International Journal of Advanced Research and Development
ISSN: 2455-4030
Impact Factor: RJIF 5.24
www.advancedjournal.com
Volume 3; Issue 2; March 2018; Page No. 12-18

Profiling of employees based on background characteristics in Information Technology (IT) Industry

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Abstract
This study focuses on an analysis of background characteristics (Social, Economic and Demographic, etc.) of the employees in Information Technology (IT) Industry since these factors have bearing on the respondent's knowledge, attitude, preference and behavior towards any specific issue. This study will be helpful in planning and execution of the most effective and appropriate policies in IT industry. Here an attempt is made to analyze certain selected social, economic and demographic conditions and IT experience detail of the respondents. A total of 512 samples have been collected from the top 5 Indian IT companies of the year 2015, based on revenue, profit and market capitalization as published by the National Association of Software and Services Companies (NASSCOM) were selected for this study. Descriptive research method is used to analyze the responses from participants.

Keywords: profiling, background, demographic, software, information technology

1. Introduction
Information Technology (IT) industry in India has shown tremendous growth trajectory. The aspiration of college graduates to join software industry has been increasing, considering the lucrative job offers being floated by IT companies compared to other industries. The IT industry, which comprises of majorly multi-national companies, includes diverse sets of peoples from across the globe. The software companies cater services to almost all the industries, which include Banking and financial industries, aeronautical domains, health care industries, telecom industries, retail industries and other industries, which employ software to service the customers. This shows the importance of IT industries and can be reiterated by the huge amount of loss in failure of any software by any of the industries in servicing its customers.

The key to the success of the IT industry depends on the management of employees and their intellectual knowledge. The employees who are from diverse sets of background and with diverse aspirations need to be managed efficiently to ensure employee and knowledge retention. The employees need to work as a team, trained to impart leadership qualities and interpersonal conflict management skills. To achieve efficient management of employees, the background characteristics of the employees of IT industry need to be studied, which includes their distribution by age, sex, religion, marital status, educational qualification, spouse's educational qualification, number of male and female children, annual income, experience, onsite experience and their current role. This study analyses the background characteristics of employees of IT industry in India, which might be beneficial for any future studies related to IT Industry.

2. Literature Review
John McManus (2011) [2] in his study offered offer a point of view on the challenges China faces competing in a twenty-first century software industry. The approach taken was desk research and conversations with other academics and industry experts. The findings of the study is China needs to overcome weaknesses in managerial and technical skills and focus on international markets where it is positive strengths. This paper provides insight into the issues and challenges faced by the Chinese softwareindustry looking to expand within a global economy.

Subhash C.Kundu (2017) [3] *et al* in their study examined the relationship between employee perceptions of diversity (i.e. significance of diversity and diversity management, and value of diversity practices employed) and perceived organizational performance. It also attempts to examine whether the perceptions of diversity vary among employees from different diversity backgrounds (i.e. across gender and categories) in Indian IT industry. Primary data based on 402 respondents were analysed using statistical tools like factor analysis, correlations, analysis of variance, means, grand means, and regression. Results indicated that employees irrespective of their diversity backgrounds positively acknowledged diversity and diversity management. However, limited but significant differences were observed among employee perceptions regarding valuing the diversity practices employed based on their diversity backgrounds. Further, employees' perception of promotion of gender diversity was found to be positively related to perceived organizational performance.

Santoshi Sengupt (2011) [4] in her study determined what and how job-related and demographic variables are associated with employee satisfaction of the BPO employees. Data

collected from 500 middle level BPO employees was analyzed using SPSS 16.0. T-tests and Duncan's post hoc tests were done to compare the various dimensions of employee satisfaction across selected demographic variables such as gender, marital status, education, age and tenure. Correlation was done to find out the relationship between employee satisfaction and various job characteristics as well as demographic variables and finally, regression was done to find out the actual determinants of employee satisfaction. The results revealed that there is difference of perception towards the job-related variables on the basis of gender, marital status, education, age, and tenure.

