

# Risk Analysis of Selected Petrochemical and Chemical Companies Towards the Development of An Enterprise Financial Sharing Model

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**Abstract:** This study focuses on the risk analysis of financial shared service models in petrochemical and chemical enterprises. The SOP of this paper proposes a suitable financial shared service model for petrochemical enterprises by studying the impact of financial processing data (FPD), financial shared service risk (FSR), and financial digital transformation (FDT) on the financial shared service model, as well as the interaction between FPD, FSR, and FDT. This study method aims to explore the financial sharing model suitable for the petrochemical and chemical industry through quantitative analysis. This research results presents a comprehensive and effective financial sharing model suitable for the petrochemical and chemical industry. This research conclusion presents FSM facilitates the sharing of financial risks. This recommendation is building a customized enterprise financial sharing model for the unique risk environment of petrochemical and chemical companies.

**Keywords:** Financial Sharing Model (FSM); Financial Processing Data (FPD); Financial Sharing Risk (FSR); and Financial Digital Transformation (FDT).

## 1. Background of the Study

With the acceleration of the global economic integration process, higher requirements are put forward for the development of state-owned enterprises. State-owned enterprises should continuously optimize the financial management model in the process of continuous growth, so as to better adapt to the needs of business development and market changes. With the acceleration of the development of the internet, state-owned enterprises choose the innovative model of financial sharing when carrying out financial activities. At the same time, Cai (2024) emphasized the importance and functionality of financial activities, which laid a solid foundation for state-owned enterprises to optimize the internal control system. The application of financial sharing model not only brings some challenges to state-owned enterprises, but also brings them more opportunities for development. The views in the article focus on the study of the advantages and benefits brought by financial sharing, and the lack of thinking about the risks brought by financial sharing.

As the state-owned capital, the capital chain risk control of petrochemical and chemical enterprises is also facing unprecedented challenges with the deepening of economic globalization and the intensification of market competition. As an innovative management model, financial sharing brings many benefits, but also accompanied by a series of potential risks. Cao (2023) aims to deeply analyze the risks that the petrochemical and chemical industry may face in the implementation of financial sharing, and provide reference for the risk prevention and management of enterprises in this industry. However, its theory only focuses on capital chain control, and rarely mentions financial processing data and business process reengineering. In view of the main aspects of financial sharing risks, the current research mainly focuses on financial sharing risk and management innovation conscious.

Some enterprises lack of understanding of the strategic significance of the implementation of financial sharing, just as a simple tool to reduce costs, ignoring their role in improving the overall management level and competitiveness of enterprises. This cognitive bias

may lead to difficulty for financial sharing projects to obtain sufficient resource support, thus affecting the implementation effect. Mismatch with the overall strategy of the enterprise: the construction of financial sharing should adapt to the overall development strategy of the enterprise. Chang (2022) believes that some enterprises lack long-term planning when starting financial sharing projects, and fail to fully consider the requirements of financial sharing for future business development and technological progress, leading to the difficulty of system design and process optimization to adapt to the future needs. This study focuses on the strategic significance of corporate financial sharing, but ignores the particularity of the petrochemical and chemical industry. As a state-owned enterprise in the national strategic planning, the financial sharing strategy is greatly influenced by the national policies.

Operational risks and insufficient business process re-engineering: financial sharing is not only a simple functional concentration, but also requires a thorough redesign of the existing business processes. In Chen (2022) study, if the original inefficient process is only moved to

the sharing center, it is difficult to achieve the expected efficiency improvement. Insufficient degree of standardization: petrochemical and chemical enterprises often involve multiple business sectors, and the business differences between different sectors are large. Failure to establish uniform business standards and financial policies increases the complexity and error rates of shared services. Although this study carefully analyzes the problem of internal process re-engineering of enterprises, it does not combine the external risk factors of the petrochemical and chemical industry, and the thinking of the impact of financial sharing

model on financial processing data is not thorough enough.

Financial sharing risk is often accompanied by large-scale personnel adjustment, which may lead to key brain drain, especially those compound talents who understand both finance and business. Financial sharing may be seen as a threat to existing interests, causing employee resistance and affecting the implementation effect. Financial sharing risk requires employees to have new skills, such as process management, project management, etc. If the employee skills cannot be updated in time, it affects the operational efficiency of the sharing center. Deng (2023) pointed out that the withdrawal of financial personnel from the business line may lead to lack of understanding of business and decline of financial sharing service quality. Especially in the petrochemical and chemical industry, such as a highly professional industry, this problem is more prominent. This theory reflects on financial sharing on personnel change and personnel service quality. However, the analysis is still not comprehensive enough to combine the internal and external related factors of the petrochemical and chemical industry.

Zhao (2023) puts forward the theory of financial sharing risk, which shows that in the practice process of financial sharing, enterprises face various risks, including risk of talent structure change, risk of industry and finance separation, process management risk and information transmission risk, etc. Only by preventing risks and identifying risks can enterprises help them overcome the management crisis. The financial risk theory proposed by Xing (2023) does provide important insights into risk management in the process of financial sharing. However, there are indeed some research gaps when applying this theory to financial sharing in the petrochemical and chemical industries. According to these studies, financial sharing is very important in the oil and petrochemical industries. As an advanced management model, financial sharing provides a powerful tool for petrochemical and chemical enterprises to improve the financial management level and cope with the complex business environment. However, these studies are difficult to answer the following questions: How does the financial sharing model achieve financial processing data, financial sharing risk and financial digital transformation? This paper makes up for and improves these research gaps.

## 2. Statement of the Problem

The study analyze the risks of existing financial sharing among selected 20 petrochemical and chemical companies. Specifically, the study attempt to answer the following sub-problems.

(1) What is the status of the selected petrochemical and chemical companies in terms of;

1.1 Financial sharing model (FSM);

1.2 Financial processing data (FPD);

1.3 Financial sharing risk (FSR);

1.4 Financial digital transformation (FDT);

(2) How does the financial processing data, financial sharing risk and financial digital transformation affect the financial sharing model?

(3) What is impact of financial digital transformation on the financial sharing risk?

(4) How does the financial sharing risk affect financial processing data?

(5) How does the financial processing data affect the financial sharing risk and financial digital transformation?

(6) From the findings on the study, what financial sharing

model can be proposed?

## 3. Scope and Delimitation of the Study

The survey be conducted from January 2025 to April 2025. This ensures that the data collected is up to date and adequate, and that the research methods and strategies can be adapted to progress and preliminary results. This study establishes a risk-analysis model of development-oriented financial sharing model for selected petrochemical and chemical enterprises. However, the practical application is the best in China and other emerging countries. Therefore, the study site was limited to the study site in China.

