



Navigating Construction Project Outcomes: Synergy through the Evolution of Digital Innovation and Strategic Management

Mirindi, Derrick^{1,*}, Mirindi, Frederic² and Oluwakemi Oshineye¹

¹School of Architecture and Planning, Morgan State University, USA

²Department of Economics, University of Manitoba, Canada

Abstract: The ongoing high rate of construction project failures worldwide is often blamed on the difficulties of managing stakeholders. This highlights the crucial role of strategic management (SM) in achieving project success. This study investigates how integrating digital tools into the SM framework can effectively address stakeholder-related challenges. This work specifically focuses on the impact of evolving digital tools, such as Project Management Software (PMS) (e.g., Basecamp and Wrike), Building Information Modeling (BIM) (e.g., Tekla BIMsight and Autodesk Navisworks), Virtual and Augmented Reality (VR/AR) (e.g., Microsoft HoloLens), drones and remote monitoring, and social media and Web-Based platforms, in improving stakeholder engagement and project outcomes. Through existing literature with examples of failed projects, the study highlights how the evolution of digital tools will serve as facilitators within the strategic management process. These tools offer benefits such as real-time data access, enhanced visualization, and more efficient workflows to mitigate stakeholder challenges in construction projects. The findings indicate that integrating digital tools with SM principles effectively addresses stakeholder challenges, resulting in improved project outcomes and stakeholder satisfaction. The research advocates for a combined approach that embraces both strategic management and digital innovation to navigate the complex stakeholder landscape in construction projects.

Keywords: Strategic Management, Digital Tools, Virtual and Augmented Reality, Stakeholder Management, Building Information Modeling, Project Management Software

1. Introduction

The construction industry is in a constant state of flux, with successful project outcomes hinging on the adept management of stakeholder challenges. These complexities, if mismanaged, can precipitate delays, cost overruns, and project failures. The Boston Big Dig project exemplifies the repercussions of poor stakeholder management (Greiman & Sclar, 2019), where initial cost projections of \$2.8 billion ballooned to an excess of \$14.6 billion, spurred by stakeholder disputes, environmental issues, and political strife. This case demonstrates the criticality of strategic management (SM) in steering stakeholder expectations and interests towards the fruition of construction endeavours (Aecis, 2024; Haynes, 2008).

Recognizing the critical role of strategic management (SM), it is considered essential for project success (Sinnaiah et al., 2023). It provides a systematic approach to address the complex challenges that come with construction projects. However, the construction industry's dynamic nature, characterized by a diverse range of stakeholders and intricate demands, calls for the advancement of traditional strategic management methodologies. In this regard, digital tools emerge as innovative solutions that have the potential to redefine stakeholder engagement and management. Technologies such as Project Management Software (PMS) software, Building Information Modeling (BIM), Virtual and Augmented Reality (VR/AR), drones, remote monitoring, and social media platforms are leading this transformation by offering improved communication, collaboration, and access to real-time project data (Appelnasa, 2024; Fieldwire, 2024).

In addition, there are various challenges that can cause construction projects to fail. These challenges go beyond just the construction activities and encompass a wide range of issues. Some of these challenges include cultural diversity, environmental concerns, economic fluctuations, technological advancements, legal and regulatory constraints, and political governance issues. An example of such challenges is the "100 jours" project in the Democratic Republic of Congo (DRC), which was poorly managed by the government (Rfi, 2024). The World Bank's decision to suspend \$1 billion in project funding in Congo due to concerns about transparency and accountability highlights the seriousness of these challenges (Reuters, 2024). Furthermore, the "Congo Hold-up" leak exposed widespread corruption, demonstrating how the negligence and lack of due diligence by various actors, including international entities, can lead to the misuse of a country's resources and derail construction projects (Pplaa, 2024).

