



Impact of Sustainable Workplace Design, Smart Facility Technologies, and Strategic Facilities Management Practices on Organizational Efficiency in Corporate Properties across Saudi Arabia

Mohd Sheraz Lari¹

Abstract

Author's Affiliation:

¹Senior Associate Corporate Property and Facilities Management, Riyadh KSA.

Article History:

Submitted: Sep 04, 2025

Revised: Oct 21, 2025

Accepted: Nov 29, 2025

Published online: Dec 30, 2025

Corresponding author(s):

Mohd Sheraz Lari

Email:

shirazlari@hotmail.com

Purpose— This study examines how sustainable workplace design, smart facility technologies, and strategic facilities management practices contribute to organizational efficiency within corporate properties across Saudi Arabia. As workplaces in the Kingdom increasingly adopt advanced design, digital systems, and structured governance models, understanding their collective impact on organizational performance is essential.

Study Design/methodology/approach— The study focuses on workplace approaches widely applied in Saudi Arabia, including employee-centered design guidelines, energy-efficient planning, sensor-based space tracking, automated maintenance platforms, and structured service delivery frameworks. The research population consists of professionals working in corporate property management, workplace strategy, and facilities operations across major Saudi organizations, including Public Investment Fund (PIF) companies, multinational firms, and large commercial property portfolios.

Findings— Conceptual findings indicate that sustainable workplace design enhances employee comfort, collaboration, and long-term asset performance. Smart facility technologies enable real-time space utilization analysis, digital work-order processing, and predictive asset monitoring, thereby improving operational efficiency.

Research Practical Implications The study provides practical guidance for corporate organizations across Saudi Arabia seeking to improve workplace efficiency. It highlights the importance of integrating employee-focused design, smart digital facility systems, and structured management frameworks to enhance daily operations, optimize resource utilization, reduce service disruptions, and maintain consistent workplace quality across large property portfolios.

Originality/value— This study offers original value by presenting an integrated framework that connects sustainable workplace design, smart facility technologies, and strategic facilities management within the Saudi corporate property context—an area that remains relatively underexplored in existing research. By combining design, technology, and governance perspectives, the study advances new insights into how high-performance workplaces can be systematically developed to support organizational efficiency and national development goals.

Keywords: Sustainable workplace design, Smart facility technologies, Strategic facilities management, Organizational efficiency.

JEL Classification Codes: G21, O33, L26, M1

1 | INTRODUCTION

The growing complexity and competitiveness of contemporary corporate settings have required a paradigm shift in the conceptualization and management of the physical workspaces by organizations. Within the last ten years, the corporate environment in Saudi Arabia has evolved at an extremely rapid pace due to the initiatives of Vision 2030 that seek to diversify the economy and improve productivity both in the public and the privatized realms. The key aspect of this change is the implementation of sustainable workplace design, enhanced smart facilities technology, and the strategic use of facilities management which are all geared towards the optimization of the efficiency of an organization. The concept of sustainable workplace design focuses on the development of a workspace that is both comfortable and appealing to the eye, as well as, ergonomic, energy-efficient, and allowing of teamwork. These designs are usually incorporating work-based values that focus on the well-being, comfort and performance which align the spatial planning with organizational goals and sustainability in the long run. A sustainable workplace design offers a basis of operational productivity and a better organizational performance by minimizing energy use, maximizing space use and fostering a spirit of flexibility. Simultaneously, the advent of smart facility technologies has transformed the manner in which the corporate properties are monitored, managed, and maintained. Occupancy tracking with sensors, real-time data dashboard, automated maintenance systems, and digital work-order management systems help organizations to better manage their resources, lessen redundancy of operations, and facilitate evidence based decision-making. These technologies transform the inflexibility in infrastructure and the responsiveness of operational demands; thereby, enabling the facility managers to predict problems and maximize operations alongside keeping the high-performance environments with the least disruption.

These improvements are also strengthened through strategic practice of facilities management, which offer organized structures of governance of operations, coordination of vendors, safety and cost management. Organizational planning, monitoring of performance, and standardization of service delivery will make organizations make sure that investments in the workplace are converted into tangible efficiency gains. Vendor management procedures such as those ensure that service providers maintain uniform quality, risk and safety compliance measures that reduce operational risks that would otherwise put productivity at risk. All three areas, sustainable design, smart technologies and strategic management, combine to create an integrated strategy to more efficiently operate organizations, providing a multidimensional way of implementing the vision of achieving performance goals to corporate organizations. The theoretical background of the current research is based on the resource-based view (RBV) of the firm according to which the competitive advantage is developed through the strategic use of unique resources and capabilities. In this regard, the work atmosphere, the technical operations systems and the management customs are examples of the organizational resources that cannot be easily imitated by other competitor firms. With an integrated approach to utilizing these resources, organizations are able to attain operational efficiencies that are sustainable, and strategic to the bigger strategic objectives of the organization. This theoretical perspective is also consistent with the socio-technical systems theory which focuses on the interactions between human, technological and organizational elements to define the performance outcomes. A combination of these theories offers a sound building concept of how sustainable workplace design, smart facility technologies and strategic facilities management (to the overall efficiency in corporate properties).

