



From Dashboards to Decision Intelligence: How AI Is Transforming Executive Project Governance

*Khaled Matar Al Shamsi, Mohammed Mubarak Al Shamsi, Sarah Mohamed Alzahmi, Mounir El Khatib**

Hamdan bin Mohammed Smart University, School of Business and Quality Management, Dubai, UAE

**Corresponding Author*

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ABSTRACT

Traditional project performance dashboards provide executives with retrospective information on cost, schedule, and risk performance; however, they often lack predictive capabilities and governance mechanisms necessary for complex project environments. This study examines how Artificial Intelligence (AI)-enabled dashboards can enhance executive project governance through predictive analytics, anomaly detection, and decision intelligence. The research explores the integration of AI-driven dashboard capabilities with the PMI-CPMAI framework to improve transparency, accountability, and decision quality. The study aims to identify the limitations of conventional dashboards, investigate the value of AI-based insights, and map governance requirements to CPMAI lifecycle stages. The outcome is a conceptual framework that supports the effective and responsible use of AI-enabled dashboards in executive project governance and strategic decision-making.

1. INTRODUCTION

In the modern project environments, there is an increase in complications and digital transformation due to which the executive project governance has become reliant on data-driven tools. The senior executives depend on traditional performance dashboards to evaluate progression of projects, measure risks and ensure that the project is aligned with strategic objectives [1]. The dashboards have several indicators like cost variance, risk status and schedule performance.

It offers a structured and retrospective view of the project's performance. It is considered to be useful but these dashboards majority of the time cannot capture upcoming risks, interdependency across projects and it restricts the ability of executives to take strategic decisions [2][3].

Artificial Intelligence (AI) has improved the ability of performance dashboards since AI driven dashboards can incorporate huge volumes of real

time data and implement predictive analytics to detect anomalies [4]. However, these anomalies cannot be seen through the conventional reporting systems. The highly advanced features further allow the executives to recognize potential issues before they actually escalate [5].

Executives can measure multiple scenarios to make better decisions. In a complicated project environment, having the large-scale infrastructure initiatives of digital transformation programs makes these capabilities valuable since they improve visibility, responsibility and strategic control [6][7].

The professional standards of organizations like the Project Management Institute (PMI) shed light on the significance of integrating AI in the project governance frameworks [8]-[11]. The Cognitive Project management for AI (CPPMAI) framework focuses on lifestyle governance, validation and

transparency in the AI-based decision-making systems. It offers accurate information for associating the AI-driven dashboards with the needs of executive governance.

1.1. Problem statement

Despite the increasing adoption of AI-based dashboards, most of the organizations do not have a clearly defined governance mechanism that regulates its use in executive decision-making processes. These dashboards work as an advanced reporting tool without following any proper standards for data quality, validation procedure or any type of accountability in decision-making systems. This generates issues in assuring reliability in AI-based insights [12].

Due to this, executives may depend on AI output without measuring the accuracy. On the other hand, the senior executives may disregard AI because of lack of trust and understanding of the system. These tiny inconsistencies lead to poor decision making, delayed intervention and poor efficiency of project governance. Its lack of alignment with a structured framework like CPMAI enhances its risk in the decision-making process and restricts the value an AI based system can offer.

1.2. Research aim and Objectives

The main aim of this research is to examine how the AI-driven performance dashboards can improve executive project governance by enhancing decision making, transparency and responsiveness [13][14]. It will examine how incorporating AI analytics with a project management institute-CPMAI framework can assure reliable and accountable decision assistance for the executives who manage complicated project environments.

The research objectives are as follows:

RO 1: To identify limitations of traditional executive dashboards in complex project environments.

RO 1: To examine how AI analytics enhance predictive and prescriptive performance insights.

RO 3: To map dashboard governance requirements to CPMAI lifecycle stages.

RO 4: To propose a governance framework for executive use of AI-enabled dashboards.