The integration of digital tools with strategic management practices in the construction industry is a promising area for research (Duarte-Vidal et al., 2021; Sepasgozar et al., 2022). This study aims to explore the relationship between digital innovation and strategic management in order to better understand how to effectively manage stakeholders in today's digital landscape. The findings of this study provide valuable insights for



construction professionals, project managers, and industry stakeholders. In fact, the study highlights the impact of the digital revolution on stakeholder management in construction projects. BIM is at the core of this digital shift, creating a collaborative environment where stakeholders can visualize and understand project deliverables together. Drones, with their high-definition imaging capabilities, offer real-time project monitoring, enhancing transparency and trust among stakeholders. VR and AR technologies provide stakeholders with tangible previews of construction plans, enabling them to make informed decisions and suggest modifications proactively. PM software plays a crucial role in coordinating project activities and fostering a culture of accountability and collaboration among stakeholders. Social media and web-based platforms have emerged as effective channels for stakeholder dialogue and community involvement, ensuring inclusive and comprehensive engagement (Greiman & Sclar, 2019; Ucd, 2024; Yahaya et al., 2018).

This research proposes a new approach to engaging stakeholders in construction projects, by combining digital tools with strategic management practices. This combination not only improves stakeholder management, but also streamlines project management workflows, resulting in better project outcomes. The aim of this study is to provide construction professionals with guidance on navigating the complex landscape of stakeholders using both strategic management principles and advancements in digital tools for effective project management. Through this research, we hope to contribute to the existing body of knowledge on successful stakeholder management in the construction industry, offering practical strategies to address stakeholder-related challenges and enhance project success in this digital era.

2. Stakeholder Management in Construction Projects

Strategic Management (SM) in construction projects is an essential discipline that has evolved significantly since the late 1950s. Originating from the foundational work of scholars like Peter Drucker and Igor H. Ansoff, SM has become crucial in navigating the complexities of construction projects. Defined broadly, strategic management involves specifying an organization's objectives, developing policies and plans to achieve these objectives, and efficiently allocating resources to support their implementation. This process is vital in the construction industry, where managing diverse resources and solving problems are paramount for project success.

The core of strategic management lies in its ability to coordinate human and financial resources to meet organizational goals. This coordination is particularly critical in construction due to the industry's inherent project complexities. Strategic management in this context includes evaluating the current strategic direction, analyzing strengths and weaknesses, formulating and executing action plans, and assessing their success. This ensures that construction projects align with the broader strategic objectives of the organization, enhancing operational efficiency, profitability, and market share.

Moreover, strategic management provides clear direction for organizations, fostering an environment of high performance and productivity. It contributes to operational efficiency and the successful realization of project goals by facilitating consistent planning, monitoring, and evaluation of activities. Additionally, strategic management enables organizations to navigate environmental constraints, identify and pursue objectives, and apply strategic thinking skills effectively. This proactive approach not only increases productivity and profitability but also enhances communication, creativity, and competitiveness within the construction industry.

Innovatively applying strategic management principles to construction projects involves leveraging digital technologies, fostering strategic team building, and emphasizing purpose-driven documentation and communication. Digitalization can optimize project management processes, enhance data-driven decision-making, and improve stakeholder engagement. Strategic team building ensures that all project participants, including suppliers and subcontractors, are aligned with the project's goals and work collaboratively towards their achievement. Purpose-driven documentation and communication facilitate efficient information flow, accountability, and compliance, thereby mitigating risks and enhancing project outcomes.

Stakeholder management is another critical aspect of strategic management in construction projects. The diverse interests and impacts of stakeholders, ranging from clients and suppliers to regulatory agencies and local residents, significantly affect project outcomes. Managing these stakeholders involves addressing conflicting interests, bridging communication gaps, and managing expectations effectively. Strategic management provides the framework for engaging with stakeholders in a manner that aligns with the project's goals and objectives, ensuring the project's success.

3. Stakeholder challenges in construction projects

Stakeholder challenges in construction projects are multifaceted and can significantly impact the success and smooth execution of these projects (Joshi et al., 2021). These challenges arise from the diverse interests, expectations, and influences of various stakeholders (Figure 1) involved in construction projects, ranging from clients, contractors, and suppliers to local communities, regulatory bodies, and environmental groups.

