


Value Creation and Sustainable Project Management: A Case Study on a Leading SOE in China

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ABSTRACT

The literature emphasizes the crucial role of state-owned enterprises (SOEs) in fostering economic growth and addressing public demands. However, ensuring the sustainable development of SOEs requires further research to investigate sustainable project management with a focus on value creation. Accordingly, the authors conducted a case study of a prominent real estate SOE in China to examine how SOEs can alter their project management practices and achieve a more sustainable business model. The findings reveal that adopting a whole life-cycle management system can promote value refinement, optimization, and co-creation, enabling SOEs to achieve value creation through sustainable management. This study offers useful insights for policymakers and business executives in China and contributes to the literature on sustainable project management and value creation.

KEYWORDS

Case Study, China, Life-Cycle Management, Real Estate, SOEs, Sustainable Project Management, Value Creation

INTRODUCTION

In recent years, sustainable development has become a priority for many economies, including emerging ones like China. Over the last decade, China's economy has experienced rapid growth, with numerous Chinese state-owned enterprises (SOEs) enjoying sustained success. Despite this, the current business environment remains uncertain, and some SOEs continue to operate in traditional industries such as real estate, which pose significant risks due to complex projects (Bocken & Geradts,

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2020). Given that SOEs play an essential role in China's economy (Li & Tong, 2023) and citizens are rightful owners of companies in China (Cuervo-Cazurra et al., 2014), sustainability has become more crucial than ever for both the enterprises and the country's economic development.

Previous sustainable project management research has focused on private companies and overlooked SOEs in traditional industries such as real estate. The complexity of managing SOEs and real estate projects includes decision-making, preparation, construction, marketing, and sales (Gupta & Newell, 2020), and it requires an understanding of the unique business culture (Huang et al., 2022). Scholars interested in sustainability have primarily concentrated on environmental factors while neglecting the importance of improving value-creation skills among managers (Bjorvatn, 2022).

A life cycle management information system can benefit SOEs by enhancing capital utilization efficiency, reducing operational costs and risks, and improving customer service (Dino et al., 2014; Gupta & Newell, 2020). While there are differences in business models and procedures between real estate SOEs and other types of businesses (Cozmiuc & Petrisor, 2018), life cycle management can still facilitate the development of synergies within SOEs (Dino et al., 2014).

SOEs can leverage digital transformation and the implementation of information systems to sustain their business operations. Researchers believe that enhancing life cycle project management is significant and acknowledge notable differences between real estate SOEs and private enterprises (Toller et al., 2011). In particular, constructing life cycle management systems that promote sustainable project management in the real estate sector are more challenging due to distinct differences in business processes and relationships. Additionally, real estate firms' value-creation methods differ from continuous production-based enterprises (Bjorvatn, 2022).

The usefulness of project management platforms for real estate and construction companies is in facilitating seamless and collaborative operations between different business departments, upstream and downstream supply chains, and customers throughout the life cycle of real estate development projects (Toller et al., 2013). In contrast to the maturity of product life cycle management (PLM) platforms in manufacturing companies, the construction of project management systems in the real estate industry through full life cycle management is still in its infancy; scholars are more focused on the production and operation phases after the construction of PLM platforms (Dino et al., 2014). There is currently no consensus on the design of sustainable project management through whole life cycle management.

To answer the question of how to achieve a sustainable business model through project management, we adopted the value creation perspective as the theoretical lens (Pan & Tan, 2011). To further explore this, we conducted an in-depth case study (Eisenhardt, 2021) on a real estate SOE in China: China Overseas Land & Investment Ltd. (COLI). We explored the question of how SOEs reposition their project management activities to achieve a more sustainable business model. Through our investigation of the value creation through whole life cycle management towards sustainable project management of COLI, we discovered the value creation path towards sustainable project management.

The remainder of the paper is structured as follows: We first review the literature covering sustainable business models, sustainable project management, project management in SOEs, and value creation. We then explain our research methodology including research design, research context, and data collection. Next, we present the findings of the case study, which include three phases of value creation: value refinement, value optimization, and value co-creation. We then discuss the findings, contributions, conclusions, and implications. Finally, we identify the limitations and outline potential avenues for future research.

