



Human-AI Collaboration in Educational Project Decision-Making: Accountability and Governance through the PMI-CPMAI Lens

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ABSTRACT

Education authorities are implementing AI in project decision-making but its actual place is uncertain. This study focuses on investigating how AI assist in decision making in the case of project in the education authorities of the UAE and in so doing intends to reduce the ambiguity on reliability, value and accountability of AI-supported decisions by exploring the degree of AI supported decisions reliability, value and accountability in practical education settings. A qualitative, case based study methodology was utilized and cases were selected from the UAE, UK, Singapore, Chile and India. The findings show that AI value addition is higher in data intensive activities namely real-time monitoring of performance, predictive modeling and in systemic planning. The findings also suggest that reliability varies with AI being context dependent. They also conclude that AI has value for data-intensive decision-making such as real time performance monitoring, predictive modeling and systemic planning; while its reliability is a function of data quality and transparency and human supervision. It was found that accountability in the system continues to be human centric. In summation, AI adds value by speeding up the decision-making process without supplanting human intelligence, however; success depends on establishing robust governance, appropriate accountability, human-AI complementarity based on PMI and CPMAI.

1. INTRODUCTION

The UAE education authorities have been implementing many projects with data-driven methods such as implementing digital learning, developing curriculum, and enhancing the overall system [1]. The development of AI enables the use of data-mining to facilitate decision-making about various projects such as implementing digital learning, developing new curriculum, and improving a system-wide processes based on the ever-increasing available massive data sets [2]. However the nature of AI contribution in project decision making has yet to be identified with the practical world of decision making [3]. This includes lack of confidence on the reliability of the

results from AI on different applications of decision support, nature of value AI provide in terms of enhancing decision-making process across the domain of application, and the question of who is accountable when humans take decision based on human judgments as well as AI based suggestions [4]. The situation is further aggravated when dealing with decisions in the context of public sectors such as UAE education authorities since transparency, accountability, and governance are paramount [5].

- 1- Based on these concerns, the current research addresses how AI is incorporated in project decision making by UAE

education authorities through answering these questions; "how do project managers assess the reliability of the AI results?" "in what decision areas AI can actually add value?", and "how to achieve decision accountability in human-AI collaboration settings?". The study intends to offer relevant understanding on applying AI in real projects and suggests how the efficiency can be enhanced by integrating it better, governing the processes and practices of decisions making.

2. LITERATURE REVIEW.

2.1 Artificial Intelligence and Project Decision-Making.

The integration of AI into project decision-making has gained prominence, particularly in highly data-driven environments such as education authorities where these systems analyze massive amounts of data to provide a basis for planning, forecasting, and performance tracking [6]-[9]. When used in a project setting, AI enables decision-makers to detect trends, increase efficiency, and support data-driven decisions [10]. The benefit of AI however varies significantly depending on the type of decision to be made, with high efficiency for the highly structured, data-intensive decision tasks and relatively low influence on tasks that require deep context, human expertise and judgment [11]-[17].

2.2 Human-AI Decision Support.

In the decision-making process, the use of AI can best be characterized as human-AI collaboration, whereby AI supports the decision-maker with analytical information whereas human decision-maker remains the one that makes the final decision [18]. Trust between AI and its human partner will be derived from clarity, context and relevance of AI insights. As such, in cases where AI outputs is clear [19], relevant and reliable, human decision-makers will embrace the system, leading to the confirmation of the AI assisted decisions [20], but in the opposite case, they will choose either to disregard the output, or rely on it with low validation leading to inconsistent decision-making outcomes [21]-[24].

2.3 To what extent can Artificial Intelligence be relied upon in project decision-making?

Three primary factors can be attributed to the use of AI in the decision-making process; these are;

reliability, value and decision accountability.

Reliability can be explained as the degree to which an AI-generated output is perceived to be trustworthy and utilizable and depends upon several factors which include data accuracy [25], transparency and human verification of the AI outputs as opposed to it purely relying on technology it relies also on the ability of the user to interpret and make relevant the AI outputs in the context of the decision to be made [26]-[30].

The **Value of AI**, in one hand, is the ability for the AI system to effectively handle the analysis and extraction of vast amounts of information in tasks such as reporting, prediction and monitoring of progress [31]-[35].

On the other hand, its influence is significantly minimal in complex decisions that involve ethical considerations, effect on stakeholders and the required human intuition, judgment and knowledge [36]-[40].

