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GROWTH OF INFORMATION TECHNOLOGY (IT) INDUSTRY IN INDIA

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ABSTRACT

*Information Technology in India is an industry consisting of two major components: IT Services and Business Process Out sourcing (BPO).The sector has increased its contribution to India's GDP from 1.2%in 1998 to 7.5 in 2012. According to NASSCOM, the sector aggregated revenue of US$ 147 billion in 2015, where export revenue stood at US$99 billion and domestic at US$48 billion growing by over 13%. India's current Prime Minister Narendra modi has started '**Digital India'** Project to give it a secured position insided outside India. Information technology refers to the digital processing, storage and communication of information of all kinds.*

Key Word: Information Technology, BPO, Growth Rate

Information technology can be defined as computing and telecommunication technologies that provide automatic means of handling information. IT includes software and hardware. The role of IT in services i.e. IT-led services includes Business Process Outsourcing, hardware and software maintenance, training and education in IT, system integration and application development.In the present paper an attempt has been made to analyse the growth of IT Industry in India.

I. VARIABLE USED

The variables which have been used to analyze the growth are 'software exports' which have become one of the star export performer for India , 'BPO(Business Process Outsourcing) exports' which is the exporting of IT related work from developed countries to area where there is both political stability and lower labour costs or tax savings, 'hardware exports' which have become an integral part of human life and are playing a major role in the everyday routine activities , 'other IT exports' which includes the training, designing, etc of Information Technology Industry, 'domestic computer production' in which India is the fourth largest in Asia-Pacific region after China, Korea and Australia, 'domestic IT services' which encompass a wide range of fields including web technology, global information system, knowledge base and cloud computing and 'share of revenue from exports and domestic market of Information Technology Industry in India' which has a major contribution in the GDP of the country.

II. SOURCE OF DATA

The data has been collected from The National Association of Software and Services Companies (NASSCOM) McKinsey Reports, Economic Survey, Ministry of Information Technology, Indian Department of Electronics,

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Information Technology Reports, Dataquest (India), Handbook of Statistics and Centre for Monitoring Indian Economy (CMIE) Reports.

III. METHODOLOY USED

To explain the growth-performance of Information Technology Industry in India, annual growth rates and compound annual growth rates have been calculated for the period 2000-2001 to 2014-2015.The growth rates were compound using the following formulae.

IV. ANNUAL GROWTH RATE:

AGR=[n-(n-1)/n-1] * 100

Where n=current Year

And n-l=previous year

V. COMPOUND ANNUAL GROWTH RATE

$Yt= a\ b^t e^{ut}$ Under the logarithmic transformation the above equation can be expressed as

$$\mathrm{Log}Y_t = \log a + 1 \log b + ut$$

Where y_t is the value of dependent variable in the year t, and t is trend variable,u_t disturbance term and a and b are constants.

$$R = \mathrm{antilog}\ (b-1) * 100$$

From the estimated value of regression coefficient b, the growth rate r can be calculated.

VI. RESULTS AND DISCUSSION

Table 1.1 Software Exports in Indian IT Industry (2000-2001 to2014-2015)

Year	Software IT Services (USD Billion Dollars)	Annual Growth Rate (%)
2000-01	5.43	-
2001-02	6.30	16
2002-03	7.25	15
2003-04	8.86	22
2004-05	12.40	40
2005-06	17.06	38
2006-07	23.43	37
2007-08	32.89	40
2008-09	36.03	10
2009-10	36.23	1
2010-11	41.10	13
2011-12	48.63	18
2012-13	56.33	16
2013-14	63.24	12
2014-15	74.80	18
*Compound Annual Growth Rate (CAGR) %(2000-2001 to	19.49	

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*Source: Dataquest (India), Indian Department of Electronics, Information Technology reports, Handbook of Statistics, Ministry of Information Technology, National Association of Software and Services Companies (NASSCOM) Mckinsey Reports, Centre for Monitoring Indian Economy Reports

