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Project Management Issues for The Improvement of Medical Industry of Bangladesh by Industry 4.0

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ABSTRACT

In this article, project management in Industry 4.0 is analyzed from the perspective of improving the health sector of Bangladesh. There is a potential scope of Industry 4.0 in the growth of the healthcare industry, which we have identified using Project Management 4.0 in this article. This proposal is defined as Improving Bangladesh`s health sector through Industry 4.0. We analyzed the necessary qualities of a project manager to tailor it. The features of Project Management 4.0 revealed in improving the health system are closely connected with the key components of project management: time management, cost management, quality management, project team management, communication management, project risk management, procurement, and resource management. Industry 4.0 is a necessary strategy to deliver new and evolving technologies in the medical field through a combination of technology, sensitive machines, and software. With the help of industrial revolution 4.0, it is creating a new virtual healthcare world.

Keywords: Medical Industry, Industry 4.0, Project Management, Technology, Software.

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INTRODUCTION

The idea of enterprise 4.0 is a concrete expression of the manifestation of the fourth commercial revolution. It is promoted for the primary time on a huge scale through the German kingdom thru the Ministry of Research and the Ministry of Economic Affairs. The industry 4.0 idea have become the image of the economic destiny in evolved countries. The Fourth Industrial Revolution idea is primarily based totally on each human-machine communication and machine-machine communication [1]. In this article we are trying to say about some scope improvement in Bangladesh medical sector by using industry 4.0. We are trying to through a project to make improvement in medical sector. For this project we need to follow through each system consists about project management. Because of expensiveness for this project, we need to think about this project constraints also [2]. To execute any medical project, we have to hire some dedicated project managers those have some sound knowledge about healthcare system and also aware about updated technologies. The focus of this article is to discuss the potential scopes of medical industry of Bangladesh by industry 4.0. By using internet of things (IOT), artificial intelligence (AI), Big data analysis, Holography, Sensors we can make the medical system easier. In this idea Industry 4.0 connects products, clever substances and machines and generates records from many locations. It stocks statistics digitally in hospitals and permits to create complete visibility in operation that

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gives a better degree of statistics approximately remedy quality, using machine automatically, give the patient medical advice, it also helpful for people to save time and money [3]. We need to focus out the medical doctors and we have to introduce medical health record system process. It used to preserve the document of patient of any hospital's automatic medical documentation server. It also helpful for increasing employment. For the documentation process we can using google glass to see doctors and record their medical advice data which is given to patient [4,5]. For this project kind of project, the new and as well as challenging factor for project managers is to convince people and doctors about the technology and its benefits. This is how it makes their work so easy, and doctors can pay their full attention to the patient and use their data stored device as hospital. Because of working on medical sector improvement project by industry 4.0 perspective some major skills such as Leadership, organization agility, technological knowledge, collaboration, and teamwork is required most to manage projects [6]. We have divided the main discussion in two parts. One is the scopes of project management in medical industry and the new technologies of medical industry in the perspective of industry 4.0.

LITERATURE REVIEW

The medical sector is a unique and major side of any country consists of many doctors and nurses, insurers, patients, and software vendors. Bangladesh medical sector is not so improvising nowadays. In recent years the medical sector has grown rapidly to it can't cope up with its need. Digitalized healthcare section is need there to make medical sector automatic. To figure out the facilities we need proper maintenance, proper management. Huge manpower is needed to manage, organize, and monitor all these projects [7]. For this project we are proposed to using industry 4.0 criteria. Which can be a major change in our medical sector. These concepts are closely related to Industry 4.0 and the industrial revolution has recently emerged globally, so by using this concept we can make our medical field a reality. easier for everyone [8]. This industrial revolution depends on technologies such as three-dimensional (3D) printing, AI, IoT, and robotics. It creates a smart factory through which customization is done efficiently. Industry 4.0 can help medical innovation meet different requirements. It introduces new design, custom tool development and many other supporting devices in less time at optimal cost. Industry 4.0 helps to create digitalization in the medical field with the support of various technologies such as Internet of Things, big data, artificial intelligence, robotics, etc. These technologies provide better protection, confidence, satisfaction, and patient care [3]. As there is a significant role of the project manager in this area. This project manager should be someone with a solid knowledge of the industry itself as well as training in basic project management techniques, but this is slightly different from traditional project management. first]. The usual techniques of project management had to be transformed to the fourth industrialization because many variations occurred in the way things worked. After examining the required knowledge and responsibilities of regular project managers and industry 4.0 project managers, there are many differences, challenges, and opportunities in the industry 4.0 project. Transformation includes digitization and automation, connecting different machines with multiple software platforms and connecting departments in a production environment, virtual support, changing communication methods, collecting, and analyzing analyze big data streams and make data available to partners such as suppliers and machine builders., IoT predictive maintenance monitoring and cloud platforms, as well as virtual and augmented reality [9].