LITERATURE REVIEW

Sustainable Business Model and Project Management

Scholars have pointed out that from the business model perspective one could explore questions in the field of sustainability (Massa et al., 2017). A sustainable business model is considered crucial

for achieving competitive advantage and promoting corporate sustainability (Bocken & Geradts, 2020). Such a model is complex and includes economic feasibility, stakeholder support, awareness, regulations, operability, resource risks, and project management models (Gan et al., 2015). Although extensive research explores environmental programs and social practices, little attention has been paid to how companies develop their capacity for value creation and sustainable project management.

Scholars have progressively highlighted several factors that could influence the formation of a sustainable business model. For instance, agility and continuous innovation in operating models are becoming mandatory requirements for organizations to successfully compete (Massa et al., 2017). Technology companies can leverage technological innovation, public policies, and the market environment to help realize sustainable development (Cui et al., 2022). From an organizational design vantage point, we identified constraints and enabling factors across three levels: institutional, strategic, and operational (Bocken & Geradts, 2020). Despite these developments, the question of how to achieve a sustainable business model still requires further research. Project management is a suitable context for exploration.

A sustainable project management practice is a must-have for businesses' overall sustainability (Silvius & Schipper, 2015), and this approach necessitates flexibility and openness to introducing changes on a project level. As project management evolves, organizations and individuals in charge have to acquire a range of management skills and competencies so they can quickly adapt to the ever-changing business landscape (Calabrò et al., 2019).

Information technologies and systems assist managers with managing projects under the auspices of life cycle management, as enhancing life cycle project management standards is essential for sustainability (Zamojska & Prochniak, 2017). Studies have shown that implementing PLM can effectively reduce time and material waste in the entire supply chain, increasing supply chain flexibility and enabling risk management (Andriankaja et al., 2015).

PLM is categorized into six phases: (1) concept, (2) design, (3) procurement, (4) production, (5) sales, and (6) after-sales service. Conceptualization involves gathering market information, conducting analysis, and forecasting new product development. Design completes product development using PLM for data exchange among those on the research and development team and other teams (Andriankaja et al., 2015). Procurement utilizes PLM to understand production operations. At the production stage, the staff conducts a preliminary analysis based on the new product design results and demand, and also identifies and determines the implementation plan necessary for the new product. The sales department completes product release, marketing, the sales plan development and execution, and customer order management at the sales stage (Kakehi et al., 2009). Finally, PLM assists in collecting customers' after-sales demands and feedback to help the design and production departments.

Project Management in SOEs

Sustainability has attracted substantial attention in managing SOEs around the world. Projects in SOEs may be large and intricate, making them difficult to manage, yet management within SOEs is under-researched. Knowledge management is also crucial in creating value (Nguyen et al., 2022); therefore, the development of corporate entrepreneurship is a viable solution to the challenges posed by large-scale and complex projects (Gil-Lopez et al., 2020).

Life cycle management is a solution to project management in SOEs. Previous studies on PLM in project management have mainly focused on the utilization of technologies and have failed to consider managerial theory in this field. Technologies are essential but not enough to achieve life cycle management in an organization. PLM platforms also require management measures related to constructing a unified and standardized data model for modeling product design, product production, and product collection characteristics at different stages of the product life cycle (Silvius & Schipper, 2015). These measures can help managers to (1) ensure effective collaboration between different roles inside and outside the organization so that risks can be reduced and (2) orchestrate resources to create value (Schuh et al., 2008). In this study, we look into the value creation process in the life cycle

management of the real estate project and investigate how value creation contributes to sustainable project management.

Value Creation Towards Sustainable Project Management

Value creation is defined as the generation of subjective value for an organization's target audience (e.g., customers) (Bullinger et al., 1999). Incorporating sustainable project management can help to achieve value creation. A project may be singular or include a collection of projects in the form of a temporary organization (Bakker, 2010) that allows for value creation (Winter & Szczepanek, 2008). The abundance of information regarding this issue has increased awareness of social and environmental needs (Bullinger et al., 1999). Silvius and Schipper (2015) suggest that sustainable project management involves the shift of critical success factors from time, quality, and budget to social, environmental, and economic long-term objectives.

The process of project value creation can be divided into value management and benefits management, although, scholars have pointed out that digital transformation can benefit value creation as well (Vogel & Telesko, 2020). However, current value management research is largely focused on cost optimization rather than benefit maximization (Bakker, 2010). Therefore, this study focuses on benefits management to fill this gap. Benefits management is the process of organizing and managing such that potential benefits arising from investments in change are achieved (Serra & Kunc, 2015). Scholars suggest that to achieve sustainable project management, managers should revamp value management into an integrated practice that encompasses value, benefits, and costs, instead of keeping the practices separate since decisions about one project are likely to have an impact on other projects, the program, and the entire strategy (Serra & Kunc, 2015). Consequently, comprehensive life cycle management for real estate companies is critical for sustainable projects.