The IT organizations are getting tuned to agile fashion of delivering to customers. Any conflict situations will lead to non-productive efforts and will be detrimental to the organizations productivity. It is of paramount importance to understand the background characteristics of employees in IT industry, so that they can be managed effectively. There has been very limited study conducted so far on this subject in Information Technology (IT) organizations.

The previous studies have the following research gaps, which has been addressed in this study.

- Very limited studies in IT industry in India
- Very limited studies on the background characteristics (Demographic characteristics, Number of Male/Female Children, Onsite Experience) of respondents in IT industry.

3. Research Methodology

This section explains the research objectives and a suitable methodology to achieve them. This section describes the pilot study, participants of the study, Sampling Procedure, instrumentation used for the study, data collection, and data analysis procedures adopted for the study. Descriptive Research method was used to analyze the responses from participants. The data was obtained by distributing the physical questionnaires to the respondents and also through the use of an online survey using the platform surverygizmo.com. The top 5 Indian IT companies of the year 2015, based on revenue, profit and market capitalization as published by the National Association of Software and Services Companies (NASSCOM) were considered for the study. NASSCOM is a trade association of Indian Information Technology (IT) and Business Process Outsourcing (BPO) industry. The top 5 IT companies are as follows:

1. TCS - Tata Consultancy Services
2. Infosys
3. WIPRO
4. HCL technologies and
5. Tech Mahindra

The top 5 Indian IT Companies selected for the study majorly have their delivery centers in the Information technology hubs like Chennai, Mumbai, Pune, Bengaluru and Hyderabad.

The following procedure has been followed in order to arrive at the sample:

1. Cluster Sampling is applied to identify Chennai and Bangalore as 2 cluster samples for the study.
2. Cluster Sampling is again applied on the 5 IT companies to identify TCS as the cluster sample for the study
3. Simple Random sampling is applied in TCS Chennai and TCS Bangalore to identify the sample for the study.

The size of the population is approximately 12 Lakh employees and the empirical sample size is 400 with 5% margin of error, however a total of 512 samples have been taken for this study.

The data was collected over a period of 180 days. In general nearly 500 e - mails were sent to the employees and physical questionnaires were distributed to around 500 employees of IT Companies. Each questionnaire or e-mail contained information about the topic, instructions to fill, the length of the survey and the privacy conditions. First reminder was sent after 30 days of the first email followed by second reminder with the gap of 15 days. Information was finally gathered through questionnaire and in very few cases, interviews were also held in order to substantiate the data gathered. Separate appointments were scheduled with Delivery Heads of large accounts to explain the objective of the study. Only 547 filled in questionnaires were received out of which only 512 were found to be fully filled in, the rest 20 were discarded due to in complete information. While analyzing the data, the focus was put on:

- **Frequencies** - Frequencies were used to determine how many answered each answer possibility for each question.
- **Means** - Means were used to find out the average score for some questions.
- **Association** - The independent and dependent variables were further tested using Chi - square test with the confidence level of 95% and the significance level of 5% respectively.

The research hypotheses are as follows;

H1: Marital Status of the IT employees has a strong association with Age Group.

H2: Annual Income of employees has a strong association with Gender.

H3: Annual Income of employees has a strong association with Age.

H4: Gender of employees has a strong association with IT Experience.

H5: Gender of employees has a strong association with Onsite Experience

H6: Current Role of employees has a strong association with Gender

4. Analysis

This section analyses the background conditions of the respondents and their spouses, if married, in terms of religion, age and sex, marital status, education, occupation, income, etc.

