The Advent of Robotics Technology in Industry Sectors

The report submitted to the Department of English, AIUB, in part-fulfillment of the requirements of the final examination in Business Communication, **Spring 19-20**.

Prepared & Submitted by:

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to

Course Teacher: AMAL MAJUMDER

Date of Submission:

16-05-2020

American International University-Bangladesh (AIUB)

Date:16/05/2020

AMAL MAJUMDER

Course Instructor

Business Communication

American International University Bangladesh

Subject: Submission of my final report.

Dear Sir,

I have the pleasure to submit my report titled 'The Advent of Robotics Technology in industrial sectors'. The report gave me opportunity to know the variety and range of applications for next-generation robotics have increased dramatically. These include those working with humans (sometimes called co-bots), interacting with humans (such as educational robots), assisting humans (surgical robots, exoskeletons), or adapting and integrating into human-made environments. We now see uses for robots across industrial manufacturing, the home and the battlefield.

My research was on the advances in robotics technology that are making human-machine collaboration an industry sectors and its real effect on human life.

From the research I found out that, the technology has reached the point where a new age of robots is emerging. The next generation of robotics machines will move beyond the factories and warehouses to work beside humans in new capacities. Where robots in the factories were cells of articulated-armed, fast-moving steel machines that had to be caged in controlled production environments to protect human workers; the next generation of robots is working side-by-side with their human counterparts.

I thank you for giving me the chance to do this report.

Yours sincerely,
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Preface

In this report I tried to find out the increasing demand of Robotics technology on current time and its upcoming popularity in future and also the effect on human life. Mainly I did research on the incremental demand in industry for this enhance Robotics technology. I compared the data of past and present time on the uses of this technology in the industry in this decade. Also I analyzed the data based on the demand of recruit the human and machine worker. I categorized the demand for the industry and made an analytical research on it. My subjects were current section students of our class, ex-students and couple of industry employee. In my research I went to 40 students, 10 ex-students and 2 employee of Automobile industry then I gave them questionnaire and interviewed them as well. I collected both qualitative &quantitative data from all the subjects. From the analysis I made a statistic report and this statistical data showed the overall scenario of Robotics technology in Bangladesh and on abroad. Also it will give us an idea of what is the current situation of industry.

Acknowledgement

I am heartily thankful to our course instructor, whose encouragement, supervision and support from the preliminary to the concluding level enabled me to develop an understanding of the subject.

I am thankful to all the students, ex-students and The employee of Automobile company who participated of this study and greatly appreciate their sincere co-operation.

Also I want to thank some of my friends who helped me with collecting all analytical data and interviewing all the subjects.

Lastly, I offer my regards and blessings to all of those who supported me in any respect during the completion of the study.

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Abstract

Robotics is a tremendous technology for the 21st century. It brings a incredible changes in human lifestyle. The manufacturer industry has received a new dimension after this technology has arrived. The results of introducing industrial robots can only ensure higher profitability levels with lower cost per products with shorter of time. Current research shows that this technology will take over the job over human in recent future. On this circumstance there will be a high possibility of industrial worker loss their work soon. Because of industrial robots can complete certain tasks faster and more efficiently than humans as they are designed and built to perform them with higher accuracy. It is a automated processes which previously might have taken more time and resources. Studies have indicated that over 40% industrial work are done by the robots recently. Developed country already replace human over robots in some tasks like dangerous and laborious or repetitive for humans to carry out. In developing country this technology is like luxury to outcome. However in recent future it will be spread in all sector of work for human welfare.

1.0 Chapter 1: Introduction

1.1 Popularity and demand of Robotics technology

Robots first emerged on the year of 1970s and 80s. The initial uses of robots in production often were not very efficient. As robots and control system technologies improved, robotic workstations became a standard component of automotive production. They have since moved into other applications including filling, packaging and loading. Robotics is evolving away from the large, complex, and expensive industrial robotics toward inexpensive, smaller, and safer people-friendly systems.

1.2 Working sectors of this robotics technology

There are six main types of industrial robots: Cartesian, SCARA, Cylindrical, Delta, Polar and Vertically articulated. There are many sectors where this robotics technology are used nowadays.

