countries. Finally, added one type was EMCRC, countries of except OECD member countries and recipient countries. EMCRC is composed of 31 countries and territories.

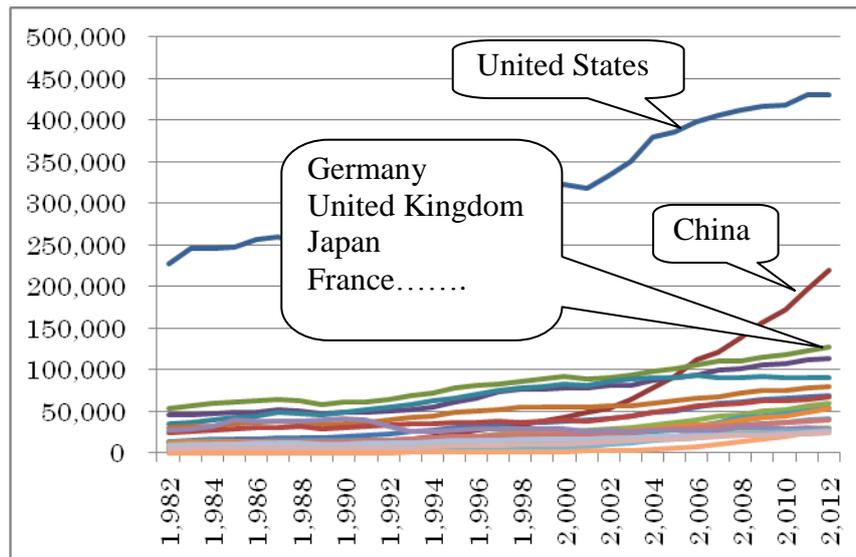
### **2.3 Analysis**

30 years were divided into six periods by 5 years. The growth rate of publication in developed countries and developing countries is analyzed of year on year, 5 year geometric mean.

### 3 RESULTS

#### 3.1 Number of Published Papers

The United States published most scientific papers. But, The number of published scientific papers in China increased year by year since 2000s. China comes close in the United States. The countries after the third such as Germany, the United Kingdom, Japan, France, and et al. are greatly far. Figure 1 shows the number of published papers in countries form 1982 to 2012. Table 1 shows the world’s top 60 countries, ranked by their numbers of the world’s papers in 2012.



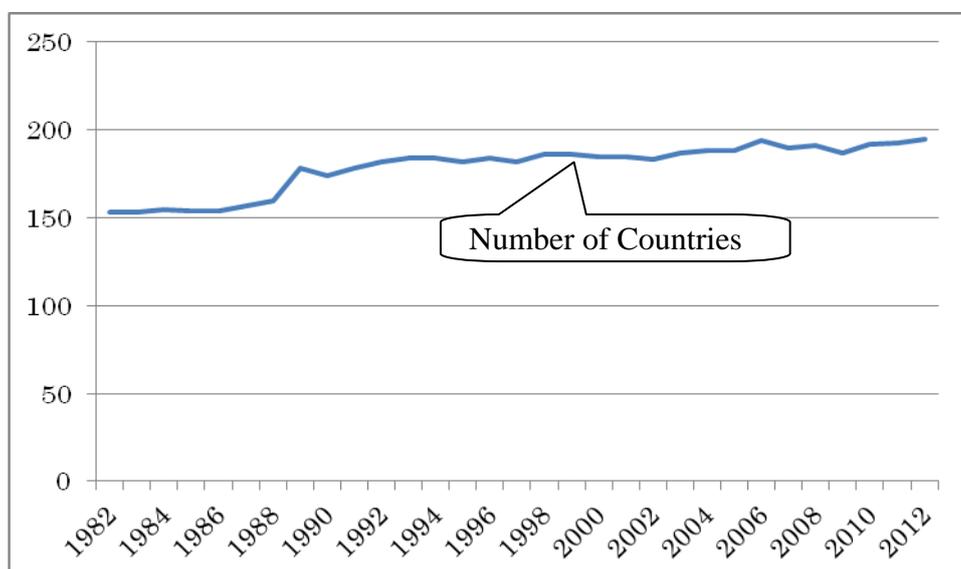
**Figure 1. Number of Published Papers in Countries from 1982 to 2012**

