



## IoT (Internet of Things) in projects management

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### ABSTRACT

*The research study is aiming at determining the impact of implementing IoT (Internet of Things) in project managements for reducing the risks as well as the costs of the project management. It is also aiming at focusing on characteristics related to the implementation of IoT in project management. The research question considered is reflecting what is the impact of IoT in projects management? The researcher had reviewed different articles from other researchers' works. With the analysis of the different article, the researcher is enabled to gaining detailed information related to the implementation of IoT in the projects management. In this section, the researcher had focused on the IoT enabling technologies and the technical regulatory characteristics present in the project management. These are seen to be considered as it is enabling the researcher is focusing on the benefits of the IoT. Apart from this, the implementation of IoT in the project management is discussed which is showing that projects can be carried out at a much faster speed. In this research, the researcher had considered secondary data analysis process. It is enabling the researcher in determining the minimum requirements needed for setting the IoT. It will be facilitating the researcher in determining the efficiency and the effectiveness of implementing IoT in project management. The identification of benefits gained by the organization with the implementation of IoT is also seen in this context. The characteristics of the IoT are considered which is enabling the project managers in focusing on learning about the project participants. This illustrates the projection of private data, confirmation of the accuracy of the data collected, and the creative thinking processes. With considering the increase in implementation of IoT, the importance of IoT in managing the devices and the projects carried out in different fields are analysed. The strengths and weaknesses are highlighted in the recommendation section. It is surrounding the improvement of the regulatory policies for increasing the effective organization of the project management processes. The IoT regulatory policy is seen to be playing an important role in executing the registration and documentation processes. Also in this section, the researcher had focused on the project management systems as well as the regulatory authority is playing an important role in improving the frameworks that should be followed. The regulatory authority*

*is including the vital tasks that should be carried out for protecting the big data. In the end, it is discussed by the researcher in the conclusion section is that the acceleration of growth of IoT is devising increase in the pressure on the organization. It is leading to the development of technologies present in project management. The policy, framework and the guidelines should be focused in every area present under the IoT umbrella. At present time, the improvement in the project management carried out by the project managers is essential. It will be helping in removing the risks present in the project as well as the project monitoring and governance is essential.*

**Keywords:** IOT (internet of things), IOT policy and project management.

### 1. INTRODUCTION

This research is titled as "Internet of things in projects management". An objective is a statement of the impact of applying IOT in projects management to reduce risks and cost of project management, on the other hand, focus in characteristics of implementing IOT of the project management.

This topic is important because one of the most critical elements of management that controls all aspects of business operations and attention for all process and operation Oversight function that is aligned with the organization's model and encompasses the project life cycle IOT entails making and implementing decisions, proper leadership, putting in place organizational arrangements, ensuring resources and funding, establishing accountability, and measuring success (Department of Electronics & Information Technology, Government of India, 2015).

Research questions:

What is the impact of IOT in projects management?

#### 1.1 Objectives and aims

The main objective of this proposed project is to determine the impact of the Internet of Things on project management in the organization (TRA). In order to develop such technical regulations in the Telecommunications Regulatory Authority:

- it is necessary to ensure the extent to which project managers know and understand the concept and application of the Internet of Things in the project.

- determine the extent of impact on the project in terms of documenting the project's processes of its governance in a seamless manner in the organization.

## 2. LITRETURE REVIEW

Today, the world is turning into a new concept in the life of the Internet, called the Internet of Things (IoT). The main concept of the Internet of Things is not entirely new because it started in the early 2000s (Macaulay, 2015). Consequently, the definitions of the Internet of Things differ and are simply defined as a network of physical objects related to each other. These physical objects referred to as "things" mentioned in the Internet of Things are connected via the Internet, and they have the ability to transfer, share and exchange data without any human interaction. These things can be thermostats, sensors, cars, and machines (Lee, 2017). Among the various definitions of the Internet of Things, there are common principles such as something or something within the network that can be accessed individually. These objects are connected via a smart platform while sharing, transmitting and receiving information related to their intention (Lee, 2018).

The importance of the Internet of Things and the possibility of communicating it to devices and people in a tangible and noticeable way and creating new types of communication. The relationship between project management and the Internet of Things is a great relationship from the project team's cooperation in all data and the possibility of implementing the project with great accuracy and more quickly. The Internet of Things will collect data in a fast, smooth and easy way, which helps leaders make decisions, and inventory and resources will be monitored periodically and quickly, so the devices automatically respond to what is happening around them, reduce the need for human intervention, reduce operational costs, increase response times and reduce errors and risks. Which contributes to receiving the service faster.

The Internet of Things will contribute to speeding up the implementation of the project. The Internet of Things will work to complete projects for companies automatically and automatically. Therefore, institutions that contain several projects must adopt the idea of Internet of Things in their projects.

The origin of the Internet of Things dates back to 1991 when Mark Wiser presented his vision of widespread computing. The Internet of Things can be defined as the integration of different objects with the ability to communicate with one another using a standardized communication protocol standard (Coskun & Togay, 2018). As technologies face rapid improvement every day, computer components become so small that they can be incorporated into other devices for computing. These devices are intended for daily use, and, accordingly, microprocessors have included computing processes that have been configured to fit purpose and purpose functions.