Table 1: Distribution of Respondents by Religion

Religion	No. of Respondents	Percentage
Christian	36	7.0
Hindu	454	88.7
Muslim	14	2.7
Other	8	1.6
Total	512	100.00

According to Durkhiem “religion as a unified system of

beliefs and practices related to sacred things, that is to say, things get apart and forbidden" (Bhusan vidhya and sachedeva D.R, 1984). Religion is found to be a strong bearing on social, economic and demographic aspects of population. Table 1 shows that the overwhelming majority of the respondents (88.7%) are Hindus, followed by Christians (7.0%) and Muslims (2.7%). As a composition of India's population, Hindu respondents are numerically dominant in this study.

Table 2: Distribution of Respondents by Sex

Sex	No. of Respondents	Percentage
Female	208	40.6
Male	304	59.4
Total	512	100.0

One of the two important structures of the population is sex (Gender). Sex is a biological attribute. Gender difference in the knowledge, attitude and behavior regarding any issue is clearly evident. There are attempts underway to eliminate gender inequality. In IT sector, the gender difference is more likely in the performance and behavior of the employees. Table 2 shows that about three- fifth (59.4%) of the respondents belong to males and the remaining two-fifth (40.6%) are females. Therefore, male respondents outnumber females in this study. In other words, the masculinity proportion of respondents is comparatively higher in this study.

Table 3: Age and Sex Distribution of the respondents

Age (in years)	Males		Females		Total	
	No. of Respondents	Percentage	No. of Respondents	Percentage	No. of Respondents	Percentage
21-25	92	30.3	100	48.1	192	37.5
26-30	98	32.2	84	40.4	182	35.5
31-35	72	23.7	16	7.7	88	17.2
36-40	30	9.9	4	1.9	34	6.6
41-45	12	3.9	4	1.9	16	3.1
Total	304	100.00	108	100.00	512	100.0

Age is an important demographic variable. Age is the interval of time from birth to the time of ascertaining. Demographically, age is calculated in completed years. Table 3 shows that the ages of the respondents are ranging from 21 years to 45 years. The high proportion of respondents (37.5%) falls in the age group 21-25 years, followed by 26-30 years age group. The mean age is 28.17 years. It is to observe that while the high proportion of male respondents (32.2%) fall in the age category 26-30, the high proportion of females (48.1%) are in the 21-25 age category.

Here an attempt is made to analyze the respondents' marital status, which is an important social factor as well as a demographic composition of population. The marital status categories include single/unmarried, married, widowed, Divorced, Separated, etc. Table 4 shows that the respondents of the study are classified into "Single" and "Married" categories. Irrespective of sex distribution, majority of respondents (59.0%) are singles and the remaining proportion (41.0%) is married indicating unmarried respondents are numerically dominant in this study. Interestingly, majority each in male and female sex categories are found to be singles, but the proportion of unmarried females is comparatively high for which economic independence might be a causative factor.

Table 4: Marital Status of Respondents by sex

	Males		Females		Total	
Marital Status	No. of Respondents	Percentage	No. of Respondents	Percentage	No. of Respondents	Percentage
Single	168	55.3	134	64.4	302	59.0
Married	136	44.7	74	35.6	210	41.0
Total	304	100.00	208	100.00	512	100.00

In this section, marital status of the respondents is cross-classified with age and sex so as to

Assess the age-sex specific relationship with marital status of the respondents in this study. Table 5 shows that the ages of the respondents range from 21 years to 45 years. In the category of male respondents, the proportion remaining single is extremely high in the age group 21-25 years. This proportion decreases or the proportion of married increases with increase in the age group of the respondents. This observation is almost same in case of female respondent category, but the proportion of married in the age group 21-25 years is comparatively high indicating that the females are relatively getting married earlier. The significant association between marital status of the respondents and their age groups has been statistically proved