**Table 1. The World’s Top 60 Countries, Ranked by Their Numbers of the World’s Papers in 2012**

No	Country	Pub. pap	Country	Pub. pap	Country	Pub. pap					
1	United States	MC	431,247	21	Belgium	MC	21,547	41	Hungary	MC	7,080
2	China	UMICT	220,178	22	Denmark	MC	16,492	42	Pakistan	LMICT	6,239
3	Germany	MC	126,811	23	Austria	MC	15,783	43	Serbia	UMICT	6,236
4	United Kingdom	MC	113,211	24	Israel	MC	13,712	44	Chile	MC	6,110
5	Japan	MC	89,891	25	Portugal	MC	13,628	45	Ukraine	LMICT	5,223
6	France	MC	79,063	26	Greece	MC	13,029	46	Slovenia	MC	3,804
7	Italy	MC	68,746	27	Mexico	MC	11,667	47	Croatia	EMCRC	3,680
8	Canada	MC	67,263	28	Singapore	UMICT	11,615	48	Colombia	UMICT	3,453
9	Spain	MC	59,387	29	Norway	EMCRC	11,551	49	Tunisia	UMICT	3,400
10	S Korea	MC	54,026	30	Finland	MC	11,472	50	Slovak Republic	MC	3,336
11	India	LMICT	52,828	31	Czech R.	MC	11,187	51	Bulgaria	EMCRC	2,540
12	Australia	MC	52,776	32	S. Africa	UMICT	9,724	52	Nigeria	LMICT	2,255
13	Brazil	UMICT	41,035	33	Ireland	MC	9,187	53	Algeria	UMICT	2,093
14	Netherlands	MC	39,672	34	Argentina	MC	9,091	54	Lithuania	EMCRC	2,027
15	Switzerland	MC	29,780	35	Malaysia	UMICT	8,966	55	Morocco	LMICT	1,975
16	Soviet Union	EMCRC	29,501	36	New Zealand	MC	8,550	56	Vietnam	LMICT	1,832
17	Turkey	MC	27,357	37	Saudi Arabia	EMCRC	8,178	57	Indonesia	LMICT	1,540
18	Iran	UMICT	25,967	38	Egypt	UMICT	8,056	58	Estonia	MC	1,483
19	Sweden	LMICT	25,060	39	Romania	MC	7,776	59	Kenya	OLIC	1,454
20	Poland	MC	24,733	40	Thailand	EMCRC	7,208	60	Bangladesh	LDC	1,395

### 3.2 Number of Countries in SCI

The number of countries in SCI increases gently. It was 150 countries in 1978, but 200 countries in 2012. Figure 2 shows the numbers of countries in SCI.



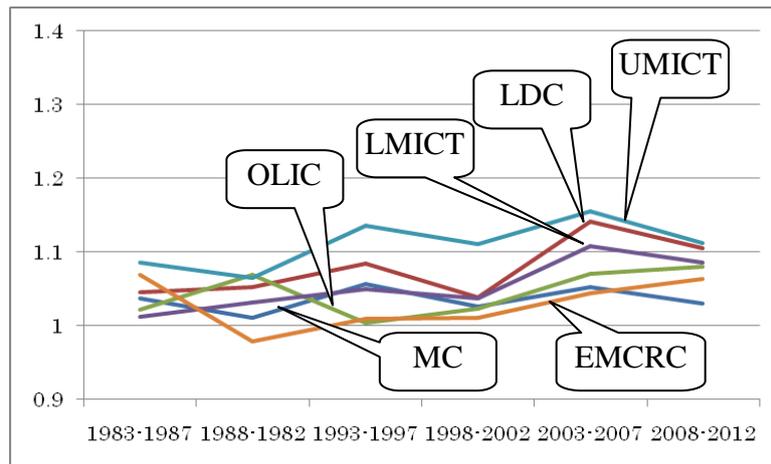
**Figure 2. Numbers of Countries in SCI**