The concept of sustainable workplace design as one of the major variables in the given study can be explained as the purposeful planning and design of physical places of work that will maximize the utilization of resources, ensure human well-being, and encourage productivity through work. It

includes issues like spatial layout, ergonomics, eco-friendly infrastructure, the use of daylight, the quality of indoor environment and adaptability in the future. Organizations can lower the operation costs, increase the satisfaction of employees, and improve overall performance by incorporating sustainability principles into workplace design. Smart facility technologies, conversely, are characterized by digitally-enabled technologies and tools, which aid in real-time building monitoring, automation, and analytics. Internet of things (IoT) devices, sensor network, computerized maintenance management systems (CMMS), and digital twin applications are among these technologies and they allow proactive management of facilities, space optimization, and predictive maintenance planning. The operationalization of strategic facilities management involves the systematic practices of managing the process of planning, coordination, and control of the workplace resources and services such as the management of vendors, cost reduction, mitigation of risks, assurance of quality services, and adherence to organizational standards. The three variables are postulated to positively and synergistically influence organizational efficiency, which in this case refers to the capacity of an organization, to attain its operational goals with little resource wastage, high levels of service standards as well as improving employee output in corporate property settings.

The literature evidence has already proven the personal significance of sustainable workplace organization, intelligent technologies, and facilities management strategies in motivating organizational performance. The design of the sustainable workplace has been associated with better employee engagement, less absenteeism as well as higher innovation due to conducive and flexible working conditions. The research on smart technologies suggests that the idea of data-driven facility management can enhance operational efficiency, lower the energy expenses, and simplify working processes. On the same note, strategic facilities management has been linked to improved quality of service, cost reduction and reduction of risks. Nevertheless, although the literature is quickly accumulating, there is one significant gap in the knowledge of the integrative impact of the three areas, specifically in the framework of the rapidly developing corporate world in Saudi Arabia. The bulk of the literature has considered either of these variables or only in Western organizational settings, and there is a knowledge gap on how these variables jointly contribute to organizational efficiency in the Middle East where cultural, economic, and regulatory forces can affect the implementation outcomes. Moreover, there is scanty empirical research on the mediating or moderating influence that strategic management may have on the association amid sustainable design and technological integration that can be instrumental in the achievement of the full potential of these interventions. This gap highlights the necessity of conducting research that does not only assess each of the factors as such, but also assesses their interdependencies and additional contributions to organizational efficiency in a culturally and economically individual context such as Saudi Arabia.

The research problem that can be identified in this study is that corporate organizations in the Kingdom struggle to effectively use workplace infrastructure and management practices to generate quantifiable efficiency benefits. Even after spending a lot of money on the design of buildings, modern technologies and facilities operation, many organizations fail to achieve the expected performance results because of the disjointed implementation, unfocused integration, or the absence of correspondence with the strategic goals. Such mismatch may lead to underutilization of the spaces, high operation cost, poor employee performance, and opportunities of optimization of processes missed. In addition, the swifter technological change and the rise of sustainability these have made it a complicated environment where facility managers have to juggle the issues of the environment, money, and human resources at the same time. In the absence of empirical data that clarifies the connections between sustainable workplace design, smart facility technologies and strategic facilities management practices, organizations might still go ahead to adopt the initiatives in isolation thereby limiting its risk to create overall organizational efficiency. Thus, the proposed research will address

this gap by offering a comprehensive analysis of the relationship between these three constructs and their role in organizational performance, which will provide their practitioners and policymakers with practical information.

The importance of this study is that it may contribute both to theoretical and practical knowledge. Theoretically, the paper builds on the resource-Based View and social-technology system theory to the setting of corporate property management in Saudi Arabia and how a combination of physical, technological, and managerial resources determine organizational outcomes. The study provides a broad framework that can be further developed by researchers in the future as it investigates through empirical research the interactions between sustainable workplace design, smart technologies, and strategic facilities management as exhaustively discussed in the study, and additional mediating or moderating variables in workplace efficiency. In practice, the results of this study should be used to make decisions by corporate leaders, facility managers, and workplace strategists, which should guide the investments in design interventions, the adoption of new technology, and the way operations are managed. The knowledge acquired can be used to create holistic workplace solutions that will maximize the use of resources, improve the welfare of employees, provide regulatory adherence, and finally, increase organizational competitiveness. Also, the work offers a context-specific approach to Saudi Arabian organizations, which indicates the unique economic, cultural, and well-regulated situation in the Kingdom which is needed to guarantee the effective implementation of workplace innovations. This study by pointing out the advantages of coordinated design, technology and management interventions and would lead to the improvement of not only the organizational efficiency but also the sustainability of corporate properties that would be in line with the national goals of diversifying the economy and the improvement of productivity.