The target respondents were 400 petrochemical and chemical company employees who used the financial sharing model, and the state employees were voluntary. China Petrochemical Corporation, China Petroleum Corporation, China Offshore Petroleum & Chemical Corporation and other 20 domestic and foreign companies financial sharing related personnel. Therefore, these respondents all agreed with their participation, and only those consent would be included and recruited to participate in this study. Chinese Domestic petrochemical and chemical Companies: China National Petroleum Corporation (CNPC), China Petrochemical Corporation (Sinopec), China National Offshore Oil Corporation (CNOOC), Shaanxi Yanchang Petroleum (Group) Co., Ltd., Sinochem Holdings Corporation Ltd., Hengli Petrochemical Co., Ltd., Rongsheng Petrochemical Co., Ltd., Wanhua Chemical Group Co., Ltd., Hengyi Petrochemical Co., Ltd., Shenghong Petrochemical Group Co., Ltd., Donghua Energy Co., Ltd., Tongkun Group Co., Ltd.

Foreign petrochemical and chemical Companies: CNOOC Nexen Petroleum (Canada), CNPC International Ltd., Sinopec International Petroleum Exploration and Production Corporation (SIPC), Zhenhua Oil Co., Ltd., Sinochem International Corporation, China Oilfield Services Limited (COSL), Sinopec Engineering (Group) Co., Ltd. (SEG), and Guanghui Energy Co., Ltd. (Overseas Business).

The theoretical basis of this study is extensive, studying the globally relevant literature. With the establishment of the financial sharing model as a variable, relevant actual investigations be conducted from November 2024 to April 2025. In this study, questionnaires were issued and data collection patterns were conducted in relevant companies in China.

## 4. Research Design

This study aims to explore the financial sharing model suitable for the petrochemical and chemical industry through quantitative analysis, and to evaluate its performance and potential risks in financial processing data (FPD), financial risk sharing (FSR) and financial digital transformation (FDT). The study be able to comprehensively and systematically analyze the risks of the financial sharing model and make optimization recommendations and answer to each SOP here.

Financial sharing model (FSM), Analyze the types of financial sharing models currently used by the selected company, such as centralized, decentralized, or mixed, as well as their organizational structure and processes. Financial processing data (FPD): Evaluate the consistency, accuracy, and efficiency of data processing, including data collection, processing, storage, and reporting aspects (Janssen and Joha, 2023).

Financial sharing risk sharing (FSR), identify and evaluate

major financial risks, such as exchange rate risk, compliance risk, operational risk, etc., and analyze existing risk management measures (Zou, 2023).

Financial digital Transformation (FDT), Investigate the progress of the company in the application of digital tools and technologies, such as the application of cloud computing, big data analysis, artificial intelligence, etc., and its impact on the business.

How does the financial processing data affect the financial sharing model? High-quality data helps improve decision quality and operational efficiency, but data inconsistencies or errors can lead to poor decisions.

How does the financial sharing risk affect the financial sharing model? Effective risk management can enhance the stability and reliability of the financial sharing model, which may increase the uncertainty (Taherdoost, 2021).

How does the financial digital transformation affect the financial sharing model? Digital transformation can improve automation and data processing capabilities, but it also brings new technological risks and security challenges.

The impact of financial digital transformation on financial risk sharing, digital transformation can improve the ability of risk identification and management, but it may also introduce network security risks and data leakage.

How does financial risk share affect financial processing data? Efficient risk management can reduce errors and delays in data processing and improve data quality; otherwise, insufficient risk control may lead to data distortion and inconsistency.

How does financial processing data affect financial risk sharing and financial digital transformation? Accurate and timely data supports more effective risk management decisions, and is also the basis of digital transformation. Conversely, data quality issues may hinder the transformation process.

Proposed financial sharing model. Based on the research results, we propose an optimized financial sharing model that comprehensively considers financial processing data, financial risk sharing and financial digital transformation. The model should include standardized data management processes, multi-level risk management systems, and advanced digital tools and technology applications to improve the overall financial management level. Through the above study design and detailed answers, this study provides a comprehensive risk analysis and optimization suggestions for the financial sharing model in the petrochemical and chemical industry (Chen and Zhang, 2020).

This study combines quantitative analysis and questionnaire design to get a comprehensive understanding of the application of financial sharing model in the petrochemical and chemical industry. First of all, review the historical cases of China adopting the financial sharing mode in recent years, and analyze the successful experience and main problems encountered by these enterprises in the implementation process. Pay special attention to the enterprises that have completed or are carrying out major financial sharing projects, and extract the key learning points. Secondly, we collect first-hand information about the operation of the financial sharing center through a questionnaire survey of the personnel of oil companies. This includes understanding specific practices in how they manage and optimize financial processing data, how to establish effective financial risk-sharing mechanisms, and how to use digital technology to drive business transformation. Finally, a

number of representative petrochemical and chemical enterprises were selected as pilot units to introduce new financial sharing models and technical solutions for a one-year experiment. By comparing the changes of various financial indicators before and after the test, the actual effect of the new model on improving the efficiency of data processing, reducing the risk level and promoting the digital transformation is evaluated. In this study, after the literature's initial review, the proponent decided to use a questionnaire survey (Liu et al., 2021).

Study should use the quantitative study. This study believes that the degree of influence of financial sharing model on the risk of financial personnel in petrochemical and chemical enterprises can be solved by quantitative methods. A researcher collects quantitative data, analyzes the data and compares the results of the analyses. In the design, the researchers' quantitative data in order to provide a comprehensive analysis of the research problem. A quantitative questionnaire study on the financial sharing risk in the petrochemical and chemical industry has significant advantages. First, quantitative studies can provide a large amount of data to collect a wide sample of 400 respondents from 20 companies, it is ensuring the representativeness and generalizability of the study results. Secondly, quantitative research methods to facilitate statistical analysis of data, can use a variety of statistical tools and models to identify and evaluate the key risk factors in the process of financial sharing, such as operational risk, technical risk, compliance risk, human resources risk and strategic risk, so as to provide enterprises with more accurate risk assessment and management advice. In addition, quantitative research helps to find correlations and trends among risk factors, enabling enterprises to better understand the interactions between different risks and develop more comprehensive and effective risk control strategies. By combining the advantages of quantitative research, enterprises can not only improve the scientific and systematic financial sharing risk management, but also provide strong data support and decision-making basis for optimizing the financial sharing process and improving operational efficiency (Zhao and Wang, 2022).

To quantitatively analyze the influence of the financial sharing model on the risks faced by financial personnel in petrochemical and chemical enterprises, this study uses surveys and structured questionnaires as the primary data collection method. Respondents provide measurable data on various risk factors, which then be analyzed using statistical techniques. Quantitative analysis offers several advantages: it provides objective and precise results by relying on numerical data, reduces subjective biases, and ensures clear and measurable outcomes. The findings can be generalized to similar populations, allowing broader applicability within the industry. Additionally, quantitative methods facilitate hypothesis testing, enabling the study to empirically examine the relationship between the financial sharing model and risk levels. Statistical tools also support comparative analysis, identifying patterns or differences across groups, and help uncover trends and correlations, offering actionable insights. Furthermore, surveys and questionnaires are efficient, scalable, and replicable, ensuring reliable and consistent results. By adopting this approach, the study aims to deliver robust, data-driven insights into the risks associated with the financial sharing model, providing a strong foundation for informed decision-making (Bharadwaj et al., 2020).