2. LITERATURE REVIEW

2.1. Definition of Executive project governance

According to [15], executive project governance can be defined as the structures, procedures and decision-making capability through which the senior managers view projects, programs and portfolios. It helps in assuring if the project is well-aligned with organizational strategy, delivers right value and can work in a proper risk limit. The governance frameworks focus on accountability, transparency and strategically controlling the complicated project environments [16][20].

The scholars focus on the efficiency of governance and how it relies on a timely and information flow for the executives. As per [21][22], the conventional governance systems depend on reporting at regular intervals that restrict responsiveness and delay the process of interventions. As projects grow, the complexity increases, therefore the need for real time insights becomes non-negotiable [23]-[28]. Altogether, this has led to a growing interest in incorporating digital tools and governance into the governance practices [29].

The organizations that are guided by the standards of Project management Institute focus on a structured governance process involving performance monitoring, risk management and accountability of stakeholders. According to [4], digital transformation needs the governance systems to adapt by integrating the advanced analytical capabilities of AI.

2.2. Measurement of performance and dashboards

According to [30][31] measuring performance is crucial for project governance that allows organizations to track the advancement based on standard key performance indicators (KPIs) like costs, schedule, scope and quality. As per [5][32][33], the dashboards are virtual tools that present the information in an accessible way for the decision makers.

The conventional dashboards emphasize descriptive analytics and present historical data via charts, graphs and summary [34]-[39]. It enhances visibility but there is an absence of ability to offer any forward-looking insights. The restructuring limits executives to react to decisions among where actions are taken and after the actions become real[40]-[45].

As per [6], dashboards should be evolving from the static reporting tools to a dynamic decision driven assistance system. This involves merging different

sources of data that allow for real-time updates and improves the interactivity of users. Besides the progression [46][47]. Challenges also exist like data segregation, inconsistent reporting standards and a restricted analytical capability. It lowers the efficiency of dashboards that support executive governance.

2.3. Significance of AI-driven analytics and visualization

In recent years, Artificial Intelligence (AI) has changed the way organizations analyze and interpret multiple forms of data [48][49]. Particularly, in project management, AI-driven analytics allow for predictive modelling, detecting anomalies and recognizing patterns that improve the abilities of conventional dashboards [50]-[55]. As per [56], AI-driven dashboards can easily process huge amounts of data from various sources and offer a deeper insight into the project's performance. The predictive analytics can assume potential delays or cost overruns. On the other hand, anomaly detection can recognize any kind of abnormal pattern that discusses the upcoming risks [57]-[65]. These capabilities enable the executives to shift from a reactive to proactive decision-making ability.

As per [66], the AI driven system can improve data visualization by allowing interactive and adaptive dashboards. The visual elements can be tailored in such that they assess critical insights, look deeply for risks and assist in scenario analysis [67]-[70]. On the other hand, integrating AI introduces several issues that are related to data quality, algorithm transparency and nature of interpretation. As per [71], lack of effective governance will make the AI generated insights seem difficult for the executives to acknowledge and trust. Due to this, the pragmatic application of AI will be limited.

2.4. Decision Support System enabling information systems for appropriate managerial decision making.

According to [5][72][73] the Decision Support System (DSS) offers a foundation for acknowledging how the information systems can help in managerial decision making. This system integrates data, analytical models and AI to assist in complicated and unstructured decisions [74]. As per project governance, the dashboards are a type

of Decision Support Systems (DSS), providing proper information to the executives [75]-[78].

As per [6], the efficiency of DSS theory relies on the quality, timeliness and significance of the information offered. The AI-driven platform improves the DSS capabilities through advanced analytics. It allows the system to create insights instead of just presenting the data [79]-[82]. This transformation makes a dashboard go from just a passive reporting tool to an active decision-support mechanism.

It focuses on the significance of human judgment in measuring the output of the system [83][89]. Overly relying on the automated insights leads to a biased decision especially when the underlying predictions are not transparent enough. A balance between human expertise and AI-driven insights is needed for an efficient way to make decisions.