Agriculture

To help increase productivity while lowering overall costs, the agriculture industry has been actively working to adopt different forms of robotic technology. Farmers have already been using tractors and harvesters that are self-guided by GPS. Recently, there has been a rise in the experimental use of autonomous systems that automate operations like pruning, thinning, mowing, spraying, and weed removal. Sensor technology is also being utilized to manage pests and diseases that affect crops.

Food Preparation

One of the more extravagant advancements in robot technology will soon be available in the kitchen. Automated and intelligent robots — such as those

invented by Moley Robotics — will be able to prepare and cook hundreds of meals in a home kitchen. This robotic chef will be controlled via a smartphone, and once the controller chooses a recipe and arranges pre-packaged containers of cut and prepared ingredients, the robot will be able to cook the predetermined meal quickly and efficiently. Moley Robotics is also developing a consumer-friendly version of a robot kitchen, which will include a built-in smart dishwasher and refrigerator.

Hospital robots

Robots have an increasing presence in healthcare, such as surgical robots like Da Vinci or support robots used to deliver medical supplies around a hospital when needed. In addition, robots are also performing more routine tasks such as acting as guides, helping patients and visitors navigate large hospital estates, and freeing up valuable capacity for trained professionals.

Exoskeletons

The Phoenix exoskeleton has enabled people paralyzed from the waist down to walk again. With the cost and weight of these systems reducing, we are likely to see exoskeletons increasingly used to both enable mobility and support work-based activities.

Manufacturing reinvented

Rethink Robotics have introduced the Baxter robot that is designed to work on a production line alongside humans. Human operators can re-program Baxter by moving its arms into desired configurations, much like teaching a child. Using such robots can reduce equipment costs for factories by allowing human-robot collaboration and minimizing the changes needed to acquire and

install the robot, as well as the costs associated with learning to operate and re-configure it.

Military

In the military and public safety sectors, robotic technology is being applied in many areas. One highly visible area involves unmanned drones. These machines can be used for surveillance and support operations on the battlefield. Military drones flying over areas of war and conflict, in hostage situations, and for natural and man made disasters are able to assess danger levels and provide soldiers and first responders with real-time information. Drones are revolutionizing disaster response since they can access hazardous areas with greater speed and precision without placing human responders in harm's way.

Robotic devices are already establishing a wide presence in several commercial industries. As robotic technologies become more affordable, they will soon be available in various forms for consumers as well, with the ability to impact our lives in countless ways.

1.3 Overview of the research report

This research report is on the uses of technology of robotics on industrial sectors in abroad and Bangladesh. The report results figure out the quantitative data on the demand of this technology in industrial area in Bangladesh and overseas. There is approached to 40 individual subjects with questionnaire and also interviewed some of them personally. There is collected all the quantitative and qualitative data and made a statistical analysis.

1.4 Rationale of research report

From the analysis of this report there come down to some factual conclusion about this technology. It can be assume by this report that the demand of this technology is increasing rapidly and it will create a major impact on human workers. This report will help us to point out the are facing and the reason behind it. Such as-

- What are the facilities provide by this technology?
- What are the main facts in increasing its demand?
- Why world wide it's uses has risen?
- Why there is less opportunity in Bangladesh than abroad ?
- Reason behind replacement of human worker over Robotics worker?

All this information would be much helpful to overcome all the impact of this technology. This analytical report would be helpful for industry to choose robotics technology over human worker on their field. This report will also be helpful to the human worker to overcome unemployment problems on industry level and they can shift on another platform.

1.6 Chapters of the research report.

- Chapter 1: The introduction about the full report. What is the report about and how the reason behind doing this report.
- Chapter 2: Methodology of the report. How the analysis method is used, why and how it used. Also the analysis of data is shown in this chapter.
- Chapter 3: Findings and analysis. The resultant data and findings are in this chapter.
- Chapter 4: The conclusion of the report.
- Chapter 5: Personal recommendation based on the result of the report.
- Chapter 6: Bibliography

2.0 Chapter 2: Methodology

2.1 Method used

In this report there is used both quantitative and qualitative data.