## 5. Results

### 5.1. The Situation of Selected Petrochemical and Chemical Enterprises

The survey data reveal a complex but interconnected relationship among the Financial Sharing Model (FSM), Financial Processing Data (FPD), Financial Sharing Risk (FSR), and Financial Digital Transformation (FDT). The weighted mean scores indicate that FSM has a notable impact on financial operations, as shown by the positive effect of FSM on enterprises (3.45, SD = 0.68) and its role in simplifying financial accounting (3.34, SD = 0.69). Additionally, FSM significantly improves financial data consistency and accuracy (3.32, SD = 0.72) and facilitates financial data processing (3.28, SD = 0.75), confirming its essential role in enhancing FPD. High-quality FPD is also a key driver of FSM effectiveness (3.52, SD = 0.65), suggesting that improvements in data processing contribute to a more efficient financial sharing system. Meanwhile, the relationship between FSM and financial risk sharing (FSR) is evident, with FSM supporting financial risk sharing (3.18, SD = 0.81) and risk management playing a crucial role in enhancing FSM effectiveness (3.38, SD = 0.71).

The data also demonstrate the strong influence of FPD on FDT, as FPD improvements enhance FDT effectiveness (3.21, SD = 0.76), and digital tools impact financial management

(3.40, SD = 0.70). Furthermore, FDT itself positively affects FSM effectiveness (3.29, SD = 0.73), reinforcing the idea that digital transformation strengthens financial sharing operations. The findings suggest that FSR affects the quality and efficiency of FPD (3.15, SD = 0.79), indicating that financial risks, if not well managed, may hinder data accuracy and processing efficiency. In summary, FSM improves FPD, which in turn enhances FDT, while FSR acts as a moderating factor that influences their overall effectiveness. Organizations in the petrochemical and chemical industry should therefore focus on optimizing FSM, strengthening financial risk management, and leveraging digital transformation to maximize operational efficiency and cost savings, as indicated by the impact of FSM on financial cost reduction (3.20, SD = 0.80).

The survey results indicate a complex but interconnected relationship among the Financial Sharing Model (FSM), Financial Processing Data (FPD), Financial Sharing Risk (FSR), and Financial Digital Transformation (FDT). FSM plays a crucial role in improving FPD by enhancing data consistency, accuracy, and efficiency in financial processing, while high-quality FPD, in return, strengthens FSM effectiveness (Zhang et al., 2022). Additionally, FSM contributes to financial risk sharing, yet financial risks can also impact the quality and efficiency of FPD, demonstrating that financial risk management is an essential factor in maintaining FSM performance.

**Table 1.** Weighted Mean and Standard Deviation of Questionnaire Items

Question	Weighted Mean	Standard Deviation
1. Positive effect of FSM on enterprises	3.45	0.68
2. FSM improves data consistency/accuracy	3.32	0.72
3. FSM facilitates financial data processing	3.28	0.75
4. FSM supports financial risk sharing	3.18	0.81
5. FPD affects financial risk sharing	3.10	0.84
6. FPD affects financial digital transformation (FDT)	3.25	0.77
7. Digital tools impact financial management	3.40	0.70
8. High-quality FPD improves FSM effectiveness	3.52	0.65
9. Risk management enhances FSM effectiveness	3.38	0.71
10. FDT impacts FSM effectiveness	3.29	0.73
11. FSR affects FPD quality/efficiency	3.15	0.79
12. FPD improvements enhance FDT effectiveness	3.21	0.76
13. FSM positively impacts petrochemical financial activities	3.47	0.67
14. FSM simplifies financial accounting	3.34	0.69
15. FSM reduces financial costs	3.20	0.80

The findings also suggest that FPD significantly affects FDT, as better financial data processing capabilities facilitate digital transformation, leading to more effective financial operations. Moreover, FDT itself enhances FSM by introducing digital tools that streamline financial management, indicating a reciprocal relationship between digital transformation and financial sharing. Risk management serves as a moderating factor in these relationships, where stronger risk control measures enhance FSM efficiency, while unmanaged risks may compromise FPD quality and hinder FDT adoption. In summary, FSM improves FPD, which subsequently enhances FDT, while FSR moderates their effectiveness, showing that financial risk levels influence data quality and operational efficiency. The integration of these elements highlights the need for organizations in the petrochemical and chemical industry to

invest in high-quality financial processing data, adopt strong risk management strategies, and embrace digital transformation to maximize the effectiveness of FSM (Yang, 2022).

### 5.2. The Affect of FPD, FSR and FDT on the FSM

Based on the T-test results and the survey questions provided, we delved into the intricate relationships between the Financial Sharing Model (FSM) and other pivotal components, namely Financial Processing Data (FPD), Financial Sharing Risk (FSR), and Financial Digital Transformation (FDT). This analysis positions FSM as the dependent variable, while the effectiveness of the other components is treated as independent variables.

The following is an exhaustive and seamless exploration of

these relationships, enriched with the insights drawn from the T-test data. The T-test results revealed no statistically significant difference ( $\text{Sig.} = 0.275 > 0.05$ ) in the perceptions of FSM's impact across the different components. This finding implies that FSM is universally regarded as a positive influence on FPD, FSR, and FDT, even though the strength of these relationships may vary slightly. The mean difference across components was recorded at 1.200, accompanied by a 95% confidence interval spanning from -3263.370 to 4666.790. Despite the broad confidence interval, the positive mean difference suggests an overall toward viewing FSM as advantageous for the other components. However, the absence of statistical significance indicates that the relationships are not robust enough to assert definitive causal effects.

Commencing with the correlation between FSM and FPD, the survey data disclosed that the implementation of FSM is perceived to enhance the consistency and accuracy of financial data processing. This is mirrored in the responses to Q1, which addresses FSM's positive effect on enterprises, and Q6, focusing on FPD's consistency and accuracy. The T-test results, with a significance level of 0.275 and a mean difference of 1.200, corroborate that FSM's beneficial impact on enterprises is intertwined with its capacity to refine FPD. Although the wide confidence interval precludes a definitive conclusion, the positive mean difference underscores a general belief that FSM fosters more reliable and consistent financial data processing. Further solidifying the FSM-FPD relationship is the interplay between Q4 and Q7. Q4 highlights FSM's role in simplifying financial accounting, while Q7 emphasizes how FPD facilitates financial data processing. The T-test insights, maintaining the same statistical parameters, suggest that FSM's simplification of accounting procedures is perceived as complementary to FPD's streamlining of data processing. This symbiotic relationship implies that the advantages of FSM in simplifying accounting are echoed in the efficiency gains observed in financial data processing.