Table 5: Marital status distribution of the respondents by age and sex

Sex	Marital status	Age Group					
		21-25	26-30	31-35	36-40	41-45	**Total**
	Single	92 (54.8)	60 (35.7)	16 (9.5)	0	0	168 (100.0)
	Married	0	38 (27.9)	56 (41.2)	30 (22.1)	12 (8.8)	136 (100.0)
Males	Total	92 (30.0)	98 (32.2)	72 (23.7)	30 (9.9)	12 (3.9)	304 (100.0)
	Single	84 (62.7)	48 (35.8)	2 (1.5)	0	0	134 (100.0)
	Married	16 (21.6)	36 (48.6)	14 (18.9)	4 (5.4)	4 (5.4)	74 (100.0)
Females	Total	100 (48.1)	84 (40.4)	16 (7.7)	4 (1.9)	4 (1.9)	208 (100.0)
	Single	176 (58.3)	108 (35.8)	18 (6.0)	0	0	302 (100.0)
	Married	16 (7.6)	74 (35.2)	70 (33.3)	34 (16.2)	16 (7.6)	210 (100.0)
Total	Total	192 (37.5)	182 (35.5)	88 (17.2)	34 (6.6)	16 (3.1)	512 (100.0)

Note: Figures in parentheses denote percentages, Chi-square Test result: Significant at 5 percent level (Pearson chi-square value: 210.683 at 4 d. f, P Value = 0.000).

Since all the respondents are IT employees, they would have completed some courses at UG or PG level. Table 6 shows that though majority each in male and female employee category took under graduation, the proportion of post-graduates and Doctorates are comparatively greater in male employee category indicating a narrow gender gap in education level attainment between males and females.

Table 6: Educational Qualification of Respondents by Sex

Sex	Educational qualification of Respondents				
	Diploma	**Under Graduation**	**Post Graduation**	**Doctorate**	**Total**
Males	2 (0.7)	218 (71.7)	80 (26.3)	4 (1.3)	304 (100.0)
Females	0	166 (79.8)	42 (20.2)	0	208 (100.0)
Total	2 (0.4)	384 (75.0)	122 (23.8)	4 (0.8)	512 (100.0)
	Education Qualification of spouses				
Males	2 (1.5)	84 (61.8)	50 (36.8)	0	136 (100.0)
Females	2 (2.7)	32 (43.2)	40 (54.1)	0	74 (100.0)
Total	4 (1.9)	116 (55.2)	90 (42.9)	0	210 (100.0)

Note: Figures in parentheses denote percentages

Children' care and management is also a factor determining the performance of IT employees. Table 7 shows that 42.9 percent of married employees have no living children and 41.9 percent have one child followed by two children with 15.2 percent of respondents.

Table 7: Distribution of married respondents by number of living children

No. of children	No. of Married Respondents	Percentage
No child	90	42.9
One child	88	41.9
Two children	32	15.2
Total	210	100.0

In this section an attempt is made to analyze the occupation of the respondents' spouses. Life style of any individual as well as his decision making on any aspect depends, to some extent, upon his economic activity. It is clear that all the respondents of this study are IT employees working in various multi-national IT companies. Table 8 shows that the spouses in the category of IT Professional account for 19.5 percent of the total, homemakers constitute 12.5 percent, Teachers constitute 2 percent and the remaining proportion is in the other occupation. Therefore, most of the spouses of respondents are also working in IT sector

Table 8: Distribution of respondents by Spouse's Occupation

Occupation	Frequency	Percent
Home Maker	64	12.5
IT Professional	100	19.5
Teacher	10	2.0
Other	36	7.0
Total	210	41.0
Not Applicable	302	59.0
Total	512	100.0

Income is one of the direct measures of economic status of a person and it exercises influence over taste, preference and behavior of an individual on various aspects of life. Table 9 shows that the high proportion of IT employees (36.3 percent) is in the Annual income category of 4.1-8 lacs followed by 0-4 lacs with 33.2 percent and the rest of income categories have the remaining proportions of the respondents. The distribution of Annual income by Gender in Table 10 reveals that while the high proportion of male employees is in the category 0f 0-4 lacs, majority of female employees fall in the category of 4.1-8 lacs indicating that female employees earn comparatively more income. The gender specific relationship with income has been statistically proved.