As a statically analytical report the main method is used quantitative method. Because the report has to be made on statistic number of industry, number of worker performing different jobs, number of technology are using there and then compared all the data. So quantitative should be used to make such an analytical statistic.

Also I used qualitative method to survey on the industry and employee about current and previous time. It helps to identify the problems by comparing the quantitative data.

2.2 Selection of subjects/participants

As this report is on the demand of Robotics in industry sector, all the data are based on industrial uses of this technology. I took data from 30 current senior students, 15 ex-students and 5 employee from an automobile company.

The reason of choosing current senior students is, they would know what is the upcoming future for this technology how precisely it can be use for mankind.

The reason of choosing ex-students is, they would know better how the industry and other sectors uses this technology. What occupation need to take to work in this modern industry.

Finally, I choose the employee from an automobile company they would know the industry situation and the increasing demand of this technology. How industry is being operated using this technology and could be the future industry look like.

2.3 Data analysis

The questionnaire are given to all the subjects and interviewed in Online and Google Form. Using those data there are some different static graph compared them with each other.

Graph and analysis:

2.3.1 What is Robotics technology-

The data showed that the multiple uses of this technology with less effort and very faster. And this technology spread in many sectors.

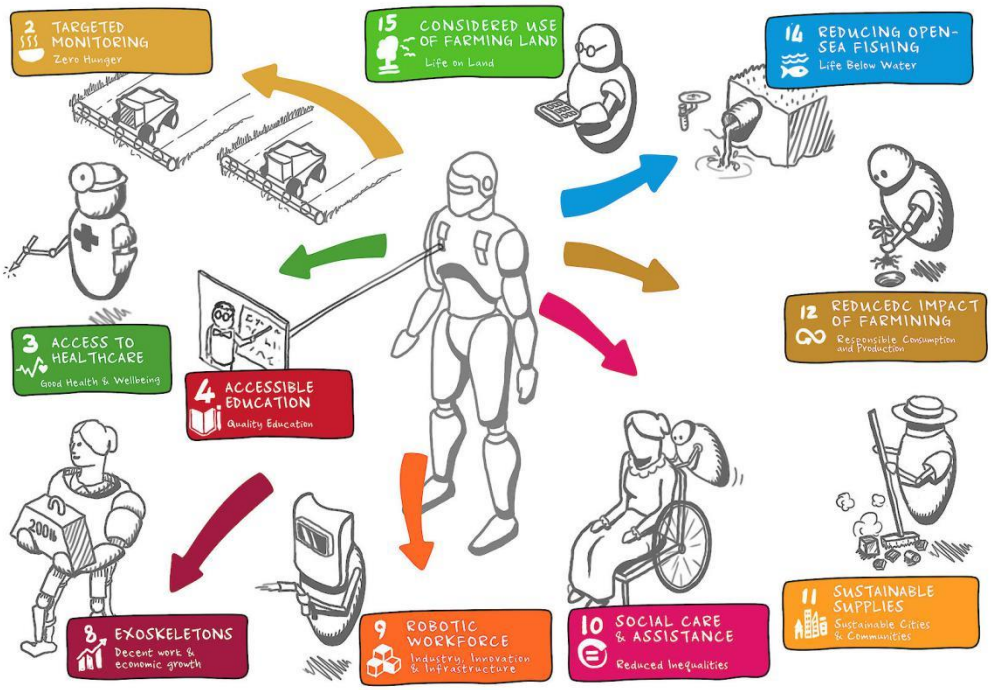

Figure:01

2.3.2 What is the scenario of current industry -

The scenario in this decade explain that in the beginning of this decade this technology was not so popular in the industry and there was a very few uses of this. But within time in industry sector this technology become very popular and there is huge use of this technology.

Finally most uses of this technology found in recent five years according to a report of '*International Federation of Robotics* (IFR)'.