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PROJECT MANAGEMENT 4.0

Project Management 4.0 is the fourth unit of project management evolution as a study. In the subsequent number are the stages of the project management development from the viewpoint of the fourth stage: PM 4.0.

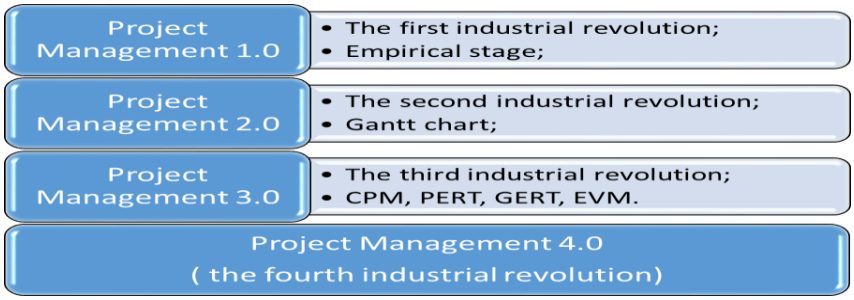

Fig 3.1 Development of Project Management from the First to the Fourth Industrial Transformation

Importance of Project Management in The Medical Sector According to Industry 4.0

The main areas of the health industry can be classified into the following four sections of healthcare services and facilities. Medical devices, instruments and hospital supplies to manufacturers, health insurance, medical services, and managed care. The healthcare industry that implements effective project management will benefit from lower costs and better results. Patient health and satisfaction is of the utmost importance, which makes project management in the medical field more complex and very important. It is worth the investment and effort to make sure everything is done right, as both the hospital and the patient will always benefit [7]. Some topics of the Project Management function are shown here:

The Medical Project Manager's Role

Industry 4.0 has created many opportunities to bring exciting possibilities and new opportunities to patient care. It personalizes products with precise fabrication of patient-specific devices that produce high-quality results. The overall management process should include a basic process. Streams can be like this start, schedule, run and monitor then close. The implementation and follow-up phases are the most important and unique in health project management. In this sense, the management of hospital projects is special because many efforts have been made to obtain approval and confirm that regulations are respected. The project manager is responsible for the overall people requirements of this project [10].

Skills of A Medical Project Manager to Cope Up with Industry 4.0

Skills required for jobs changing faster for Industry 4.0, Corporations around the world cope with questions in discovering trained employees at present-day talent levels. Machinery is upgrading quicker than still earlier, and companies have to select employees is disappearing due to deteriorating labor force. Leadership is required to maintain project smoothly. Risk assessment and management knowledge is important. Because of risk in project, we have to maintain project planning and timetable wisely that we make up project in time. As it is a technology-based project, technically skilled people are needed to work in project. Most importantly collaboration and teamwork are much more important to make project efficient [6].

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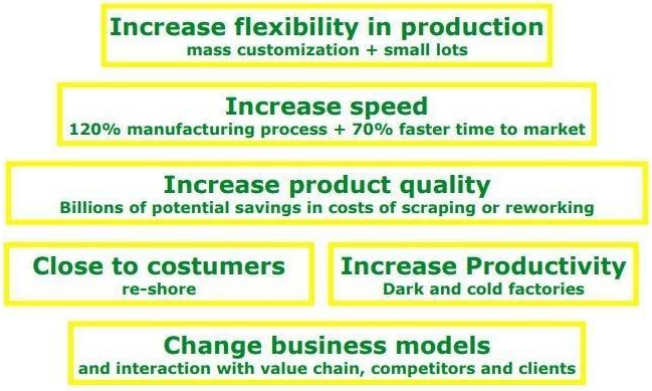

Fig 3.2: Role of medical project manager

Project Management Practices Vary in Industry 4.0

Though it is a medical project, project management components practice very in industry 4.0. It plays a vital role to make project effective. The project management component is time management, cost management, quality management, project team management, communication management, project risk management, procurement, and resource management [2].