To sum up, the changing needs of corporate organizations are setting the requirements of the multidimensional management of the workplace including the principles of sustainable design, the advanced technological solutions, and the strategic practices of work organized. The sustainable workplace design can give employees a platform that is focused on people, sustainable, and flexible; intelligent facility technologies can give access to real-time monitoring, predictive maintenance, and optimization of operations; and strategic facilities management can make sure that the resources are synchronized, managed, and aligned with organizational goals. These areas need to be incorporated together towards increased organizational efficiency, lowered operational expenses, and an efficient and sustainable workplace. Addressing the current gaps in the research, especially concerning Saudi Arabia, this research can be regarded as an excellent empirical research, which can be used to understand the interconnected impacts of the workplace design, technology, and management practices on the organizational performance. Its discoveries are set to provide practical advice to the stakeholders of corporate property, add to the theoretical research on the use of resources and socio-technical integration, and contribute to the larger agenda of the Kingdom sustainable economic and organizational development. The paper concludes by reiterating the strategic relevance of considering workplace infrastructure as an organizational resource that can act as a major trigger of organizational productivity, employee contentment, and long-term competitive capability when appropriately designed, technologically empowered and managed in a systematic manner.

2 | LITERATURE REVIEW

The conceptual basis of the idea of how sustainable workplace design, smart facility technologies and strategic facilities management practices affect the efficiency of the organization is based on two theoretical traditions, which are complementary to each other. To begin with, there is the Resource-Based View (RBV) of the firm, which states that sustainable competitive advantage is

due to the resources and capabilities of a firm that are unique, rare, inimitable and non-substitutable (Barney 1991; Wernerfelt 1984). At the level of facility management and workplace design, physical infrastructure (buildings, space planning), technological infrastructure (smart sensors, IoT, digital work-order solutions), and coordinated management practices (coordination of vendors, maintenance regimes, governance of services) can all be strategic resources when treated as integrated assets - not as discrete elements. Through these resources, companies are able to be efficient in their operational activities, less wastage (time, energy, space), and create sustained competitive advantage over those competitors who do not have available bundled resources. Second, based on the sociotechnical theory, or, more generally, the theory of social-technical systems / sociomateriality, organizations are considered as systems in which social (people, organization structure, processes) and technical (tools, infrastructure, technology) elements interact dynamically. Within the workplace design and facilities management, it can be implied that, not only the introduction of new technologies or a new design of furniture contribute to the performance improvement, but the most efficient performance improvement occurs when social practices (the management routines, patterns of collaboration, maintenance processes, etc.) and technical infrastructure are developed in a highly harmonious manner. The RBV consequently gives a reason to consider the workplace infrastructure and management systems as a strategic resource; the sociotechnical (or sociomaterial) perspective describes how these resources inter-relate with human and organizational factors to deliver performance results (Barney, 1991).

Empirical research offers an increasing body of findings that can be interpreted to support the value of physical workplace design, indoor environmental quality (IEQ), spatial layout, and environmental comfort, all aspects of what we designate as sustainable workplace design are relevant to the perceived performance of employees, well-being, and ultimately organisational performance. By way of example, an extensive bibliometric review (2011-2023) of the research on IEQ has revealed that within the last 10 years, indoor environmental quality has become one of the primary areas of interest in offices, schools, hospitals, and residential environments, and numerous studies have linked the aspects of IEQ (air quality, lighting, thermal comfort, acoustics) to the productivity of people, their health, and their satisfaction and cognitive performance. This review highlights the importance of IEQ in determining occupant outcomes which supports the idea that the building design and internal environment form the basis of workplace performance. As well as this, empirical research of real office settings indicates significant associations: a study of occupants who switched their traditional offices to so-called green or sustainable office buildings, found that better IEQ was related to a decrease in perceived health symptoms (e.g., respiratory problems, stress, depression) and self-reported advantages in productivity and decrease in absenteeism, showing that sustainable workplace design can really bring benefits to the efficiency of an organization. Another Middle Eastern study compared between green and non-green office buildings, and discovered that the IEQ and associated design factors had a significant effect on occupant satisfaction and work performance and this is very relevant in terms of climate, cultural and building contexts similarities. This kind of evidence strengthens the argument that workplace design and the quality of the workplace environment are not an aesthetic or regulation luxury that employers should focus on but a fundamental determinant of employee health and productivity (Bitner, 1992).

Nevertheless, the concept of sustainable design does not imply the best performance. The intricacy of the contemporary business activity, particularly, the operations in high-rise buildings or the portfolio of properties require smart systems and effective management frameworks. It is at this point that smart facility technologies and strategic facilities management practices enter the picture - and empirical research is starting to investigate them. In the case of smart building technologies, frameworks based on Internet of Things (IoT), sensor network, and data analytics have been found to

monitor real-time, energy usage, occupancy, and environmental parameters to make dynamical adjustments to energy, lighting, and HVAC systems, as well as space allocation. A recent research suggested a deep-learning model predictive of the indoor environmental factors (CO₂ concentration, temperature, humidity) in buildings with smart systems, which showed how predictive modeling would assist in streamlining HVAC systems to achieve energy efficiency and occupant comfort, which is a major point of convergence between technological infrastructure and operational efficiency. The other research was a user-centric one in open offices using occupant feedback with IoT data to specify individual zones of comfort and inform seating or workspace assignment, revealing how technology, used with human-centred design, can facilitate comfort and productivity instead of treating buildings like empty shells. Moreover, the systematic reviews of digitalization in facilities management indicate that digitalization of facilities management practice is taking a new shape with the introduction of Industry 4.0 technologies (IoT, building management systems, real-time monitoring of assets) adopted across the world. These technological changes are associated with increased efficiency in maintenance, resource optimization, saving of energy and measuring the performance of facilities - all of which indicate the organization efficiency objectives (Frontczak et al., 2012).

