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# E-Governance in Projects Management: Models and Approaches and Disruptive Technologies

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A B S T R A C T

This research is a trial to highlight and uncover the role of e-governance in project management, highlight some e-governance models and approaches and have a type of comparison to provide the minimum guidance on selection and implementation of the appropriate e-governance methodology, technology and high-level processes. The research highlights also the risks encountered through the implementation lifecycle and how to reduce them. Critical success factors and relevant disruptive technologies are also highlighted.
The research concludes with definite encouragement to use of e-governance in project management with special and specific considerations to the business-driven technologies needs and the proper customization that suits the right context.

## 1. INTRODUCTION

This research is titled as "e-governance in projects management". An objective is a statement of the impact of applying e-governance in projects management to reduce risks in project, on the other hand, focus in the risks of implementing e-governance of the project management [1]-[4].
This topic is important because one of the most critical elements of management that controls all aspects of business operations and Oversight function that is aligned with the organization's governance model and encompasses the project life cycle .E-Governance 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, 2012)[1][5][6].

### *1.1. Research questions*

- What is the impact of e-governance in projects management?
- What are risks of implementing e-governance of the project's management?

## 2. LITERATURE REVIEW

All the resources in this literature review contribute to the main objectives of this research, which aided in understanding and clarifying the path that the research should take.

### *2.1. Project governance*

Project governance is one of the most critical elements of management that controls all aspects of business operations [7]-[11]. The project governance has been defined in the PMBOK (2013) as "Oversight function that is aligned with the organization's governance model and encompasses the project life cycle" [12]-16]. Following table present other definition from various papers:

Table 1 Conclusion of Some Definitions

| # | Author | Definition |
|---|---|---|
| 1- | Nistor and Beleiu (2014) | Governance is a system of responsibilities, values, and number of process, that have the purpose of achieving the goals of a certain project, taking into account the organisation interest along with the stakeholders' interest. |
| 2- | Müller (2009) | Governance is the corporate governance framwork that includes the organisation projects, project management and programs. It also includs the value system, responsibilites, and policies that aim to achive the organisation goals while ensuring meeting the interset of the organiation and of the internal and external stakholeds. |
| 3- | Nielsen,2010 | Governance as a high-level framework that defines the process and structures, which will govern and manage projects and its strategic objectives. |
| 4- | (ASX, 2007; OECD, 2004). | Governance is policies and relationships with stakeholders, and processes that helps to regulate the authority within the organisation. |
| 5- | (Pinto, 2014). | Ggovernance as the systems and frameworks of authority that are used to assign resources in order to manage the project activities. |
| 6- | (Müller and Turner, 2009). | Governance as the methodes to obtain resoures, and how a progress is being monitored.<br>Governance is defined as the ways the required resources are obtained, and how progress is monitored, in order to ensure that the project is feasible throughout its life cycle. |

Besides, a recent study defined project governance as a set of management systems, rules, protocols, relationships, and structures that provide the framework within which decisions are made for project development and implementation to achieve the intended business or strategic motivation [17]-[22]. It's important to mention that to build a project governance structure and to determine the governance level involved, to manage intended projects, many factors needs to be considered [23]-[28]. One of these factors is the organization size which may involve number of sponsors and stakeholders [29][30]. Another factor is the job workload which can lead to have organization levels involve; for example, building a specific program or portfolio [31]-[35].

*2.2. Governance of project management (GoPM)*

Governance of project management (GoPM) is one of the projects governances' dimensions. And it can be understood as the practice of focusing on areas related to project activity within the corporate governance [36]-[40]. Corporate governance, in turn, means a set of relationships between a company's management, its board, its shareholders, and other stakeholders [41]-[44]. It also provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance are determined (OECD, 2004)[10][45][46][47]. Corporate governance focusing areas are portfolio/program direction, project sponsorship, project and program management efficiency, and disclosure and reporting [48]-[52].

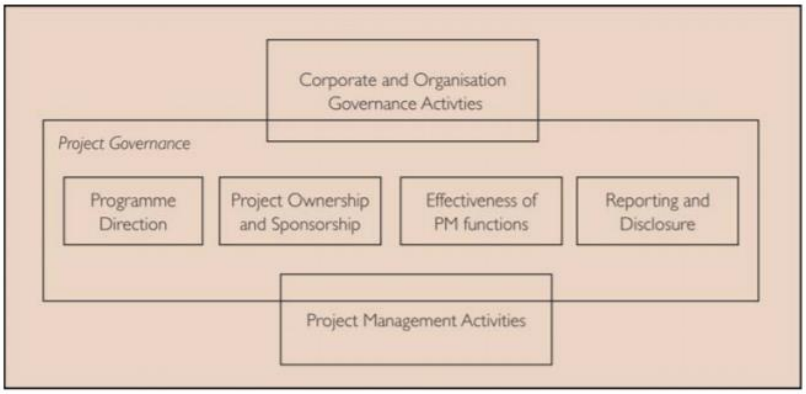



Figure 1 Project governance components (Office of Public Sector Information, 2007)[12].

This relationship will ensure smooth and unobstructed exchange of information between the organization board and the related stakeholders [11][53][54][55]. The following figure represents the said relationship.


Figure 2 Governance of Project Management (GoPM) in context ( APM,2011)

The base of the (GoPM) approach may be summarized through a set of 13 governance principles developed with the aid of APM (2016) that cope with the necessities of project management. The following points list those principles:

1- The governance of project management is the responsibility of the board [56].
2- The organization is responsible for differentiates among projects and non-project-based activities.
3- Project management governance's roles and obligations are stated clearly [57].
4- Disciplined governance arrangements, supported by way of suitable methods, resources, and controls, are applied during the challenging life cycle. Every project has a sponsor.
5- There is a demonstrably coherent and supporting relationship among the general enterprise method and the project portfolio.
6- All projects have an authorized plan containing authorization factors at which the business case, together with cost, advantages, and chance, is reviewed. Decisions made at authorization factors are recorded and communicated [58]-[60].
7- Members of delegated authorization bodies have sufficient representation, competence, authority, and assets to permit them to make appropriate decisions [61].
8- Project enterprise instances are supported by using applicable and realistic information that gives a reliable foundation for making authorization decisions [62].
9- The board or its delegated agents determine when independent scrutiny of initiatives or challenge management systems is required and enforce such assurance accordingly [63].
10- There are defined criteria for reporting project status and escalating risks and problems to the tiers required by means of the company [64].
11- The company fosters a tradition of development and of frank internal disclosure of PM information [65].
12- Project stakeholders are engaged at a level that is commensurate with their importance to the agency and in a manner that fosters trust [66]-[70].
13- Projects are closed when they are now not justified as part of the business enterprise's portfolio.