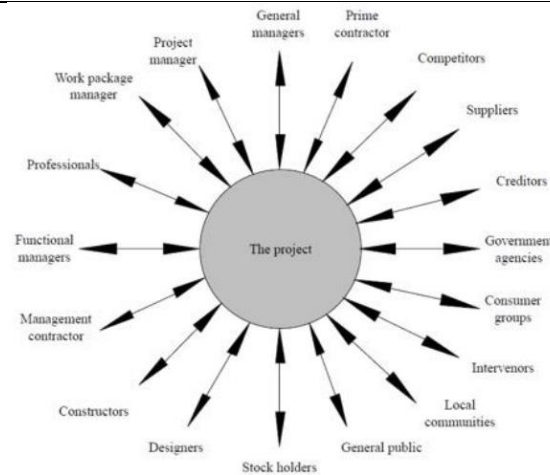


Figure 1: Different Project Stakeholders (Yahaya et al., 2018)

The management of these stakeholders is complex, as it involves balancing economic, legal, environmental, and ethical responsibilities. This often leads to conflicts, delays, and cost overruns. The examples below illustrate some projects that have faced challenges with stakeholders. Table 1 provides details on the initial and final costs, as well as the funding source for these projects.

- I. The High Line, New York City, USA (Figure 2(a)): The transformation of the High Line from an abandoned railway into a public park is a clear example of successfully navigating stakeholder challenges. Initially, property owners raised concerns about privacy and public access near their properties. However, through extensive engagement and collaboration with stakeholders, the project team turned opposition into support. As a result, the project became a highly successful urban renewal initiative, serving as a model for similar projects worldwide (Fennelly, 2024; Hyde, 2024; LaFarge, 2024).
- II. The Sydney Opera House, Sydney, Australia (Figure 2(b)): This iconic project faced significant stakeholder challenges, including political controversies, budget overruns, and design changes. The original architect, Jørn Utzon, eventually resigned due to conflicts with stakeholders, including the government (Drew & Utzon, 1995). Successfully completing the project required effectively managing the complex dynamics among stakeholders to realize the vision of a landmark cultural facility (Greiman, 2023; Landorf, 2019).
- III. The Gautrain Rapid Rail Link, South Africa (Figure 1(c)): The Gautrain project, which connects Johannesburg, Pretoria, and the Oliver Reginald (OR) Tambo International Airport, encountered challenges related to land acquisition, environmental concerns, and community opposition (Bond, 2014; Mthombeni et al., 2022). Stakeholder engagement strategies, such as public consultations and negotiations, played an important role in addressing these challenges and ensuring the project's successful implementation.
- IV. The Three Gorges Dam, China (Figure 1(d)): As one of the world's largest hydroelectric projects, the Three Gorges Dam faced significant stakeholder challenges, including the displacement of over a million people, environmental degradation, and the preservation of cultural heritage (Wilmsen, 2016, 2018). To address these concerns, the project's management had to engage with local communities, environmental groups, and government agencies. This highlights the complexity of managing stakeholders in large-scale infrastructure projects (Ponseti & López-Pujol, 2006).
- V. The "Highway to Nowhere," Baltimore, USA (Figure 1(e)): This project aimed to connect Interstate 70 with downtown Baltimore but was never completed. As a result, hundreds of families were displaced, and a physical and symbolic barrier was created in West Baltimore (Salimbene & Wiggins, 2023). The project encountered strong opposition from the community and has become a case study on the consequences of not adequately engaging and considering the needs and concerns of local stakeholders (de Lucas, 2020; Eloshway, 2022).



Table 1: Stakeholder challenges in construction projects

Project	Location	Date of Completion	Initial Budget	Final Cost	Funding Sources	Overrun
The High Line	New York City, USA	2009 (First Section)	-	\$152.3 million (Sections 1 and 2)	City, federal government, state, and private funding	-
Sydney Opera House	Sydney, Australia	1973	AUS \$7 million	AUS \$102 million	Primarily funded by a dedicated lottery	Over budget by 1300%
Gautrain Rapid Rail Link	Gauteng, South Africa	2012	R27 billion	R31.8 billion (Capex)	Public-Private Partnership (PPP), federal and provincial funding	R4.8 billion increase due to inflationary pressures
Three Gorges Dam	Hubei Province, China	2006	USD \$8.3 billion	USD \$37.23 billion	State Investment, Power Generation Revenue, Bonds, Loans, Three Gorges Project Construction Fund, International and Private Investment	Over budget by 163 %
Highway to Nowhere	Baltimore, USA	Never completed since 1975, stop in 1979	USD \$2 million	-	City, federal government, state, and private funding	-



(a)



(b)



(c)



(d)



(e)