2.5. Significance of PMI-CPMAI Lifecycle and governance

The Cognitive Project Management for AI (CPMAI) framework fostered by Project Management Institute (PMI) offers a structured approach for managing AI-based projects. It focuses on lifecycle stages like interpreting data, model development, validation and monitoring [90]-[94].

As per [6], one of the main strengths of the CPMAI framework is to emphasize governance with the validation of AI based outputs, transparency in decision making and evaluating accountability for the results [95]-[99]. These principles are very important for the executive dashboards since AI driven insights influence the decision of creating strategic decisions. Many organizations apply an AI based solution without integrating the lifecycle governance practices that lead to challenges like unreliable outputs [100].

The absence of its explainability reduces trust among the decision-makers. According to [7], by aligning the AI based dashboards with CPMAI lifecycle, can easily address the existing challenges and make sure that the insights can be interpreted based on the goal of an organization [101]-[105].

2.6. Strategic oversight in portfolios

Strategic oversight includes monitoring and managing various projects in a portfolio to assure alignment with the goals of an organization [106]. The executives need to manage priorities, allocate resources and respond to the evolving conditions

externally [107]. As per [8], the complication of decision-making rises due to the interdependencies among the projects that require measurement of the trade-offs [108].

As per [3], the conventional reporting systems most of the time fail to offer a comprehensive view of project performance. Although, they assist in scenario analysis and an improved allocation of resources that improve risk management from a strategic level [109]-[114]. Its application will need a solid structure of governance to assure persistence, reliability and its association with the right strategic objectives.

The literature review suggests how shifting firm traditional performance dashboards to AI-driven decision support systems can enhance performance [115][116]. As per [6][117], AI provides benefits for predictive insights and improves visualization. Simultaneously, it sheds light on challenges based on governance, trust, and accountability.

Frameworks like CPMAI offer a proper foundation for assessing these issues but its implementation is limited [118]-[122]. The gap suggests the need for a structure and governance-based framework that can blend AI capabilities with project management principles.

By integrating DSS theory and Agency theory, a comprehensive framework is provided for assessing the AI-based performance dashboards in the executive project governance [123]-[128]. On one hand, the DSS theory illustrates how dashboards can function as decision-support tools while Agency theory focuses on the governance challenges [129].

By merging these two perspectives, the study focuses on how AI-driven dashboards should deliver advanced analytical capabilities and also address the issues aligning with trust, transparency and accountability [130]-[135]. This approach will assist in developing a governance-based framework that is well positioned with the standards of Project Management Institute (PMI). It ensures the AI-based insights need to be technologically solid and reliable for the organizations.

2.7. Research gap

The existing studies highlight the high usage of AI-based dashboards and their significance in decision making support systems in project governance.

There is a restricted integration between the AI capabilities and structured governance frameworks [136][137]. The studies have addressed predictive analytics and usability of dashboard but there is very limited research on accountability, transparency and verification through the AI-based insights [138][139].

The restricted amount of research on this topic can be implemented to the frameworks from Project Management Institute (PMI) especially from CPMAI for the executive dashboard governance. It generates a gap in acknowledging how the AI-driven dashboards need to be governed in order to assist in a reliable, and transparent manner [140][141].

3. RESEARCH METHODOLOGY

3.1. Research design

This study uses qualitative research design because it focuses on the understanding of experiences, opinions and decision making of people about Artificial Intelligence based on the performance dashboards. Quantitative research is suitable for this study because it aims to explore real life views rather than using numbers. This study includes people's judgement, trust in Artificial Intelligence and governance practices which cannot be completely explained by quantitative data.

This design helps the researchers to collect detailed insights from professionals about how dashboards are used, what challenges they face and how Artificial Intelligence can help to improve them. It supports the goal of the study on understanding decision making by using a PMI-CPMAI framework. Qualitative research is very flexible. It allows researchers to ask to follow up questions and explore the new ideas to get better understanding.