IoT is one of the main indications for the technology enhancement in project management. The 'things' refer to objects or devices that has the potency to recognize, communicate and interact between each other at real time away from the involvement of human using a network or service (Kavitha & Vallikannu, 2018). These objects are defined as smart objects, which has the potential to sense, monitor and make decisions in real-time scenarios in project management. Furthermore, these smart objects have the capability to access

data collected by each other (Kavitha & Vallikannu, 2018). In other words, the purpose of these objects is to perform assigned processes automatically such as determining, sensing, measuring and communicating (Čolaković & Hadžialić, 2018). Therefore, it is a challenging task to simply define the IoT. This is because it is new and cannot be limited to a specific function or area. It also has the potential to satisfy different needs in varied industries and services. In this sense, this technology encompasses a large number of devices.

## 3. IOT ENABLING TECHNOLOGIES

It has the capability to identify, communicate, manage and actuate in project management. IoT enabling technologies can be categorized into various number of categories. Sensing technologies, hardware and software, networks and communications technologies, identification technologies, data processing, power consumption technologies, security, and positioning technologies (Čolaković & Hadžialić, 2018). These categories were grouped into four domains based on the functional blocks of the IoT system, and these domains compromise different technologies, hardware and software systems with certain functionalities.

Furthermore, to facilitate the integration and connection between the enabling technologies of IoT, they should be defined and provided by supportive platforms. The main aim of these, is to enable the connection between the devices and the network within a specified framework. The impact of these platforms is recognizable as they can be used in several fields to raise and enhance their productivity, flexibility and usability. Not only that, it also needs to show a decrease in cost and the time taken for the processes during in project management (Čolaković & Hadžialić, 2018).

### 3.1 Technical and Regulatory Characteristics in project management

The IoT services and devices were accepted and used in various industries in project management, starting from the environment to governmental sectors. Currently, this solution has become the dominant in the market but with a restriction of a single IoT platform. Each infrastructure has its own properties and the data generated in one project management cannot be shared with another, even though these project managements are identical and perform the same function but for different projects. Hence, it is necessary to classify the projects based on their characteristics to determine the requirements in both technical and regulatory perspectives (Weber & Podnar, 2019). The technical and regulatory characteristics shall be well defined, and their requirements must be fulfilled to achieve a successful provision of the IoT projects. According to the comprehensive analysis on the projects provided related to the IoT, a set of technical and regulatory characteristics were set in place.

### 3.2 IoT in project management

The Internet of Things is a way to communicate with some people through a strong and global network of devices. In the recent period, the Internet of Things has emerged in a big way. Many international companies are developing platforms for Internet of Things and these companies have big projects like Amazon.

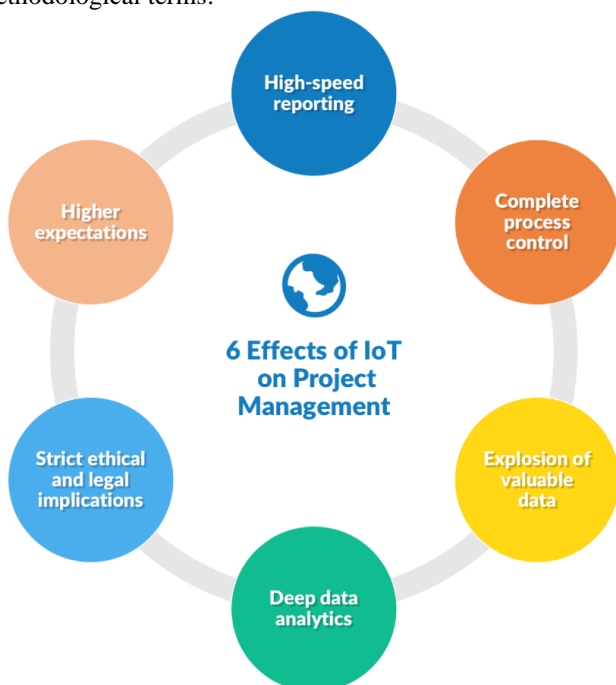
The Internet of Things intersects with project management in everything from team collaboration to data collection. You can expect real-time online status reporting to enter a new era of dynamic planning and revolutionary project implementation.

The data will be collected seamlessly and continuously, allowing leaders to make more informed decisions. Stocks and resources will be easily monitored at all times.

Devices can automatically respond and respond to what's happening around or in its network, reducing the need for human intervention, reducing operating costs, increasing response times, and reducing mistake, customers can expect to receive better and faster service.

In terms of project management technology, the Internet of Things will fundamentally change the speed of project implementation. Organizations that take advantage of the Internet of Things will complete projects faster than those that do not, and leave organizations that fail to adapt to the Internet of Things revolution hopelessly behind it.