The combination of the three above-mentioned factors can be summarized with the help of figure 1:

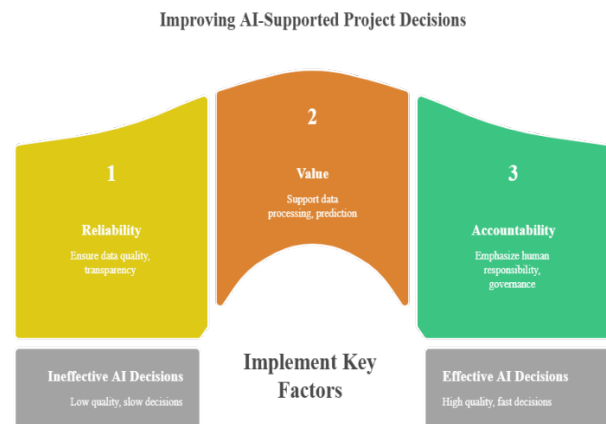


Figure 1 –AI-Supported Project Decision **Decision accountability** is still an ongoing concern, human is still the responsible person in the final decision, even with AI system in operation [41]-[48]. This may lead to multiple layers of accountability (technical, managerial and operational) and increasing the risk of blur the decision context [49]-[54].

2.3 Aligning with PMI and CPMAI framework.

For AI can be used effectively in the project environment, decisions supported by AI must conform with existing project management framework [55]-[59]. Project Management Institute (PMI) promotes governance,

transparency in decision and clear accountability as all the decisions are aligning to the project goals [60]-[65].

Similar with CPMAI framework (which has supported by further AI governance and management studies) [66], the framework emphasizes how AI must integrate into the human-centered process within the controlling environment and how the humans maintain their responsibility and accountability [67]-[72].

Based on above frameworks, a reliable system for evaluating how reliability, value and decision accountability are managed in AI-supported decision making will be available [73]-[77].

2.4 Research Gap and Study Justification.

Generally, studies confirm that the impact of AI on enhancing project decision-making can only be achieved through reliability of insights and value across decisions, along with clearly defined decision accountability in the human-AI interactions [78]-[83].

However, a **limited empirical study** had been undertaken to assess the actual implementation and its effect in actual project decisions among UAE education authorities [84][85].

Consequently, this case-based qualitative study explores how AI is practiced in project decision-making within this specific context with the aim of answering the study questions stated above.

3. RESEARCH METHODOLOGY

This study will use qualitative research approach to explore how AI is used to assist project decision-making in education authorities. Based on secondary data supporting the real-world case analysis method, five cases have been chosen from UAE and International education systems for examining AI-supported decision making. They

were chosen because they could illuminate some specific issues relating to AI-supported decision making as discussed by previous researchers such as reliability of AI-driven information, value of AI in decision-making, decision accountability.

Data is obtained from the official reports and available publicly provided information. Case studies such as the Alef Education platform in the UAE, United Kingdom, Singapore, Chile and India's systems of adopting the use of AI are chosen as case studies to observe.

All these cases have provided us with a number of insights to investigate the application of AI to the support of project decision making. The structure of the study will be to describe each case, analyzing each of the five case studies to understand the problems which are being addressed, and how AI is helping to solve these problems.

Lastly, cross-case analysis will be performed on all the 5 cases according to reliability of the data, value, and accountability. The approach has been taken to enable study goes beyond theories and discuss real implementation.

3.1 Case Demonstration.

The selection of the cases has been guided by its relevance and contribution to this study. Namely reliability of AI driven information, value of AI and decision accountability. In order to understand how Artificial Intelligence (AI) is applied to assist the project decision-making, five selected cases from UAE and international education systems were used. Those cases were chosen because they could address various dimensions to understand the variables as identified in this study; reliability, value and decision accountability. It could vary from institutional platforms to national systems.

Table 1 Case Demonstration

Case	Context	Description	Motivation for AI Use
Case A: Alef Education (UAE)	UAE education authority (ADEK)	AI-driven platform providing real-time student performance analytics and personalized learning recommendations	Need for real-time visibility of student performance and faster instructional decision-making
Case B: UK Education Data Systems	United Kingdom (Department for Education)	AI-supported systems integrating attendance, and school performance data into centralized dashboards	Address fragmented data systems and improve system-wide decision visibility
Case C:	Singapore	AI-based adaptive learning	Overcome limitations of

Singapore Adaptive Learning Systems	Ministry of Education	systems that adjust content dynamically based on student progress and behaviour	standardized teaching and improve individualized learning outcomes
Case D: Chile Early Warning System	Chile Ministry of Education	Predictive analytics system identifying students at risk of dropout based on behavioural and performance data	Enable early intervention decisions to reduce dropout rates
Case E: India National Education Platforms (DIKSHA)	India national education system	Large-scale digital platform using AI to analyse nationwide education data and support policy-level decisions	Manage high data volume and complexity for national education planning

The chosen cases present various ways the technology is being deployed in different contexts for decision-making [86]. In the UAE case the implementation is institutionally focused, informing classroom and school level decisions with performance analytics. Conversely, other cases like in the UK and India work at a higher-level system-wide perspective looking at data integration and at-scale monitoring [87]-[92].