Current research lacks the connection between life cycle management and project management, thus providing limited theoretical insights into sustainable project management. By focusing on value creation in the life cycle of project management, this study aims to gain an understanding of the mechanism of sustainable project management and explore how value creation contributes to it.

METHODOLOGY

Research Design

The case research method is appropriate for this study to analyze the value creation of the real estate industry toward sustainable project management. The research question is exploratory and based on "how." As such, it is better answered through inductive methods (Eisenhardt, 2021; Pan & Tan, 2011), and it points to a case study that investigates the current state where relevant factors are not controllable. Furthermore, our research team had a partnership with the case organization, which allowed us to conduct this investigation.

Research Context

Our case selection followed the principle of theoretical sampling (Yin, 2013), and we developed three criteria. First, the organization should have achieved sustainable project management so that the theoretical phenomenon is significant. Second, the sample organization and related contexts should be sufficiently complex to study value creation. Third, top management should be willing to support an in-depth case study to gain insights.

This paper presents the examination of China Overseas Land & Investment Ltd.'s (COLI) sustainable project management initiatives by analyzing changes in their business processes, informatization work, and organization structure from 2004 to 2021. As an established real estate development company that undertakes complex projects, COLI provides valuable insight into effective project management within the industry.

To promote sustainability, COLI's management team developed the Whole Life Cycle Management System, utilizing digital innovation platforms and new technology to comply with national policies and adapt to changing environments. This system has enabled COLI to establish a sustainable project management model suitable for large-scale real estate enterprises.

Data Collection

In December 2020, we obtained research access from COLI and began collecting secondary data from public sources such as the stock market, newspapers, and the Internet. We also received a large number of relevant documents and materials from the company, which provided us with technological and managerial details, enriched our data sources, and helped to avoid memory bias. Furthermore, we selected a theoretical lens (Pan & Tan, 2011) and read both classic and current literature. We adopted the value creation perspective to construct a preliminary theoretical framework (Eisenhardt, 2021; Pan & Tan, 2011) which we used as a guide for our on-site data collection and analysis.

We conducted on-site data collection at COLI's headquarters in Shenzhen and a branch of COLI workshops in Wuhan from March to May 2020. During this period, we interviewed a total of 22 participants (see Table 1) for 40-60 minutes per interview. We followed the rule of triangulation, which is to "obtain a fix on the phenomenon under investigation from two known points" (Yin, 2013, p. 192). We employed the triangulation principle to verify the research questions by seeking input from both system designers and users during INTERVIEWS and cross-checking their responses against secondary resources to ensure accuracy.

Data Analysis

To manage the large volume of data, we focused on understanding the roles of subsystems within the Whole Life Cycle Management System, specifically value-related actions and their ability to facilitate sustainable business models and project management—both key areas of our research question. Our interviews were recorded digitally and transcribed using AI tools such as iFlytek, which were double-checked manually as necessary. Data collection and analysis occurred concurrently (Pan & Tan, 2011), and we used NVIVO 11 to code the data.

We identified a concrete value creation model for sustainable project management, presented in Tables 2 and 3 in the Findings section, to better examine how using the Whole Life Cycle System

Table 1. List of Interviewees

Role in the Whole Life Cycle Management System	Roles in COLI	Number of Interviews	Duration (Total)
The Constructor of the Whole Life Cycle Management System	Vice President of COLI Information Technology Company and CIO of COLI	6	244 min
	Person in charge of the subsystems of the Whole Life Cycle Project Management System	3	133 min
Users of the Whole Life Cycle Management System	Vice President of COLI	1	58 min
	The head of the COLI's departments including operation management, consumer serving, marketing, cost management, investment department, and engineering management department	6	246 min
	The head of the departments in COLI's Wuhan Branch including operation management, consumer serving, marketing, tax management, finance management, and engineering management department	6	268 min
Sum		22	949 min

facilitated sustainable management in COLI. We then validated and revised the preliminary theoretical framework accordingly. Through an iterative process, we continued to analyze the data until theoretical saturation was achieved (Pan & Tan, 2011).