### *2.3. E-Governance in project management*

The continuous evolution of the technology environment created the need for a centralized control point in the organizational hierarchy [71]-[75]. The project governance system allowed value strategies to provide stability and sustainability to the organization, thus employing various business infrastructure with a solid sense of accountability and reliability [76]-[80]. As a result, networking all processes into an easily governed centralized model enabled business smooth operations [81]-[85].

The “e” in the e-Governance stands for ‘electronic,' and together, it means the use of information and communication technologies to convert and support the techniques and structures of a governance system [86]-[88]. E-Governance 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, 2012) [15][89][90]. The fulfillment of an e-Governance venture depends upon the improvement of the venture in an integrated and holistic manner [91][92]. E-Governance should no longer be understood merely as the procurement of hardware and different networking equipment. E-Governance is an integration of diverse fields of PM to develop a complete management system rather than a technology-enabled project [93][94][95].

In project management, part of implementing e-Governance means; using available technologies to develop matrices and performance indicators to enable the organization board, stakeholders, and sponsors to monitor and assist the current and future projects [96]-[100]. Also, project indicators will allow having verification for projects' results [16][101][102]. The following figure is illustrating the project e-Governance model and its various components:

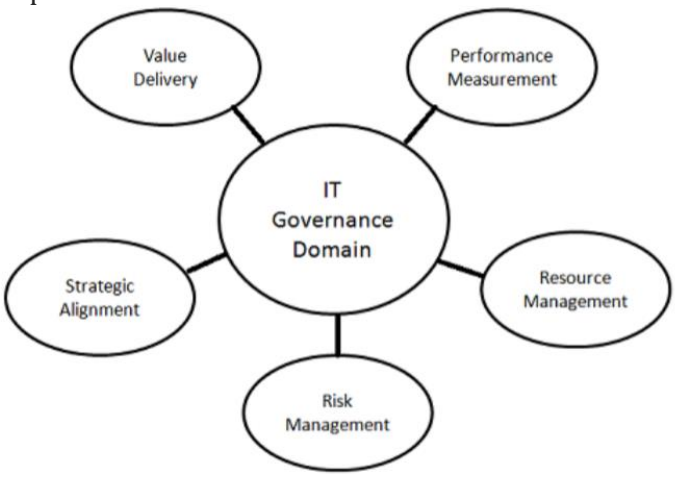



*Figure 3 E-Governance model*

E-governance and project risk management

Project risk management is an essential part of project management, and its primary concern is dealing with uncertainties related to the project process. The following figure is showing the risk position in the project life cycle [103]-[108].

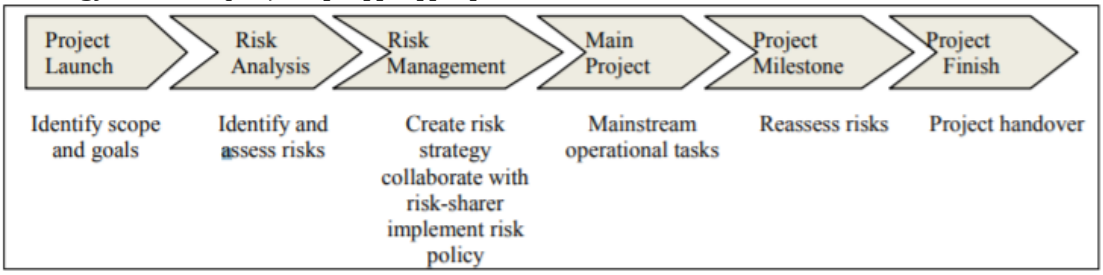



Figure 4 Project life cycle and its relation to risk )(Adami,2018)[17]

With reference to Figure-3, it’s clearly stated that e-Governance model is taking account of risk management in its process [109]-[112]. The risk relation to the e-Governance mainly associated with the IT arising issues which is, unfortunately, commonly occurs. According to [17][113][114], there are another type of risks that can be labeled as hazards when overlooking the project virtually. For example: mistrust, cliques, uninformed managers and the allure of other interesting but unrelated work [115]-[119]. Still, the resolution of risks and issues depends on precise mitigation strategies executed in a timely and efficient manner [18][120][121]. Leadership must also ensure that all stakeholders are aware of this process and agree to follow it.

### *2.4. Project management E-governance models and approached*

Any system, when starts hatching is mainly influenced by its development models. E-Governance models are purposely and specifically

designed to guide the implementation and development of e-Governance applications in a stage-wise manner [122]-[126]. E governance is to improve governance processes and outcomes with a view to improving throw a new technology and tools such as AI, Block chain, dashboards and collaborative BI. They are used to monitor developmental projects [127]-[131].

*2.5. Artificial Intelligence*

AI is one of the tools which is helping to monitor and guide projects through an online platform for projects management's teams and organizational decision makers [132]-[136]. It's the machines inelegancy learning to think like a human thinking and makes it possible to learn from experience which leads to adjust performance tasks [137]-[139]. This model is aimed at beating the intricacies associated with traditional project management such as time constraints and costs [140]-[145]. This model is created via two key strategies, which are: service design process and reusability capabilities, all of which apply artificial intelligence (AI) technologies [146][147]. These components induce lower maintenance costs and higher efficiency also avoiding multiple costs in the independent design for different sectors as well incorporates an extension for external agencies to liaise with governance particularly for consulates and other diplomatic scenarios [19][148][149][150]. AI and its application usable across different sectors such as health, technology, water, traffic, education, space, transport, and renewable energy [151].