Table 1.1 shows the software exports in Indian IT Industry during the period 2000-2001 to 2014-2015.The results of annual growth rate depict that in the year 2001-02(6.30 USD billion dollars) there was 16 percent growth in Indian software exports as compared to the year 2000-01(5.43 USD billion dollars).In the year 2005-06, the annual growth rate was 38 percent(17.06 USD billion dollars) as compared to 40 percent(12.40 USD billion dollars) in the year 2004-05.In view of global economic recession in the developed markets, the software export growth increased only to 1 percent(36.23 USD billion dollars) in the year 2009-10 as compared to 10 percent (36.03 USD billion dollars) in the year 2008-2009.Thus annual growth rate in the year 2014-15 is 18 percent (74.80 USD billion dollars) when compared to 12 percent growth (63.24 USD billion dollars) in the year 2013-14. Moreover the compound annual growth rate for the period 2000-2001 to 2014-2015 is 19.49 percent thus it gives a major contribution in Indian IT Industry exports and is the driver of the overall IT Industry.

Table 1.2 BPO Exports in Indian IT Industry (2000-2001 to 2014-2015)

Year	BPO Services (USD Billion dollars)	Annual Growth Rate (%)
2000-01	1.11	-
2001-02	1.49	34.23
2002-03	2.33	56.38
2003-04	3.56	52.79
2004-05	5.04	41.57
2005-06	6.34	25.79
2006-07	7.14	12.62
2007-08	10.64	49.02
2008-09	11.00	3.38
2009-10	14.28	29.82
2010-11	16.59	16.18
2011-12	17.33	4.46
2012-13	17.98	3.75
2013-14	20.23	12.51
2014-15	24.39	20.56
*Compound Annual Growth Rate (CAGR) % (2000-2001 to	21.26	

*Source: Dataquest (India), Indian Department of Electronics, Information Technology reports, Handbook of Statistics, Ministry of Information Technology, National Association of Software and Services Companies (NASSCOM) Mckinsey Reports, Centre for Monitoring Indian Economy Reports

The Table 1.2 shows the BPO (Business Process Outsourcing) Exports in Indian IT Industry during the period 2000-2001 to 2014-2015.The results of annual growth rate depict that in the year 2001-02 there was 34.23 percent (1.49 USD billion dollars) growth in BPO exports as compared to the year 2000-01 (1.11 USD billion dollars).In the year 2005-06 the growth rate was 25.79 percent(6.34 USD billion dollars) as compared to 41.57 percent(5.04 USD billion dollar) in the year 2004-05.It showed phenomenal growth in the year 2007-08 that was

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49.02 percent (10.64 USD billion dollars) as compared to the year 2006-07 that was 12.62 percent (7.14 USD billion dollars).Even though this year was marked with unprecedented global economic crisis, this industry was able to achieve sustainable growth. The annual growth rate in the year 2009-10 was 29.82 percent (14.28 USD billion dollar) as compared to 3.38 percent (11.00 USD billion dollar) in the year 2008-09 .In the year 2014-15 the annual growth rate is 20.56 percent (24.39 USD billion dollars) as compare to 12.51 percent (20.23 USD billion dollars) in the year 2013-14.Further the compound annual growth rate for the period 2000-2001 to 2014-2015 is 21.26 percent. This growth has created immense opportunities for employment and has contributed to the growth of national income.

Table 1.3 Hardware Exports in Indian IT Industry (2001-2002 to 2014-2015)

Year	BPO Services (USD Billion dollars)	Annual Growth Rate (%)
2001-02	0.14	-
2002-03	0.28	100.00
2003-04	0.50	78.57
2004-05	0.54	8.00
2005-06	0.58	7.41
2006-07	0.47	-18.97
2007-08	0.38	-19.15
2008-09	0.39	2.63
2009-10	0.40	2.56
2010-11	0.29	-27.50
2011-12	0.42	44.83
2012-13	0.44	4.76
2013-14	0.43	-2.27
2014-15	0.46	6.98
*Compound Annual Growth Rate (CAGR) % (2000-2002 to	2.48	

*Source: Dataquest (India), Indian Department of Electronics, Information Technology Reports, Handbook of Statistics, Ministry of Information Technology, National Association of Software and Services Companies (NASSCOM) McKinsey Reports, Centre for Monitoring Indian Economy Reports