Singapore and Chile showcase problem specific implementations for either personalized learning or preventing dropouts respectively. At their core, all implementations process big data to identify

patterns and provide actionable intelligence for decision making [93].

Despite variations in the context, the size of data, the goal for each implementation is the same – making decision-making efficient and effective by identifying trends [94]-[98].

3.2 CASE ASSESSMENT. Following on from the case demonstration this part will analyze each case, looking at how the relevant education system(s) are facing challenges, and how Artificial Intelligence (AI) is helping overcome these, thus informing decision making.

Table 2 Case Assessment

Case	Problem	AI Contribution / Solution
Case A: Alef Education (UAE)	The real-time student performance was unseen or it required either batch processing or manual data analysis	AI tracks student performance in real-time, offering immediate recommendations and faster, more accurate teaching decisions.
Case B: UK Education Data Systems	Lack of fully integrated systems within schools/institutions leading to disparate data.	AI unifies disparate data sources in a centralized dashboard to enhance data integrity and facilitate system-level decision visibility.
Case C: Singapore Adaptive Learning Systems	AI brings together various data inputs to a single console in order to improve data integrity and system-wide decision-making.	AI consolidates several data streams into one console, allowing better data integrity and system-wide decision making.
Case D: Chile Early Warning System	AI is able to integrate all of the sources above, making for an enhanced data integrity and informed decisions across the entire system.	It's also this information that the AI is able to tie together creating improved data integrity and an intelligent system as a whole.
Case E: India National Education Platforms (DIKSHA)	High data volume and system complexity, making large-scale monitoring and decision-making difficult	AI processes large-scale data and provides system-wide insights, supporting national-level planning and policy decisions

3.3 CASE ANALYSIS. The chapter has examined the objective of this study which was to analyze how AI assists project decision-making within the UAE education authorities [99]. Findings have been summarized and analyzed across the various cases with respect to the three research questions: reliability, value, and decision accountability as mediated through PMI governance perspective and CPMAI human-AI collaboration framework [100]-[104].

3.3.1 Reliability of AI generated insights. Cases indicated that it is not just technology itself which determines reliability but also data quality, transparency and human validation [105]. Consistent systems such as those in UK and Singapore appeared more reliable owing to governance and data practices, while big systems such as the ones in India were found to be problematic to be maintained consistently [106]. With the UAE case, the reliability is reinforced with the human review of AI generated insights before being used [107]-[111].

3.3.2 With these patterns it appears that AI is deemed reliable when the insights produced are interpretable, contextual and addresses the research question one above [112]. The results are consistent with other studies where humans trusted AI when it provided reliable and transparent outputs that could be verified by the decision makers [113]-[115].

Value of AI in decision-making. Across all cases, AI had more value in contexts where data is abundantly available, decisions are predictable and system is structured (e.g. Real-time dash boards in UAE and UK, personalization system in Singapore, predictive analytics in Chile and India) [116]. With data-intensive scenarios and predictable decisions, the application of AI accelerates processing and quickens the decision making process [117].

However, in cases where decisions require contextual judgment and ethical considerations, value of AI was found less significant and hence human involvement was considered essential [118]. The results answer the second research question where AI plays a supportive role to human decision-makers and not the decision maker itself [119]. These findings align with the studies in this field.

3.3.3 Decision Accountability. Accountability with all cases remained with human decision makers i.e. Teachers, project managers, and authorities [120].

AI does not take responsibility of the decisions taken but facilitates the process [121]-[125]. However, integration of AI into the decision-making process leads to the distribution of accountability as there are those who manage the systems and those who use the system to make decisions [126]-[130].

Ambiguity may be created when there are ill-defined roles, addressing the third research question directly where decision accountability is shown to remain within the human domain despite AI systems usage, as suggested by researches on accountability diffusion when the use of AI becomes widespread [131].

4. CASE EVALUATION.

This analysis covers the purpose of this study to explore AI support in project decision-making within UAE education authorities. This is evaluated against the three research questions- reliability, value and accountability of decision-making, interpreted with the help of PMI governance framework and CPMAI approach to human-AI collaboration [135].