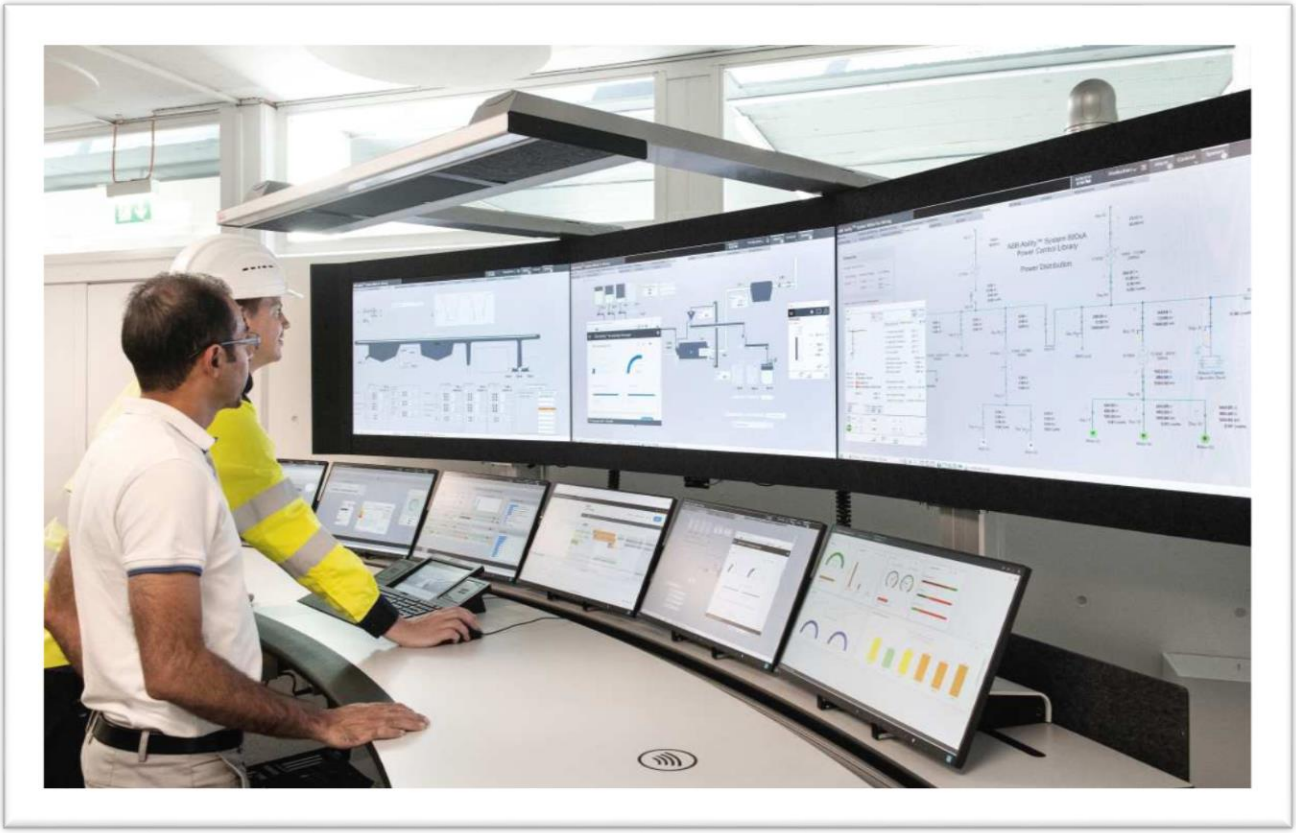
In e Governance AI improving Query response mechanism for board members, shareholders, CEO's which may reduce time waste and price automating routine tasks reduces paperwork and improves query-response time and saves the standard time of state officials to specialize in other development issues [20][152][153].

While counting the benefits of the AI there are some risks related to it in such of lack of knowledge which makes it difficult to manage projects or if data has been mesenteries which makes the choice makers difficult to gauge [154][155].

However, AI has effects projects management in e governance during a certain way, among those huge data and business analytic the normal methods incapable of catching and time consuming to process data volume as its finding known and therefore the unknown risks [156]-[160]. When given information doesn't fit into structured project cognitive technologies, like tongue processing (NLP), use advanced algorithms to research text so as to derive insights and sentiment from unstructured data [161]-[165]. As AI reduces the danger of fraud especially when it involves a budget wise because the computers analytic can detect and be more accurate and robust [166]-[170]. It's an assistive technology to assist suggest strategies and probabilities of outcomes [171]. Hans says Together, humans and computers are going to be ready to do things that were just impossible previously [19][172][173].

Certain merging is often done also in AI to scale back risks like merging policies, controls, procedures and with the regulators and regulatory changes to enhance their organizations compliance (Artificial intelligence and risk management - Enterprise Risk, n.d.) [174]-[177].

The following picture is of ABB company minerals process control and a visible control graphic interface. the primary to display process information in its situational context. It's an automation software solution for the mining and cement industries [178]-[182]. The plan is that the system reaches the very best plant productivity, safety and therefore the best operator efficiency. (ABB reinvents process control with new generation human-machine interfaces - Cement Lime Gypsum, 2019)[21].



Example of a project manager in control

*2.6. Block Chain*

The second tool is a block chain which is mainly a tool that record every transaction and any digital event on the internet world. It's not possible to any user to manipulate the information recorded so among strangers there would be no worry about being cheated. The concept is about financial transaction and it extends to transaction of smart contracts which is running without any human intervention [183][184]. This model is aimed in aspects of security, automation and decentralization. In e Governance the application will consider the way of regulation going to be and modified including creating and managing digital records, exchanging digital assets, verifying and reinforcing acceptable performance, building reputation systems and executing smart contracts as well as maintaining an unalterable source of truth.

The correct e governance model for a platform depends on a certain factor

- strategy and mission-criticality
- policy/decision-making and risk sharing
- participant roles, responsibilities and representation
- node management
- type and variety of international regulatory jurisdictions
- desired permission level of features
- cost of ownership, incl. financing and cost charging
- Supervisory bodies and assurance [22].

Taking in consideration some risks related to such technology which are, lack of scalability and continuity which affects the project counting on block chain. Moreover, cryptographic key management function likewise algorithm, public key improper management of cryptographic key-pairs might end in unauthorized access of the system [185].

Considering the abovementioned risks arising from block chain, these risks primarily relate to the absence of a trusted third party or a central authority. Where current IT environments of organizations can typically be thought of as centralized silos (operated and managed by one party) that are logically separated from one another, block chain powered IT environments

dissolve these boundaries as organizations transact on the identical system [186].

As an example of how this tool is implementing a e governance suppose if you had scheduled your construction contractor to send people on a particular date and that they send their people too late or too early, everyone on the ledger can verify if the subcontractor made an error or not [187]. [23] You can also use the knowledge within the ledger to research business operations to seek out new efficiencies and savings of your time and money.