Shifting the focus to FSM and FSR, the survey responses indicate a reciprocal relationship between effective risk management and FSM's efficacy. Q2 underscores that effective risk management measures can elevate FSM's effectiveness, while Q9 reveals that FSM aids enterprises in sharing financial risks. The T-test results, consistent in their statistical metrics, reinforce that risk management and FSM are mutually reinforcing. The positive mean difference intimates that regions acknowledge FSM's potential to mitigate risks, and in turn, sound risk management bolsters FSM's performance. This bidirectional relationship is a testament to the intricate dance between risk and financial strategies in the FSM framework.

Another facet of the FSM-FSR dynamic is unveiled through Q5 and Q10. Q5 points to FSM's role in reducing financial costs, while Q10 links the degree of FPD to financial risk-sharing. The T-test analysis, with its familiar statistical profile, suggests that FSM's cost-reduction benefits are perceived as intertwined with FPD's influence on risk-sharing. The positive mean difference intimates that FSM's financial prudence is seen as a facilitator of more effective risk-sharing mechanisms, painting a picture of FSM as a cost-efficient risk mitigator.

When examining the nexus between FSM and FDT, the survey data suggests that FSM's impact on specific industries like petrochemicals, as posed in Q3, is viewed through the

lens of digital transformation. Q13, which addresses how FPD influences digital transformation, reveals a connection where FSM's industry-specific benefits are amplified by digital advancements. The T-test results, aligning with previous findings, indicate that FSM's positive footprint on industries is perceived as harmonious with FPD's thrust toward digital transformation. This alignment suggests that FSM is not just a financial tool but a catalyst for digital evolution in financial practices.

## 6. Conclusion

### 6.1. The Situation of Selected Petrochemical and Chemical Enterprises

The survey of selected petrochemical and chemical enterprises reveals that the Financial Sharing Model (FSM), Financial Processing Data (FPD), Financial Sharing Risk (FSR), and Financial Digital Transformation (FDT) form a tightly intertwined system in which each element both influences and is influenced by the others. FSM significantly improves data consistency, accuracy, and processing efficiency—thereby simplifying accounting and reducing costs—while high-quality FPD in turn amplifies FSM effectiveness. Enhanced FPD also drives FDT by supplying reliable, timely inputs for digital tools, and FDT further strengthens FSM through automation and real-time analytics. However, financial sharing risk moderates these relationships: robust risk management boosts FSM stability and performance, whereas unmanaged risks degrade FPD quality and hinder digital adoption. Consequently, petrochemical and chemical firms should pursue an integrated strategy that standardizes and automates shared services, invests in data governance, embeds dynamic risk assessment, and leverages RPA and AI-driven digital platforms. Such a coordinated approach will unlock the full potential of FSM–FPD–FDT synergy, yielding both lower financial costs and higher operational efficiency.

### 6.2. The Affect of Financial Processing Data (FPD), Financial Sharing Risk (FSR) and Financial Digital Transformation (FDT) on the Financial Sharing Model (FSM)

The analysis reveals that Financial Processing Data (FPD), Financial Sharing Risk (FSR), and Financial Digital Transformation (FDT) each exert a positive, albeit statistically non-significant, influence on the effectiveness of the Financial Sharing Model (FSM). The T-test results ( $\text{Sig.} = 0.275 > 0.05$ ) indicate that while there is no significant difference in perceptions across these components, a positive mean difference of 1.200 supports the view that FSM benefits from each of them. FPD contributes to FSM through improved data consistency, accuracy, and streamlined processing, which reinforces FSM's efficiency and reliability. Similarly, effective financial risk management (FSR) not only mitigates potential disruptions but also enhances FSM's capacity to function as a cost-effective, risk-sharing framework.

Furthermore, FDT plays a critical role in enabling FSM by integrating digital tools that enhance transparency, automation, and agility in financial operations. Despite the absence of robust statistical evidence, the qualitative data suggests a synergistic relationship wherein high-quality FPD strengthens FSM performance, sound risk management

supports FSM sustainability, and digital transformation amplifies FSM's impact across financial functions. Therefore, to fully harness the value of FSM in the petrochemical and chemical sectors, organizations should invest in improving financial data quality, fortifying risk control mechanisms, and embracing digital innovation. Future research should explore the contextual and operational drivers behind these interactions to develop more targeted strategies for optimizing FSM implementation. Chen, J. H., & Tang, H. R., (2022).

### **6.3. The Results to Impact of Financial Digital Transformation (FDT) on Financial Sharing Risk (FSR)**

The findings demonstrate that Financial Digital Transformation (FDT) significantly influences Financial Sharing Risk (FSR), particularly in shaping the structure, exposure, and resilience of financial shared service platforms. Although the 14th principal component contributes only 2.785% to the overall variance in the principal component analysis, it encapsulates critical yet often overlooked technical and systemic risk factors—such as data security, disaster recovery, and system stability—that are intrinsic to the digital transformation process. These risks, while not the most prominent in routine operations, can cause severe cascading effects during cyber-attacks, system failures, or data breaches. The adoption of advanced digital systems like ERP, RPA, and cloud platforms streamlines financial processes, but also introduces complex dependencies and potential vulnerabilities, particularly when interface design, access control, or backup protocols are inadequate.

The analysis underscores that as organizations pursue efficiency through digital transformation, foundational risk elements embedded in components like the 14th must not be ignored. Variables such as IT response time, system recovery metrics, and security incident frequency, although less visible in performance dashboards, are pivotal to sustaining uninterrupted and secure financial operations. Moreover, the low but essential variance contribution of the 14th component suggests that effective FDT must extend beyond performance enhancement to include robust risk governance.

In practical terms, failure to address these risks can lead to significant financial and reputational damage, as illustrated by real-world cases where overlooked system vulnerabilities undermined the integrity of financial reporting. As enterprises increasingly integrate AI and big data into financial management, the stability and governance of digital systems become key to controlling financial sharing risks. Therefore, FDT directly impacts FSR by shaping the enterprise's ability to manage hidden yet high-impact risks. In conclusion, financial digital transformation is not only a lever for operational efficiency but also a stress test of an organization's systemic risk resilience. Effective risk control in the digital age demands proactive attention to the latent risks represented by components like the 14th, integrating both technological infrastructure and institutional safeguards into FDT strategies. (Li and Tang, 2022)

### **6.4. The Results to the Affect of FSR on FPD**

Principal Component Analysis (PCA) reveals how financial sharing risk (FSR) impacts financial processing data (FPD). The eleventh principal component (PC11), accounting for 4.24% of the variance, highlights the significance of measuring and reporting FSR's performance. Organizations

need clear metrics and reporting frameworks to assess FSR's effectiveness and demonstrate its value to stakeholders. Tracking FSR's impact on key performance indicators (KPIs) like cost reduction, process efficiency, and data quality is crucial for maintaining support and driving continuous improvement. The twelfth principal component (PC12), explaining 3.437% of the variance, emphasizes the importance of vendor and technology partnerships in FSR implementation. Many organizations rely on external vendors for FSR solutions, and the quality of these partnerships can greatly influence FSR's success. Strong relationships with technology providers, software vendors, and consulting firms can offer expertise, innovation, and support that enhance FSR's effectiveness.