FINDINGS

The Whole Life Cycle Management System of COLI is divided into seven main parts, including (1) investment, (2) operation management, (3) cost control, (4) design, (5) engineering, (6) marketing, and (7) consumer relationship management. COLI has achieved value refinement in the investment and operation management parts, capitalizing on the potential of their resources to create value and structuring these resources to generate more value in future project management. Value optimization is achieved in the cost control, design, and engineering management parts, consolidating the resources necessary to manage the project and create more value with fewer resources. In the marketing and consumer relationship management parts, COLI has considered the demands of its customers and worked with them to cocreate value by providing tailored solutions.

Value Refinement in Investment and Operation Management

The investment and operation management of real estate project management is essential to ensure the sustainability. Managers must refine the potential of their resources to create value and structure them in a way that enables more value to be generated in the future. This will help ensure the creation of sustainable value in the project.

In the early stages of COLI's investment department development, management adopted a result-oriented approach, setting goals for front-line staff and allowing them to decide the best course of action to achieve those goals. Due to competition in the Chinese real estate industry, however, companies have shifted to a value-added operations model, making process-oriented management a necessity. The old result-oriented management practices are no longer suitable for COLI to maintain sustainable project management. In response, COLI implemented the Whole Life Cycle Management System to make the most of its resources and avoid waste.

The investment management of COLI is divided into an investment management system and a city map system. The investment management system consists of nine components, and the city map system stores information on the city's land and related supporting resources, macroeconomic conditions, demographic and land data, analytical models, and investment strategies.

COLI has implemented a color-coded system to categorize the potential risk of investments in land. Green indicates a low risk, and yellow and red indicate medium- and high-risk potential, respectively. Market researchers also capture risk elements of each investment in various regions and parcels of land through the city map system, which assists COLI's regional branches and headquarters in making decisions. This system has significantly enhanced the efficiency of COLI's decision-making process, allowing them to handle a larger scope of business.

The implementation of the Whole Life Cycle Management System in COLI is significant for empowering employees to develop collaborative and entrepreneurial tendencies. Before implementing the Whole Life Cycle Management System in COLI, the management of the Shenzhen headquarters recognized that full control would not bring the desired results and was technically unfeasible, which could potentially cause problems with the investment. The implementation of the system supported visual display and sharing, allowing the staff to reduce their workload. Additionally, the system modification authority was delegated to front-line employees, allowing them to modify study reports, budgets, and other documents according to their direct leader's instructions while incorporating locally specific constraints such as the northern branch's emphasis on room warmth and the southern branch's emphasis on room ventilation.

The operation management system traces the logical chain of value-added investment, products, and operations, enabling the company to create markets, upgrade products, and increase the quality

and efficiency of its services. This system digitally granularizes various elements within the business, providing everyone in the company with a clear understanding of their tasks, the standards to be achieved, and how to measure, evaluate, and assess the results. Figure 1 illustrates the system's function in operation management.

The managers of COLI must be able to effectively utilize both external and internal resources. This means they must be able to flexibly integrate the nonsystematic information components to form the focal capability needed for the operation management system. As a result of using peripheral resources (Ma et al., 2023), the managers of COLI achieve their organizational goals more effectively.

Designers of the Whole Life Cycle System must carefully transfer the peripheral resources into core resources to ensure a sustainable function. After taking into consideration the feedback from front-line staff, the investment and operation management system building of COLI allowed for collaborative and sustainable project control through a quantitative evaluation of each module. Furthermore, the information system was used to create a set of quantitative indicators to help enterprises manage their business operations more effectively. The project development was broken down into 112 management nodes, each with clearly defined roles and responsibilities. The progress, quality, and cost of each node were also refined and clarified, thus creating a practicable blueprint for value creation.

Table 2 shows how value is refined in COLI's investment and operation management.

Value Optimization in Cost, Design, and Engineering Management

In the part of the cost, design, and engineering management, the Whole Life Cycle Management System of COLI can greatly assist to effectively allocate resources and optimize the project cycles of the real estate projects, thus helping the company to maintain sustainable development and minimize the potential risks of prolonged project cycles.