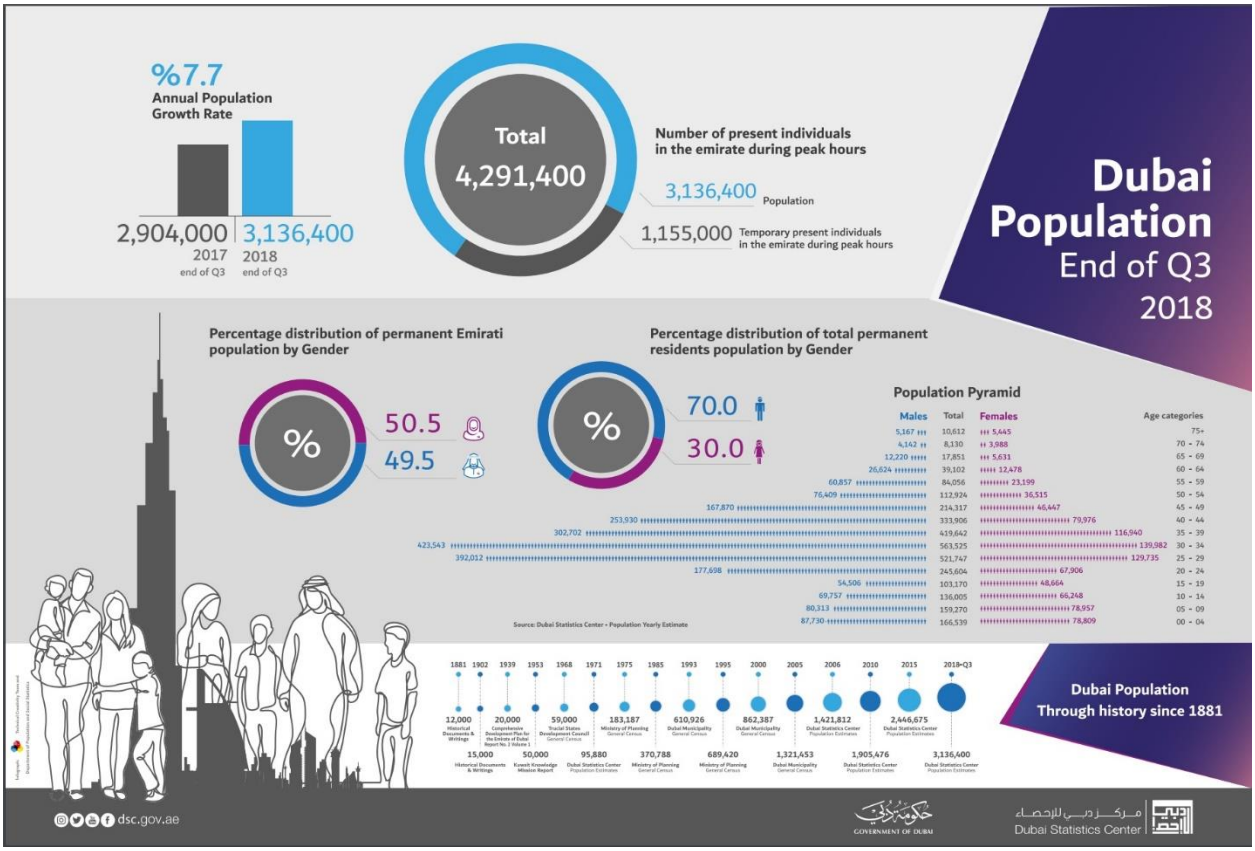
*2.7. Dashboard*

It's an interface that displays complex data to users in real time, by drawn from multiple sources. The creation of the dashboards became technologically facile with advances in data warehousing (a database that could be queried) and online analytical processing (OLAP) (selective analysis of the data based on purpose to provide status reports and decision support) [24] it's an important tool for decisions makers. It's a platform that displays and present a mix KPIs such as metrics, stats in one central location in order to benefit the project's performance which makes the organization more intelligent [25].

Dashboards promise a smooth data driven decision making in e-governance environment such as cutting costs, providing new insight into citizens' concerns and allowing for smarter policy and operational choices. They help relay important project information without unnecessary details that may be confusing or irrelevant to stakeholders. It eases the projects with more efficient because it present continuous data at a glance. It has benefits due to team members, managers, and stakeholders all have access to their project's progress, health and projections the benefits are Greater convenience, Increased efficiency, Improved accuracy, Better communication, Persuasive evidence.

The risk associated with implementing dashboard in projects comes in the complexity in mining all of the data in one system which makes accessible query interface or be available only in standardized reports, which might not answer all of a enterprise executives and stakeholders questions resulting to delay the decisions.

Dubai statistical has applied a dashboard as a new service after customer's feedback to include the statistics from government and private sectors and individuals. This dashboard delivers the latest economic and social indicators in Dubai through a live dashboard which is direct linked to the centralized statistical repository which assist in studies and researches for decision making.




Sample picture taken from Dubai Statistical website
https://www.dsc.gov.ae/en-us/Dubai-Infographs/Pages/Dubai-Infographs.aspx

*2.8. Critical Success factors*

Critical Success factors perhaps the simplest approach for tackling the organizational aspects of projects is thru the utilization of critical success factors

While all participants share same documentation that shared version can only be updated through consensus, which suggests everyone must agree. To vary one transaction record would require the alteration of all subsequent records and thus the collusion of the entire network. Thus, data on a tool mentioned is more accurate, consistent and transparent. It is also available to all or any participants who have permission.

Moreover, to clearly identified goals and benefits to determine if projects, program or portfolio can produce the results goals. It minimizes the risk in the future and the opportunities will be increased, ensuring the sustainability of those projects and to create value of it.

Detailed project management is one of the CSF which leads to algorithm of the information to analytic the information more accurately than a human can do. Manage change processes and Information dissemination and transparent communication.

3. CASE STUDIES

- Dashboard Case study ( ITDASHBOARED)

**General Description:**

The IT Dashboard was launched in June 2009 as a public website where the clients ( Investors) can have more insightful information about IT project investments. The data used on the Dashboard is obtained from Exhibit 53, a report submitted annually to the Office of Management and Budget ( OMB) to state the budget stated for all IT investments and its relation to the federal agencies. The report also highlights significant investments called " Capital Asset Plans"-Exhibit 300. The used data is classified as public data that the user can be accessed [2].

The Dashboard will generate information that is related to both Exhibits (53 & 300). Around 7000 investments will be showing form Exhibit 53 while 800 significant investments from Exhibit 300. The Dashboard generates ratings for all investments

based on pre-established criteria like risk management, requirements management, contractor oversight, historical performance, human capital, and other factors deemed by the CIO- Chief information officer.

- **Dashboard Display:**

The Dashboard will show information about IT investments that are important for the users. Below list is highlighting the display info. (Ganapati, 2016):

- **Necessary investment information** ( Investment name – Description )
- **Chief information officer CIO's information (** Name, Contact, E-mail, Photo, bio)
- **Awarded Contracts** ( Obligation amount, Vendor name, Type, Contract start date, and End date).
- **The performance information** ( Measurement indicator, Baseline, Actual results, target, rating)
- **Cost and Schedule ratings** ( Milestone description, percent completed, Planned completion date, Planned cost, Actual cost, Cost variance)

For the general display of the Dashboard, there are five buttons. Tabs are :

- **Home** – Will take the user into a quick review of the federal IT investment data.
- **Portfolio** – user will view the overall rating of the federal government and the individual agencies' investments.
- **Tools** – Will show current trends on the year ratings.
- **Data feeds** –Will allows the user to customize the dashboard rating data.
- **FAQ**– will list the frequently asked questions with answers.

**Below figure is showing the Dashboard as it's displayed to the users :**


*Figure 5 IT Dashboard interface*

- **Dashboard implementation results**

Since the establishment of the Dashboard, it has been showing significant impacts on the IT federal projects. The CIO ratings showed massive progress in the first few months, rating all projects that the Dashboard lunches. This resulted in early decision making for projects which lead to either suspensions or terminations. For example, the Department of Veterans Affairs suspended 45 projects, of which 12 were eventually terminated. Moreover, within the first year of establishment, the CIO started new sessions called TechStat, which joined the agency's CIOs and the staff to have a close review of the IT investments. The meetings resulted in a more accurate rating on the investments and a clear understanding of underperformance ratings. The sessions also allow the agencies to investigate corrective action plans as well.

