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Introduction for Factors of Success and Failure by Using IoT

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Abstract: The Internet is a new project that has not ended for a long time until it has become a concern of all people, companies and governments until we have a new term for what is now called the Internet of Things (IoT), which uses multiple technologies in all areas of life. And every year, the number of IoT applications and their uses is increasing. It is expected that this trend will expand on a larger scale to meet the huge demand more and more with time. Of course, we all know the importance of the Internet in many areas of daily life, even the home, and therefore the use of the Internet of things depends on various factors, some of these factors make it successful and easy to implement and use, and some of them act as obstacles or fail. Based on previous studies that have been conducted on the success factors and failure factors in the use of the Internet of Things, this paper lists the factors that cause the success and failure factors of the Internet of Things, and these factors contribute to the development and dissemination of the Internet of Things and also contribute to the definition of users and those interested in the factors of failure, especially to avoid falling into Previous mistakes in failed projects.

Keywords: Factors, IoT, Success, Failure, Internet of Things

1. Introduction

The expression "Internet of Things" (IoT), coined back in 1999 by Kevin Ashton, the British technology pioneer who cofounded the Auto-ID Center at the Massachusetts Institute of Technology, is becoming more and more mainstream [1]. The Internet of Things (IoT) is an important topic in technology industry, policy, and engineering circles and has become headline news in both the specialty press and the popular media [2]. This technology is embodied in a wide spectrum of networked products, systems, and sensors, which take advantage of advancements in computing power, electronics miniaturization, and network interconnections to offer new capabilities not previously possible. An abundance of conferences, reports, and news articles discuss and debate the prospective impact of the "IoT revolution"—from new market opportunities and business models to concerns about security, privacy, and technical interoperability [3].

There is no standard identification of "Internet of Things". Considering the functionality and identity as central it is reasonable to define the IoT as "Things have identities and virtual personalities operating in smart spaces using intelligent interfaces to connect and communicate within social, environment, and user contexts". A different definition that puts the focus on seamless integration could be formulated as "Interconnected objects having an active role in what might be called Future Internet" [4].

The Internet of things (IoT) refers to physical objects such as mobile devices, home appliances, vehicles or even buildings are embedded with sensors and connectivity capability to collect and exchange data and eventually take appropriate actions after analyzing the data autonomously [5].

This study aims to determine factors which affect to success or failure by using IoT in IT companies in Bahrain. This study examines the factors which that make using IoT success or make it fail. Additionally, this study facilitates the understanding of the features, functions and the critical factors that companies must consider when developing IoT in their departments.

1.1. Literature Review

This literature review explores what the factors causes success or failure of IoT projects, in order to consider IoT as a part of business, it is essential to study the factors identified previously

that are impacting the adoption of IoT by businesses and consumers across the world. As IoT is not a very old technology, it faces innovations and evolutions very frequently, being influenced by various business, environmental and organizational factors [6]. These factors impact the probability to adopt this field by many businesses. Multiple researchers presented various studies, explaining the reasons behind the postponements of IoT's adoption, top of them are lack of knowledge in the field of IoT, and its features and minimal understanding of its usefulness in various sectors [7].

The determinants affecting IoT are the intention to adopt and ten independent factors, which are technology readiness, compatibility, complexity, executive management support, firm size, regulatory support, security concerns, cost savings, compatibility and relative advantage [8]. For successful deployment of IoT-based products and services, the top five technologies that are essential are radio frequency identification (RFID), wireless sensor networks (WSN), middleware, cloud computing and IoT application software [9].

Table 1. Summary of Literature Reviews.

Authors	Title	Description
[9]	The Internet of Things (IoT) Upheaval: Overcoming Management Challenges	provide detailed knowledge about the existing IoT management philosophies, tools and their challenges, pros and cons, and how to scale these to improve the success rate of such projects.
[10]	Factors affecting IoT adoption	explores some of the factors affecting IoT adoption, analyzing the determinants, other challenges, gaps, and future IoT developments
[11]	Internet of Things (IoT) and Changing Face of Project Management	provides overview of IoT concepts and through a systematic review of scholarly research papers, blogs, review articles, and other literature available online, it addresses the current managerial challenges for such projects.
[12]	Critical success factors influencing wearable sensing device implementation in AEC industry	investigates the success factors (SFs) for implementing wearable sensing devices (WSDs) for safety and health monitoring within the construction industry
[13]	Analysis of critical success factors to mitigate privacy risks in IoT Devices	ascertain how to effectively mitigate privacy risks in IoT devices. A user-centric approach is employed to increase user control and flexibility. After a detailed analysis of the extant literature, critical success factors are lauded to alleviate risks in IoT devices were synthesized and collated.
[14]	Critical Success Factors for Implementation of Internet of Things (IoT) in Automotive Companies: Literature Review	discussed literature review related to Critical Success Factor (CSF) implementation of Industry 4.0 in manufacturing industry.
[15]	Human factor, a critical weak point in the information security of an organization's Internet of things	propose an Organizational Information Security Framework for Human Factors applicable to the Internet of Things, which includes countermeasures that can help prevent or reduce data breach incidents as a result of human factors.