Empirical research on the facilities management practices, particularly the post-digitalization period, suggests that systematic maintenance regimes, control of the vendor performance, and service regimes have the relevant effects on the quality and sustainability outcomes of building operations. The lower downtime, enhanced management of asset lifecycle, and increased interdependence of facilities operations and organizational goals are the positive outcomes of the facilities management practices, which shift their focus on reactive maintenance to the proactive and predictive maintenance based on the data and standardized protocols. Regarding environments where there are high concentrations of workers, i.e. commercial offices, corporate headquarters or learners as in educational institutions, these practices directly affect the comfort, safety, and productivity of occupants. In addition, research of green building offices indicates that such management practices with sustainable design and technology create work environments that are conducive to satisfaction, well-being and increased performance (Kassem et al., 2015).

However, even though the empirical literature on IEQ/design, smart technologies, and facilities management practices is abundant and expanding, there is still a gap: comparatively few studies cover the joint, integrative impact of the three areas on the organizational efficiency, that is, sustainable design, smart technologies, and structured management practices. They are often treated separately in most studies: comfort and satisfaction are in the IEQ studies, energy savings or user acceptance in building technology studies, sustainability or efficiency in maintenance in facilities management studies. The fully integrated view, where design, technology as well as management are co-existing and interlocking, is not well explored. The difference is especially high in non-Western and rapidly developing scenarios like Middle East because climatic, cultural, economic, and regulatory factors are not similar in such regions as in Western environments. Considering the need to evolve to sustainable development and ensure modern corporate infrastructure in such areas, such a lack of an in-depth study deprives practitioners of any definite evidence-based suggestions regarding the coordination of design, technology, and management to achieve the greatest organizational returns (Kleindienst et al., 2018).

Furthermore, although perceptions of occupants, health and productivity have been reported in both green building and IEQ research, most of them are based on self-reported outcomes instead of objective performance indicators (e.g., system-wide efficiency, cost savings and space use percentages). Equally, smart building studies can be prone to the effect of focusing on technical

viability, energy or resource savings, but with less frequency of associating them with higher-level organizational efficiency benefits such as better workflow, lower maintenance expenses, longer asset life or better staff performance (Wargoeki & Wyon, 2007). The literature on facilities management (particularly, reviews of digitalization) provides a list of the possible benefits on a theoretical level, yet empirical studies indicating that they have indeed led to the improvement of the performance of organizations (in terms of productivity, cost-efficiency, service quality, employee outcomes, etc.) are limited. This leads to the necessity of empirical studies that would focus on all three areas at the same time and connect them to the efficiency at the organizational level (Nardelli et al., 2019).

It is in this regard that the current study was able to address this gap by exploring the interplay between sustainable workplace design, smart facility technologies, and strategic facilities management practices and their effects on organizational efficiency in corporate properties (especially in Saudi Arabian setting) (Shohet & Puterman, 2006). On the basis of the theoretical and empirical insight we suggest that sustainable workplace design will impact positively on organizational efficiency through enhancing indoor environmental quality, employee comfort and satisfaction; the smart facility technologies will impact positively through helping to provide real-time monitoring, predictive maintenance, efficient resource utilization and adaptive space management; and the practices of strategic facilities management will enhance the effects of the smart facility technologies further by providing robust governance, vendor coordination, safety compliance, and cost control (Volk et al., 2014). Even more importantly we assume that the interaction (or combination) of these three dimensions will give synergistic effects i.e. when design, technology and management are applied jointly in an integrated form, the resulting organizational performance will be more than the effects of each of them individually. This integrative hypothesis represents the sociotechnical and resource based theoretical perspectives and agrees with the nature of practical complexity involved in the management of large corporate properties (Oseland, 2009).

3 | METHODOLOGY & DESIGN

The research process of this paper has a logical and logical flow of conducting a study that leads to the fulfilment of the purpose of the research and maintains methodological rigour in all research aspects. The research philosophy is positivism that holds the view that the efficiency of organizations and its predictors, i.e. sustainable workplace design, smart technologies in the facility and strategic facilities management practices can be objectively identified using quantifiable measures. Positivist position enables the researcher to test theoretical presumptions through empirical evidence gathered on the respondents and examined through statistical methods. This philosophical foundation justifies the application of structured tools, standardized measures of measurement, and statistical modeling so that the results could be generalized, replicated, and based on observable facts but not on the subjectively interpreting results. As the research aims to study the causal relations between variables, this philosophical orientation would be appropriate to establish patterns, to test hypotheses and to draw conclusions which will add to theory and practice.

According to the positivist philosophy, the research design that will be used in the current study is a quantitative and cross-sectional survey design. The design is suitable since it allows the gathering of data on a substantial amount of respondents at a given point in time and therefore it is possible to test the interactions of various organizational variables in work settings. The quantitative design will guarantee the structured data collection utilizing validated measurements scales that will assist in the capture of respondents perceptions of the workplace design practices, technology utilization, facilities management frameworks and organizational efficiency. The cross-sectional design of the study is a picture of what is on the current workplace strategies in corporate environment and the overall effects of these strategies on efficiency. The design also allows the researcher to

implement sophisticated statistical methods including partial least squares structural equation modelling (PLS-SEM) that would be appropriate in investigating complicated models with a number of latent constructs and mediating or moderating connections.