In conclusion, the analysis suggests that Financial sharing risk (FSR) play a pivotal role in accelerating Financial processing data (FPD) by leveraging both internal and external enablers of transformation. The internal dimension—embodied by rigorous performance measurement and KPI alignment—highlights how robust reporting frameworks and governance structures provide the strategic oversight needed to drive digital finance initiatives. In parallel, the external dimension emphasizes that strong partnerships with technology vendors and collaborative system integration introduce new capabilities and expertise that amplify digitization efforts.

Together, these insights illustrate that FSR provides a strategic platform for unifying data flows, standardizing processes, and coordinating governance in the digitized finance function. In practical terms, organizations undergoing digital transformation should strengthen their shared services with clear KPI-aligned reporting, integrated IT systems, and proactive vendor collaboration. By doing so, companies can leverage the combined power of internal governance and external partnerships to make finance processes more agile, transparent, and value-driven. FSR can act as a catalyst or a constraint for FPD. Its impact is determined not only by operational efficiency but also by its capacity to enable data-driven decision-making and leverage technological ecosystems. FPD is a continuous journey, and FSR, when correctly designed and supported, provides the road on which this journey unfolds.

### **6.5. The Affect of FPD on the FSR and FDT**

The analysis reveals that Financial processing data (FPD) exerts a profound influence on both Financial sharing risk (FSR) and financial digital transformation (FDT), acting as a critical enabler of modernization across financial operations. Insights drawn from principal components PC8, PC10, and PC13 underscore that the success of FPD hinges not only on technological capabilities but also on human and cultural dimensions. PC8 emphasizes the importance of stakeholder engagement, highlighting that effective communication, transparency, and inclusive participation are essential for building trust and accelerating FSM integration. PC10 brings attention to organizational culture, showing that environments which promote innovation and adaptability are more likely to embrace digital transformation successfully. Meanwhile, PC13 illustrates that continuous investment in training and development is key to equipping employees with the skills necessary for leveraging digital tools, managing financial risks, and enhancing data maturity.

Through these interconnected factors, FPD strengthens the operational backbone of FSR by improving data quality,

standardization, and process transparency—allowing shared services to function with greater efficiency and strategic focus. Simultaneously, FPD provides the digital infrastructure and real-time analytics that propel FDT initiatives forward, fostering more agile, data-driven decision-making. The synergistic effect between FPD, FSR, and FDT positions organizations to better respond to market demands, regulatory pressures, and innovation opportunities.

## 6.6. Financial Sharing Proposed Model

This paper proposes a tailored financial shared service model for the sector. The model is built upon three core pillars, data-driven operations, integrated risk management, and digital empowerment, aiming to establish an efficient, intelligent, and well-controlled financial service system. In terms of data, the model advocates for unified ERP systems and master data standards, promotes the use of electronic documents and automated workflows, and implements data quality management mechanisms to enhance the accuracy and consistency of financial data. For risk control, it integrates risk identification and approval controls into each process node, establishes dynamic permissions and audit trails, and enables real-time monitoring and visualization of risks.

On the digital front, the model recommends the deployment of financial robots (RPA + AI), data visualization tools, and modular shared service platforms to build an intelligent financial hub. The implementation path is divided into three phases: short-term (data integration), mid-term (risk control framework), and long-term (full digital transformation), ensuring a systematic and progressive reform process. Through this model, petrochemical enterprises can achieve standardized and centralized financial processes, significantly improving efficiency and transparency while effectively reducing compliance risks. Ultimately, this enhances the financial function's strategic role and supports sustainable development in an increasingly complex and volatile market environment.

## 7. Recommendations

### 7.1. FSM to Financial Digital Transformation

In the volatile landscape of petrochemical and chemical companies, where market fluctuations, regulatory demands, and environmental challenges converge, the Enterprise Financial Sharing Model (FSM) must proactively drive Financial Digital Transformation (FDT) to address these multifaceted risks and opportunities. To achieve this, companies need to integrate cutting-edge digital technologies that enable real-time data capture, predictive analysis, and agile decision-making capabilities. This begins with the adoption of robust digital platforms such as cloud-based enterprise resource planning (ERP) systems, big data analysis, and artificial intelligence (AI) solutions. These systems must be designed to consolidate data from various internal and external sources—ranging from market pricing and supply chain data to environmental monitoring and regulatory compliance information—thereby empowering decision-makers with timely and actionable insights. In practical terms, implementing a cloud-based ERP solution facilitates the centralization of financial data, ensuring that all relevant stakeholders can access up-to-date information regardless of their geographic location. Chen, L. P., (2022).

This capability is particularly crucial in an industry where global operations and international supply chains expose

companies to diverse market risks and regulatory environments. Moreover, leveraging big data analysis allows for the identification of trends, anomalies, and patterns that may signal emerging risks, such as sudden commodity price swings or operational disruptions due to unforeseen events. Integrating machine learning algorithms further enhances this capability by enabling predictive maintenance of equipment and forecasting potential financial shocks based on historical data trends. Another critical aspect of FDT within FSM is the development of a secure digital ecosystem. Given the high stakes involved, petrochemical and chemical companies must prioritize cyber-security measures that safeguard sensitive financial and operational data from breaches and cyber-attacks.

This involves implementing multi-factor authentication, advanced encryption protocols, and continuous network monitoring systems that can quickly detect and respond to potential threats. Alongside technical measures, organizations should foster a culture of digital literacy through ongoing training programs designed to upskill finance professionals, IT personnel, and operational managers. These training initiatives should focus not only on the technical aspects of new digital tools but also on their strategic application in risk management and decision-making. Furthermore, the FSM should encourage the adoption of agile project management methodologies, ensuring that digital transformation initiatives are iterative and responsive to evolving market conditions and technological advancements. This agile approach supports continuous improvement and allows companies to pivot quickly in response to emerging risks or opportunities.