Table 9: Distribution of respondents by Income

Income Group	Frequency	Percent
0-4 lakhs	170	33.2
4.1-8 lakhs	186	36.3
8.1-12 lakhs	96	18.8
12.1-16 Lakhs	34	6.6
Above 16 Lakhs	26	5.1
Total	512	100.0

Table 10: Annual Income of the respondents by sex

Annual Income Rs. In Lacs	Males		Females		Total	
	No. of Respondents	Percentage	No. of Respondents	Percentage	Number	Percentage
0-4	92	54.1	78	45.9	170	100.0
4.1-8.0	82	44.1	104	55.9	186	100.0
8.1-12.0	78	81.3	18	18.8	96	100.0
12.1-16.0	30	88.2	4	11.8	34	100.0
> 16.0	22	84.6	4	15.4	26	100.0
Total	304	59.4	208	40.6	512	100.0

Note: Significant at 5 percent level (Pearson chi-square: Value 57.625 at 4 d.f - P value = 0.0000)

An attempt is made to find the relationship between the amount of annual income and their ages. Table 11 shows that while majority of respondents (80.0 percent) aged 21-25 years fall in the annual income category 0-4 lacs, 30.8 percent of respondents aged 41-45 years are in the annual income category 16 lacs and above. The high proportion of respondents shifts from low-income category to the high-income categories with increasing age group of respondents indicating the relationship between the level of income and age group of respondents. This association has been proved statistically, according to chi-square result.

Table 11: Distribution of Respondents' Personal Annual income By Age Group

Personal Income	Age_Group_Range					Total
	21-25	26-30	31-35	36-40	41-45	
0-4 lakhs	136	32	2	0	0	170
	(80.0)	(18.8)	(1.2)			(100.0)
4.1-8 lakhs	56	112	16	2	0	186
	(30.1)	(60.2)	(8.6)	(1.1)		(100.0)
8.1-12 lakhs	0	36	46	10	4	96
		(37.5)	(47.9)	(10.4)	(4.2)	(100.0)
12.1-16 Lakhs	0	2	16	12	4	34
		(5.9)	(47.1)	(35.3)	(11.8)	(100.0)
Above 16 Lakhs	0	0	8	10	8	26
			(30.8)	(38.5)	(30.8)	(100.0)
Total Count	192	182	88	34	16	512
	(37.5)	(35.5)	(17.2)	(6.6)	(3.1)	(100.0)

Note: Figures in parentheses denote percentages Chi-square test: Association is found to be significant at 5 percent level (Pearson Chi-square value: 499.457 at 16 d. f, P value= 0.0000)

In this study all the respondents are IT Employees. Therefore, it is necessary to analyze the years of working experience of these employees and gender difference in their working experience. Table 12 shows that about half of the female respondents and the high proportion of male respondents (34.2 percent) have IT experience of 0-3 years, but the proportions of males in 10-12 years and also its succeeding year's categories are relatively high indicating that male employees have more working experience in this study. The significance of this relationship has also been statistically proved.

Table 12: Distribution of IT Experience of Respondents By Sex

Sex	IT Experience (in Years)						
	0-3	**4-6**	**7-9**	**10-12**	**13-15**	**Above 15 years**	**Total**
Males	104 (34.2)	70 (23.0)	48 (15.8)	46 (15.1)	14 (4.6)	22 (7.2)	304 (100.0)
Females	102 (49.0)	62 (29.8)	34 (16.3)	6 (2.9)	0	4 (1.9)	208 (100.0)
Total	206 (40.2)	132 (25.8)	82 (16.0)	52 (10.2)	14 (2.7)	26 (5.1)	512 (100.0)

Note: Figures in parentheses denote percentages. Chi-square Result: significant at 5 percent level (Pearson Chi-square value: 43.660 at 5 d. f, P value = 0.000)

The IT Industries facilitates onsite experience for the employees and comparatively IT employees make use of these opportunities. The availability and utilization of onsite experience are being widely discussed (or important subject matter in IT industries). Table 13 shows that in general 60.9 percent of the respondents have no onsite experience and sex specific analysis reveals that 52.0 percent of males and 74.1 percent of females are yet to travel overseas countries and male respondents have relatively better onsite experience indicating sex-specific association with onsite experience. Of course, the parents are less hesitant to send their sons for utilization of onsite opportunities. The gender difference in on site experiences has also been statically proved.