Figure 2: (a) The High Line in New York, USA (Pinjacolada, 2024); (b) Sydney Opera House in Sydney, Australia (Jshoton, 2024); (c) Gautrain Rapid Rail Link in Gauteng, South Africa (Bloomberg, 2024); (d) The Three Gorges Dam in Hubei Province, China (Britannica, 2024); (e) The Highway to Nowhere in Baltimore, USA (Baltimoresun, 2024)

These examples demonstrate the significance of effective stakeholder management in construction projects. When project teams properly understand and address the various needs and concerns of all stakeholders, conflicts can be minimized, risks can be reduced, and the likelihood of project success can be enhanced. The challenges encountered by these projects underscore the importance of adopting a strategic approach to stakeholder engagement, with a focus on communication, collaboration, and consensus-building.

4. Integrating Digital Tools with Strategic Management for Stakeholder Engagement

The integration of digital tools with strategic management practices presents a novel approach to mitigating stakeholder challenges in construction projects. This synergy not only enhances stakeholder engagement but also streamlines project management processes, thereby improving project outcomes. This section explores the innovative strategies for integrating digital tools with strategic management to address stakeholder challenges effectively.

4.1 Building Information Modeling (BIM)

Building Information Modeling (BIM) is a crucial digital tool in the construction industry that promotes collaboration among stakeholders. By integrating BIM with strategic management practices, construction managers can ensure that everyone involved in the project has access to a unified, real-time view (Entrepriseinsights, 2024). This integration allows for early identification of conflicts and discrepancies, enabling stakeholders to address issues proactively. For example, using BIM to conduct virtual stakeholder meetings can enhance understanding of project complexities, leading to informed decision-making and consensus-building in real time. Tekla BIMsight and Autodesk Navisworks are two popular software solutions that enhance collaboration and simulation capabilities, thereby mitigating challenges faced by stakeholders in construction projects. Tekla BIMsight enables effective project review and collaboration by allowing users to combine models, detect conflicts, and share information within an accessible BIM environment, promoting informed decision-making (Figure 3 (a)) (Tekla, 2024). Navisworks is particularly powerful in simulation, offering tools such as 5D analysis and clash detection that integrate with Autodesk BIM 360 Glue to improve project management workflows and stakeholder engagement, ultimately resulting in better project outcomes (Figure 3 (b)) (Helpautodesk, 2024).

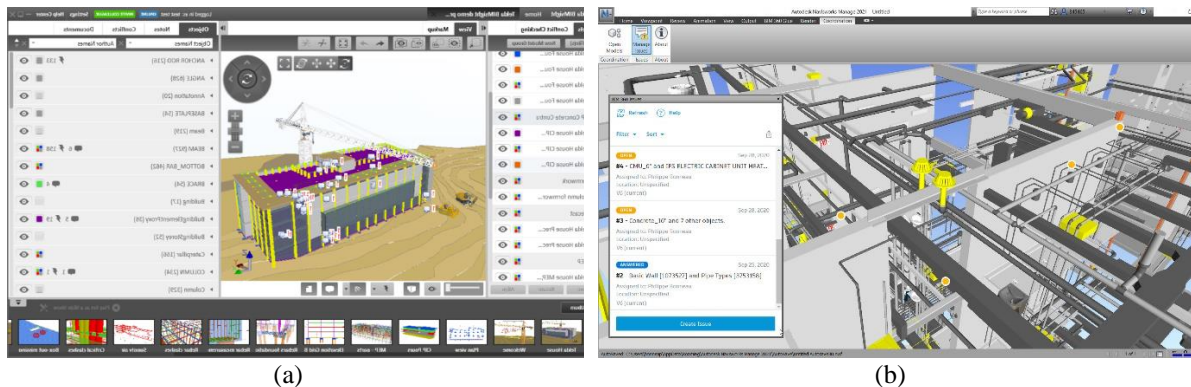


Figure 3: (a) Tekla BIMsight interface (Tekla, 2024); Autodesk Navisworks interface (Autodesk, 2024)