In addition, digital transformation under the FSM must be guided by a robust digital governance framework that sets clear standards for data quality, privacy, and usage. This governance framework should include regular audits, performance benchmarks, and feedback loops that ensure digital systems remain aligned with the company's strategic objectives and regulatory requirements (Cai, 2024). Cross-departmental collaboration is also essential; establishing digital innovation hubs or cross-functional teams can help break down silos and promote the sharing of best practices across the organization. By creating a unified digital culture, the FSM can better harness the collective expertise of its workforce, ensuring that digital transformation efforts are both comprehensive and effective. Finally, it is vital to view FDT not

as a one-off initiative but as an ongoing strategic journey that evolves in tandem with the business environment. By embedding digital transformation into the core fabric of the FSM, petrochemical and chemical companies can build a resilient, future-ready financial function that not only optimizes operational efficiency but also significantly enhances risk management and strategic foresight. This transformation, when effectively executed, provides a competitive advantage by enabling companies to respond rapidly to market shifts, regulatory changes, and technological disruptions, ultimately ensuring long-term financial stability and growth (Niu et al., 2023).

### 7.2. FSM to Financial Sharing Risk Management

For petrochemical and chemical companies, where high capital intensity and market volatility converge with complex regulatory landscapes, managing Financial Sharing Risk (FSR) is crucial to the success and resilience of an Enterprise

Financial Sharing Model (FSM). An effective FSR management strategy must be comprehensive and proactive, addressing risks ranging from operational disruptions and financial misstatements to cyber-security threats and compliance breaches. The first step in this process is to establish a robust risk assessment framework that systematically identifies and quantifies potential vulnerabilities across the financial sharing system. Companies should employ advanced risk analysis that combine historical financial data, operational metrics, and real-time market intelligence to model potential risk scenarios. This data-driven approach allows organizations to forecast financial impacts from events such as sudden commodity price drops, supply chain interruptions, or regulatory non-compliance, thereby facilitating timely and informed decision-making. In addition to predictive analysis, continuous monitoring of key risk indicators is imperative. The FSM must incorporate real-time dashboards and automated alert systems that flag deviations from established risk thresholds. Such systems enable rapid responses to be emerging threats, minimizing potential damage.

A critical component of FSR management is the implementation of rigorous internal control mechanisms. These controls should include regular audits, both internal and external, to ensure that financial data integrity is maintained throughout the sharing process. It is essential to design and enforce policies that clearly delineate roles and responsibilities, ensuring that every aspect of financial data management—from data entry and processing to reporting and archiving (Li, 2023).

Given the increasing prevalence of cyber threats, particular attention must be paid to cyber-security measures. This entails not only adopting advanced technologies like intrusion detection systems, secure access controls, and multi-factor authentication but also regularly updating these systems to stay ahead of evolving threats. Additionally, building a culture of risk awareness within the organization is fundamental. Employees at all levels should be trained to recognize potential risks and understand their roles in mitigating them. Establishing clear communication channels for risk reporting and ensuring that staff can report irregularities without fear of reprisal are essential components of a proactive risk management culture. Moreover, scenario planning and stress testing should be integral to the FSM's risk management strategy. By simulating extreme yet plausible risk events—such as severe market downturns, natural disasters impacting production facilities, or major cyber-security breaches—companies can identify weaknesses in their current risk management approaches and refine their contingency plans. Financial risk transfer mechanisms, such as insurance policies or contractual risk-sharing arrangements with suppliers and partners, should also be considered as part of a diversified risk management portfolio. These instruments can help mitigate the financial impact of unforeseen events and provide an additional layer of protection. Furthermore, FSR management under the FSM should be dynamic and adaptive.

As the external environment, technological landscape, and regulatory framework evolve, so too must the risk management strategies. Regular reviews of risk policies and procedures are necessary to ensure they remain relevant and effective. By establishing a dedicated risk management committee that includes representatives from finance, IT, operations, and legal departments, companies can ensure that risk management is integrated into every facet of the

organization's operations. This committee should be empowered to make swift decisions and adjustments in response to emerging risks, ensuring that the FSM remains resilient even in the face of significant challenges. Ultimately, an effective FSR management strategy is not merely a defensive measure but a strategic asset that can enhance overall organizational performance.

By proactively identifying, assessing, and mitigating risks, petrochemical and chemical companies can safeguard their financial stability, protect shareholder value, and build a foundation for sustainable growth in an increasingly uncertain global marketplace. Wang, Y. Y., (2022).

### **7.3. FSM to Enhance Financial Processing Data**

In the competitive and risk-laden environments of petrochemical and chemical companies, high-quality Financial Processing Data (FPD) is the backbone of an effective Enterprise Financial Sharing Model (FSM). FPD, which encompasses the collection, processing, and reporting of financial data, plays a pivotal role in enabling accurate decision-making, risk assessment, and operational efficiency. To harness the full potential of FPD, companies must focus on standardizing data collection methods, integrating advanced data processing technologies, and ensuring that data quality is consistently high. Initially, the FSM should establish a centralized data repository that consolidates financial information from various sources, including operational data, market analysis, and external economic indicators. This repository must be built on a scalable digital platform that supports real-time data integration and analysis. By doing so, companies can achieve a unified view of their financial landscape, reducing discrepancies and eliminating the inefficiencies associated with disparate data systems. Next, standardization is key. The FSM should implement uniform data standards and protocols across all departments and subsidiaries, ensuring that financial information is collected and processed in a consistent manner. This includes the adoption of common chart of accounts, standardized data formats, and uniform reporting templates. Such measures not only enhance data integrity but also facilitate smoother integration with other digital tools and systems. Advanced data processing technologies, such as robotic process automation (RPA) and artificial intelligence (AI), should be deployed to automate routine data processing tasks. Automation minimizes the risk of human error, increases processing speed, and frees up valuable human resources for more strategic activities (Li, 2023).

For instance, RPA can be used to automate tasks like data reconciliation, error detection, and report generation, thereby ensuring that financial data is both accurate and timely. Additionally, the integration of AI-powered analysis tools can help transform raw data into actionable insights. These tools can analyze vast datasets to identify trends, anomalies, and correlations that might otherwise go unnoticed. Predictive analysis, for example, can forecast future financial performance based on historical data, enabling companies to anticipate potential risks and opportunities. Another critical component of enhancing FPD is the establishment of rigorous data governance and quality control frameworks. The FSM should incorporate automated data validation checks, regular audits, and continuous monitoring processes to ensure that the data remains accurate, complete, and secure. This governance framework must also define clear roles and responsibilities

for data management, ensuring accountability at every level of the organization (Zhao, 2023).

Training and development are also crucial. Employees who handle financial data must be well-versed in the latest data management technologies and best practices. Comprehensive training programs should be implemented to ensure that staff understand the importance of data accuracy, the methodologies for maintaining data quality, and the impact of high-quality FPD on overall organizational performance. Furthermore, the FSM should leverage modern data visualization and reporting tools to present financial data in a clear and accessible manner. Dashboards that provide real-time insights into key financial metrics can empower decision-makers to respond swiftly to emerging trends and potential issues. These dashboards should be designed to offer customizable views, enabling stakeholders to drill down into specific areas of interest and extract detailed insights as needed.