The Internet of Things will contribute to changing the speed of project implementation, will make the project trip faster, at least six things will be changed in the project trip, which will contribute to the project manager adapting to technology and methodology. At least six things will change, which will require project managers to adapt to both technical and methodological terms:



**Fig. 1: Effects of IOT on project management**

- **High speed reporting:** Internet of Things policy reduces communication costs, which will drive the continuous flow of data that automates business systems and greatly expedites the project. Therefore, the IT project manager will assist him in preparing smart devices and equipment and tablets, and the Internet of Things will assist him in moments to prepare such reports.
- **Complete process control:** The Internet of Things will contribute to project managers and stakeholders to monitor and manage project activities and activities in real time, and monitoring is done through a full screen displaying all the steps that help in managing the project quickly, and there are many equipment to use sensors to monitor the needs for maintenance and forecast throughout the project trip, which contributes In reducing the risk to the project, the more complex the projects, the more devices and activities.
- **Explosion valuable data:** In the previous time, keeping the old data in the traditional way that takes a lot of time, with the Internet of things, this data will become available

immediately and this is useful for current and future projects. Project tools are more responsive and scalable in order to accommodate all this information, the organization must ensure that its project management software package is capable of growing and prospering.

- **Deep data analytics:** With the Internet of Things, advanced data analytics come in which require advanced explanations and management, project managers must upgrade their data processing skills and this will contribute to increased spending and resources towards data management.
- **Stricter ethical and legal implications:** The devices connected to the Internet send data to each other very quickly so that companies must enforce ethical regulations and be strict to reduce risks, and project managers and all project members must complete the project with the least moral and legal risks.
- **Higher expectations:** The project manager needs to lead the responsibility to raise standards in the Internet of Things and the task of the project manager is more familiar with the available techniques available at the present time.

#### 4. SECONDARY DATA

IoT regulatory policy plays a critical role in the project management registration process, as it includes a general set of phases requirements to cover all of IoT. Therefore, setting the minimum requirements for the Internet of Things will facilitate the registration and organization process in the project management phases. Therefore, the main recommendations are set out below to fill the existing gaps, decision-making organization, organizational structure, resources and risks for project management.

In order to introduce and implement highly efficient smart systems in project management, the regulatory authority plays an important role in terms of establishing regulations and frameworks in project management for all project participants to follow. Accordingly, the Telecommunications Regulatory Authority (TRA) should include major tasks such as:

Establish and spread the concept of the Internet of Things widely among project managers, and learn about project participants.

- Creative thinking about the Internet of Things in the organization.
- Confirm the accuracy of big data in project management for easy management in the Internet of Things.
- Protecting the private data of the project by setting privacy and data security policies for a huge amount of the data collected, and protecting it from unauthorized access as the Internet of Things provides all data in one database.
- Confirm the accuracy of the data collected for easy monitoring and governance.

Taking into account the rapid increase in the Internet of Things and its importance in managing projects and devices, and its importance in various fields and industries. Based on the results obtained in the case study, it is recommended that the regulatory authority prepare Internet of Things guidelines.

#### 5. HIGHLIGHT STRENGTHS AND WEAKNESSES AS ECOMMENDATIONS

Based on the results observed and the discussion above, recommendations were made to the TRA to improve the current IoT regulatory policy to effectively organize project management. The IoT regulatory policy plays a critical role in the project registration and documentation process, working procedures, human and financial resources, as it includes a general set of technical requirements to cover all phases of the



project. Therefore, defining minimum requirements for project management systems will spread the Internet of Things culture to project managers in this field. Therefore, the main recommendations are developed below to fill the existing gaps and to organize and document all phases of the project in a correct and high-quality manner.

In order to efficiently introduce and implement project management systems, the regulatory authority plays an important role in terms of establishing regulations and frameworks to be followed by project managers and all project stakeholders. Accordingly, the regulatory authority should include major tasks such as:

- Facilitate and ensure the dissemination of culture and knowledge about the Internet of Things to project managers and stakeholders in the project in an effective manner.
- Protecting the big data of the project by setting privacy and data security policies for a huge amount of data collected during the stages of the project through the Internet of Things, and to protect it from unauthorized access.
- Confirm the accuracy of the data collected by Internet of Things in project management.

Taking into account the rapid increase in the Internet of things and its great importance for the project manager, and its impact on project management. Based on the results obtained from the case study, it is recommended that the regulatory authority to prepare guidelines for the security and privacy of big data for the project, and show the Internet of Things has a positive impact on project management in terms of reducing effort in monitoring and governance of the project because of the Internet of Things providing information in an easy way, and also works Internet of things to reduce costs on the project in terms of reducing resources and cadres in monitoring the project.

## 6. CONCLUSION

The accelerating growth of IoT devices increases the pressure on the organization by developing technologies in project management, and therefore, it emphasizes the importance of clearly defined organization, policy, framework or guidelines that focus on every area under the IoT umbrella. At the present time to develop project management, project managers must be aware and aware of the concept and use of Internet of Things in projects because they have a positive impact on the project by increasing project quality, reducing risks and facilitating project monitoring and governance.

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