4.2 Utilizing Drones for Real-Time Monitoring and Stakeholder Reporting

Drones offer unparalleled capabilities in monitoring construction progress and identifying potential issues before they escalate. By integrating drone technology with strategic management, construction managers can provide stakeholders with real-time updates and visual progress reports. This approach not only enhances transparency but also builds trust among stakeholders. For example, deploying drones to capture aerial footage of the construction site can be used in stakeholder presentations to demonstrate progress, address concerns, and adjust project plans based on stakeholder feedback. Indeed, drones such as Dji Mavic 3E, particularly with its RTK module, is highlighted for revolutionizing the world of small drones in the construction industry by offering precise data and visuals in real-time using BIM tools (Figure 4) (Entrepriseinsights, 2024). This drone is celebrated for its efficiency, safety, and accuracy in tasks such as surveying, monitoring, and inspection processes. Its ability to provide real-time, precise data and visuals has optimized these processes, reducing both time and cost for construction projects.

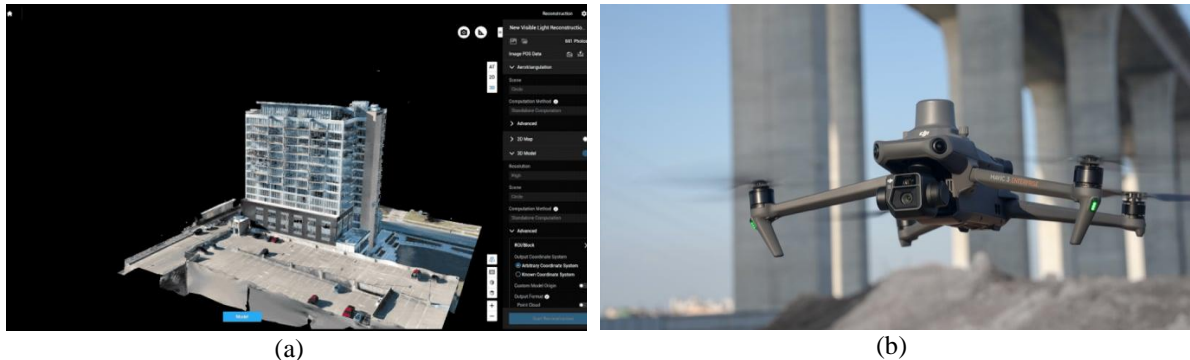


Figure 4: (a) Real-time interface of a building connecting drone to BIM tool; (b) Dji Mavic 3E drone (Entrepriseinsights, 2024)

4.3 Implementing Project Management Software

Project Management Software (PMS) plays a critical role in centralizing project information and facilitating seamless communication among stakeholders. By integrating PMS with strategic management, construction managers can maintain a clear and consistent flow of information (Ferreira & Tereso, 2014). Stakeholders can access project schedules, budgets, and updates in real-time, which reduces misunderstandings and conflicts. Additionally, PMS can create a centralized repository of project documents, making it easier for stakeholders to review plans, contracts, and compliance documents. This ensures that all parties are aligned with project objectives (Sigalov et al., 2021). Using advanced PMS tools like Wrike and Basecamp into strategic management can significantly mitigate stakeholder challenges in construction projects. As depicted Figure 5 (a), Wrike offers a suite of features, including Gantt charts and real-time progress updates, which enhance transparency and coordination among stakeholders (Wrike, 2024). Basecamp facilitates streamlined communication with designated discussion areas and daily updates, ensuring that all stakeholders are informed and engaged throughout the project lifecycle (Figure 5 (b)) (Signalnoise, 2024). These tools centralize project information and foster a collaborative environment, reducing the potential for misunderstandings and aligning stakeholder expectations with project objectives.

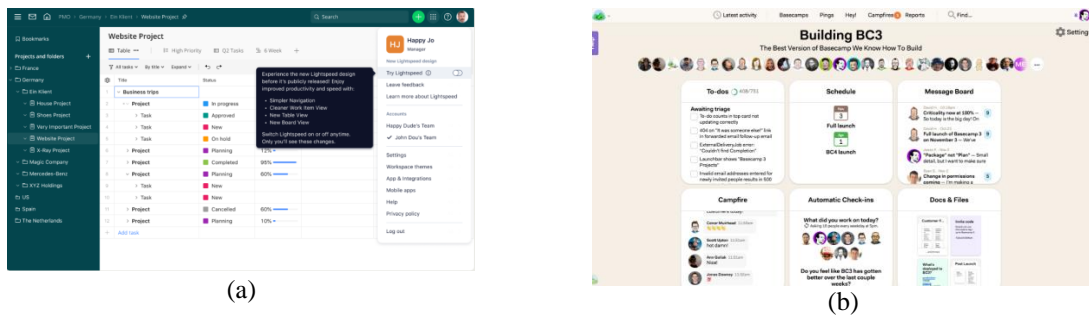


Figure 5: (a) Basecamp interface (Signalnoise, 2024); (b) Wrike interface (Wrike, 2024)