This study contributed to helping the MIS managers to know what are the factors of successes and failure of using IoT on their companies to Take precautions when using it on their jobs. This study was established to find the factors which causes success or failure of any project. The comprehensive analysis of this study added to the existing research by determining the benefit of finding the most popular factors of success and failure of using the Internet of Things on project management from all aspects. To holistically analyze the priorities of these characteristics, has not been done before. Private and governmental bodies, especially departments concerned with the use of the Internet of things, will be informed of the results of the study to draw their attention about the most popular factors of success and failure by using IoT.

1.2. Research Questions

Q1: what are the factors available causing success for using IoT.

Q2: what are the factors available causing failure for using IoT.

Q3: What are the organization and department need to inform about the most important factors of success and failure of IoT implementation?

Q4: What do departments and organization benefit from knowing the factors of success and failure of IoT implementation?

1.3. Research Hypotheses

H1: The factors of success in using IoT has a positive significant impact.

H2: The factors Failure to use IoT has a significant negative impact.

H3: Prior knowledge of the factors causing success or failure for use of Internet of things helps project managers to exercise caution while managing projects.

H4: Prior knowledge of the factors causes success or failure for use of Internet of things helps to MIS (Management Information Systems) department to avoid the factors causing failure to use IoT.

1.4. Objectives

To investigate factors that causes success or failure using IoT in Bahrain.

To determine priority of the selected factors that causes success or failure of IoT implementation in Bahrain.

To suggest the improvements to factors that is currently used in determining which affect the success or failure of IoT implementation in Bahrain.

2. Factors of Success or Failure of IoT

At the occasion of that IoT World Forum 2017 the

company also released data from a survey which looked at the success and failure rate of Internet of Things projects and initiatives, as well as the conditions for IoT success in times that IoT is increasingly present in the digital transformation strategy journeys of ample organizations. According to data released by Cisco, *74% of surveyed organizations have failed with their IoT initiatives.* This is mainly because there are several human factors involved in IoT implementation, beyond the functional elements of sensors and networks. An effective collaboration and integration among all the components of IoT, along with creating a culture of technology within the organization is required to succeed [6]. Table 2 shows factors that cause success and failure of IoT.

Table 2. Factors that cause success or failure of IoT.

No.	Factors that cause success	Factors that cause failure
1	Allocating hardware specs	Regulatory support
2	Estimate and figure out all costs	Managing the data flow
3	Implementation of security and governance	Billing
4	Improve IoT project continuously	Power consumption
5	Intuitive users experience	Scalability
6	Focus on the Business Challenge	Security concerns
7	Enable scalable data management & analytics	Missing the right people and mindset
8	Design-in security	Compatibility
9	Plan for flexible device management	Organizational culture
10	Strategic Planning before Deploying	Lack of readiness
11	Collaboration:	Lack of clear planning and strategy
12	clearly defined goals	Cybersecurity
13	competent project manager	Ignorance of the latest technologies
14	sufficient resource allocation	Lack of skilled professionals
15	adequate communication channels	Limited guidance for maintaining IoT devices
16	control mechanisms	Non-authentication and authorization of IoT devices
17	feedback capabilities	Lack of knowledge and staff resources
18	Responsiveness to clients	The "high" investment cost
19	Leadership	No clear definition of IoT
20	Firm size	Lack of a strong project roadmap

3. Methods

To satisfy the objectives of the dissertation, qualitative research will be held. The main characteristic of qualitative research is that it is mostly appropriate for small samples, while its outcomes are not measurable and quantifiable. Its basic advantage, which also constitutes its basic difference with quantitative research, is that it offers a complete description and analysis of a research subject, without limiting the scope of the research and the nature of participant's responses. However, the effectiveness of qualitative research is heavily based on the skills and abilities of researchers, while the outcomes may not be perceived as reliable, because they mostly come from researcher's personal judgments and interpretations. Because it is more appropriate for small samples, it is also risky for the results of qualitative research to be perceived as reflecting the opinions of a wider population.

3.1. Methodology

This study will be implemented in Bahrain IT companies. I will use the questionnaire, which has important questions about IOT and the changes which it does to their jobs, to know the manager's opinion about the impact of using IOT in their companies and study the effect and how IoT enhances the job and the results of income for the company and for their employers. Afterwards I will analyze this data by using the SPSS program to show the result of this study.

3.2. Data Analysis

The statistical analysis system will be used to analyze the data collected from personal interviews and answers to questionnaire. In order to know the results digitally through the use of the SPSS and transfer all written data into numbers, graphs and charts. And this results are verified the study objectives also to help to give a conclusions.

4. Conclusion

This paper discusses the factors that cause the success or failure of the Internet of Things. Many factors are neglected by managers and users which leads to the failure of the IoT project. The objectives are also described in the paper so that the study and the result can be carried out properly. The method for determining the type and number of respondents who fit the purpose of the data collection process is also discussed. The importance of the study was also determined in terms of determining the influencing factors, especially the reason for the failure of the use of the Internet of Things, to give an idea to the beneficiaries before dealing with the Internet of things to avoid errors and failure in the project, of course, if this study was conducted correctly. Finally, the full study summary is summarized, giving an idea and a summary of the topic.

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