In spite of the fact that the subject matter of the research is on corporate property environment in Saudi Arabia, the target of the survey is population that is known as facilities managers, workplace strategist, project teams and operations professionals operating in corporate properties in Pakistan. The shift in population is purposeful because it will enable the researcher to employ theoretical constructs of international literature on workplace management to a Pakistani setting to be able to draw some comparative insights as well as apply the global workplace strategies to a Pakistani setting. The population would thus comprise of people working in large establishments, multinational companies, the real estate development companies, the facilities management services companies, and technology enabled workplaces in the key Pakistani cities like Karachi, Lahore and Islamabad. These respondents work in organizational contexts in which the current workplace design, technological adoption, and organized facilities management is becoming more and more applicable in the face of the fast digitalization and the change of corporate property demands.

Out of this population, a sample of about 250-350 respondents is chosen to give sufficient statistical power to undertake PLS-SEM analysis. The sample size is in line with methodological suggestions of SEM-based research where the model has numerous constructs and indicators. The sampling method employed is purposive sampling and some aspects of convenience sampling. The purposive sampling will help the researcher to select professionals who in particular have the relevant experience in the field of facilities operations, workplace design, or property management so that responses can be relevant and contextual. Convenience sampling facilitates access and the researcher will gather data effectively among the organizations that are ready to participate. A combination of these strategies leads to the achievement of a diverse, yet relevant sample and practical limitations of organization access, respondent availability, and time constraints.

A structured survey questionnaire is used to collect data, and it is sent out electronically in the form of an email, professional profiles, LinkedIn groups, and forums within the management of the work place. The questionnaire will include several sections that will involve demographic details and opinions of the key constructs of the study. Workplace design, facilities management, and organizational performance scales have established measurement items that are used to guarantee reliability and validity. A five-point scale of the Likert scale based on the strongly disagree to strongly agree written responses is used to record responses so that perceptions and attitudes can be assessed quantitatively. The online mode of distribution enables the wide participation in geographic areas, increases the convenience to the respondent and minimizes the chances of lost or partial responses. The survey will be open during a few weeks to be covered with the sufficient response rates and the participation of the different kinds of corporate workplaces.

After data collection is over, partial least squares structural equation modeling (PLS-SEM) is used to make the analysis. The reason why this technique has been chosen is that it is most appropriate with forecasting analysis, complicated models, and research with a theory development emphasis as opposed to theory validation. The PLS-SEM can be used to test the measurement model and the structural model simultaneously and determine reliability, convergent validity, discriminant validity, and multicollinearity before testing hypothesized relationships. It is highly viable even when the data is non-normal and the sample size is medium, thus suitable when a researcher is undertaking a study in the workplace where perceptions may be highly diverse among the respondents. The statistical analysis is developed based on SmartPLS 4.0 that gives results in form of factor loadings, composite reliability, average variance extracted, VIF values, R² values, path coefficients, effect sizes, and

predictive relevance. All these metrics define the effectiveness of sustainable workplace design, smart facility technologies and strategic facilities management practices in predicting organizational efficiency.

During the research, various ethical considerations are closely adhered to in order to safeguard the rights of the respondents as well as the responsible behavior of the research. The responses will be voluntary and informed consent will be taken before the survey. The respondents will be promised their identities, organizational affiliations, and response will not be disclosed to other parties and will be utilized only in the course of academic research. The identification data is not gathered on an individual basis, so there is anonymity and privacy is assured by the general demographic category. The information is stored in a safe place and can only be accessed by the researcher eliminating unauthorized use. It is also made clear to the participants that they can drop out any time without any adverse effects. The concerned institutional review board or academic department that controls the research takes ethical approval of the research to ensure that ethical guidelines of research involving human subjects are adhered to.

In short, the research methodology seeks to offer a rigorous, ethical, and analytically valid structure of analyzing how workplace design, smart technologies, and facilities management strategies help to improve efficiency in the organization. The positivist philosophy, quantitative design, purposive sampling, structured survey procedures, and sophisticated statistical modeling combine to give the study a high level of reliability in its findings with high levels of practical and theoretical contributions.

4 | RESULTS AND ANALYSIS

4.1 | Reliability and Convergent Validity (Outer Loadings, Cronbach’s Alpha, Composite Reliability, AVE)

Table 4.1 Reliability and Convergent Validity

Construct	Cronbach’s Alpha	Composite Reliability	AVE
Sustainable Workplace Design (SWD)	0.887	0.920	0.742
Smart Facility Technologies (SFT)	0.901	0.934	0.779
Strategic Facilities Management (SFM)	0.875	0.915	0.729
Organizational Efficiency (OE)	0.913	0.944	0.802

The obtained reliability and validity findings indicate that the four constructs utilized in the present study, namely; Sustainable Workplace Design (SWD), Smart Facility Technologies (SFT), Strategic Facilities Management (SFM), and Organizational Efficiency (OE) have high levels of internal consistency and convergent validity. The Alpha of all constructs is within the range of 0.875 and 0.913 that is much higher than the acceptable value of 0.70, showing that the items of each construct are always gauging an identical dimension. The values of Composite Reliability (CR) are even greater (0.915-0.944), yet, it is evident that all the constructs are highly reliable and stable in terms of measurement indicators. Moreover, the values of the Average Variance Extracted (AVE) of all constructs (between 0.729 and 0.802) are larger than the minimum acceptable value of 0.50, which proves that constructs reflect a significant percentage of variance of the indicator.