The Dashboard, in its first show significant progress in terms of saving time and money. According to the OMB, the usage of the first-year implementation of the Dashboard resulted in "over $3 billion in life-cycle cost reductions, and have reduced time to delivery from over two years to eight months" (OMB, 2011).

Although the Dashboard provided a platform of transparency and accountable data on the IT investments, they were some drawbacks. First, there was some criticism on the Dashboard design. Users generally were unhappy with the morphing indicators as it doesn't give them time to review them. The graphics, also like charts, were ineffective to the users. Moreover, some users were complaining about the lack of appropriate labeling on the figure shows. And last, there was no display for the performances over time, which were essential for the investment analysis.

On the other hand, many users also have some issues related to the data itself. The users were complaining about the data inaccuracies about cost and schedule. The Government Accountability Office (GAO) conducted two reviews on the Dashboard data and its result on inaccurate information related to selected agencies only. Corrective actions were for OMB to establish clear guidance on standardizing milestone reporting on the Dashboard.

- **AI Case Study**

E-government projects can enhance the development and streamline service delivery for society and offer opportunities to citizens to engage more in the improvement of people's welfare. Also, such projects can revolutionize government systems and processes. However, most e-government projects face a myriad of impediments regarding their complications, risks, and difficulty in their implementation [7]. The significant aspect of this case study entails that any objectives, barriers, drivers, and threats of artificial intelligence (AI) in the public department warrantees a geographical and thematic differentiation of numerous aspects in the management of government departments by employing the automated decision-creating frameworks in various administrative economies across the globe.

This paper looks at the Canadian immigration process management system that employs the AI policy strategy. The Canadian ambition to modify international programs through e-governance projects through novel initiatives like the Canadian AI Strategy. The Canadian government deployed and financed its Canadian Institute for Advanced Research (CIFAR) to lead in the progress of local Canadian AI policy support. The case study involves the success of the Canadian government to incorporate global ideals like diversity, human rights, inclusion, economic growth, and innovation in its AI e-governance national project management initiative. The project remains an encouragement for the future development of AI in most regimes across the globe.

The contemporary AI implementation public service delivery involves a smarter search through an AI language processing technology that enhances public interaction that can store data on what citizens deem the best service. The operating AI government initiative filters routine queries that enhance public service without depending on the manual human resource department. Besides, the project by the Canadian government improved automated decision support through a progressed quality service delivery by reducing wait time. The AI government launch ensured that information recorded met the quality standards enacted internationally.

- **Artificial indigence implementation results**

The above case study indicates an authentic case of a public e-service development project in e-

governance project management. The life-cycle perspective of the Canadian government initiative highlighted some variations in e-projects most federal governments prioritize to enhance citizens' welfare. The basis and motivation for launching e-governance projects remain essential for other forms of ISD (Information System Development) government initiatives. The e-governance in projects remains complicated and insufficient, requiring a high level of skills, knowledge, and professionalism in developing the necessary technology.

- **Block Chain Case Study:**

Using advanced technological methods such as block chain opens various opportunities for e-governments to excel in the services provided. Project managers can use the block chain method during the planning, especially in procurement. Block chain falls under two categories in terms of implementation which are permissionless and permissioned. According to Terzi, et al. (2019) permissionless block chain is part of the Distributed Ledger Technology (DLT) that offered decentralized databases that allows a clear flow of transactions to users on ledger. Data is identical to mutual parties that are then connected through blocks. Advantages of this form is that it's extremely difficult to change, edit, or remove information in the blockchain. However, a major disadvantage to this method is lacks privacy. This makes this method of blockchain unsuitable for governmental use. Permissioned blockchain is able to give users the security and safety required during processes. Terzi, et al. state that security can be achieved through a central authority which could be various government authorities and ministries (2019). This illustrates the adaptivity of this technology and the progress it has made since becoming available.

- **Smart Dubai**

The Dubai Government considered the implementation of blockchain due to the lengthy process of manual reconciliation and settlement. According to Al Muhairi et. al, it took about 45 days for complete settlements and reconciliation, thus, Smart Dubai was created (2020). Smart Dubai uses blockchain as a method to complete payments online in various government entities. However, a major setback was the fact that most entities had their own books and manual methods for reconciliation. Another issue is that most of the government entities had decentralized data systems that had to be shifted to centralized systems in order to have a blockchain successfully implemented [3]. This illustrates the number of challenges that were initially faced by the Dubai Government. However, steps were taking in order to ensure proper progression to blockchain payment methods. Dubai government introduced blockchain to small government entities providing workshops and training required [5][11]. This resulted to quicker transactions, faster settlement and reconciliation rates, along with increased customer satisfaction. This illustrates the power of blockchain when implemented properly. Some of the factors that led to this success is continuous engagement of stakeholders along with outlining a clear path to how the government will switch from conventional payment method to using block chain.

## 4. METHODOLOGY DESIGN

### *4.1. Research Design*

The research design that will be used in this research is the case study design. The reason is that this research is focusing on organizations, which are Dubai Police, RTA and DHA. This research will be detailed, and will analyze the research topic it's undertaken for, which are the impact of e-governance in projects management and risks of implementing e-governance of the project's management. In addition to intending to search further in this topic to understand it using qualitative research and analyzing the data to address the gaps found in the area of interest, for the purpose of improving this process in the organizations.

Furthermore, case study research design analyzes specific events or conditions and their relationships, which is the exact purpose of this research which is to find the impact of e-governance in projects management.

(Starman, 2013) states that there are multiple advantages of using the case study design in a research, first of all, they are extremely useful for closely investigating the hypothesis set in a research regarding a specific case, which is similar to what this research is aiming for.

According to (Shuttleworth, 2008) [10], the case study research design might introduce new and unplanned results during the execution of the

research. Moreover, the case study design will add value to the researcher through discussing the subject at hand with the research stakeholders, as well as improving the researcher's skills in terms of communication, tolerance for different views, as well as critical thinking. On the other hand, the other four research designs will not be selected as they are less suitable for the research.

The first research design that will not be used is the longitudinal research, for the reason that it must be repeated over a specific period of time such as three months, which is not convenient, due to the time period that is specified for this course.

The second design is the comparative design, this specific research design calls for comparing two or more case studies. It will not be applicable to this research.

The third research design that will not be featured, is the experimental design. According to (McLeod, 2007), this design consists of two groups of subjects, which are the experimental group and the control group, where the researcher will control some variables during the study for a certain group. This specific research will not be controlling any factors in the study, on the other hand, it will gain data and information about the chosen topic through qualitative research for the purpose of analyzation and gaining the desired results.