Cost management for real estate projects involves a series of processes designed to ensure that projects are completed within their approved budget. This includes resource planning, cost estimating, cost budgeting, and cost control. The full cost of a project refers to the sum of all costs and expenses

Figure 1. The operation management of COLI

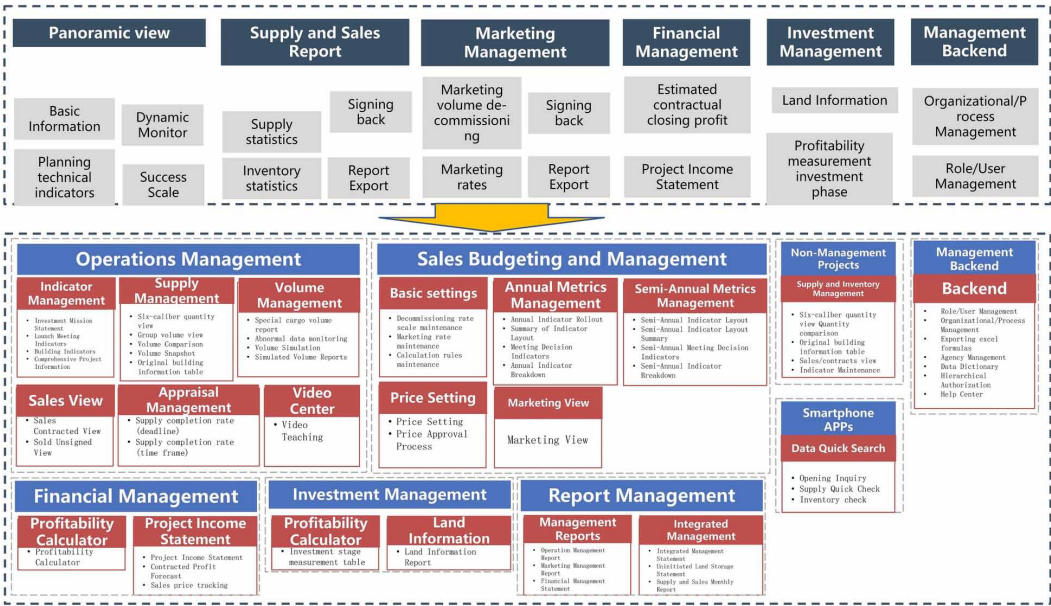


Table 2. Sustainable project management towards refining value

Field	Subsystems	Value Actions	Examples
Investment Management	Investment management system	Dividing investment into several specific components for value refinement	The investment management system consists of nine components: land reserve planning, information registration, project establishment, feasibility study analysis, regional investment review, group investment decision, land auction, land auction process record, and land acquisition.
	City map system	Potential value assessment	We would begin the process by registering the land for the project, identifying any potential risks, and having the group's professionals evaluate the information for accuracy (a user of the city map system).
		Document value actions	After that, we would submit the land purchase applications and proceed with any competitive bidding necessary. Finally, we would go through with the land transaction and complete the process (a user of the city map system).
Operation Management	Operation management system	Traces the logical chain of value-added management	The functions of the operation system (see Figure 1)
		Usage of using peripheral resources to add values	AVC software is easy to use and familiar to young people. By using the map to mark the previous knowledge of the land, we can quickly access the relevant knowledge and decide whether it meets investment demands. With the help of this software, we can make decisions and have better performance on investments (an operation manager).

associated with COLI's real estate development projects such as costs for land, setup, construction and security, sales, and management. Sustainable cost management is mainly achieved through contract management and market cost control. COLI sets limits on contract changes, precisely controls contract changes through these limits, and realizes multi-dimensional warnings of contract changes. These measures help COLI reduce the waste in marketing and create value for customers.

Cost management also brings new problems such as suppliers providing low-quality products as well as associated legal issues. To prevent these, COLI takes supplier management and compliance seriously. The audit department verifies the qualifications of potential partners during the bidding process, requiring the IP and MAC addresses used by the supplier bid to be the same or associated with the supplier unit.

To ensure sustainable project management, COLI's design system includes a project library, basic information, node results, process approval information, area management, cost management, and a photo album. This system helps designers accumulate and transfer their experience into organizational knowledge and maintain sustainable development. Furthermore, COLI has created a digital platform for design operations based on design management specifications, providing efficient business operations and organizational changes, reducing employees' workload, and empowering workers.

COLI's engineering management includes daily inspection, process acceptance, special inspection, evaluation inspection, and report analysis modules. Through this management system, engineering management actions are made more efficient, standardized, and digitized. Table 3 shows how value is optimized in COLI's cost, design, and engineering management.