Table 1.3 shows the Hardware Exports in Indian IT Industry during the period 2001-2002 to 2014-2015.The results of annual growth rate depict 100 percent(0.28 USD billion dollars) growth in the hardware sector in the year 2002-03 as compared to 2001-02 (0.4 USD billion dollars).The hardware exports emerged as a dynamic and diversifying industry. It leads to a significant rise in the disposable income of the middle class families. The annual growth rate accounted in the year 2005-06 to be 7.41 percent (0.58 USD billion dollars) as compared to the year 2004-05 in which it was 8.00 percent (0.54 USD billion dollars).It accounted for the largest share of the industry, but later its growth started declining as compare to IT and ITES:BPO. The annual growth rate in the year 2009-10 was 2.56 percent(0.40 USD billion dollar) as compared to 2.63 percent(0.39 USD billion dollar) in the year 2008-09 .The annual growth rate in the year 2014-15 is 6.98 percent(0.46 USD billion dollars) as compare to -2.27 percent (0.43 USD billion dollars) in the year 2013-14.The compound annual growth rate for hardware exports in Indian IT Industry for the period 2001-2002 to 2014-2015 is not much, but is 2.48 percent.

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Table 1.4 Other IT Exports in Indian IT Industry (Designing, Training)

(2001-2002 to 2014-2015)

Year	**Other IT exports**	**Annual Growth Rate (%)**
2001-02	0.87	-
2002-03	0.99	14
2003-04	1.17	18
2004-05	1.42	21
2005-06	1.71	20
2006-07	2.17	27
2007-08	3.11	43
2008-09	2.99	-4
2009-10	2.75	-8
2010-11	3.12	13
2011-12	2.98	-4
2012-13	3.17	6
2013-14	3.45	9
2014-15	4.60	33
*Compound Annual Growth Rate (CAGR) % (2000-2002 to 2014-15)	11.04	

*Source: Dataquest (India), Indian Department of Electronics, Information Technology Reports, Handbook of Statistics, Ministry of Information Technology, National Association of Software and Services Companies (NASSCOM) McKinsey Reports, Centre for Monitoring Indian Economy Reports

Table 1.4 shows the other IT Exports of Indian IT Industry which includes training and designing of information technology during the period 2001-2002 to 2014-2015.The results of annual growth rate depict that in the year 2002-03 there was 14 percent (0.99 USD billion dollars) in other IT exports as compared to 2001-02(0.87 USD billion dollars).The annual growth rate was 20 percent(1.71 USD billion dollars) in the year 2005-06 as compared to 21 percent(1.42 USD billion dollars) in the year 2004-05.The annual growth rate depict the growth as -4 percent(2.99 USD billion dollars) in the year 2008-09 as compare to 43 percent(3.11 USD billion dollars) in the year 2007-08,indicating the global recession in this market. The annual growth rate in the year 2009-10 was -8percent (2.75 USD billion dollar) as compared to -4 percent (2.99 USD billion dollar) in the year 2008-09.Further the annual growth rate is 33 percent (4.60 USD billion dollars) in the year 2014-15 as compare to 9 percent (3.45 USD billion dollars) in the year 2013-14.The compound annual growth rate for the period 2001-2002 to 2014-2015 is 11.04 percent which indicates that other IT exports has a major contribution in the IT Industry.

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Table 1.5 Total Exports in Indian IT Industry (2000-2001 to 2014-2015)

Year	IT exports (USD Billion Dollars)	Annual Growth Rate (%)
2000-01	6.54	-
2001-02	7.93	21.25
2002-03	9.86	24.34
2003-04	12.97	31.54
2004-05	18.05	39.17
2005-06	25.69	42.33
2006-07	33.22	29.31
2007-08	47.02	41.54
2008-09	50.41	7.21
2009-10	50.91	0.99
2010-11	57.98	13.89
2011-12	66.38	14.49
2012-13	74.75	12.61
2013-14	83.90	12.24
2014-15	99.64	18.76
*Compound Annual Growth Rate (CAGR) % (2000-2001 to 2014-2015)	19.62	

*Source: Dataquest (India), Indian Department of Electronics, Information Technology Reports, Handbook of Statistics, Ministry of Information Technology, National Association of Software and Services Companies (NASSCOM) McKinsey Reports, Centre for Monitoring Indian Economy Reports