The fourth and last research design that is not applicable for this study, is the cross-sectional design. According to (Cherry, 2018), this research design targets different groups with different variables, nonetheless, they share similar features for the purpose of observing and describing data from the groups without manipulation. As mentioned previously, this research has no interest in comparing two or more groups.

### *4.2. Qualitative Approach*

The qualitative approach is relevant to the research since it's useful for gaining insight about the reasons and different opinions of the participants that will be interviewed about the topic, which will aid with understanding the problem better and reach the hypothesis made for this research, because of diving deeper into the problem based on the responses of the interviewees. (Sauro, 2015)

In addition, the qualitative approach will allow the researcher to explore deeper in certain topics. Furthermore, it is relevant since it will explain is the impact of e-governance in projects management better.

In addition to the qualitative approach, the quantitative method is valuable for the research as well. Where it will aid the researcher to bound the methods in which a participant can answer a question, therefore, the findings will be within the research boundaries. In addition to preventing the participants from being biased because of the specific answers that they will be provided with, consequently reflecting the hypothesis tested in this research, and eventually supporting or rejecting it. In addition, the quantitative approach will add strength to the research, since the data is analyzed using statistical analysis which is viewed as objective and rational. (McLeod, 2017)

The qualitative approach is more likely to be beneficial to the research, since it will aid the researcher get more data and explanations from the participants about the topic, as well as asking deeper questions based on their answers.

The preoccupations in the qualitative researcher is seeing through the heart of the participants and maintaining auditory communication, as well as understanding the meanings of the participants, in addition to the terminologies used by different participants. Moreover, expecting more findings from the discussion and answers to the researcher to be able to view topics differently from the participant's point of view, as well as developing theories as the data is collected, aside from emphasizing on the process and being flexible and understanding with the participants.

Another preoccupation is giving detailed description and information about what is happening during the interview, and what is the purpose of the interview. In addition, being able to transform the different concepts and theories of the participants into valuable data for the purpose of analysis and justification of the research hypothesis.

The preoccupations in the qualitative research that will be reflected in this research are multiple. First, the measurement will be reflected since the data collected from the surveys will be represented in numerical data for easier analysis and interpretation. Whereas for the causality, data will be described as they are represented from the measurements. In addition to that, if replication ever occurs again regarding the same matter, the results will be the same since the findings will not

be influenced by personal biases. Finally, the researcher will use proper sampling techniques to ensure that the findings can be generalized.

Moving on to the objective and subjective relations in the qualitative research, the researcher will follow a subjective manner during the qualitative approach as the researcher will be closely involved with the participant and must show feelings and empathy with them in order for the participants to open up and speak about the matter at hand. The plan in applying the qualitative approaches, is doing one after another. The qualitative research will take place to gain more insight about the topic and truly understand the theories of the participants.

### *4.3. Reliability and Validity*

To ensure quality in the research, it must be reliable and valid, the plan for reliability and validity is as follows:

- *Reliability*

To ensure stability, the measures of the questions will be stable and reliable to avoid confusion and ensure that if the participant ever goes through the interview questions again, the same answers will be granted, or at least results with high correlation between them.

To ensure internal reliability, the researcher will make the effort to explain the questions to the participants during the interview by phone or WhatsApp.

- *Validity*

To ensure face validity of the instruments, the researcher will evaluate the instruments based on the researcher's own opinion and align the instruments with the intended purpose of the research, as well as the research questions, to evaluate and ensure that the instruments will achieve the purpose of the research. To ensure construct validity, the researcher will ensure that the instruments used will generate results that can be generalized later when the study is done.

In addition, concurrent validity will take place, since the results generated from the qualitative, will be compared with the data gained from the organizations in the literature review regarding the impact of e-governance in projects management the risks of implementing e-governance of the project's management.

Furthermore, predictive validity will take place, as the measures will predict some effects that the subject of research should have. Moreover, convergent validity will be used with the instruments, as the researcher will ensure that they will generate related data regarding the same concept or topic. Finally, to ensure content validity, the instruments will cover a wide range of meanings that are included in the concepts that research is trying to test.

### *4.4. Concepts and Variables*

In this research, the researcher developed two main questions that will be answered after conducting the interviews, as well as analyzing the data gathered.

Those two research questions are the following:

- What is the impact of e-governance in projects management?
- What are risks of implementing e-governance of the project's management?

There are underlying concepts in each of those questions, and some concepts are shared between all of them.

The concepts that are found in the first question are the following:

e-governance, projects management, impact, accountability.

The concepts in the second question are:

e-governance, projects management, risks, implementation.

So, the main concepts that are defined in the research are (e-governance), (projects management), (risks), (impact), (accountability).

Each concept from the above requires more than one variable to measure, the reason is that multiple variables lead to better distinction among individuals. In addition, multiple variables cover and capture multiple dimensions of a concept to be able to deeply understand the topic and formulate questions that directly touch the required data, consequently achieving the goal of the research, which is unlikely to happen if one variable is used, since it might capture a portion of the concept only.

Sampling

The samples that are applicable for this study for both the qualitative approaches are the following:

The research will use samples instead of the population, because the whole population consumes a lot of time and effort to interview, therefore, using samples is more convenient. In

addition to that, the research will contain both, the probability sampling and the non-probability sampling, since the probability sampling that will be used is the stratified random sampling from different departments, in parallel with the non-probability sampling of judgmental sampling, where the researcher will choose specific people from the strata, based on their experience and awareness of the processes and the topic at hand.
Moreover, the expected sampling error in this research is the non-response in case a participant doesn't fully answer, which will waste time and effort, and the researcher will then have to look for another participant that would give correct and full answers. The participants must be aware of the topic and experienced with it so that the given data is accurate which will allow the research to prove or reject the hypothesis.
The type of probability sampling that will be used in this research is the stratified random sampling, since specific people from specific departments and sections will be chosen based on their awareness of the topic and its processes, for the reason that they will give the best answers and data regarding the research matter, given that it's their specialty. Judgmental sampling, also known as purposive sampling, will be used as a non-probability sampling type for this research. The reason is that the researcher will choose particular participants that are fit for the research and have high probability of giving adequate data based on their experience in the field compared to other people in the population.

*4.5. Data Collection*

The data was collected using both, qualitative methods, with no harm to the respondents and with no invasion of privacy, the purpose of the data was stated and was explained verbally to respondents, participated in the interview by their own well.
The qualitative interview questions and their data, the data captured are both in appendix A.
The data collected was used in the analysis section below.