4.4 Adopting Virtual and Augmented Reality (VR/AR) for Stakeholder Engagement

Virtual and Augmented Reality (VR/AR) technologies offer immersive experiences that greatly improve stakeholder engagement (Theguardian, 2024) (Imottesjo & Kain, 2022). Construction managers can use these technologies to provide stakeholders with virtual walkthroughs of the project, allowing them to visualize the final outcome and make informed decisions. This approach is particularly useful for engaging community stakeholders, as it gives them a clear representation of how the project will impact the local environment and infrastructure. One standout VR/AR tool is the Microsoft HoloLens, which offers immersive, mixed-reality experiences (Theguardian, 2024). By integrating Microsoft HoloLens with strategic management, construction managers can provide stakeholders with interactive 3D models of projects, enabling them to explore potential design options and impacts in real-time (Figure 6). This direct engagement with the project through VR/AR technology helps address concerns and align stakeholder expectations, mitigating challenges related to communication and decision-making in construction projects.



Figure 6: Virtual reality headsets (Theguardian, 2024)

4.5 Social Media and Web-Based Platforms for Community Outreach

Social media and Web-Based Platforms have emerged as powerful tools for engaging with the broader community of stakeholders (Burke et al., 2024). Integrating these platforms with strategic management practices enables construction managers to conduct outreach efforts, gather feedback, and address public concerns. Also, construction projects can foster a positive public image, mitigate opposition, and build support for the project by maintaining an active presence on social media. Additionally, web-based platforms can serve as forums for public consultations, allowing stakeholders to voice their opinions and contribute to the project's success. Platforms like Nextdoor have become popular for their ability to connect local communities and stakeholders (Figure 7) (Businessinder, 2024). For projects like the High Line in New York City, using Nextdoor could facilitate direct communication with neighborhood residents, allowing for transparent discussions about privacy and public access concerns. This localized social platform can be instrumental in transforming initial resistance into community support by providing a space for dialogue, feedback, and consensus-building, ultimately contributing to the project's success and acceptance within the community.

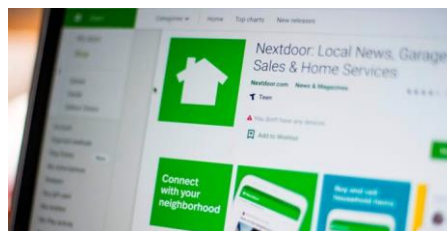


Figure 7: Nextdoor interface (Businessinder, 2024)

5. Conclusion

This study investigates how digital tools can be integrated with strategic management techniques to address stakeholder challenges in construction projects. The research aims to demonstrate how the application of digital innovations and strategic management practices can help mitigate complexities arising from diverse stakeholder interests, which often lead to project delays, budget overruns, and failures. The key findings highlight the transformative potential of digital tools, such as Building Information Modeling (BIM), drones, Virtual and Augmented Reality (VR/AR), Project Management Software (PMS), and social media platforms, in revolutionizing stakeholder engagement and management. These technologies significantly improve communication, collaboration, and access to real-time project information, facilitating informed decision-making and enhancing project outcomes. By integrating these digital tools with strategic management practices, a new approach to navigating the complex stakeholder landscape in construction projects is offered, aligning stakeholder expectations with project objectives and promoting transparency and accountability. These results hold practical implications for construction professionals, project managers, and industry stakeholders. Through the adoption of this integrated strategy, the construction industry can leverage digital innovation to improve operational efficiency, stakeholder satisfaction, and project success. Additionally, the study contributes to the existing body of knowledge and emphasizes the need for widespread adoption of digital tools in strategic management practices, which can inform policy development. However, it is important to acknowledge the limitations of this study, such as the scope of digital tools examined and the geographical context of the research. These limitations suggest areas for future research, particularly in exploring the scalability of integrating digital tools across different construction contexts and assessing their long-term impact on project success. This research reaffirms the crucial role of digital tools in enhancing strategic management practices in the construction industry.



