

Impact of Woman as an Automation Engineer in India & World Scenario

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I. INTRODUCTION

Role of woman is the part & parcel of human society. All activities of man or woman are always affected by the rules, regulations, customs, cultures, Civilizations, tradition & geography of their particular society or nations. So, it becomes part of social sciences & its conclusion differs society to society on the contrary, activities of automation are the part of natural sciences. So, its conclusion will be common all over the world. But, impact will be differing society to society.

In the field of international relations, the Three Worlds Theory by “Mao Zedong”, proposes three politico-economic worlds: the First world consisting of superpowers, the Second world of developing powers, and the Third world of exploited nations.

The First world comprises the US and the USSR, the superpower countries engaged in imperialism and in social imperialism. The Second world comprises Japan and Canada, Europe and the countries of the global North–South divide. The Third world comprises the countries of Africa, Latin America, and continental Asia. In 1974, the Vice-Premier of the People Republic of China, Deng Xiaoping, explained the Three Worlds Theory at the special session of the United Nations General Assembly on the problems of raw materials and developments, about the People Republic of Chinese cooperation with non-communist countries.

In simple worlds, “Society of whole world & third world. 1st world exploits second & third world, second World exploits third world & third world is exploited by first & second world.” (*1)

Role of woman are also differing in this 1st, 2nd & 3rd world. Because the way of thinking is also differing in each world, that are the role of woman in an automation field too.

Automation is a set of technologies, automatic control devices, and automatic operation, control of industrial process without human intervention. Superior performance than manual control, it increases quality & reliability, reducing production cost & designing cost. For this, different types of microcontrollers and microprocessors are the most common type of components i.e. used in Industry for Industrial Automation.

So, automation becomes popular in industrial sector. And now, women can perform the job of industrial automation in following field.

- 1) PLC Programming
- 2) SCADA Designer
- 3) Project coordinator
- 4) Testing Engineer
- 5) Site support Engineer
- 6) Technical customer support Engineer
- 7) Purchase Engineer

But role of women in Industrial Automation is really differing in the countries of 1st world such as Russia & USA. In 2nd world, such as all European countries including divided in three parts-i.e. 1st world, 2nd world.

Japan & 3rd world such as Asian countries (excluding Japan), African countries, Latin American countries & etc. Due to the differing of social thinking & social development of human being, woman can't be getting same opportunity.

Women in automation opportunities by Jim Pinto, August 2012 in Automation World, says Author of book “How to win in the Automation Business”

“Automation needs more women who can bring innovative ideas to the industry, contribute their intuited skills, balance & find different ways to solve many difficult problems.” (*2)

Women make up 40% of the global work force & have come a long way culturally. However, there is still wide spread gender imbalance in different countries of the world, in Engineering Business like industrial Automation. Women are able to respond softly & able to provide a high level of technical support.

A. According to Mckinsy & Company's Report

“Women matter” makes a strong business case for increasing the number of women in senior management roles. It shows a link between corporate organizations and financial performance & the specific leadership behavior that women tend to adopt more frequently than man” (*3)

As per “Automation federation of USA” announced that the society of women engineers has become a member to help. Spread the message to women & students about many careers available to them in engineering & specifically in automation field.” (*4)

“Miller Dunn became the first female president of instrumentation society of America in 2008.

Under her leadership, the organization went through a major transition, changing its name to international society of automation.” (*5)

“Dr. Peggi Ward Koon (female) in the role of president at ISA in 2013 and was responsible for process control & automation at Graniteville at textile manufacturing company. Now, she is in charge of corporate digital strategy in ‘Morris communication’.” (*6)

Automation needs more women who can bring innovative ideas, intuitive skills & solve the many difficult problems that really need.

Above mention all explanations about role of women are showing that automation field is more favorable for women. Naturally, biologically & psychologically:

- a) Women are stronger than men in physique.
- b) They are more laborious.
- c) Their memory power is far better than men.
- d) More compassionate.

- e) More interpersonal in communication with people.
- f) Make sustainable relationship.
- g) Effectively influencing people.
- h) Soft talking

1) *Level of Thinking*

But social aspects are most important for the development of human in the ownership of men societies. We have already stated about thinking of society/ family depends upon the level of education & understanding as 1st world. If thinking of each family is like 1st world USA etc. Their women and girls will able to get higher education can able to join in automation or engineering field & able to designate leadership of any organizations.