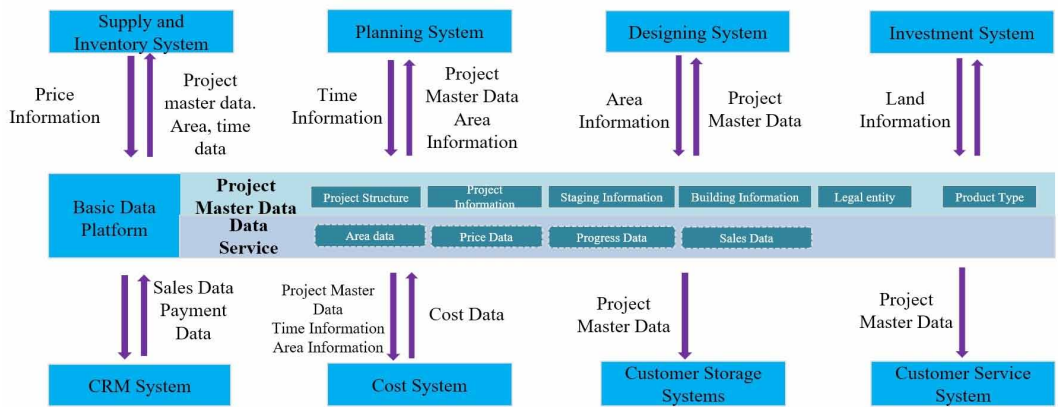
Through the management system, the engineering management actions are streamlined, standardized, and digitized. These usages of data are shown in Figure 2.

The standardization and modularization of management behavior across all management nodes enable value optimization. Established protocols, operational guidelines, standardized

Table 3. Sustainable project management towards optimizing value

Field	Subsystems	Value Actions	Examples
Cost Management	Cost management system	Avoid value loss	We cannot use the supplier seal because of the SMS verification code. The security and legal compliance of the company seal is also not a problem. As long as the supplier is registered in our system, the supplier must provide the seal authorization letter so that we can avoid legal risks (a supply chain manager).
Design Management	Design process management system	Value creation optimization	Everything is customer oriented. We need to do a good job of customer insight, find the real needs of our customers, and then make products that meet the needs of future customers (a manager in the design department).
	Design unit management system	Value assessment	Regional team leaders organize review meetings to evaluate the performance of the design team in doing each project. Our system provides several scoring items (a designer of the system).
Engineering Management	Engineering acceptance system	Efficiency enhancement	Some duplication of work can be avoided because when editing the information, the construction unit and the supervisor will get a copy of the image data at the same time (a designer of the system).
		Internal and external interconnectivity	Internally, the company has established data exchange and integration across all levels and functions, creating a unified digital workspace. Externally, it connects contractors and suppliers across the entire industry, reinforcing the management standards of the company.
	Engineering evaluation system	Data accumulation	I usually use “Smart Site” installed on my phone. When I don’t have time to go to a site, I look at how many people are working late at night on this upstairs, or if a site is at risk (an engineering manager).
		Standard solidification	Management protocols and requirements are standardized.
		Information sharing	Headquarters, regional offices, and the company’s management team collaborate and share information in real time.

Figure 2. Data usage in the whole life cycle management system of COLI



work templates, and standard operation processes reduce the dispersion of management activities. Automated task distribution and result evaluation also allow for risk management and control. This, in turn, creates more value with fewer resources and decreases waste, allowing for sustainable project management.

Cocreating Value in Marketing and Consumer Relationship Management

Cocreating value is essential for real estate companies to build and maintain sustainable relationships with their customers. (It is also imperative for improving internal departmental collaboration and performance.) Improving customer engagement allows for a better understanding of customer needs and the housing market.

Specifically, COLI has established a standardized system with a long-term update mechanism for standardizing results. Dynamic revisions and innovations are made based on project practices and market feedback, eliminating product curing and creating a positive interaction between standardization and innovation. COLI has developed five grades of product lines, namely “CRAFT” (see Figure 3). For regular projects, especially those of mature regional companies, the relevant staff must adhere to the actions set forth by the system; for critical projects, especially those of young regional companies, they should be held accountable for the results and establish a differentiated dynamic authorization management mechanism.