References

- [1]. Aecis. (2024). <https://aecis.com/how-to-manage-common-stakeholder-challenges-in-the-construction-industry-b-354>.
- [2]. Appelnasa. (2024). <https://appel.nasa.gov/2010/07/15/the-big-dig-learning-from-a-mega-project/>.
- [3]. Autodesk. (2024). <https://www.autodesk.com/support/technical/article/caas/tsarticles/ts/2Ub2VdE8GZ11VZVxGSinPC.html>.
- [4]. Baltimoresun. (2024). <https://www.baltimoresun.com/2021/05/21/highway-to-somewhere-no-easy-fixes-for-abandoned-baltimore-roadway-commentary/>.
- [5]. Bloomberg. (2024). <https://www.bloomberg.com/news/articles/2018-11-07/south-africa-s-high-speed-rail-network-seeks-cash-for-new-trains>.
- [6]. Bond, P. (2014). Theory and practice in challenging extractive-oriented infrastructure in South Africa. In *Research in Political Economy* (pp. 97-132). Emerald Group Publishing Limited.
- [7]. Britannica. (2024). <https://www.britannica.com/topic/Three-Gorges-Dam>.
- [8]. Burke, C., Triplett, C., Rubanovich, C. K., Karnaze, M. M., & Bloss, C. S. (2024). Attitudes Toward School-Based Surveillance of Adolescents' Social Media Activity: Convergent Parallel Mixed Methods Survey. *JMIR formative research*, 8(1), e46746.
- [9]. Businessinder. (2024). <https://africa.businessinsider.com/tech-insider/what-is-nextdoor-how-to-use-the-social-network-for-neighborhoods/0c1xvpg>.
- [10]. de Lucas, A. K. P. (2020). Producing the “Highway to Nowhere”: Social Understandings of Space in Baltimore, 1944-1974. *Engaging Science, Technology, and Society*, 6, 351-369.
- [11]. Drew, P., & Utzon, J. (1995). *Sydney Opera House: Jørn Utzon*. (No Title).
- [12]. Duarte-Vidal, L., Herrera, R. F., Atencio, E., & Munoz-La Rivera, F. (2021). Interoperability of digital tools for the monitoring and control of construction projects. *Applied Sciences*, 11(21), 10370.
- [13]. Eloshway, M. (2022). *Highway to The Bottom: Recasting Baltimore's Highway to Nowhere* [Harvard University].
- [14]. Enterpriseinsights. (2024). <https://enterprise-insights.dji.com/blog/bim-drones>.
- [15]. Fennelly, M. (2024). *Clocks and Clouds Spring 2019-Urban Park Paths and Their Impact on Community: A Study of Washington DC's 11th Street Bridge Park*.
- [16]. Ferreira, M. E., & Tereso, A. P. (2014). Software tools for project management—focus on collaborative management. *New Perspectives in Information Systems and Technologies, Volume 2*,
- [17]. Fieldwire. (2024). <https://www.fieldwire.com/blog/top-challenges-for-construction-project-managers/>.
- [18]. Greiman, V. A. (2023). *Global megaprojects: lessons, case studies, and expert advice on international megaproject management*. John Wiley & Sons.
- [19]. Greiman, V. A., & Sclar, E. D. (2019). Mega infrastructure as a dynamic ecosystem: Lessons from America's interstate system and Boston's big dig. *Journal of Mega Infrastructure & Sustainable Development*, 1(2), 188-200.
- [20]. Haynes, W. (2008). Boston's Big Dig Project: A Cautionary Tale. *Bridgewater Review*, 27(1), 3-7.
- [21]. Helpautodesk. (2024). <https://help.autodesk.com/view/BIM360/ENU/?guid=GUID-1A8003B9-DA74-41F0-ACE2-204F69E4E4EC>.
- [22]. Hyde, A. (2024). *Parks for Profit: Selling Nature in the City*. In: SAGE Publications Sage CA: Los Angeles, CA.
- [23]. Imottesjo, H., & Kain, J.-H. (2022). The Urban CoCreation Lab—an integrated platform for remote and simultaneous collaborative urban planning and design through web-based desktop 3D modeling, head-mounted virtual reality and mobile augmented reality: prototyping a minimum viable product and developing specifications for a minimum marketable product. *Applied Sciences*, 12(2), 797.
- [24]. Joshi, S., Chen, J., Sultan, M., Singh, S., Abedi, S., & Zheng, S. (2021). European stakeholder perspectives on challenges to rare disease drug development—a qualitative study. *Expert Opinion on Orphan Drugs*, 9(6), 181-188.
- [25]. Jshoton. (2024). <http://jshoton.com/html/en-detail-58.html>.
- [26]. LaFarge, A. (2024). *On the High Line: The Definitive Guide*. Fordham Univ Press.
- [27]. Landorf, C. (2019). *Participatory Culture and the Social Value of an Architectural Icon: Sydney Opera House*. In: Taylor & Francis.
- [28]. Mthombeni, M., Scheepers, C. B., & Mgedezi, V. (2022). Gautrain: contextualising strategic leadership of African rapid rail. *Emerald Emerging Markets Case Studies*, 12(2), 1-31.
- [29]. Pinjacolada. (2024). <http://www.pinjacolada.com/2011/01/high-line.html>.
- [30]. Ponseti, M., & López-Pujol, J. (2006). The Three Gorges Dam project in China: history and consequences. *HMIC: història moderna i contemporània*, 151-188.