2) *Working Environment*

If working environment in industries are in favor of women. Women can be interested to join & family, guardians & society can easily be agreed to allow them to do the job.

3) *Balance of Family & Work*

Women are the pillar of their home affairs. More or less, they are internally dealing and handling the all activities of home. They are responsible for internal management of their home.

In this circumstances, if women will do job in any organizations - it is necessary to make balance in the responsibility of home affairs & their organizations. It can only be possible whenever family will support to the serving women that may be automation field or others.

4) *Support of Family*

Support of family is the most important factor for success of women those who are serving (like employer/ leaders) in any organizations, must be support of family.

5) *Social Security*

It's also most important factor that stops the women to do job in the field of automation or any other organizations. Specially, the percentage of rape case in India is increasing day by day. So, the parents and guardians are also afraid and women are also feeling unsafe due to degradation of moral character in our nation. So, improvement in social security is must.

In spite of it, after independence, rate of education as well as rate of technical education engineering / technical education. Now days, 30% women are doing the job in different organizations. Automation is new field.

6) *Biological Reasons*

Biologically women are facing the problem of monthly periods or baby delivery. And that stops to join the automation field or others.

7) *Responsibility to Look after her Children*

Each mother is responsible to look after her children. Psychologically children are not satisfied without they are mother. This reason is also affecting to join the industries that may be automations or others.

As per study of past, rare women had interested to do job in industries. After involvement of computerized technologies in industries, percentage of women has increased.

Due to impact of this technological development of industries, women has started to join and taking training in industrial automation field. But the responsibility of women in home affair - like a house wife, as a wife, as a mother, as a daughter and so on, they are facing the several problems. They become unable to make balance between home affairs

& industries or any other organization. So, that they are leaving the job. These are the basic reason of imbalance between women and men.

However, women can't leave their responsibility like men. But now days, women are getting success in those families, they are getting support of them. So, percentage of job of women increased in different field. In spite of it, our engineers (women or men) are unable to get the job as per professional specialty.

Ratio of women is 48% out of total population in India. And we proudly celebrate of women increased. As per "census of 2011", 40% women / girls have completed their empowerment. And it is the biggest problem for balance development of this nation. As per NSSO (National Sample Survey Office) report. See in below pie chart, shows, in India only 4% women are participating in organized sector still now. On the other hand, 71% to 75 women's are participating in organized sector in developed countries.

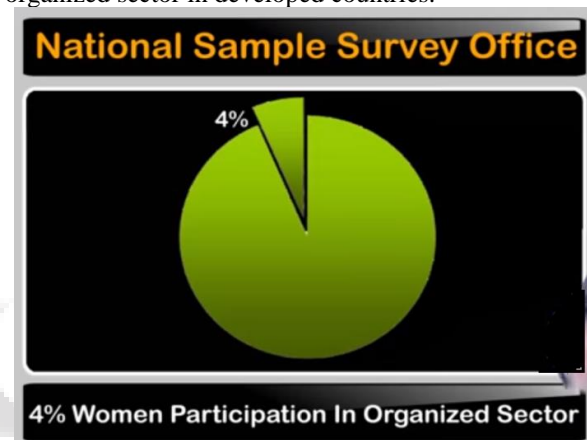


Fig. 1:

As per 2011 census report, average Indian women are going to school only for 1.25 yrs. i.e. it means only KG class completed by an Indian Women. It is unfortunately for our country for development point of view. Due to negative approach for women, bank is not ready to give the loan directly. House owners are hesitating to give the house on rent. Job givers are not ready to give the job. It shows negative mentality for women empowerment in our country.

"8th march as Women's Day" on the basis of lie trolling on social media, print media and electronic media. Actually, no one is interest in women As per World Bank report of 2017- Indian Maternal mortality ratio in India is highest on the earth i.e. (Modeled estimated 100,000 live births)

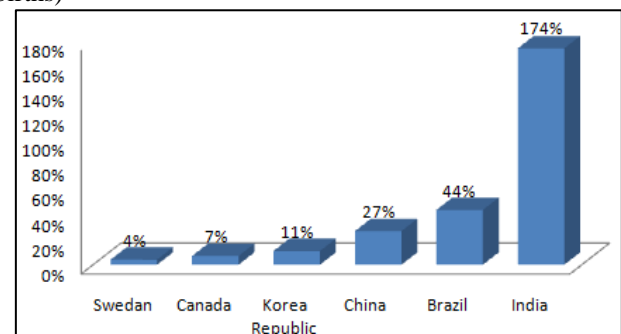


Fig. 2: Maternal Mortality Rate

As per World Bank report; ranking of Indian women workforce is 120th out of 131 nations. It shows lowest female participation as workforce. It showing, Indian eco-system is not favorable for women and their healthy development of empowering them.