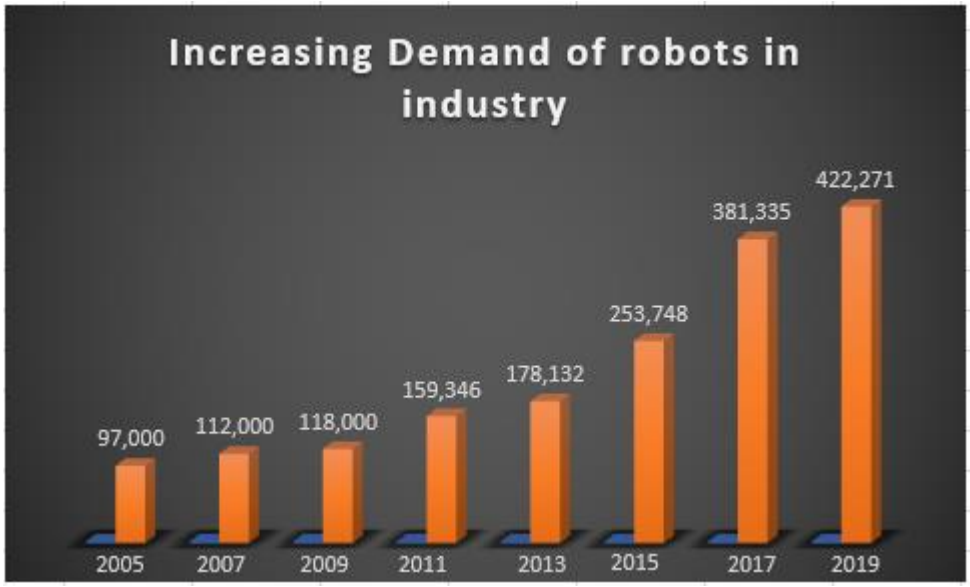

Figure: 02(**Estimated worldwide annual supply of industrial robots**)

2.3.3 Ratio of Robots and Human worker –

First of all, the ratio of human and robot worker in industry globally is about 80%-20%. But this is not a good scenario for human worker cause day by day the uses of robot worker are added to the industry and thousand of people become jobless. From the report of FORBBES Statista 2016 the rate of robot worker number is increasing rapidly in developed country.

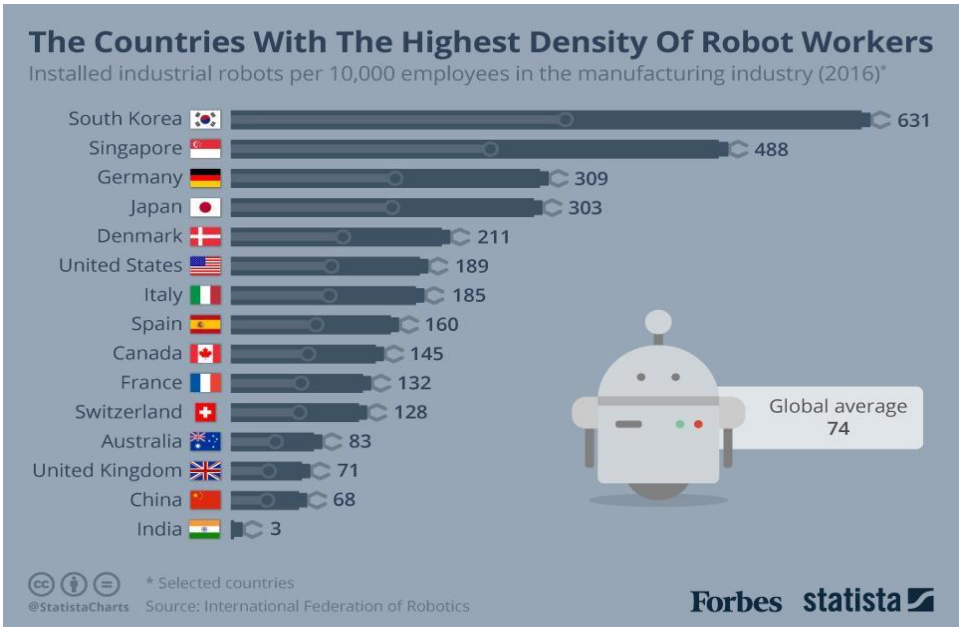

Figure: 03.