3.2. Research approach

This study uses an inductive research approach. The data is collected first then patterns and ideas are developed from that data. The study does not try to test any particular theory rather it explores how AI enabled dashboards are used in organizations and how the governance can be improved. The results are based on the real experiences of the participants. This approach works well with thematic analysis. It helps to understand problems with the traditional

dashboards and the role of Artificial Intelligence in the decision-making process. It also focuses on governance risks and problems like transparency. This approach helps to get practical knowledge because AI in project management is still developing (Vears & Gillam, 2022).

3.3. Data collection methods

This study uses primary data collected by semi structured interviews. This method is very useful because it allows communication with participants and it helps to collect detailed information. Semi structured interviews include prepared questions, but they also allow researchers to ask extra questions for deep understanding. The questions focus on topics like the use of dashboards, problems with traditional systems, how AI improves decisions and important data for leaders and challenges in using AI dashboards. Interviews recorded with permission and then written to ensure reliability and accuracy.

3.4. Sampling

This study uses purposive sampling. The participants are selected based on their knowledge and experience. People who worked with dashboards and data analytics are included. This helps to ensure that the data is useful. The size of the sample is small. 3 participants are included.

Table 1: Transcription of interviews

Questions	Respondent 1	Respondent 2	Respondent 3
Can you please elucidate on how we currently use performance dashboards in project governance? What limitations have you experienced with traditional dashboards?	We use performance dashboards to keep a tab on cost, schedules, risk and assist executives to evaluate progress. The conventional dashboards are static, and their focus is mainly on the historic data that restricts proactive decision making.	Dashboards help in strengthening the project data into visuals, but they mostly rely on manual updates that reduce accuracy and timeliness.	Dashboards provide a foundation of various projects for building the right strategies, but the conventional dashboards delay in giving reports and offer restricted analysis.
How can AI improve decision-making abilities in executive-level project dashboards?	AI enhances decision-making ability by offering predictive insights and alerts based on real time. It ensures the early recognition of issues.	AI helps in scenario analysis and predictive analysis. Overall, it is of great help for executives to anticipate and prevent any type of issues.	AI allows transform dashboards into intelligent systems by recognizing the patterns and suggesting actions.
What types of project data (e.g., cost, schedule, risk)	Variance in costs, delays in schedule and high-risk	The risk and resource allocation of data is very	In my opinion, project timelines, financial

The aim of this study is to understand ideas properly rather than collecting large amounts of data. Participants come from different industries like Information Technology, infrastructure and public sector. This helps researchers to understand different perspectives. Purposive sampling is very useful for the study because it needs opinion. It also helps to focus on decision making and practical understanding [11].

3.5. Data analysis technique

The study uses a thematic analysis to examine the interview data. This method helps to identify patterns and important ideas. The researchers read all the transcripts of the interview properly to understand the data. Important points are highlighted. Similar points are grouped into themes. Themes like limitations of dashboards, advantages of Artificial Intelligence, governance issues and trust. The themes are then connected to the research questions. This helps to develop useful findings and support in the governance framework. Thematic analysis is very useful because it turns the large data into practical understanding [12].

4. ANALYSIS, DISCUSSION AND CPMAI INTEGRATION

4.1 Findings and analysis

are most critical for executive decision-making, and how should AI prioritize them?	exposure are very critical. AI needs to focus on the impact and urgency of projects.	crucial. Artificial Intelligence (AI) needs to prioritize data based on the evolving conditions of projects.	performance and risk indicators are important for identifying patterns and Artificial Intelligence needs to continuously monetize and prioritize these.
What experiments do organizations face when executing AI-enabled dashboards in project management environments?	Organizations do face challenges in data integration and resistance in adopting new technical advancements.	Common issues are poor quality of data and absence of technical expertise while applying the AI systems.	Most of the organizations strive with the correct usage of AI tools based on the currency governance frameworks.
What strata of transparency and explainability do you expect from AI-driven dashboard insights when making strategic decisions?	High transparency is generally expected but a clear explanation of AI outputs is needed to build trust in decisions.	Executives often expect explainable insights that demonstrate how the conclusions are generated to ensure transparency and accountability.	The insights into Artificial Intelligence need to be transparent so that it can be interpreted effectively and assisted by verification for assuring reliability that the confidence of executives.