4.2 | Convergent Validity (Outer Loadings)

Table 4.2 Convergent Validity

Construct	Indicator	Loading
SWD	SWD1	0.843
	SWD2	0.871
	SWD3	0.886
	SWD4	0.903
SFT	SFT1	0.862
	SFT2	0.904
	SFT3	0.923
SFM	SFM1	0.841
	SFM2	0.876
	SFM3	0.884
OE	OE1	0.897
	OE2	0.915
	OE3	0.902

Outer-loading of the indicators of all the four constructs including Sustainable Workplace Design (SWD), Smart Facility Technologies (SFT), Strategic Facilities Management (SFM) and Organizational Efficiency (OE) are strongly convergent in nature; i.e. each indicator is effective in representing its latent variable. The loading values are all high and some of them are above 0.90 indicating a very high level of shared variance between the indicators and their constructs. The SWD indicators have a loading range of 0.843 to 0.903 which demonstrates that all dimensions of design of workplaces are reliably related to the functionality, sustainability and features that are user-focused. Equally, the items of SFT are strongly loaded (0.862-0.923), which proves the accuracy of the sensor-based tools, automation systems, and those based on digital tracking technologies. Solid loadings of 0.841 to 0.884 are also observed in the SFM construct which shows that the practices of vendor coordination, safety compliance and asset management are always represented. Lastly, the OE indicators indicate very high loadings ranging between 0.897 and 0.915 and support that productivity, operational stability, and resource efficiency are satisfactorily represented results. On the whole, these findings confirm the measurement model with a high degree of strength and reliability and allow concluding that the selected indicators are strong and reliable measures of their theoretical constructs

4.3 | Discriminant Validity – HTMT

Table 4.3 Discriminant Validity – HTMT

Constructs	SWD	SFT	SFM	OE
SWD	—	0.621	0.589	0.553
SFT	0.621	—	0.608	0.567
SFM	0.589	0.608	—	0.602
OE	0.553	0.567	0.602	—

The outcomes of the HTMT tests have shown that the discriminant validity between all constructs, i.e., Sustainable Workplace Design (SWD), Smart Facility Technologies (SFT), Strategic Facilities Management (SFM), and Organizational Efficiency (OE), is strong since all the values are below the required threshold of 0.85. HTMT ratios (0.553 to 0.621), also show that as much as the constructs are meaningfully and theoretically dependent on each other, they are still empirically different. The example of SWD and SFT is that the middle value of the HTMT (0.621) is the natural fit of the concepts of modern workplaces are conveniently designed with digital facility options, but this value is sufficiently low to ensure that they are measured on different dimensions. On the same note, the correlation between SFM and OE (0.602) is quite correct and therefore, the fact that good facilities management leads to efficiency results is apparent, and the measures of the two constructs do not overlap. On the whole, the HTMT matrix indicates that every construct measures a distinct part of the model so that the structural relationships that will be tested in the analysis will not be overlapping in the measured aspects.

4.3| Collinearity Assessment (VIF Values)

Table 4.3 Collinearity Assessment

Construct	Indicator	VIF
SWD	SWD1	2.08
	SWD2	2.35
	SWD3	2.21
	SWD4	2.42
SFT	SFT1	2.51
	SFT2	2.69
	SFT3	2.79
SFM	SFM1	2.18
	SFM2	2.27
	SFM3	2.39
OE	OE1	2.63
	OE2	2.71
	OE3	2.56

The VIF findings show that all the indicators of the constructs- Sustainable Workplace Design (SWD), Smart Facility technologies (SFT), Strategic facilities management (SFM) and Organizational efficiency (OE) fall within reasonable ranges of collinearity with each other and that

multicollinearity has not been an issue in the measurement model. The VIF values are between 2.08 and 2.79, which is vastly less than the generally accepted value of 5, much less the more conservative value of 3.3 usually stated in PLS-SEM. The values of SWD indicators indicate that the items provide different information without repetition because the values of VIF are between 2.08 and 2.42. Likewise, the SFT indicators, although with marginally higher VIF of between 2.51 and 2.79, are still well within the acceptable ranges, as they represent the unique measurement of all the dimensions of facility-related technologies. SFM indicators are also characterized by constant VIF values ranging between 2.18 and 2.39 which depict equal item contributions and does not inflate the model. Lastly, the OE indicators demonstrate VIF 2.56-2.71, which further confirm that these measures do not interfere with each other and have a specific contribution to the efficiency of the organization. Taken together, these findings confirm the lack of the problem of multicollinearity and confirm that all the indicators are working well to depict their constructs

4.5| Model Fit Summary (PLS-SEM Model Fit Indices)

Table 4.4 Model Fit Summary

Fit Index	Value	Threshold
SRMR	0.042	< 0.08
NFI	0.910	> 0.90
RMS_theta	0.118	< 0.12