Challenges of Medical Project Manager in Industry 4.0

The big challenge of medical project managers is to convince doctors and people about its benefits and clarify about that how easy the work will be done by doctors and they will do their treatment properly and the accuracy of work will be being good. Project managers need to convince stockholder that how much effective it will be for country as well as medical sector. The summary of the main challenges is:

1. High-level Sensitivity
2. Increasing Costs
3. Harsh Ruling
4. Continually Shifting Business
5. High-level Legal process Threat
6. Distinct Investors

MEDICAL 4.0

Several experts believe that the implementation of Industry 4.0 in medical sector want result in improved use of robotics and automatons in hospitals, medical equipment, and medicine factories. These mechanical automated devices want to be able to perform duties several periods with higher precision and in a shorter period duration than humans. Robots will act as an efficient substitute for manpower. So, a project manager has to be capable of adapting the recent updates of technology and

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so his team [8].

Major Machineries of Industry 4.0 In Medical Sector

Industry 4.0 assists to generate digitization in the medical field with the help of several machineries. These machineries provide security, gratification, and correct data to the patient role. Various machineries of Industry 4.0 for medical field are discuss here:

Robotics
The robot is uniquely positioned for surgical procedures and enhances performance, movement, and control. Now surgery can be performed via computer control. It reduces/eliminates tissue trauma in open surgery. It can also operate in environments that are considered hazardous to the surgeon [3].

Holography
Holography is a non-contact 3D image that is visible to the naked eye. It provides high resolution details of organs inside the body. Now, doctors can examine patients with three-dimensional images without the actual presence of the patient. It is useful for a non-contact study used to measure internal and external fractures. Patient information can be stored in digital form, which will benefit the training of medical students [3].

Sensors
In the medical field, pressure sensors and mass flow sensors are used to provide a solution required by surgery. The sensors provide information about the patient's temperature, blood pressure and other conditions. Different types of sensors are used according to the requirements of the medical field [3].

Big Data
In healthcare, big data is delivering life-saving results. Through digitization, he consulted a large amount of information and analyzed it. Doctors need to understand a patient's past for them to better treat them, so this technology is useful in providing valuable patient information such as disease markers. It also provides important relevant information about better care and faster treatment [8].

Artificial Intelligence
In the clinical field, AI is used to research complicated clinical data. It is a vital era this is programmed and operated with the aid of using machines with the assist of the computer. It can accumulate facts and to offer well-defined output to medical doctors and patients. AI offers interference and remedy technology to beautify affected person outcomes. It is useful in customized medicine, prognosis process, disorder level, drug development, and affected person monitoring [8].

Internet of things (IoT)
IoT has opened a worldview in medicine. It connects the internet to medical devices and collects the information needed to provide patient control and treatment. It is very useful in monitoring, treatment and testing to ensure patient safety [3].

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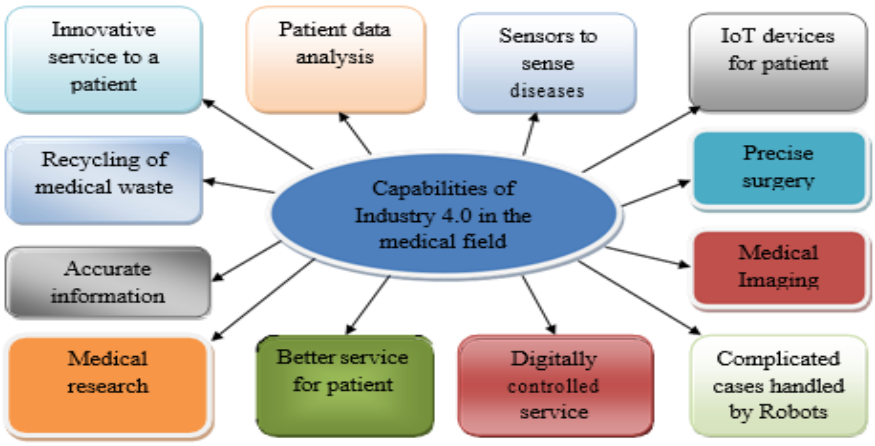

Fig 4.1: Capabilities of industry 4.0

Industry 4.0 Applications in Medical Field

Industry 4.0 is an integral part of tomorrow's smart drug factories and smart hospitals, where new technologies and new processes provide efficient services with less time and costs.