### 3.3 Papers of Growth Rate

Table 2 and figure 3 show a average of growth rate of papers in a developed country and developing countries. The group of the highest growth rate is UMICT of the developing country, following LDC, LMICT, OLIC. An OECD member of the developed country is the lowest except OECD countries.

**Table 2. The average of growth rate of papers in OECD member countries, ODA recipient countries, and countries of except OECD.**  
(year on year, 5 year geometric mean)

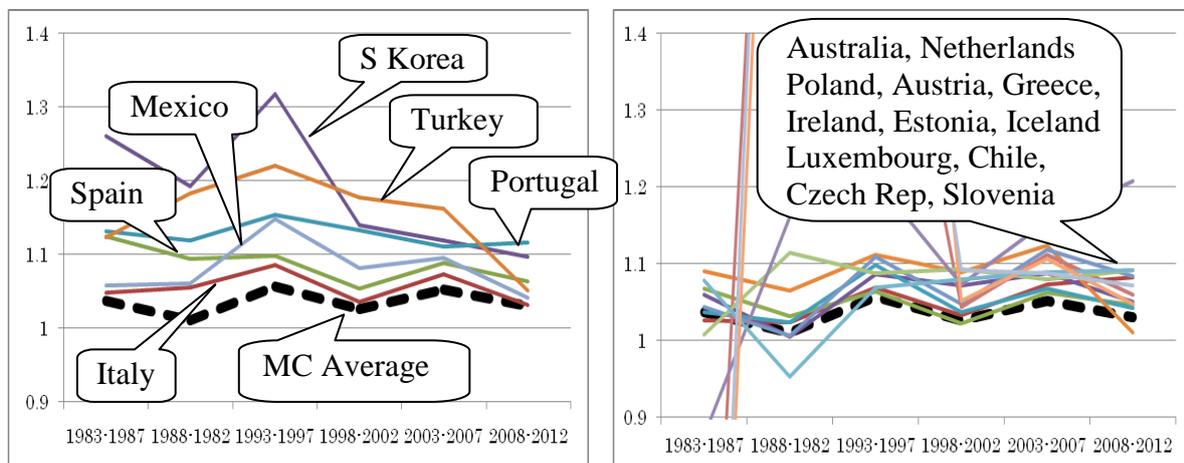
OECD		1983-1987	1988-1992	1993-1997	1998-2002	2003-2007	2008-2012	(%) All periods
Member Countries		103.72	101.05	105.66	102.67	105.22	103.05	103.55
ODA Recipient	Least Developed Countries	104.58	105.17	108.83	103.83	114.20	110.55	107.74
	Other Low Income Countries	102.25	106.91	100.34	102.32	107.04	108.02	104.44
	Lower Middle Income Countries and Territories	101.22	103.18	105.02	103.67	101.78	108.63	105.36
	Upper Middle Income Countries and Territories	108.63	106.49	113.59	111.10	115.53	111.26	111.06
Countries of Except OECD Member Countries and Recipient Countries		106.88	97.85	100.93	101.08	104.43	106.38	102.87



**Figure 3. The average of growth rate of papers in OECD member countries, ODA recipient countries, and countries of except OECD. (year on year, 5 year geometric mean)**

### 3.4 OECD Member Countries (MC)

Six countries which are higher than average of OECD member countries in six periods are Italy, Spain, S Korea, Portugal, Turkey, and Mexico. Twelve countries which are higher than average of OECD member countries in five periods are Australia, Netherlands, Poland, Austria, Greece, Ireland, Estonia, Iceland, Luxembourg, Chile, Czech Rep, and Slovenia. Figure 4a&b shows the average of growth rate of papers in OECD member countries