-
- [31]. Ppplaa. (2024). <https://www.ppplaa.org/2021/11/19/congo-holdup-leak.html>.
- [32]. Reuters. (2024). <https://www.reuters.com/world/africa/world-bank-suspends-1-bln-worth-project-funding-congo-2023-05-16/>.
- [33]. Rfi. (2024). <https://www.rfi.fr/fr/afrique/20200409-rdc-le-programme-100-jours-travaux-%C3%A0-lad%C3%A9tention-vital-kamerhe>.
- [34]. Salimbene, F. P., & Wiggins, W. P. (2023). Unending Environmental Injustice: The Legacy of the 1956 Federal-Aid Highway Act. *Env't L. Rep.*, 53, 10169.
- [35]. Sepasgozar, S. M., Costin, A. M., Karimi, R., Shirowzhan, S., Abbasian, E., & Li, J. (2022). BIM and digital tools for state-of-the-art construction cost management. *Buildings*, 12(4), 396.
- [36]. Sigalov, K., Ye, X., König, M., Hagedorn, P., Blum, F., Severin, B., Hettmer, M., Hückinghaus, P., Wölkerling, J., & Groß, D. (2021). Automated payment and contract management in the construction industry by integrating building information modeling and blockchain-based smart contracts. *Applied Sciences*, 11(16), 7653.
- [37]. Signalvnoise. (2024). <https://signalvnoise.com/posts/3968-launch-basecamp-3>.
- [38]. Sinnaiah, T., Adam, S., & Mahadi, B. (2023). A strategic management process: the role of decision-making style and organisational performance. *Journal of Work-Applied Management*, 15(1), 37-50.
- [39]. Tekla. (2024). <https://download.archsupply.com/get/download-tekla-bimsight/>.
- [40]. Theguardian. (2024). <https://www.theguardian.com/technology/2016/nov/10/virtual-reality-guide-headsets-apps-games-vr>.
- [41]. Ucd. (2024). <https://www.ucd.ie/professionalacademy/resources/power-of-project-management-and-how-to-survive/>.
- [42]. Wilmsen, B. (2016). After the deluge: A longitudinal study of resettlement at the Three Gorges Dam, China. *World Development*, 84, 41-54.
- [43]. Wilmsen, B. (2018). Damming China's rivers to expand its cities: the urban livelihoods of rural people displaced by the Three Gorges Dam. *Urban Geography*, 39(3), 345-366.
- [44]. Wrike. (2024). <https://help.wrike.com/hc/en-us/community/posts/14112871742231--From-Wrike-Try-the-New-Wrike-Lightspeed-Experience>.
- [45]. Yahaya, M., Kasimu, M., Saidu, I., & Shittu, A. (2018). Appraisal of challenges of stakeholder's management in construction projects in Nigeria.