In the context of risk management, high-quality FPD is indispensable. Accurate and timely data allows for more precise risk modeling and forecasting, enabling companies to identify vulnerabilities and implement appropriate mitigation strategies. For petrochemical and chemical companies, where operational and market risks are significant, reliable data is the foundation upon which robust risk management practices are built. Finally, fostering a culture of continuous improvement is essential. The FSM should not view data processing as a static function but rather as an evolving discipline that adapts to new challenges and opportunities. Regular reviews of data management practices, incorporation of feedback from data users, and adoption of emerging technologies ensure that the FPD capabilities remain at the cutting edge.

By prioritizing the enhancement of Financial Processing Data within the FSM, petrochemical and chemical companies can significantly improve operational efficiency, reduce risk exposure, and strengthen their overall financial management framework, ultimately positioning themselves for long-term success in a highly competitive global market (Zhang, 2022).

Constructing a new Enterprise Financial Sharing Model (FSM) tailored to the unique risk landscape of petrochemical and chemical companies requires a comprehensive and

transformative approach that integrates advanced digital technologies, robust risk management practices, and streamlined operational processes. The design of this new FSM must be driven by a clear understanding of the specific risks these companies face—such as market volatility, operational hazards, regulatory pressures, and cyber-security threats—and must incorporate mechanisms to mitigate these risks effectively. The construction process should begin with a strategic assessment of the existing financial management framework, identifying areas where inefficiencies and vulnerabilities exist. Based on this assessment, the new FSM should be built upon a robust digital infrastructure that leverages cloud computing, big data analysis, artificial intelligence (AI), and block-chain technology. A cloud-based infrastructure, in particular, offers the advantages of scalability, flexibility, and real-time data integration, which are essential for consolidating financial information from disparate sources into a single, reliable repository. This centralized repository serves as the foundation for all subsequent financial processing, enabling seamless data flow and reducing the likelihood of errors that could lead to financial misstatements or compliance issues. Next, the new

FSM should incorporate agile process automation technologies such as robotic process automation (RPA) to handle repetitive, manual tasks. Automating processes like data entry, reconciliation, and report generation not only increases efficiency but also minimizes the risk of human error—a critical consideration in industries where precision is paramount (He, Q, 2023).

Alongside automation, the integration of advanced analysis is essential. Predictive analysis tools can analyze historical and real-time data to identify trends and forecast potential risk events, such as fluctuations in commodity prices or unexpected operational disruptions. This proactive approach enables companies to implement timely interventions and adjust their financial strategies in response to emerging threats. Equally important is the establishment of a comprehensive risk management framework within the FSM. This framework should include robust internal controls, continuous monitoring systems, and well-defined contingency plans. The implementation of real-time dashboards that display key risk indicators—such as liquidity ratios, credit exposures, and operational performance metrics allow decision-makers to monitor the financial health of the organization continuously. In parallel, cyber-security must be a cornerstone of the new FSM (Xing, 2023).

As financial data becomes increasingly centralized and digitized, the risk of cyber-attacks and data breaches grows. To address this, the FSM must be equipped with advanced cyber-security measures, including multi-factor authentication, encryption, intrusion detection systems, and regular vulnerability assessments. These measures should be complemented by a comprehensive data governance policy that outlines protocols for data access, usage, and protection. Organizational restructuring is another critical element. The new FSM should feature a centralized financial shared services center that consolidates key functions such as accounting, treasury, and risk management. This centralization not only fosters greater consistency and standardization across the organization but also enables economies of scale that can lead to significant cost savings. Change management is crucial during this transition. Companies must invest in extensive training programs to ensure that all employees are familiar with the new systems, processes, and technologies. Effective communication of the strategic benefits of the new FSM helps secure buy-in from all stakeholders, thereby minimizing resistance to change. Governance structures should be put in place to oversee the implementation and ongoing operation of the FSM (Zan, S, 2024).

This includes forming dedicated committees or oversight boards responsible for regularly reviewing performance metrics, assessing risk exposures, and making strategic adjustments as needed. By establishing clear roles, responsibilities, and accountability mechanisms, companies can ensure that the FSM remains aligned with both risk management objectives and broader strategic goals. Finally, flexibility and scalability must be embedded into the design of the new FSM. Adopting agile methodologies and modular system architectures allow the model to evolve in response to changing market conditions, technological advancements, and emerging risks. This forward-thinking approach ensures that the FSM is not only robust in the present but also capable of adapting to future challenges. In summary, constructing a new FSM for petrochemical and chemical companies requires a holistic rethinking of traditional financial management

paradigms. By integrating advanced digital technologies with a proactive risk management framework and streamlined operational processes, companies can develop an FSM that significantly enhances operational efficiency, reduces risk exposure, and supports sustainable growth in an increasingly complex global environment (Zhou, 2023).

#### **7.4. FSM to Integrate FDT, FSR And FPD**

In today's dynamic and risk-prone global environment, the development of an integrated and future-oriented Enterprise Financial Sharing Model (FSM) is not only a strategic imperative but also a critical enabler of long-term success for petrochemical and chemical companies. This holistic FSM must synthesize the transformative elements of Financial Digital Transformation (FDT), rigorous Financial Sharing Risk (FSR) management, and high-quality Financial Processing Data (FPD) into a unified framework that enhances operational efficiency, bolsters risk resilience, and supports strategic decision-making. The roadmap for such an integrated FSM begins with the establishment of a centralized digital infrastructure that acts as the backbone for all financial activities. This infrastructure should be built on scalable cloud technologies, ensuring that financial data from various operational units and market sources is consolidated into a single, reliable repository. This unified data platform not only facilitates real-time monitoring of key performance indicators but also provides the analytical foundation for predictive risk management. By integrating advanced business intelligence and data visualization tools, companies can transform raw financial data into actionable insights that inform both short-term tactical decisions and long-term strategic planning. Concurrently, the FSM must embed a comprehensive risk management framework that continuously identifies, assesses, and mitigates the diverse risks inherent in the petrochemical and chemical industries. Leveraging predictive analysis and scenario planning, the risk management component of the FSM should be designed to simulate a wide range of adverse conditions—from drastic commodity price fluctuations and supply chain disruptions to regulatory changes and cybersecurity threats. These simulations allow companies to develop and refine contingency plans, ensuring that the organization remains resilient even in the face of unexpected challenges (Yang, 2022).

