

Data Center Feasibility Assessment Using DEJI Systems Model

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The Plight, Perils, and Potentials of Data Centers

AI is here to stay. There is no turning back at this point. The train has already arrived. No derailment is possible now. We are all already benefiting from the proliferation of the new generation of AI tools. As things stand now, there is no single person alive today who is not benefiting from AI in one form or another. From home, work, leisure, finance, education, transportation, and shopping to healthcare, AI is benefiting us. Even if we don't readily see it, we are engulfed in AI applications. If we knew what we are gaining from AI right now, we would not want to give it up. It is when we don't know that we don't care.

AI needs data. Data is the knowledge base of AI. AI is trained on data in the same analogical way that a baby acquires knowledge through being exposed to external stimuli in the world. The formative brain of a toddler acquires knowledge rapidly as new stimuli are encountered every day. AI learns and acquires knowledge through training sets that are fed to it. In spite of what we hear, no inanimate AI tool can be sentient and become self-conscious. At least not in the present generation of technological possibilities. So, there is no threat of human annihilation by AI misdeeds. We should stop fearing AI. AI can only be what we expose it to. If we program AI to be able to randomly concatenate inputs that we feed to it, then it may exhibit what may appear to us as being self-actuating in good or bad ways. But in that case, we provide the training prompts to make AI do whatever it does. It is all embedded in whatever the AI programmers encode for the AI tool to be able to do. With all these said, there are legitimate areas of concern that should not be dismissed.

Rather, they should be understood to better understand the partnering potentials between AI and humans. There are cognitive capabilities that only humans can execute. AI can only assist in accomplishing capabilities faster, cheaper, more efficiently, more effectively, more consistently, and safer.

Job Transitions Rather than Job Loss

One of the greatest concerns about AI is the fear of human job losses due to AI. I don't see absolute job losses. Rather, I see job transitions that should be embraced and leveraged. That has been the trend in human existence and advancement over the centuries. How many professional typists are still working in corporate offices today? Yet, we are all still typing, albeit not on typewriters, but on computer keyboards. If we had resisted and opposed desktop computers in favor of our beloved QWERTY typewriters, where would our technological advancement be today? Those who will survive in the wave of job transitions are those who master the art of wielding AI to get things done on personal, institutional, or corporate platforms.

Hullabaloo About Data Centers

The pros and cons of the raging debates about data centers are real and legitimate, even though the connecting dots are missing from both sides. The discussants jump, justifiably, on their respective band wagons. Unfortunately, the basic facts that could have clarified each position are missing because the data center czars never pursued a strategic justification of data centers. Massive undertakings, such as data centers, require strategic and focused communication, cooperation, and coordination, the Triple C approach advocated in complex project management (Badiru, 2008). Triple C is a foundational subset of the DEJI Systems Model (Badiru, 2023) for system Design, Evaluation, Justification, and Integration.

Communication: Inform all known and prospective stakeholders, investors, beneficiaries, users, local officials, residents, and so on upfront about what, when, where, and how of data centers.

Cooperation: Explicitly solicit the cooperation of all (or almost all) of those affected. Although 100% cooperation may not be possible in most cases, a good cooperation level would lessen widespread opposition later. Communication facilitates cooperation. If communication is missing, cooperation suffers.

Coordination: Smooth project coordination is possible only after the communication and cooperation requirements have been accomplished. Far too often, we jump to the project coordination stage, such as block-and-mortar, before a measurable cooperation level is achieved.

Implementing DEJI Systems Model

Getting to the coordination stage is not an assurance for “show time.” It is at this point that the structural power of systems thinking would start. The structured feasibility assessment of a Data Center needs to follow the stages summarized below:

Design: Design is the first stage of any system. This is not necessarily the physical, mechanical, or technical design of the goal. It could also be the conceptual framework over which the proposed project is conceived. In the case of a data center, design could be the need for data to power AI.

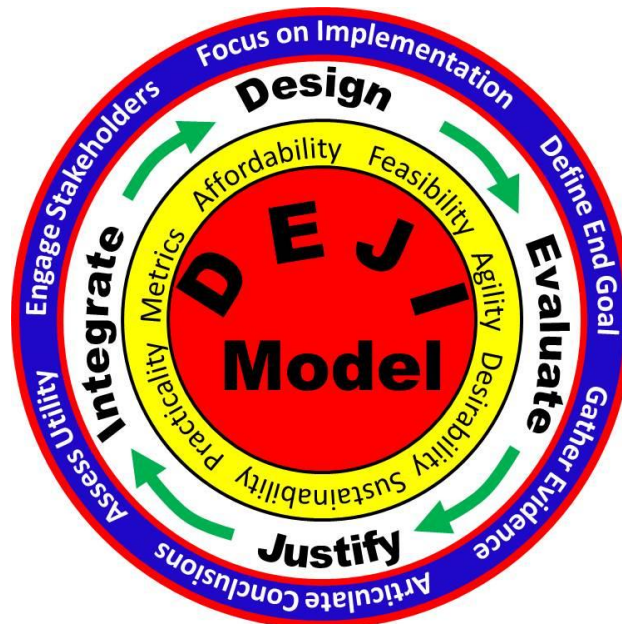
Evaluation: This is the stage where all the factors, attributes, and indicators of a functioning data could be assessed. In this case, input, process, and output relationships should be assessed.

Justification: Not everything that is well designed and positively evaluated is justified for implementation. Justification is not just a matter of economic or technical feasibility. It is also necessary to assess social acceptance, physical desirability, and community reception. Many of the oppositions to data centers center on community concerns that could have been mitigated earlier by the Triple C approach.

Integration: This is the most critical aspects of implementing a new system. Systems are most successful when they are integrated and aligned with the prevailing physical and human infrastructure, such as the social-economic profile of the surrounding community. Shotgun approaches most often lead to project

failures due to a lack of alignment with what the environment could accommodate. Sometimes, it may be necessary to reorient and reorganize the intended placement of a new system. The DEJI Systems Model could be effective in revealing where and when such actions are necessitated.

In conclusion, a practical approach to a Data Center could benefit from the early application of the Triple C approach and the DEJI Systems Model. Further elucidation of this recommendation is possible with specific data and details about a proposed data center. Some have unique attributes, factors, and indicators that could come to light through a more structured and deliberate application of systems-based methodologies. There is more to a data center than meets the naked eye and unopened minds. Figure 1 below shows a graphic representation of the DEJI model.



References

1. Badiru, A. B. (2008), **Triple C Model of Project Management: Communication, Cooperation, and Coordination**, Taylor & Francis CRC Press, Boca Raton, FL.
2. Badiru, A. B. (2023), **Systems Engineering Using DEJI Systems Model: Design, Evaluation, Justification, and Integration with Case Studies and Applications**, Taylor & Francis CRC Press, Boca Raton, FL.

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