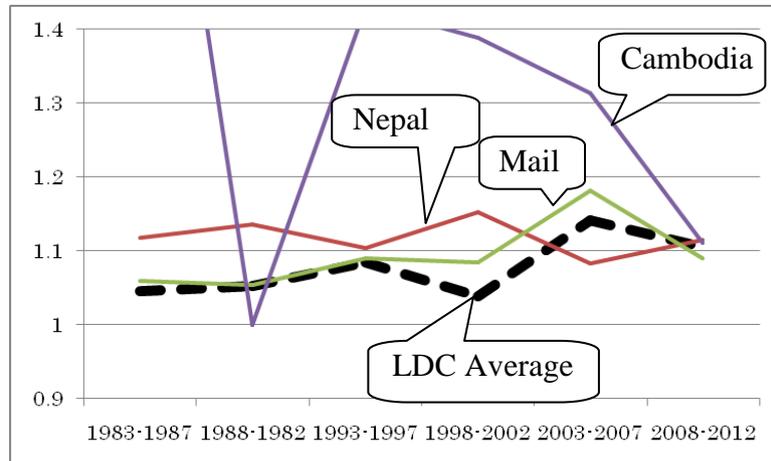


**Figure 4a(left – higher than average in six periods), 4b(right - higher than average in five periods). The average of growth rate of papers in OECD member countries. (year on year, 5 year geometric mean)**

### 3.5 ODA Recipient Countries

#### (a) Least Developed Countries (LDC)

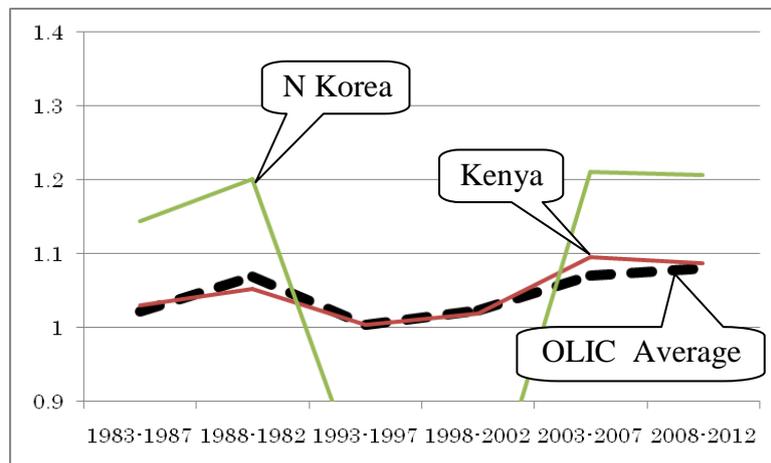
Three countries which are higher than average of LDC in five periods are Nepal, Mail, and Cambodia. Figure 5 shows the average of growth rate of papers in least developed countries.



**Figure 5. The average of growth rate of papers in least developed countries. (year on year, 5 year geometric mean)**

#### (b) Other Low Income Countries (OLIC)

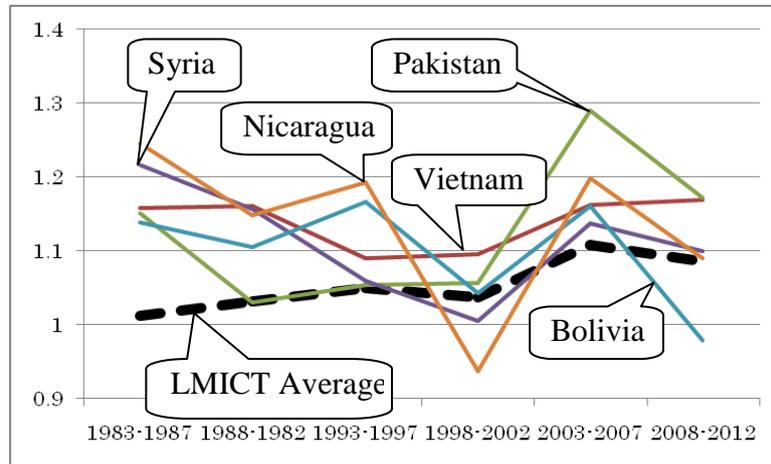
Two countries which are higher than average of LDC in four periods are N Korea and Kenya. Figure 6 shows the average of growth rate of papers in other low income countries.