Personalization of Transplants

Personalization is a key requirement of the medical field because the data of all implantable devices and specific patients is different. Industry 4.0 is renowned for manufacturing customized products that can rapidly create high-quality devices and implants in less time and at lower costs [3].

Digital Clinic

Industry 4.0 provides accurate information management in the medical field through IoT application. Useful for keeping medical records, doctors, samples, and laboratory identification.

Intelligent Transplants

Efficient generating of practical clinical additives and it could speak with tracking structures and far off physicians. It connects the net of provider and opens a brand-new generation of possibilities withinside the clinical field. By the programs of clever material, implants can change [8].

Delivers Transplants in Lesser Time

Build a custom model in less time with the required mechanical strength. It is useful for creating a conceptual model for medical applications. Thanks to the applications of various advanced design and manufacturing technologies, implants and other medical devices are created in less time [8].

Precise for Surgeons

Medical parts and components created by this process perform precise surgery because the intelligent manufacturing system generates an exact joint pattern [3].

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Improve Communication

Easily handle various complex cases. The medical models produced by the intelligent manufacturing system will improve the communication between the doctor/surgeon and the patient. Physicians and surgeons can better understand treatment outcomes and provide appropriate patient information [8].

Decreases Surgical treatment Hazard

Industry 4.0 uses innovative smart sensors and technologies that have the potential to reduce the risk of surgery. Quickly identify issues for completed cases. Performing surgery effectively, increases the success rate of surgery [9]

Recognizes the Intensity of Illnesses

By making use of special scanning approach and technique, affected person statistics is used efficiently. Helpful to discover special illnesses and their reasons through taking facts from diverse sufferers and it`s additionally beneficial to discover the extent of illnesses [8].

Complete Monitoring

Using this makes it easy to track a patient's entire course of treatment by recording all the data. Help monitor and prevent public health problems using various medical devices and software.

Increasing Manpower in Medical Sector

Manpower will increase in the medical sector. Most of us know about smart documentation of medical record for any hospitals. It normally known as medical documentation and live clinic. The people doing work in favor of doctors are known as medical scribe. The medical scribe and doctors are wearing warless camera glass known as Google Glass. By using this scribe can easily trace what doctor said to patient. Hearing this the scribe documented a file regarding of prescribed medicine, advice, treatment for the patient. By using this the effort of doctors is going less and they can give their full attention to patient. If we are implemented same technical issue in our medical sector lot of employment will happen and we can enter the digital world easily [4,5].

CONCLUSION

The project medical sector improvement in Bangladesh by industry 4.0 will be a new era. In this sector industry 4.0 focus about smart manufacturing and application on various medical tools which will makes the job easy for doctor as well as surgeon. Technological era will introduce by these people can checkup their health issue easily. It will save cost and time for big surgery. It utilizes the arithmetical theory of holography and computer-generated existence. This will reduce the risk of patient and data analysis. Most developing countries have not yet shown a concerted effort in Industry 4.0. While only a few of these countries have comprehensive initiatives, almost all are working to catch up with emerging manufacturing trends and introduce AI, cloud computing, big data analytics, robotics and many other high-end emerging technologies. Bangladesh is a developing country, so being this country, we should go through industry 4.0 revolution to make our job sophisticated and easier. By this project many people get job in project and as well as medical technical sector. The virtual job system is bringing

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out a new era. We can easily make work from home or anywhere. Technical people in medical sector will regulate the system smoothly and make people healthcare life quite easy. Industry 4.0 deeply encouraging intelligent manufacture and data method by which medical industry in our country bring out innovation. It provides high feature gadgets and elements which meet the need and demand of patient and doctors. The transformation has a better effect on environment and reduce human effort as well. Doctors can take advantages of this new revolution. If we adopt the new technologies properly in some years, it will provide a new scenario for medical sector in Bangladesh.

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BIOGRAPHY

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