Table 1.5 shows the Total IT exports of India during the period 2000-2001 to 2014-2015.The results of annual growth rate depict that in the year 2002-03 the growth was 24.34 percent (9.86 USD billion dollars) as compared to the year 2001 -02(6.54 USD billion dollars).In the year 2005-06,it showed the growth of 42.33 percent (25.69 USD billion dollars) as compared to 39.17 percent(18.05 USD billion dollars) in the year 2004-05.It is observed that the total IT exports had declined to 7.21 percent(50.41 USD billion dollars) in the year 2008-09 as compared to 41.54 percent(47.02 USD billion dollars) in the year 2007-08,this decline accounted to the global crisis of the economy. The annual growth rate in the year 2009-10 was 0 .99 percent (50.91 USD billion dollar) as compared to 7.21 percent (50.41 USD billion dollar) in the year 2008-09. Further the annual average growth rate depict that in the year 2014-15, the growth is of 18.76 percent (99.64 USD billion dollars) as compare to 12.24 percent (83.90 USD billion dollars) in the year 2013-14.The compound annual growth rate for the period 2000-2001 to 2014-2015 is 19.62 percent thus showing a growth in the overall IT export of the Indian economy.

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Table 1.6 Domestic Computer Production in Indian IT Industry

(2000-2001 to 2014-2015)

Year	Computers (USD Billion Dollars)	Annual Growth Rate (%)
2000-01	2.2	-
2001-02	1.95	-11.36
2002-03	2	2.56
2003-04	2.8	40.00
2004-05	3.3	17.86
2005-06	3.97	20.30
2006-07	4.77	20.15
2007-08	5.71	19.71
2008-09	4.58	-19.79
2009-10	2.62	-42.79
2010-11	2.99	14.12
2011-12	2.91	-2.68
2012-13	2.94	1.03
2013-14	2.96	0.68
2014-15	3.25	9.80
*Compound Annual Growth Rate (CAGR) % (2000-2001 to 2014-15)	2.01	

*Source: Dataquest (India), Indian Department of Electronics, Information Technology Reports, Handbook of Statistics, Ministry of Information Technology, National Association of Software and Services Companies(NASSCOM) .McKinsey Reports, Centre for Monitoring Indian Economy Reports

Table 1.6 shows the domestic computer production in India during the period 2000-2001 to 2014-2015.The results of annual growth rate depict that in the year 2001-02 the growth was negative that is -11.36 percent (1.95 USD billion dollars) as compared to the year 2000-01(2.2 USD billion dollars).In the year 2005-06,it showed the growth of 20.30 percent (3.97 USD billion dollars) as compared to 17.86 percent(3.3USD billion dollars) in the year 2004-05.It is observed that the total IT exports had declined to 19.79 percent(4.58 USD billion dollars) in the year 2008-09 as compared to 19.71 percent(5.71 USD billion dollars) in the year 2007-08,this decline accounted to the global crisis of the economy. The annual growth rate in the year 2009-10 was -42.79 percent (2.62 USD billion dollar).Further the annual average growth rate depict that during 2014-15, the growth is of 9.80 percent(3.25 USD billion dollars) as compare to 0.68 percent (2.96 USD billion dollars) in the year 2013-14.The compound annual growth rate computed for the period 2000-2001 to 2014-2015 is 2.01 percent thus not showing a high growth in domestic computer production in India.

Table 1.7 Share of Domestic Production of IT Services (2000-2001 to 2014-2015)

Year	IT Services (USD Billion Dollars	Annual Growth Rate (%)
2000-01	1.75	-
2001-02	1.78	1.71
2002-03	2.05	15.17
2003-04	2.34	14.15
2004-05	3.53	50.85
2005-06	4.69	32.86
2006-07	6.08	29.64
2007-08	10.03	64.97
2008-09	10.59	5.58
2009-10	13.82	30.50
2010-11	17.3	25.18
2011-12	18.54	7.17
2012-13	19.21	3.61
2013-14	18.87	-1.77
2014-15	20.33	7.74
*Compound Annual Growth Rate (CAGR) % (2000-2001 to 2014-15)	20.95	