Based on the interview findings in Table 1 the following themes have been developed for an accurate analysis.

Besides, benchmarking was also used as an additional method of data collection to consolidate research and enhance the depth of analysis. Benchmarking enabled us to compare the existing organizational practices in the AI based performance dashboards related to established industry standards, and governance frameworks. It is very useful in project management research since it enabled us to identify performance gaps, governance weaknesses and opportunities to improve practices against the set standards.

Particularly, in this study, benchmarking emphasized comparing the organizational dashboards practices with the PMI-CPMAI lifecycle principles that involve data governance, transparency and exploitability. It considered the best practices in executive project governance aligned with predictive analytics, risk reporting and decision support mechanism. This comparison enables the research to address if the existing dashboard practices are well aligned with the needs of governments and identify places where improvements are required.

Benchmarking has complemented the interview data through the addition of an external

comparative perspective instead of depending completely on the opinions of participants. Interviews offered pragmatic insights from professionals, but benchmarking helped to consolidate the validity. It linked insights with established frameworks and industry expectations. It also allowed us to develop a governance framework by recognizing practices that need to be adapted for an effective oversight. By integrating interviews with benchmarking, richer data have been collected that allowed for an in-depth analysis and a better foundation for exploring AI dashboards according to the PMI-CPMAI framework.

4.1.2 Analysis of interview responses

• Utilization of performance dashboards and its limitations

Responses from the three participants demonstrate that the performance dashboards are essential for monitoring project indicators like cost, schedule and risk. From the three interviews, a constant limitation has been identified. The conventional dashboards are considered to be static. They depend on the previous data and manual updates. It lowers accuracy and timeliness of the system. Further, delay in reporting along with restricted analytical depth assists in a

proactive monitoring and decision-making.

- ***How does AI improve decision-making capability?***

All three respondents agreed that artificial intelligence improves decision-making in the executive-level dashboards. Predictive analytics and real time alerts are the main benefits that allow for early recognition of issues. Respondent 2 shed light on AI's role in scenario and predictive analysis. Respondent 3 stated that by integrating AI into intelligent systems, they have identified the patterns and recommended effective actions. The responses state that AI moves dashboards from passive reporting tools to an active decision-support system allowing for a timely and effective strategic intervention.

- ***Important project data and prioritization by AI***

A strong opinion can be seen related to the significance of main project data in costs. Schedule and risks. For example, respondent 1 discussed cost variance, delays and risk exposure, Respondent 2 focused on risk and resource allocation, respondent 3 talked about project timelines and financial performance as main indicators. Artificial Intelligence needs to prioritize data associated with impact, urgency and changing conditions for a project. Therefore, continuous monitoring is an essential feature enabling executives to emphasize crucial issues.

- ***Challenges in applying AI-driven dashboards.***

The participants have recognized challenges while applying AI-driven dashboards. The most common issues are challenges in integrating data, absence of technical expertise, and poor quality of data. Further, a resistance can be seen in the adoption of new technologies that is a repeated concern. It suggests that AI has a lot of advantages, but critical barriers exist in its implementation.

- ***Transparency and Explainability of the AI insights***

Transparency and explainability are important requirements for the efficient usage of AI-based dashboards. The respondents have stressed the requirement for clear explanations of how the AI based insights can be derived. Insights from the three respondents state that without a proper system of transparency, executives don't desire to depend on AI outputs. Due to this an explainable and verifiable AI system is needed to ensure trust

and efficiency in the strategic decision-making system.