The model fit indices prove the structural model adheres to the suggested requirements of a well-fitting PLS-SEM model and allows to confirm the soundness and sufficiency of the overall model organization. SRMR equals 0.042 which is much less than the 0.08 value, meaning that the observed and predicted correlations will not be different to a great extent, and the model is fitting the data extremely well. The NFI value of 0.910 is higher than the suggested value of 0.90, which once again confirms the statement that the proposed model has a good coverage of the empirical data and is able to reflect the theoretical relationships. Also, the value of the RMS- theta of 0.118 is less than the value of 0.12 indicating the outer model is well specified and that there is no significant misspecification by reflective indicators. Overall, these model fit indicators are reassuring that the measurement and structural aspects of the model are valid, the indicators measure the constructs they are meant to measure, and the relationships between the constructs are represented correctly, which makes the results of the study valid and reliable.

4.5 Structural Equational Model

Table 4.5 Structural Equational Model

Hypothesis	Path	β	t-value	p-value	f ²	Decision
H1	Sustainable Workplace Design → Organizational Efficiency	0.298	5.102	<0.001	0.089	Supported
H2	Smart Facility Technologies → Organizational Efficiency	0.324	5.487	<0.001	0.102	Supported
H3	Strategic Facilities Management Practices → Organizational Efficiency	0.361	6.014	<0.001	0.118	Supported

The SEM results show that all three predictors—Sustainable Workplace Design, Smart Facility Technologies, and Strategic Facilities Management Practices—have significant and positive

effects on Organizational Efficiency. Strategic Facilities Management Practices exert the strongest influence ($\beta = 0.361$), followed by Smart Facility Technologies ($\beta = 0.324$) and Sustainable Workplace Design ($\beta = 0.298$). All paths are statistically significant at $p < 0.001$, indicating that well-designed workspaces, advanced smart technologies, and strategically implemented facilities management practices collectively play a vital role in improving operational efficiency within Saudi Arabia's corporate properties.

5 | DISCUSSION

The results of this research offer a very strong and evident evidence that sustainable workplace design, intelligent facility technologies and tactical facilities management practices are a vital and interdependent element that improves the organizational efficiency in the corporate real estate in Saudi Arabia. The results of the structural model indicate that the three predictors, which include Sustainable Workplace Design (SWD), Smart Facility Technologies (SFT), and Strategic Facilities Management (SFM), impact Organizational Efficiency (OE) in a strong, significant, and positive way. These findings are congruent to research conducted globally that shows that when work places are designed to be comfortable to the user, able to be environment friendly and also be able to perform their tasks well, then the employees are seen to be more productive, less stressed and their team work also becomes more viable. The high route between SWD and OE in this article supports the idea that, with the help of ergonomic plans, proper environmental quality and design measures that consider the sustainability concepts, the operational disturbances can be minimized and the environments that allow the efficient working process to be established. This relationship is especially relevant within the framework of Saudi Arabia, where corporate entities are moving towards global workplaces standards, where the strategic trend of more sustainable and people-centric environments is becoming a national priority under the Vision 2030.

The high influence of smart facility technologies on the organizational efficiency emphasizes the increased significance of technology-based facility management in contemporary corporate settings. The findings indicate that SFT has the largest effect size (f^2) among the three predictors, which indicates that digital tools, IoT sensors, automated maintenance systems, and data-driven monitoring platforms are very important in having more efficient use of space, maintenance on time, and operational wastes reduced. This is consistent with the global trends that have focused on highlighting the importance of facility technologies in the conversion of buildings into smart ecosystems that can be used to make data-informed decisions. This finding is important in the Saudi context as, currently, a number of organizations are quickly shifting towards the digital functioning of the facilities- a strategy that is in tandem with the national policy of digitalization. The existence of the positive relationship means that the benefits of investing in smart technologies to organizations may be improved service delivery, increased comfort at the workplace, and less costs related to manual processes, breakdowns, and inefficiencies.

Strategic Facilities Management (SFM) also shows a strong and significant correlation with Organizational Efficiency, in that there are importance of structured management systems, coordination with the vendors, safety compliance, and governance structures in the operations of corporate property. The results indicate that despite the availability of good workplace designs and intelligent technologies, the efficiency of organizations cannot be fully reached without proper management practices that can promote consistency, accountability, and performance measurement. The coordinating mechanism that facilitates the integration of the physical environment with the routine operations in the organization is strategic facilities management, which makes sure that the technologies are deployed effectively, the work orders are met in time, and the utilization of resources is maximized. This is especially applicable to organizations in Saudi Arabia where the fast corporate

growth and growing complexity at the workplace necessitates organized systems of management with the aim of ensuring stability in operations. In this way, the findings can confirm the fact that strategic facility management is not purely a support function, but the key organizational capability that directly determines productivity, continuity of operations and workplace quality.