*Source: Dataquest (India), Indian Department of Electronics, Information Technology Reports, Handbook of Statistics, Ministry of Information Technology, National Association of Software and Services Companies (NASSCOM) McKinsey Reports, Centre for Monitoring Indian Economy Reports

Table 1.7 shows the share of domestic production of IT services in India during the period 2000-2001 to 2014-2015.The results of annual growth rate depict that during 2001-02 the growth was 1.71 percent (1.78 USD billion dollars) as compared to the year 2000-01(1.75 USD billion dollars).In the year 2005-06, it showed the growth of 32.86 percent (4.69 USD billion dollars) as compared to 50.85 percent (3.53 USD billion dollars) in the year 2004-05.It is observed that the total IT exports had declined to 5.58 percent(10.59 USD billion dollars) in the year 2008-09 as compared to 64.97 percent(10.03 USD billion dollars) in the year 2007-08, this decline accounted to the global crisis of the economy. The annual growth rate in the year 2009-10 was 30.50 percent (13.82 USD billion dollar). Further the annual average growth rate depict that in the year 2014-15, the growth is of 7.74 percent (20.33 USD billion dollars) as compare to -1.77 percent (18.87 USD billion dollars) in the year 2013-14.The compound annual growth rate computed for the period 2000-2001 to 2014-2015 is 20.95 percent thus showing a growth in the share of domestic production of IT' services in India.

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Table 1.8 Revenue from Total Export and Domestic Market of IT Industry in India (1991-92 to 2013-14)

Year	Revenue of IT industry from export market (USD Billion Dollars)	Revenue of IT industry from domestic market (USD Billion Dollars)	Total revenue of IT industry (USD Billion Dollars)
1991-92	0.16	0.13	0.29
1992-93	0.23	0.16	0.39
1993-94	0.33	0.23	0.56
1994-95	0.48	1.20	1.68
1995-96	0.73	1.80	2.53
1996-97	1.10	2.06	3.16
1997-98	1.80	2.60	4.40
1998-99	2.60	3.30	5.90
1999-00	4.00	4.20	8.20
2000-01	6.20	5.70	11.90
2001-02	7.70	5.80	13.50
2002-03	9.60	6.30	15.90
2003-04	13.00	8.30	21.30
2004-05	18.20	10.02	28.22
2005-06	24.20	13.20	37.40
2006-07	31.90	14.0	45.9
2007-08	40.80	14.80	55.6
2008-09	45.12	15.6	60.72
2009-10	49.7	16.1	65.8
2010-11	59.0	17.3	76.3
2011-12	68.8	19	87.8
2012-13	76.1	19.2	95.2
2013-14	86.0	19.0	105.0

Source: National Association of Software and Services Companies (NASSCOM) Strategic Review of IT Industry in India**.** The Table 1.8 shows the revenue from total exports and domestic market of Information Technology Industry in India during the period 1991-1992 to 2013-2014. The revenue of IT Industry in the year 1991-1992 was 0.29 USD billion dollars and then it kept on increasing .In the year 1995-96,the revenue was 2.53 USD billion dollar and in the year 2001-02 it was 13.50 USD billion dollars as compared to 11.90 USD billion dollar in the year 2000-01.Further the revenue from the IT Industry had increased further to 28.22 USD billion dollars in the year 2004-05 as compared to 55.6 USD billion dollars in the year 2003-04.The revenue in the year 2009-10 was 6.8 USD billion dollars. Thus in the year 2013-14 the revenue accounted to be 105.0 USD billion dollars, thus IT Industry is emerging as the strategic growth engine for the country having a great impact on G.D.P of the country.

VII. CONCLUSION

India would be emerging as global information technology superpower and one of the largest generator and exporter of software in the next ten years. The India Government has appointed a National Task Force on information technology and software development and its recommendations are as under :

1.Encouraging private software technology parks.

2.Zero custom and excise duty on IT software.

3.Income tax exemption to software and sevices exports.

4.Dollar linked stock option to employees to Indian software companies.

5.Embarking 1 percent to 3 percent budget for every ministry/department for IT applications.

6.Financial packages for buying compters.

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