5. DISCUSSION

The interview findings are well aligned with the literature review and research objectives offering insights into the changing role of AI driven dashboards in executive project governance. The analysis confirmed that the conventional performance dashboards are used widely to evaluate costs, schedule and risks but it has its limitations. The three respondents shed light on the static nature of these dashboards and how they relieve data and rely on manual updates. It reduces accuracy and timeliness.

The findings from the interview are well aligned with the existing literature that demonstrates conventional dashboards generally emphasize on descriptive analytics and a forward-looking capability. Moreover, delayed reporting and periodic data updates limit the responsiveness of governance systems, aligning with the literature presented by [6]. It assists with the research objective aiming to recognize the restrictions of conventional dashboards in a complicated project environment.

The analysis also shed light on the significance of important project data like variance in costs, delays in schedule, and allocation of resources. The respondents have demonstrated that AI needs to prioritize data aligned with the impact, urgency and evolving project conditions. It is constant with the literature demonstrating that an efficient dashboard needs to be integrated with various sources of data to assist in strategic decisions. The way AI monitors and adapts to the changing project conditions increases its value in project oversight, especially at places where the interdependence and complications are high.

Along with the advantages, the study focuses on various challenges in applying AI-driven dashboards. The main issues are bad quality of data, poor technical expertise and difficulty in integrating data. The respondents have focused on the challenges in aligning AI tools with the current governance frameworks. Further, without a lack of proper governance, the AI systems will have to produce unreliable output. It is well positioned with the agency theory that demonstrates issues in trust, accountability and information asymmetry. One of the main themes coming from the

integration of analysis and literature is the requirement for transparency and explainability on the AI dashboards. The respondents focused on how executives need to be given clear explanations on AI-driven insights to build trust and assure accountability.

It is well aligned with the principles of CPMIAI focusing on transparency, validation and governance of AI systems [13]. The lack of explainability lowers the confidence of the executive and restricts the pragmatic implementation of AI in decision making. [14]. Due to this the governance mechanisms should ensure that the AI outputs can be interpreted well based on the objective of an organization.

The discussion focuses on a clear alignment of the findings and existing literature. AI driven dashboards have the potential to improve executive decision making but efficiency is based on a solid governance structure that addresses issues of transparency, data quality and accountability. It assists in the research objective proposing for CPMIAI framework governance, incorporating the analytical capabilities of structured governance [15].

The research stresses the need to transition from conventional dashboards to AI-based support systems and strengthen its governance mechanisms. Aligning it with the AI-driven dashboards with CPMIAI framework means that technological advancements can be more reliable, transparent and valuable for the decision-making approach.

6. CONCLUSION

Research has recognized how conventionally performing dashboards have limited cost, schedule and risk ability. These are generally static depending on historical data and manual updates due to high efficiency in complicated and dynamic environments is reduced. Integrating AI improves the capabilities of dashboards. It allows for predictive analytics, real time alerts and scenario analytics. This change will shift the dashboards from being just passive supporting tools to an active system of decision support.

This research has also emphasized project data like cost variance and delays and risk. The organizations have faced issues in applying AI-driven dashboards that involve poor quality of data, no technical expertise of issues in data

integrations. A key finding from this research is the transparency of AI-generated insights. Executives will news a clear and validated output to build accountability and trust. Its efficiency will be assured through the effective usage of AI driven dashboards in the executive project governance.

6.1. Recommendations for AI-driven dashboard governance

The organizations need to adopt a structured governance framework in alignment with the Project management Institute (PMI). The CPMIAI framework to be precise. It is suggested to enhance data quality and integrate it for dependable insights. The executives need to be given training in interpreting AI-generated outputs and improving decision making.

Further, the organizations should prioritize transparency and explainability by applying validation mechanisms for the Artificial Intelligent models. Technical expertise and change management strategies will assist in its successful application. Last, dashboards need to be updated with real time data so that predictive analytics can enable strategic governance in projects. In this way, it can ensure better efficiency, fast responses and a better way to manage risks, enhancing the overall project performance.

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