**Figure 6. The average of growth rate of papers in other low income countries. (year on year, 5 year geometric mean)**

### (c) Lower Middle Income Countries and Territories (LMICT)

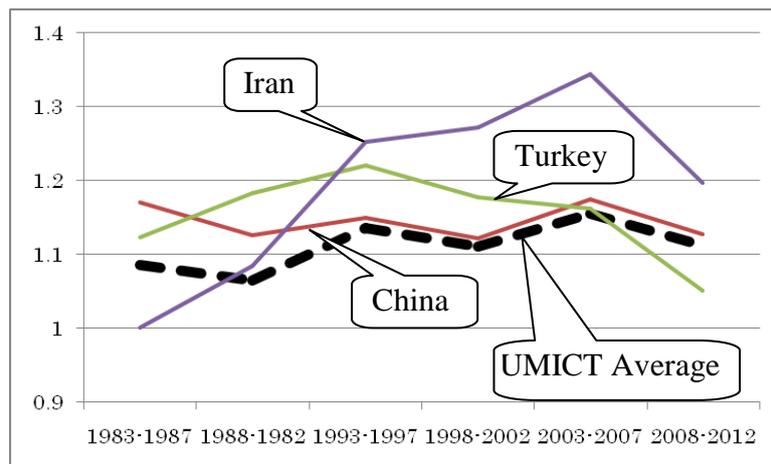
Only one country which is higher than average of LMICT in six periods is Vietnam. Four countries which are higher than average of LMICT in five periods are Syria, Nicaragua, Pakistan, and Bolivia. Figure 7 shows the average of growth rate of papers in lower middle income countries and territories.



**Figure 7. The average of growth rate of papers in lower middle income countries and territories.**  
(year on year, 5 year geometric mean)

### (d) Upper Middle Income Countries and Territories (UMICT)

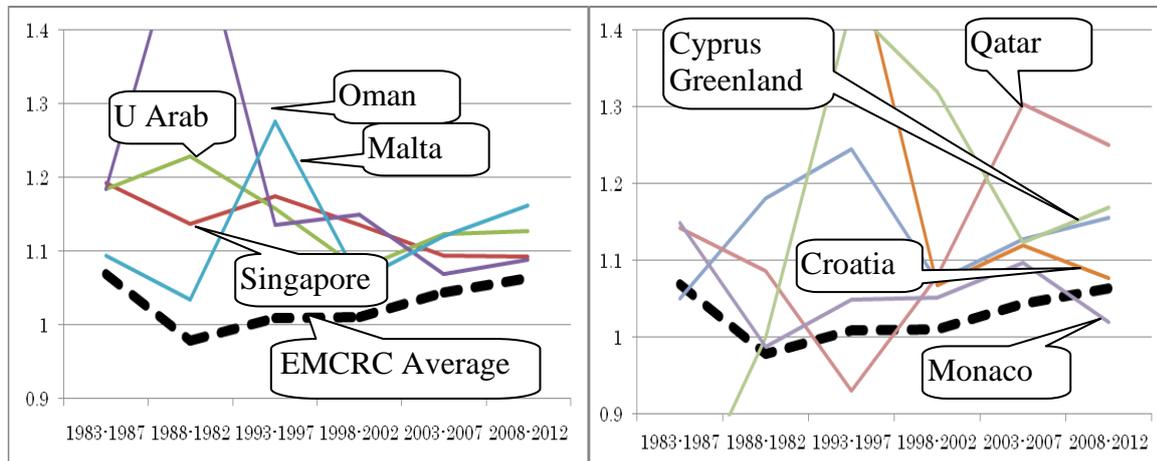
Only one country which is higher than average of UMICT in six periods is China. Two countries which are higher than average of UMICT in four periods are Turkey and Iran. Figure 8 shows the average of growth rate of papers in upper middle income countries and territories.