- Coding

The following table contains the words and phrases used in the qualitative data coding. To view the original data coding, please refer to appendix B.

| **Control project** | **Responsibility, accountability** | **Policies, strategies** | **Procedures** | **Provide decision making** | **Real time governance to action** | **Ensure real risk management effectiveness** |
|---|---|---|---|---|---|---|
| **Improve** | Real time monitor and analysis | Positive change | e-management | Help provide assurance | Technology will bring higher level of effectiveness | Achieve the result |
| **Good communication** | Effectiveness risk management | Reduce the risks | culture | Integration | Security risks | AI-Block-chain |

## 5. ANALYSIS

*5.1. Qualitative Data Analysis*

The qualitative interview was primarily undertaken to understand and gain more insight about the topic itself. There are several implications for e-governance on the project, as identified and mentioned during the interview, so it is suggested that whenever an organization wants to apply e-governance to project management, it needs a period of time to spread the culture of e-governance among stakeholders and members of the organization. It can use some modern technologies such asblockchain and artificial intelligence, as well as the availability of people qualified to use the technologies, and to clarify the requirements, which can be considered essential for the lack of an important part of electronic governance, in addition to that there are several risks in implementing electronic

governance in project management, such as security breaches of systems .

By moving to how e-governance can develop the project through the integration of e-governance and project management.

In addition, there are procedures that can be taken that can help achieve the positive impact of e-governance of the project by government laws and regulations. It seems that identifying risks to e-governance for project management is beneficial and ensures the achievement of the project goal at the specified time and cost.

According to the previous articles, the governance department will contribute greatly to the improvement and development of the project, as it works to link and integrate processes and steps that facilitate the process of supporting decision makers and this contributes to achieving the strategic goals of the organization.

Moreover, it has been proven that there are some risks and challenges that prevent e-governance from achieving the project goals such as the availability of the financial budget and the project team are uninterested and uncooperative in achieving governance and there is not enough staff culture, insufficient knowledge of e-governance as well as sudden changes to the project . These challenges pose a risk to project management.

There is a great relationship between governance and project management. Risk management is part of project management and risk is associated with e-governance. On the other hand, e-governance will reduce expected project risks, by adjusting the actual time of the project phases and simplifying and tariffing project costs that contribute to reducing risks, so it can be concluded that if e-governance is implemented in project management it will reduce project risks.

Through the qualitative interview, the tools of artificial intelligence such as Blockchain, which will contribute to the organization of the work accurately, and the challenges that will be faced through the use of Blockchain, are that the scope of the project cannot be expanded during its use, which works to adhere to the project.

There are some methods that are used as tools to grant the achievement of the government initiatives in GDRFA when it comes to the risks and governance teams. Those methods are internal excellence awards, monetary rewards, workshops, regular meetings, quarterly evaluation, friendly meetings, professional and moral support, establishing a government management guide and services, G2 B, G2G projects.

effective control environment be designed when organizations become part of digital ecosystems that is Digitalization and technologies will bring higher levels of effectiveness such as the support of the higher management.

- ***Limitations***

There were several limitations during this research that were all overcame. The first limitation was time, the time to do such a research is too short since it was done for two months only, with the pressure of other commitments as well, but the researcher managed to submit all assignment on time.

The second limitation was after the qualitative interview, since the qualitative interview was conducted in WhatsApp, this is due to the Corona pandemic, which led to the home isolation of all workers in the government sector.

Another limitation to this research is that it wasn't pilot tested in the organization, but it will be tested for sure to know the results ad prove its reliability and validity.

- ***Recommendations***

1. The government needs to develop legislation and regulations to ensure systematic and clear workflow for e-governance activates.
2. Security measures shall be included in the process of developing e-government system design and configuration principles. In addition to policies and procedures that cover security issues and cyber-attacks.
3. Continues to review and follow-up with technological development worldwide to be UpToDate which will help in facilitating the work of e-governance. Example: e-governance needs to UpToDate from front-end (As customer side) and Back-end (as an appliance in datacenters) to avoid threads attacks and cyber-attacks to ensure the system work continuously.

To sum up, we believe that AI undoubtedly is changing how projects are achieved and delivered with the lowest risk as possible. But there is something that AI will not be able to have a human mind and soul. This makes the presence and need of project managers necessary. Soft skills such as Leadership, People Management, Communication,

Empathy, Emotional intelligence, and passion to develop skills of project management will always be important; thus, managers, surveyors, accountant, engineers, and human engagements are not replaceable. The combination of the human mind and technological tools such as IA and Blockchain can add real value and drive positive change in project management.

The use of the Dashboard is essential and has significant benefits for the organization who will be implementing it. As a recommendation to use the dashboard tool, the organization first needs to assure the data quality as it is the key to the performance measure's accountability. Second, the organization must forecast the best practices used in the dashboard design and ensure its corresponding to the data displayed. Third, the dashboard performance measure should be a reflection of the organization's strategy and goals. Finally, an organization must be reminded that a Dashboard is only a tool, and its real effectiveness depends on how the users are utilizing it.

In addition, using technologies in project management applications can give a clearer idea about the project in whole instead of meeting different parties and get different explanation. Moreover, decision makers need to get the sum up knowledge that they can rely on with minimum error or miscommunication at timely basses. So using such technologies can save a lot of time and efforts of project team who will spend a week or so to prepare reports requested from upper management.

More entities along with private sectors could be added into the Smart Dubai initiative. It's important to upscale this operation to include other Emirates as well. Furthermore, it can also be implemented in procurement by creating a unified centralized database where e-tendering and smart contracts can be part of this process. This will increase the efficiency and transparency and will lead the United Arab Emirates into the leading charts in terms of e-governance.

One of the recommendations involves the governments' efforts to allow private companies to design, develop, and implement e-governance initiatives to accelerate their operations. Besides, the e-government project may require that governments function as a demanding leader if the government requirements vary from those in the business environment . E-government inventions need resolving several challenges, such as privacy, management, policy, engineering ethics, and technology research and development. Therefore, governments must remain focused to ensure effectiveness by adhering to the best project management practices.

## 6. CONCLUSIONS

This study expresses that more employees agree with the benefits associated with e-governance frameworks such as artificial intelligence via their emphasized care about customers, the interrelationship between e-governance and the private sector, and their readiness to adopt an e-governance. A myriad of clients and employees were deterred from adopting an e-governance framework due to the cost of implementation such as IT skills, hence were worried about disruption in their adoption of e-governance within project management. The paper further details the critical success factors necessary for e-governance's seamless operations across the UAE. It is therefore notable that with time, e-governance, particularly via AI and blockchain, will become a key priority for numerous nations as it is within the UAE, providing multiple benefits across business, government and individuals. The research also turned to dashboards as a tool which helps in visually understand changing business conditions so projects manager and stakeholders in e-governance can make decisions based on the real-time data. Hopefully, this will become the tool of a new wave of project decision making where time zones and time delays will no longer be significant factors in resolving project issues, making decisions and collaborating to achieve a new level of project success. Furthermore, Blockchain has proven to be a revolutionary technology with abilities to provide extremely secure and transparent methods. It can be implemented in e-governance and provide flexibility in numerous fields from finance, procurement, and project management. However, there are challenges in terms of cost and implementation. Furthermore, in the UAE more work needs to be done on a federal level in order to create a world class e-government.