In COLI’s consumer relationship management, the 1+4+N model is implemented in local branches to serve customers. The “1” is the local branch manager, the “N” is the number of real estate projects, and the “4” refers to the four supporting centers: risk control, quality control, customer experience, and customer data. The risk control center is responsible for customer-related risks and safety accidents; the quality control center ensures delivery of properties, repairs, and customer complaints; and the customer experience center caters to customer demands. The customer data center collects and transfers data from the other three centers to the COLI headquarters. This model promotes cocreating customer-centric value, which is essential for sustainable project management. By engaging with customers regularly, real estate companies ensure that their value creation continues to remain vibrant. These measures help COLI build a sustainable relationship with customers, allowing for future value-creation potential and the sustainability of project management. Table 4 shows how value is cocreated in COLI’s marketing and consumer relationship management.

Figure 3. User classification and its criteria: Personalized sales solutions of COLI

C - rigid demand housing	R - quality housing	A – preferred housing	F - premium housing	T - luxury housing
<p>Customer: The payment power is located in the city's sub-customer group of 40 or less</p> <p>Land: Class I Cities</p> <p>Product: Compact four-bedroom, standard three-bedroom, compact three-bedroom, two-bedroom</p>	<p>Customer: The payment power is located in the city's sub-customer group of 40-70</p> <p>Land: Class I Cities, Class II Cities,</p> <p>Product: Compact four-bedroom, standard three-bedroom, compact three-bedroom, two-bedroom</p>	<p>Customer: The payment power is located in the city's sub-customer group of 70-90</p> <p>Land: Class I Cities, Class II Cities,</p> <p>Product: Standard four-bedroom, compact four-bedroom, comfortable three-bedroom, compact three-bedroom, two-bedroom</p>	<p>Customer: The payment power is located in the city's sub-customer group of 90 or more</p> <p>Land: Class I Cities, Class II Cities,</p> <p>Product: Comfortable four-bedroom, Standard four-bedroom, comfortable three-bedroom</p>	<p>Customer: The payment power is located in the city's sub-customer top group</p> <p>Land: Class I Cities, Class II Cities,</p> <p>Product: Comfortable five-bedroom, comfortable four-bedroom, Standard four-bedroom, comfortable three-bedroom</p>
Tapping into user precision needs, controlling turnaround cycles, and scaling up	Widen the range of user sources, increase the price appropriately, and expand user demand			Enhance product positioning, highlight their own brand, and play a leading role in demonstration

Table 4. Sustainable project management towards cocreating value

Field	Subsystems	Value Actions	Examples
Marketing Management	Electronic signature platform	Value cocreated with customers	All the changes I make will be traced in this so that I can avoid disputes with customers (a front-line staff member).
	Smart cash register system	Value cocreated with managers	All the sales data can go from here. We then produce the data that the leaders want based on this data (a marketing front-line staff member).
		Value cocreated with front-line staff	This system also allows for appointment scheduling, subscription management, contract management, and report prep work. It can save staff's time (a designer of the system).
Consumer Relationship Management	Consumer relationship management system	Value cocreated with customers	Moreover, internally, there is a mechanism to recognize and promote any advice given, even if it is a small case. The value created is recorded on a blockchain, ensuring that any contributions are acknowledged and rewarded (a regional consumer relationship manager).

DISCUSSION AND CONCLUSION

Contributions

In recent years, various studies have highlighted the pivotal role of sustainable project management in achieving economic progress (Gan et al., 2015). As China's economic growth continues to transition towards a sustainable development model, state-owned enterprises face mounting demands to ensure sustainable practices. However, despite the growing attention regarding environmental factors, literature has often disregarded the management advancements required to achieve sustainable project management (Calabrò et al., 2019). To bridge this gap, we examined the development of COLI's Whole Life Cycle System—a management information system— through a case study approach (Eisenhardt, 2021). Our research findings reveal that COLI's top management team has successfully implemented a sustainable project management information system, emphasizing sustainable value refinement, optimization, and collaboration.

Our research endeavors to contribute to the value-creation literature by proposing a three-stage value-creation model for life cycle management. The model shows that value refinement can be achieved by employing investment and operations management; value optimization can be accomplished through cost, design, and engineering management aimed at the creation of sustainable value; and the real estate sector can attain value by cocreating with consumers through marketing and consumer relationship management. The holistic perspective presented here underscores the significance of value and projects as strategic assets, aiding scholars in comprehending project management more effectively.

Our findings contribute to the literature on life cycle management by focusing on real estate projects. Unlike traditional fields using life cycle management, such as manufacturing, real estate projects sustained for a longer time and will impact more stakeholders. Specifically, our study emphasizes the importance of generating commercial value in sustainable project management. This is achieved by using information technology to improve management efficacy in the various stages of the project. This ensures the creation of value, not just limited to post-project performance analysis and management experience identification through technology. This indicates that a value-creation perspective is a solution for real estate companies that lack necessary guidance and support, and management personnel who are unable to implement effective life cycle management strategies (Gupta & Newell, 2020).