Table 13: Distribution of onsite Experience of Respondents by Sex

Sex	Onsite Experience (in Years)						
	0-2	3-4	5-6	7-8	Above 8 Years	Yet to travel	Total
Males	86 (28.3)	32 (10.5)	14 (4.6)	10 (3.3)	4 (1.3)	158 (52.0)	304 (100.0)
Females	46 (22.1)	4 (1.9)	0	4 (1.9)	0	154 (74.0)	208 (100.0)
Total	132 (25.8)	36 (7.0)	14 (2.7)	14 (2.7)	4 (0.8)	312 (60.9)	512 (100.0)

Note: Figures in parentheses denote percentages. Chi-square Result: significant at 5 percent level (Pearson Chi-square value: 37.752 at 5 d.f, P value=0.000)

The present positions of the respondents working in IT Industry are analyzed in Table 15. In general, majority of the employees (respondents) are designed as team members, followed by Module Leaders (21.1%) and Project Leader (9.6%) and Project Manager (5.8%). This observation exactly applies to the analysis of the current position of the males and females separately. Interestingly, while the percentage of team Members in female category is extremely high, the proportions of males designated as Project leaders and Project Managers are comparatively high explaining gender difference in current position of respondents in IT Industries. The significance of this association has also been statistically proved.

Table 14: Current Role of Respondents in their Offices

Current Role in Office	Sex		
	Female	**Male**	**Total**
Team Member	152 (73.1)	168 (55.3)	320 (62.5)
Module Lead	42 (20.2)	66 (21.7)	108 (21.1)
Project Lead	10 (4.8)	36 (11.8)	46 (9.0)
Project Manager	2 (0.96)	28 (9.21)	30 (5.8)
Delivery Manager	2 (0.96)	2 (0.66)	4 (0.78)
Account Head	0	2 (0.66)	2 (0.39)
Others	0	2 (0.66)	2 (0.39)
Total	208 (100.0)	304 (100.0)	512 (100.0)

Note: Figures in parentheses denote percentages Chi-square test result: Significant at 5 % level (Pearson Chi-square value: 30.432 at 6 d.f; P value= 0.000)

5. Conculsion

The IT Population is majorly comprised of Hindu population, followed by Christians and Muslims. Three- fifth of the respondents are males and the remaining two-fifth are females, which infers that males outnumber females in IT industry. The high proportion of respondents falls in the age group 21-25 years, followed by 26-30 years age group. The mean age is found to be at 28.17 years. It is observed that, majority each in male and female sex categories are found to be singles, but the proportion of unmarried females is comparatively high for which economic independence might be a causative factor. In IT Industry, the females are relatively getting married earlier and the proportion of married is less when compared to such proportion at national level (according to Census report) due to economic independence facilitating postponement of marriage. There is a significant association between marital status of the respondents and their age groups. While majority each in male and female employee category took under graduation, the proportion of post-graduates and Doctorates are comparatively greater in male employee category indicating a narrow gender gap in education level attainment between males and females. Most

of the spouses of IT employees are also IT professionals working in IT organizations. High proportion of IT employees is in the annual income category of 4.1-8 lacs followed by 0-4 lacs. There is a significant association between annual Income of employees and their gender and age. A significant association has also been observed between gender of employees and their IT experience or onsite experience. In IT industry, majority of the employees are designed as team members, followed by Module Leaders, Project Leaders and Project Manager. There is a strong association between current role of employees in IT industry and their gender.

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