2.3.4 Popularity in different sectors -

From the data collected from many websites, blogs and research, it is seems that till robotics technology is highly used in industry sectors and also there are great number of use in Military, Hospital, Agriculture, Household.

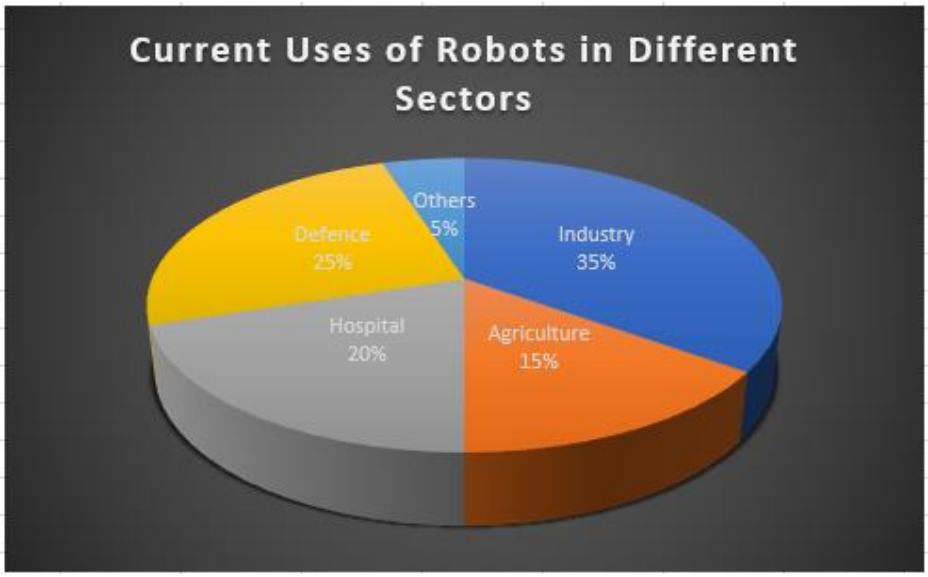

Figure: 04

3.0 Chapter: Findings and Analysis

3.1 Findings

From the data the taken from the 'FORBBES Statista 2016' statistic result show that the country with higher density of robotics worker installed in manufacturing industry per 10,000 employee are:

Ratio of Robots and Human worker -

Country	Robots	Human
South Korea	631	369
Singapore	488	512
Germany	309	691
Canada	145	9855
Australia	85	9915
Japan	211	9789
China	70	9030
India	5	9055

And the analysis shows that the demand percentage of using Robots in sector like-

Industry	35%
Defense	25%
Agriculture	15%
Hospital	20%
Others	5%

3.2 Analysis of the result

At first, from the data we can see that in the beginning of current decade this technology was not established as now. But with the developing of modern science Robotics technology has been risen. Now industry demand more production at lower cost with efficient time. And this technology is match the level of this demand.

But in the mean time there is a fact that the increasing demand of this technology will be the risk for human worker, many worker will become unemployed because of massive use of this technology.

- Robotics is the technology of next generation industry.
- It consume less time with lower cost than the human worker.
- In the developed country this technology is uses most.
- In our country there are not much industry which are uses this technology.
- It could be the replacement for human worker in recent future.
- Though the developing country like Bangladesh this technology in like luxury for industrial sector.

4.0 Chapter: Conclusion

4.1 Summery

On conclusion we can say, Robotics technology has a great future on the upcoming time. But country like Bangladesh has not the proper capability to introduce this technology on it's industry. This technology can be a thread for human working field and lots of worker can may loose their job because of this technology.

4.2 Limitation

The limitation of this research is that there couldn't reach all the people who can help with data. For example The Industrial Company manager's, industrial worker who could give more data about this.

Also the time of research was very short to cover such a vast subject. Because of some global crisis this research also hampered. So there is not good situation to study in internet to know more about the global uses of this technology.

4.3 Future direction

In future if someone does this research, the advice will be to take more part of this technology not only the industrial site, take different sectors and do more study online on global uses of this technology.

5.0 Recommendation

The recommendation is that a technology can be used in different way it has both positive and negative impact on the human. The best way is that to work for human purpose. Do not need such technology which will be the reason for human calamity.

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