After this, how we can say, women are empowering?

In spite of it, some of us have given opportunities to the women in their family like

Naina Lal Kidwai Chairman, HSBC India Director HSBC Asia Pacific	Shahnaz Husain CEO, Shahnaz Herbals
Indira Nooyi CEO, PEPSICO	Kalpna Saroj Chairperson, Kamani Tubes
Arundhati Bhattacharya Chairperson, SBI	

Table 1:

Crime is the one biggest social obstacle in Women's Empowerment as per 2015 census as below table

Crime Reported in 2015	Crime %age out of total Population
Total Crime Reported against women	4%
Crime by Husband & Relatives	35%
Women Crime cases disposed by police	67%
Crime cases take up by the courts in 2015	2.30%

Table 2:

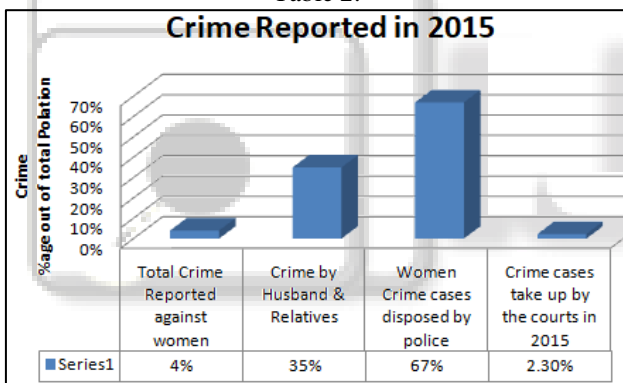


Fig. 3:

[Note: Disables female in 2011 census out of total female Population is 2.01%]

Literacy Rate	Average	Male	Female
Total Literacy Rate	73%	80.90%	64.63%
In Adult GP (15+yrs)	76%	79%	59%
In Rural Area		74%	50.60%
In Urban Area		88%	77%

Female literacy rate improved in rural area i.e. 24% more than urban

Table 3: As per 2011 Census (Government of India)

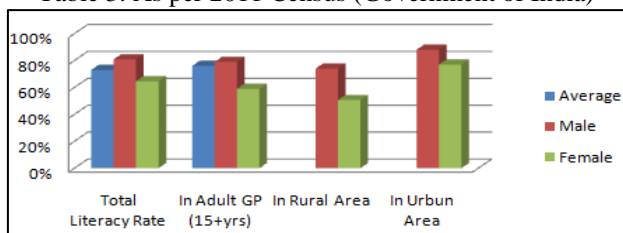


Fig. 4: Literacy Rate of India as per 2011 Census

As per article of "Lynn Siggins" Commercial engineers UK, Rockwell Solutions 25-Aug-2017,

Only 9% of the engineering workforce is in England. Women were facing the same problem like India. For long time, they were saying "you are a girl".

Due to see the situation of women engineers as a member of the Rockwell Automation Society and PWC (Professional Women Council). She realized that, women should not have only theoretical knowledge. They should be always ready to:

- Products need to be designed
- To look and feel good.
- To be Marketed & sold it.
- Not only programming and run around with a screw drives in your hand.

Women can visualize, communicating and empathizing. She can easily relate to the customers and solve their problems. So, she has given following three tips to the girls out there:-

- Try things out and don't let others push you back. There are so many options-take internships, talk to women in technical roles and also visit events.
- Being an engineer doesn't mean being a man. Be a girl, and you will be the one to bring different things to the party.
- Being an engineer is a sensible job! It's actually as cool as 'Selena Gomez' or 'Gigi Hadid'. It's not a boy's job and you are everything else than silly in following such a role.

Above suggestions of "Lynn Siggins" is appreciable, but circumstances of India & UK are differing to each other. India is the country of third world and UK is the country of 2nd & 1st world.