Our examination of a prominent real estate firm offers a framework for comparable enterprises in China's state-owned sector to leverage. Our discoveries contribute to the current body of knowledge on sustainable development and project management, introducing fresh viewpoints for policymakers

and real estate executives. We recommend that scholars consider value generation in corporations' sustainable management.

CONCLUSION

The important contribution of state-owned enterprises to the country's economy and public demands has been widely acknowledged in the literature. SOEs are highly regulated by the institution and influenced by individual demands, yet they are also hypercompetitive in the quickly developing real estate market. To understand how leading firms in this industry can achieve sustainable development, we conducted a case study of a leading real estate SOE in China, COLI. SOEs, particularly those in the real estate industry, have a unique set of challenges due to the lengthy project duration and involvement of multiple company departments, as well as external stakeholders such as suppliers and customers. To successfully navigate these complexities, effective communication and collaboration between all parties is crucial.

To create value throughout the project life cycle, it is crucial to focus on value creation at every stage. Our case study identified a three-stage value creation model in the real estate industry. Value refinement during the investment and operations management stages serves as the foundation for overall value creation. Value optimization during the cost, involvement, and engineering management stages is key to further increasing value creation. Lastly, value cocreated during marketing and customer relationship management can help SOEs avoid losing potential customers and promote value creation in pursuit of sustainable development, reducing information asymmetry in the real estate industry (Pu et al., 2022). This study provides a comprehensive understanding of project management in real estate, explores the role of information technology in life cycle management, and offers valuable insights for policymakers and industry managers.

IMPLICATIONS

An important advantage of a case study is its practical applicability. In practice, this paper provides ideas for SOEs in sustainable project management. In the process of value refinement, COLI has achieved horizontal integration and vertical penetration of management information, broken down organizational boundaries, and realized flat management. COLI has established an enterprise middle desk, connected various management data silos, and realized integration of internal and external data. In the process of value optimization, COLI replaced its manual intervention management with a data system and replaced most manual work with electronic workflow and digital information flow, freeing up a large number of inefficient workers.

To improve efficiency, quantitative management will help managers fully utilize their available resources and reduce risks. And in the process of cocreating value, COLI maintains a sustainable relationship between customers and employees, supports sustainable project management by creating future value potential, and reduces the risks of losing customers. Our case study of COLI can help SOE managers refine the value flow, optimize resources to create more value, and reduce potential risks to maintain sustainable value potential.

In light of the current pandemic and the evolving global economy, policymakers are faced with the challenge of achieving sustainable development, particularly in the context of managing SOEs. Our research highlights the importance of considering not only environmental elements but corporate value creation and risk assessment when striving for sustainability. Companies should leverage consumer demand while minimizing resource utilization to achieve sustainable value creation. This will, in turn, expand the market and promote sustainable economic development. Our findings help inform policies that support the sustainable development of SOEs.

LIMITATIONS AND FUTURE RESEARCH

Despite the merits of this study, there are certain limitations that warrant further exploration. First, this research focuses on the traditional sector of real estate to the exclusion of other sectors such as technology, which uses a different business model based on project management to achieve sustainability. Further, the model can be seen from different aspects considering attributes that impact business operations directly, cognitive schemas, and formal conceptual representations of how an organization operates (Massa et al., 2017). Future studies into how to deliver sustainable models in different types of companies can be undertaken using various forms of the business model.

Our study focuses on the information management system that can help the SOE to achieve higher efficiency. However, the SOEs are also established in the context of China's political strategies (Cuervo-Casurra et al., 2014), so other studies can focus on how the information management system is operated within different political environments. Studying the system that manages and oversees the SOEs under different strategies and contexts can be a future direction for research as well (Hu et al., 2023).

Additionally, this paper only examines the theoretical lens of value creation in sustainable project management, and other theoretical perspectives may be beneficial to the development of project management and sustainable business models. Therefore, future research should endeavor to investigate the application and impact of more theories. For example, stakeholder perspectives may be suitable for analyzing cocreated value (Rabechini et al., 2022), while exploring project failures may aid scholars in comprehending the essence of sustainable business models (Nelson, 2007).

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