**Figure 8. The average of growth rate of papers in upper middle income countries and territories.**  
(year on year, 5 year geometric mean)

### 3.6 Except OECD Member Countries and Recipient Countries (EMCRC)

Fore countries which are higher than average of except member and recipient countries in six periods are Singapore, U Arab, Oman, and Malta. Five countries which are higher than average of except member and recipient countries in five periods are Qatar, Cyprus, Greenland, Croatia, and Monaco. Figure 9a&b shows the average of growth rate of papers in except OECD member countries and recipient countries.



**Figure 9a(left – higher than average in six periods), 9b(right - higher than average in five periods). The average of growth rate of papers in except OECD member countries and recipient countries.**

(year on year, 5 year geometric mean)

## 4 DISUSSION

The world's top 30 countries, ranked by their numbers of the world's papers in 2012 were constructed by 24 MC, 5 UMICT, 1 LMICT, and 2 EMCRC. Type of double counting within MC & UMICT was composed of two countries. They are first group. The countries of ranked 31 to 50 were constructed by 7 MC, 8 UMICT, 3 LMICT, and 3 EMCRC. Type of double counting within MC & UMICT was composed of one country. They are second group. The countries of ranked 51 to 60 were constructed by 1 MC, 1 UMICT, 4 LMICT, 1 OLIC, 1 LDC, and 2 EMCRC. (see table 1) They are third group. First group includes most of MC, second group includes most UMICT, and third group includes most LMICT. The OECD's order of economic power of three types is MC > UMICT > LMICT. That is to say, the numbers of papers show economic power. But, year-on-year numbers of papers is the growth rate of the study.

In this study, every OECD types were compared the growth rate of numbers of papers in countries. OECD's countries of above average growth rate at all periods were Italy, Spain, S Korea, Portugal, Turkey, Mexico, Vietnam, and China. (see Figure 4a, 7, and 8) Countries of except OECD of above average growth rate at all the periods were Singapore, U Arab, Oman, and Malta. (see Figure 9a) OECD's countries of above average growth rate at five periods were Australia, Netherlands, Poland, Austria, Greece, Ireland, Estonia, Iceland, Luxembourg, Chile, Czech Rep, Slovenia, Nepal, Mali, Cambodia, Pakistan, Syria, Bolivia, Nicaragua, Turkey, and Iran. (see Figure 4b, 5, 7, and 8) Countries of except OECD of above average growth rate at five periods were Qatar, Cyprus, Greenland, Croatia, and Monaco. (see Figure

9b) Asian countries of above average growth rate at more than five periods were S Korea, Turkey, Vietnam, China, Singapore, U Arab, Oman, Australia, Nepal, Cambodia, Pakistan, Syria, Turkey, Iran, and Qatar. (15 countries) African country was Mali. (1 country) European countries were Italy, Spain, Portugal, Malta, Netherlands, Poland, Austria, Greece, Ireland, Estonia, Iceland, Luxembourg, Czech Rep, Slovenia, Cyprus, Greenland, Croatia, and Monaco. (18 countries) N&S American countries were Mexico, Chile, Bolivia, and Nicaragua. (4 countries)

## **5 CONCLUSION**

UMICT is highest growth rate among all types. This reason of highest growth rate of UMICT was showed Chinese, Iran, and Turkey academic activity & research development.

## **6 ACKNOWLEDGMENTS**

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