Secondly, these are affected by demand & supply theory too, because India has over populated country. So, mostly women are energizing in soft core work. But, now days, most of the girls are wanted to engaged in hard core, but the industries are not adopting them for this. As per survey of Pune:

I have study of different institutions of "Industrial Automation", and their conclusions are as under:

- I have done research in 4 most famous Training institutes in Pune.
- I got last 5 yrs. database from there. And found only 10% girls are getting job in industrial automation field. Very few girls are doing their profession like industrial automation or we can say purely project work, out of 100%. Most of the girls are doing some other works like documentation, purchasing & sales services etc.

Rest of the 90% girls is doing something else, not in the industry of Industrial automation. Some are doing work in IT Industry, some are doing in "After-sales services" of some another industry, some are doing in HR, even some are doing work in call centers and same like some are in another industries those who are not related to their engineering profession.

Together. So, it's not a traditional repeated process work or we can say same thing manufacturing work. It is a R&D work. So, Automation Engineers need to do continuous learning process and then applied it.

2) I have also done another research in 50 small scale Industrial Automation company those have 25 to 1 cr. turnover in a year. They mention the demand of only male candidate for their recruitments. And strictly mention, the girls are not preferable. This is service or field job. So, girls please don't take any initiatives for this job. Actually this is negative part of this field but this is reality.

Professional girls like engineers are capable to their job in industrial automation industries, but due to social environment, psychological factor and biological factor are affecting and stopping the job in small scale industry of industrial automation.

3) I got another research in this industry; only early stage girls are taking job in Industrial Automation after completion of their engineering. But after 5 to 10 yrs., they take retirement from this field. It's another issue.

Most of the girls are coming to join this job from middle class family. They have some limitations. Such as, they are getting the responsibility of their children, in-laws and other members after marriage and due to that the average working time period are approx 5-6 years and then they left the job.

Kalpna Chawala and Sunita Williams are in exception case because India is the country of third world but some families are thinking like 1st world like India too. And it is wastage of human capital and their professionalism including their money. But some professionals became only house wives due to above mentions reasons. These are also wastage of their talent.

Industrial Automation is a hardcore, Intellectual, Ideological, creative, research Industry. As per the demand of the customer, we make new things. It's a purely new technological development work. Engineers applies, engineering theory and practical's work

Job Criteria	Professional Status of Girls after IA Training (In %age)
Got Job in Industrial Automation field	10%
Do Diff. Engg. Jobs	30%
Left engg. & Do diff. Profession	40%
Don't get job	20%

Table 4: Survey of Girls those who have done industrial Automation (IA) Training from DIFF Institutes in Pune

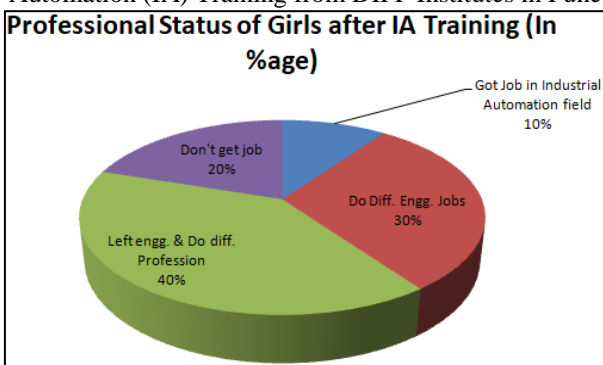


Fig. 5:

Now India is a capitalistic country and adopted free trade policy. So, different institutions of industrial automation and engineering colleges became a center of business and they work on the principle of profit maximizations.

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So, in one side they are inviting the girls for industrial automation training courses and saying, "In this industry too much potential to make your future secure, because next generation only work on automation and automation industries required too much automation engineers in the industry".

In another side, industries are not interested to invite women as an engineer in industrial automation field. So, I think that, it is a scamming with girls.

II. SUGGESTION

So, guardians and girl engineers should be conscious for recent past history of industrial automation specifically for girls job.

And families and society both should try to understand, if they make engineer girl and she got job in engineering project. They have to understand, big projects never made in one roof room. She will go to the site and she has to live there till project has to be completed. But, Indian families want an engineer girl, they interested to do the job, but their girls should not be go outside or do site work due to unsafe environment of our society. And this mentality is like third world society.

Therefore, if we are interested to make girls capable and do their job in different sectors of Industrial Automation field, following improvements are required:

- 1) Responsibility of individual self-development
- 2) Families support is required
- 3) Social environment should be improved
- 4) Law and orders must be tight

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