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# Appendix

Appendix A

**Question research with answers:**

1. What is the key principle of governance for project management in government?

Answer: The following points list those principles:

- The governance of project management is the responsibility of the board.
- The organization is responsible for differentiates among projects and non-project-based activities.
- Project management governance's roles and obligations are stated clearly.
- Disciplined governance arrangements, supported by way of suitable methods, resources, and controls, are applied during the challenging life cycle. Every project has a sponsor.
- There is a demonstrably coherent and supporting relationship among the general enterprise method and the project portfolio.
- All projects have an authorized plan containing authorization factors at which the business case, together with cost, advantages, and chance, is reviewed. Decisions made at authorization factors are recorded and communicated.
- Members of delegated authorization bodies have sufficient representation, competence, authority, and assets to permit them to make appropriate decisions.
- Project enterprise instances are supported by using applicable and realistic information that gives a reliable foundation for making authorization decisions.
- The board or its delegated agents determine when independent scrutiny of initiatives or challenge management systems is required and enforce such assurance accordingly.
- There are defined criteria for reporting project status and escalating risks and problems to the tiers required by means of the company.
- The company fosters a tradition of development and of frank internal disclosure of PM information.
- Project stakeholders are engaged at a level that is commensurate with their importance to the agency and in a manner that fosters trust.
- Projects are closed when they are now not justified as part of the business enterprise's portfolio.

2. How can the project governance develop project management?
   - there is big relationship between project governance and project management.
   - This relationship will ensure smooth and unobstructed exchange of information between the organization board and the related stakeholders.
   - Governance of project management (GoPM) is one of the projects governances' dimensions.
   - And it can be understood as the practice of focusing on areas related to project activity within the corporate governance.
   - Corporate governance, in turn, means a set of relationships between a company's management, its board, its shareholders, and other stakeholders.
   - It also provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance are determined.
3. How does e-governance enhance project management success in your organization?
   - The project governance system allowed value strategies to provide stability and sustainability to the organization, thus employing various business infrastructure with a solid sense of accountability and reliability.
   - As a result, networking all processes into an easily governed centralized model enabled business smooth operations.
   - E-Governance entails making and implementing decisions, proper leadership, putting in place organizational arrangements, ensuring resources and funding, establishing accountability, and measuring success. The fulfillment of an e-Governance venture depends upon the improvement of the venture in an integrated and holistic manner.
   - E-Governance is an integration of diverse fields of PM to develop a complete management system rather than a technology-enabled project.
   - In project management, part of implementing e-Governance means; using available technologies to develop matrices and performance indicators to enable the organization board, stakeholders, and sponsors to monitor and assist the current and future projects. Also, project indicators will allow having verification for projects' results.
4. What is the relationship between project risk management and e-governance in project management?
   - Project risk management is an essential part of project management, and its primary concern is dealing with uncertainties related to the project process.
   - The risk relation to the e-Governance mainly associated with the IT arising issues which is, unfortunately, commonly occurs.
   - There is another type of risks that can be labeled as hazards when overlooking the project virtually.
     - **And, how can e-governance reduce the risks on project?**
   - The resolution of risks and issues depends on precise mitigation strategies executed in a timely and efficient manner. Leadership must also ensure that all stakeholders are aware of this process and agree to follow it.
5. How can the artificial intelligence effect on e-governance? And why? and What are its risks?

- E governance is to improve governance processes and outcomes with a view to improving throw a new technology and tools such as AI. They are used to monitor developmental projects.
- AI is one of the tools which is helping to monitor and guide projects through an online platform for projects management's teams and organizational decision makers.
- AI is aimed at beating the intricacies associated with traditional project management such as time constraints and costs.
- AI reduces the danger of fraud especially when it involves a budget wise because the computers analytic can detect and be more accurate and robust. It's an assistive technology to assist suggest strategies and probabilities of outcomes.
- Certain merging is often done also in AI to scale back risks like merging policies, controls, procedures and with the regulators and regulatory changes to enhance their organizations compliance.
    - **And why?**
    - In e Governance AI improving Query response mechanism for board members, shareholders, CEO's which may reduce time waste and price automating routine tasks reduces paperwork and improves query-response time and saves the standard time of state officials to specialize in other development issues.
        - **and What are its risks?**
    - there are some risks related to AI in such of lack of knowledge which makes it difficult to manage projects or if data has been mesenteries which makes the choice makers difficult to gauge.
    - However, AI has effects projects management in e governance during a certain way, among those huge data and business analytic the normal methods incapable of catching and time consuming to process data volume as its finding known and therefore the unknown risks.

6. How will the blockchain contribute to achieving e-governance? Reducing the risks of e-governance? How can this be guaranteed? And what do you think about blockchain as part as e-governance?
    - In e Governance the application will consider the way of regulation going to be and modified including creating and managing digital records, exchanging digital assets, verifying and reinforcing acceptable performance, building reputation systems and executing smart contracts as well as maintaining an unalterable source of truth.
    - The correct e governance model for a platform depends on a certain factor:
    - strategy and mission-criticality.
    - policy/decision-making and risk sharing.
    - participant roles, responsibilities and representation.
    - node management.
    - type and variety of international regulatory jurisdictions.
    - desired permission level of features.
    - cost of ownership, incl. financing and cost charging.
    - Supervisory bodies and assurance.
        - **Reducing the risks of e-governance?**
    - risks related to such technology which are, lack of scalability and continuity which affects the project counting on block chain. Moreover, cryptographic key management function likewise algorithm, public key improper management of cryptographic key-pairs might end in unauthorized access of the system.
        - **How can this be guaranteed**?
    - these risks primarily relate to the absence of a trusted third party or a central authority. Where current IT environments of organizations can typically be thought of as centralized silos (operated and managed by one party) that are logically separated from one another, block chain powered IT environments dissolve these boundaries as organizations transact on the identical system.
        - **And what do you think about blockchain as part as e-governance?**
    - As an example of how this tool is implementing a e governance suppose if you had scheduled your construction contractor to send people on a particular date and that they send their people too late or too early, everyone on the ledger can verify if the subcontractor made an error or not. You can also use the knowledge within the ledger to research business operations to seek out new efficiencies and savings of your time and money.
7. What are the sources of governmental initiatives to implement project management in e governance?
    - strategy and mission-criticality.
    - policy/decision-making
8. What are the major challenges that face the proper implementation of project management in e governance?
    - AI has effects projects management in e governance during a certain way, among those huge data and business analytic the normal methods incapable of catching and time consuming to process data volume as its finding known and therefore the unknown risks.
9. Will risk managers bring their own human biases to artificial intelligence?
10. How can an effective control environment be designed when organizations become part of digital ecosystems?

Digitalization and tec