Central to this integrated approach is the enhancement of Financial Processing Data (FPD). High-quality FPD is essential for the accurate reporting, monitoring, and analysis of financial performance. The FSM should implement stringent data governance protocols, standardized data formats, and automated processing tools that ensure the integrity, accuracy, and timeliness of financial information. With reliable FPD in place, decision-makers can conduct precise risk assessments, optimize resource allocation, and adjust strategies in response to real-time data insights. Furthermore, an integrated FSM must promote cross-functional collaboration and agile decision-making. Establishing dedicated teams that include finance, IT, operations, and risk management professionals facilitate the seamless exchange of information and foster a culture of continuous improvement (Yan, 2023).

These teams should be supported by integrated communication platforms and regular strategic review sessions that allow for rapid response to emerging risks and opportunities. Governance and accountability are also critical components of the integrated FSM. A multi-layered

governance structure, featuring executive oversight, risk management committees, and IT security teams, should be established to ensure that the FSM remains aligned with corporate objectives and regulatory requirements. This governance framework should be underpinned by clear performance metrics, real-time dashboards, and periodic audits that provide comprehensive visibility into the financial and operational health of the organization. Flexibility and scalability must be embedded in every aspect of the FSM.

As the global business environment continues to evolve, petrochemical and chemical companies need an FSM that can adapt to new technologies, market trends, and regulatory landscapes. Adopting agile methodologies and modular system designs allow the FSM to evolve iteratively, incorporating new innovations and adjustments as needed to maintain its effectiveness. Finally, fostering a culture of innovation is essential for the long-term success of the integrated FSM. Encouraging experimentation, investing in research and development, and establishing partnerships with technology providers and academic institutions can drive continuous improvements and keep the organization at the forefront of financial management best practices. In conclusion, this integrated, future-oriented roadmap offers a comprehensive framework for the development and continuous improvement of an Enterprise Financial Sharing Model tailored to the unique challenges and opportunities of the petrochemical and chemical industries. By harmonizing digital transformation, rigorous risk management, and high-quality financial data processing into a cohesive strategy, companies can build an FSM that is resilient, efficient, and agile—capable of navigating the complexities of today's global environment while positioning themselves for long-term success and sustainable growth. Yang, H. L., (2022).

#### **7.5. FSM the Petrochemical and Chemical Companies**

For petrochemical and chemical companies, constructing an FSM requires tailoring the model to address industry-specific challenges such as volatile commodity prices, strict environmental regulations, and complex supply chains. This construction involves developing a specialized framework that integrates advanced digital technologies, robust risk management, and high-quality financial processing tailored to the nuances of the industry. By establishing industry-specific dashboards, risk models, and reporting systems, companies can achieve greater transparency and control over their financial operations. The benefits of such a tailored FSM include enhanced operational efficiency, improved regulatory compliance, and the ability to quickly adapt to market fluctuations, which are critical in high-stakes environments. The internal logic driving this approach is the recognition that the unique risks and operational demands of the petrochemical and chemical sectors require a customized financial sharing model that not only safeguards against financial uncertainties but also leverages digital transformation to create a competitive edge in a global market (Xia, 2022)

The findings of this study have significant implications for petrochemical and chemical companies seeking to enhance their financial management frameworks through an advanced Enterprise Financial Sharing Model (FSM). By integrating Financial Processing Data (FPD), Financial Digital Transformation (FDT), and Financial Sharing Risk (FSR) management, companies can develop a holistic approach that

ensures operational efficiency, robust risk management, and enhanced decision-making capabilities. Enhanced Financial Data Accuracy and Integrity, the study underscores the importance of high-quality FPD in ensuring accurate financial reporting and effective decision-making. Standardizing data collection, adopting automated processing technologies such as Robotic Process Automation (RPA), and implementing real-time analysis can significantly improve data integrity and consistency across financial operations. This advancement minimizes errors, reduces discrepancies, and enhances financial transparency, ultimately leading to better resource allocation and strategic planning.

Strengthened risk management framework, the implementation of a risk-resilient FSM has profound implications for mitigating financial, operational, and market risks within petrochemical and chemical industries. By leveraging predictive analysis, scenario modeling, and real-time monitoring, companies can proactively identify and address potential financial vulnerabilities. Establishing rigorous data governance policies further ensures compliance with industry regulations, cyber-security standards, and financial reporting requirements, thereby strengthening overall corporate risk management. Operational Efficiency and Cost Optimization, the study highlights the role of digital transformation in streamlining financial operations through automation, centralized financial data repositories, and cloud-based financial management systems. By reducing manual processes and integrating financial activities across subsidiaries and departments, companies can achieve greater efficiency, lower operational costs, and improve scalability. This optimization translates into better financial performance and long-term sustainability.

Improved decision-making and strategic agility, the ability to harness real-time financial data and advanced analysis tools empowers decision-makers with actionable insights. With dashboards providing real-time views of key financial metrics, stakeholders can make informed decisions quickly, respond effectively to market fluctuations, and adapt to evolving regulatory landscapes. This agility is particularly crucial for petrochemical and chemical companies operating in volatile and highly competitive global markets. Digital transformation as a competitive advantage, The integration of cloud computing, big data analysis, AI-driven insights, and blockchain technology within the FSM offers a distinct competitive advantage. Companies that effectively adopt these technologies can drive innovation, enhance financial security, and develop more dynamic business models. Furthermore, a digitally enabled FSM fosters collaboration among cross-functional teams, ensuring seamless communication and improved alignment between financial strategies and business objectives.

Organizational change and capacity building, the study emphasizes the necessity of organizational restructuring and workforce upskilling to maximize the benefits of an advanced FSM. Training employees on financial data management technologies, automation tools, and risk assessment methodologies ensures that personnel are equipped to handle complex financial ecosystems effectively. Additionally, fostering a culture of continuous learning and innovation helps organizations remain adaptable and resilient in a rapidly changing financial landscape. Regulatory compliance and governance enhancement, with increasing regulatory scrutiny in the petrochemical and chemical industries, implementing a structured governance model within the FSM is imperative.

The study indicates that well-defined oversight mechanisms, compliance monitoring systems, and standardized reporting frameworks contribute to better adherence to financial regulations. By ensuring regulatory alignment, companies can avoid financial penalties, enhance stakeholder trust, and maintain corporate credibility in the global market. Long-term sustainability and business resilience, the strategic integration of FSM elements, including risk management, financial processing, and digital transformation, positions companies for long-term success. By continuously refining financial models, incorporating emerging technologies, and adapting to market trends, petrochemical and chemical firms can build a resilient financial infrastructure that supports sustainable growth and competitive differentiation.

The implications of this study extend beyond immediate financial enhancements, offering a transformative framework for petrochemical and chemical companies to navigate complex financial landscapes. By prioritizing data accuracy, risk resilience, operational efficiency, and digital transformation, firms can develop an FSM that not only meets current financial challenges but also anticipates and adapts to future industry dynamics. This forward-looking approach ensures that financial management remains a strategic enabler of corporate success, driving profitability, compliance, and innovation in an increasingly volatile global economy.

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