4.1 Reliability of AI-generated thoughts in education. The level of reliability is varied among cases: strongest for cases with more structured systems like UK and Singapore as well as clearer governance and data standardization; weakest for large-scale system like India. However for UAE cases it is supplemented with human validation of AI outputs. This correlates to studies finding that reliability depends on the extent of explainability of the system which leads to greater user trust.

4.2 Value of AI in educational decision-making. AI has delivered most value in cases that were targeting specific applications-dashboards that display real-time information (UAE, UK), personalised learning system (Singapore), prediction on dropout (Chile) and monitoring at the system level (India) showing enhanced efficiency and faster decision-making-these results is in accordance with evidence showing AI improving speed of processing and decision effectiveness. AI has also contributed positively to outcomes in education context; but has failed to provide significant added value to issues of students' well-being and qualitative judgment decision-making.

4.3 Decision accountability in education authorities. Across all the cases, the final decision rests with the

educators/authorities and AI has a supportive rather than a final decision-making role, thus indicating a distributed accountability model where technical and managerial roles are also accountable. This agrees with previous research stating that systems using AI may lead to accountability ambiguities if roles in decision-making are not clearly defined.

4.4 Human-AI collaboration in educational systems.

Across all cases examined AI has played the role of decision support while humans hold the final say and the interaction involves teachers in interpreting performance reports from the AI (UAE, Singapore), decision-makers using the dashboards as the main reference point (UK, India). This correlates to studies claiming that well-executed human-AI collaboration improves decision quality by complementing human analytical and judgmental capacity.

Overall effect on educational project decision-making. Overall, AI has improved decision-making across cases through the speed of insights, real-time monitoring and predictability, especially in structured environments-these impacts align to the wider evidence showing efficiency and decision effectiveness (Dwivedi et al., 2021; Davenport and Ronanki, 2018). AI is unlikely to displace human decision-making particularly in matters concerning learning outcome and students in general.

5. RECOMMENDATIONS

5.1 Create a risk-based AI decision model for education.

The degree of automation and the human intervention must be correlated with the level of criticality of decisions made through AI. AI with low-risk application (e.g. Monitoring and reporting) must be automated while for high-risk applications affecting student success (e.g. Assessment, progression and intervention) there should be at least one layer of human review. This ensures the use of AI is accurate and appropriate.

5.2 Develop data governance standards for AI in education systems.

Each education authority must agree on common data structures, rules of data quality, procedures of data validation, explainability criteria and auditing criteria for both data and results from AI. Teachers should be able to trust and review the results from AI and insights delivered.

5.3 Introduce checkpoints into the governance of AI projects.

The AI must be integrated into the project lifecycle by way of project checkpoints such as data readiness reviews, validation phases and decision approval stages to ensure that the decisions supported by the AI are aligned with PMI governance principles and do not adversely influence student progress.

5.4 Set accountability matrices in AI-supported decision making.

Organizations must establish well-defined responsibility guidelines regarding data, AI output and the final decisions made and ensure accountability is not diluted. It is critical to maintain a human decision maker for any AI-influenced decision that pertains to students.

5.5 Provide AI literacy training for education decision makers.

Training should extend beyond general AI awareness to include explanation and interpretation of AI output, AI risks and limitations. Educators and project managers should be empowered to question and validate AI data, ensure explainability of decisions made and use AI effectively in their practice.

5.6 Establish feedback mechanisms for AI decision outputs.

Education authorities must monitor AI-supported decisions, error rates and human overrules and use the data to refine AI models and data inputs, improving the entire decision-making process over time.

5.7 Maintain balance between human judgment and AI automation in educational decision-making.

AI should only augment human decision making where human involvement is a critical part of the decision-making process. Human judgment should guide all student-related, ethically sensitive and contextual decisions.

6. CONCLUSION

We have explored in this study the employment of Artificial Intelligence (AI) in the decision-making process of UAE education authorities in terms of reliability, value and accountability of these decisions. Our findings indicates that AI is most feasible for use in high data processing decision making areas (e.g. Monitoring, reporting, predicting) and offers great acceleration, efficiency, and decision capacity..

The value and reliability of the system is highly dependent on the quality of the data being fed in the system, transparency in decision-making, and the presence of human review. Decisions involving students' futures, context and qualitative judgment are areas where the value of AI in decision-making is not significant and still required human input and consideration. However, in all cases, decision accountability lies solely with the humans involved regardless of the usage of an AI system. It can be stated that, in the observed context, AI enhances decision-making capabilities, but it doesn't replace the judgment and accountability.

Its successful application will require a structured governance framework, clear human responsibilities and an optimal Human-AI Partnership which would adhere to the guidelines presented by PMI and CPMAI.

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