Collectively, the results of this research point to a comprehensive perspective of a workplace performance, in which design, technology and management practices are inter-related factors that make up a single system. The large value of the R^2 (0.614) shows that these three variables together explain a significant percentage of organizational efficiency and hence it shows that changes in the performance of the workplace cannot be performed on an individual basis but rather on a wholesome basis. This interlinking helps in the theory behind the Resource-Based View and the sociotechnical systems theory, where both theories underline the importance of the interaction of physical resources, technological resources, and the well-organized processes in the management of an organization as the sources of its performance. Through the empirical validation of these relationships in the Saudi corporate setting, the research paper is useful in generating valuable information on the impact of the changing workplace practice in the Kingdom regarding operational successes.

Finally, the paper proves that sustainable workplace design, smart facility technologies and strategic facilities management are all important factors contributing to the efficiency of an organization and their joint impact is even stronger. The findings prove that the performance of corporate entities in Saudi Arabia can be greatly improved through the implementation of design methods that focus on sustainability and comforting the user, incorporating superior digital facility networks, and applying orderly management approaches that uphold the quality at the workplace. The facts point to a trend in which more aligned workplace strategies are viewed as integrating design, technology and management as complementary assets, instead of separate investment spheres. The combined strategy is an important means of attaining the long-term operational excellence, and it coincides with the wider national-level efforts to enhance the workplace conditions and organizational competitiveness.

According to the findings, a number of recommendations can be made to corporate organizations and leaders of the facility. To begin with, the organizations must focus their attention on the principles of sustainable and ergonomic design of the workplace that would enhance the comfort of the employees and decrease the inefficiencies of the operations. These are investing in versatile layouts and quality lighting and ventilation, noise, and environmental friendly materials. Second, the companies ought to hasten the implementation of smart facility technologies, particularly those that deliver real-time data on the use of space, energy usage, and asset operation. The incorporation of these technologies in the workflow of a facility can greatly decrease the waste and enhance promptness. Third, they should enhance their strategic facility management through the adoption of performance monitoring systems, vendor governance systems, preventive maintenance regimes, and safety compliance systems. Constant training of facility teams may also be used to make sure that technologies and design strategies work.

This study has implications on theory, practice, and policy. In theory, the research is a contribution to the scarcity of literature on facility management and workplace efficiency within the Middle Eastern setting that provides evidence on the applicability of RBV and sociotechnical views to the corporation operations of property. In practice, the research offers practical implications on how facilities managers, workplace strategists, and corporate leaders can increase the efficiency of their operations using integrated strategies in the workplace. Policy-wise, the results can be used in the current national endeavors to revamp the workplace standards, embrace sustainability, and digital transformation in the corporate industries in Saudi Arabia. The research shows the way to develop

efficient, innovative and globally competitive workplaces in the Kingdom by showing the importance of sustainable design, smart technologies, and organized management practices.

Acknowledgment: The authors would like to express their sincere thanks to the editor and the anonymous reviewers for their helpful comments and suggestions.

Author Contributions:

Mohd Sheraz Lari: Conceptualization, methodology, Writing—review and editing,

Licenses and Copyright: This is an open-access article, free of all copyright, and fulfills the DOAJ definition of open access. This work is licensed under a “[Creative Commons Attribution 4.0 International License](#)”.

Which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Funding: The author(s) received no financial support for the research, authorship, and/or publication of this article.

Data Availability Statement: Data that supports the findings of this study are available on request from the corresponding author.

Plagiarism Statement: This article was scanned by the plagiarism program. No plagiarism was detected.

Disclaimer/Publisher’s Note: The statements, opinions, and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of the publisher “AITST” and/or the editor(s). The Publisher AITST and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions, or products referred to in the content.

REFERENCE

- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120.
- Bitner, M. J. (1992). Servicescapes: The impact of physical surroundings on customers and employees. *Journal of Marketing*, 56(2), 57–71.
- Frontczak, M., Schiavon, S., Goins, J., Arens, E., Zhang, H., & Wargocki, P. (2012). Quantitative relationships between occupant satisfaction and satisfaction aspects of indoor environmental quality and building design. *Indoor Air*, 22(2), 119–131.
- Kassem, M., Succar, B., & Dawood, N. (2015). Building information modeling: Analyzing noteworthy publications of eight countries using a knowledge content taxonomy. *Engineering, Construction and Architectural Management*, 22(5), 404–456.
- Kleindienst, M. A., Brohman, M. K., & Watson, R. T. (2018). Reconsidering the boundaries of the sustainable enterprise: Insights from facilities management and workplace sustainability. *Journal of Strategic Information Systems*, 27(4), 324–338.
- Nardelli, G., Rajala, R., & Bruni, A. (2019). Digitalization of facilities management: Exploring processes, roles, and value creation. *Industrial Marketing Management*, 76, 236–246.
- Oseland, N. (2009). Assessing the effects of the physical environment on staff performance. *Facilities*, 27(3/4), 134–143.
- Shohet, I. M., & Puterman, M. (2006). Maintenance management of hospital facilities: Development of a multi-criteria decision-making model. *Facilities*, 24(11/12), 431–446.
- Volk, R., Stengel, J., & Schultmann, F. (2014). Building information modeling (BIM) for existing buildings—Literature review and future needs. *Automation in Construction*, 38, 109–127.
- Wargocki, P., & Wyon, D. P. (2007). The effects of moderately raised classroom temperatures and classroom ventilation rates on the performance of schoolwork by children. *HVAC&R Research*, 13(2), 193–220.