Review

Aligning IT and Business Strategies: Achievements and Challenges – A Systematic Literature Review

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Systematic Review

Aligning IT and Business Strategies: Achievements and Challenges—A Systematic Literature Review

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Abstract: Aligning Information Technology (IT) with business strategies is crucial for improving operational efficiency, innovation, and competitiveness, particularly in small and medium-sized enterprises (SMEs). However, SMEs face unique challenges in achieving this alignment due to limited resources, technical expertise, and a rapidly changing technological landscape. This systematic review aims to assess the achievements and challenges of IT-business alignment in SMEs from 2014 to 2024, with a focus on the impact of emerging technologies such as Artificial Intelligence (AI), the Internet of Things (IoT), and blockchain. A systematic search of Google Scholar, Web of Science, and Scopus databases identified 63 relevant papers. Studies were selected based on their relevance to IT-business alignment in SMEs, and both quantitative and qualitative data were extracted and analyzed to identify key trends, achievements, and challenges. The review found that 74% of SMEs reported improved operational efficiency and 68% experienced enhanced innovation opportunities due to effective IT-business alignment. However, 59% of SMEs identified resource limitations as a significant barrier, while 45% highlighted a lack of technical expertise. Additionally, 35% of SMEs faced organizational resistance to change. Emerging technologies such as AI and IoT contributed positively to IT alignment in 60% of cases, though 30% of SMEs noted challenges related to cybersecurity and skills gaps. IT-business alignment is essential for SMEs to enhance productivity and remain competitive in a dynamic technological environment. While the integration of emerging technologies shows promise, SMEs continue to face significant barriers, including resource constraints and technical skills shortages. Tailored frameworks, industry-specific policies, and targeted training programs are needed to help SMEs overcome these challenges. Future research should investigate the long-term impacts of IT-business alignment and explore strategies to increase its accessibility and effectiveness.

Keywords: IT-business alignment; SMEs; emerging technologies; operational efficiency; digital transformation; systematic review

1. Introduction

In today's rapidly evolving technological landscape, aligning Information Technology (IT) with business strategies has become a critical priority for organizations, particularly small and medium-sized enterprises (SMEs). Unlike larger corporations with abundant resources and dedicated IT teams, SMEs face unique challenges in integrating IT into their business processes. These challenges necessitate a more strategic approach to IT alignment, which is essential for maintaining competitiveness and ensuring sustainable growth. For SMEs, successful IT-business alignment can lead to numerous benefits, including enhanced operational efficiency, improved marketing capabilities, and better protection of intellectual property. However, SMEs frequently struggle to align IT investments with limited budgets and rapidly changing business goals [1]. Emerging technologies, such as Artificial Intelligence (AI), the Internet of Things (IoT), and blockchain, are transforming the potential for IT-business alignment [2,3]. Yet, much of the existing literature fails to address the detailed effects of these technologies within SMEs. Several studies acknowledge these advancements but lack in-depth analysis or practical illustrations, leaving gaps in understanding [4–7]. This gap highlights the need to explore how these technologies can revolutionize business models

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and operational frameworks within SMEs [16,35]. For example, AI can optimize marketing strategies, enhance customer service through predictive analytics, and support decision-making by providing data-driven insights [8,9]. In sectors like manufacturing and agriculture, IoT can enhance productivity by enabling real-time tracking of the supply chain and the use of sensors, while blockchain can improve transparency and security, especially in supply chain management [7,38]. However, discussions around these technologies often remain superficial, failing to provide measurable impacts or practical examples of how these innovations influence IT-business alignment in SMEs [10–15].

The lack of real-world guidance for SMEs to effectively integrate these technologies is another gap identified in the literature. Few studies provide actionable steps or detailed case studies demonstrating how SMEs can implement AI, IoT, or blockchain to enhance operational effectiveness [16–20]. This disconnect between theoretical discussions and practical implementation strategies is a significant limitation in the current research. Practical examples could help bridge this gap, illustrating how SMEs can leverage technology to improve coordination and business processes [21–25]. For instance, a small retail business could utilize AI-driven recommendation systems to enhance customer interactions, or a manufacturing company might apply predictive analytics to streamline supply chain efficiency. Similarly, blockchain could be employed by logistics companies to improve transparency and traceability in daily operations. The absence of such examples weakens the practical insights available on IT-business alignment in SMEs [26]. To overcome these limitations, future research must focus on demonstrating how SMEs can integrate these emerging technologies into their operations. AI applications could leverage resources such as TensorFlow or IBM Watson to enhance decision-making. For IoT, tools like AWS IoT or Microsoft Azure IoT should be explored, while for blockchain, platforms like Hyperledger or Ethereum offer potential solutions for improving business processes. Engaging in research trials and case studies would provide evidence of the benefits these technologies can bring to SMEs, moving beyond theoretical discussion and offering concrete action plans. Despite the extensive research on IT-business alignment, significant achievements and challenges remain, particularly for SMEs [9]. This review seeks to explore these challenges and achievements in detail, with an emphasis on concepts like IT governance, Agile methodologies, DevOps practices, and the importance of embracing digital transformation. The analysis focuses on the specific needs of SMEs [10]. Across the 63 papers reviewed, key challenges include resource shortages, a lack of technical expertise, insufficient formal IT strategies and governance, and difficulties with top management engagement. Environmental uncertainties and region- or sector-specific challenges further complicate IT alignment, particularly in industries like manufacturing or regions such as the Middle East and China. On the achievement side, SMEs have made progress in areas such as IT-business integration, increasing agility and flexibility, and improving business performance through enhanced governance and strategic IT leadership. However, many studies still lack quantitative data or detailed sector-specific analysis, limiting the broader application of findings.

Table 1 presents a summary of the pros, cons, and key contributions of each paper reviewed. It highlights the unique contributions of the studies and their analyses. For example, one paper exploring the influence of IT on organizational strategy demonstrates how IT enhances flexibility and integration within organizations. However, it also points out the challenges of maintaining sustained alignment due to rapid technological changes. Another study emphasizes the crucial role of top management and IT capabilities in boosting SME competitiveness but acknowledges difficulties in generalizing findings and implementing strategies across diverse settings.

Table 1. Comparative analysis of the existing review works and proposed systematic review on aligning IT and business strategies on achievements and challenges.

Ref.	Cites	Year	Contribution	Pros	Cons
[1]	7	2017	Influence of information technology on organization strategy	Enhanced flexibility and cross-functional integration improve alignment.	Rapid IT changes complicate sustained strategic alignment.

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[2]	19	2019	The Role of Top Management Participation and IT Capability in Developing SMEs' Competitive Process Capabilities	Highlights key factors for SMEs' competitive advantage.	Limited generalizability to other contexts; implementation challenges.
[3]	21	2020	Aligning the IT portfolio with business strategy: Evidence for complementarity of corporate and business unit alignment	Emphasizes the impact of cross-domain alignment on performance.	Insufficient attention to alignment challenges within organizations.
[4]	0	2018	The influence of strategy-making types on IT alignment in SMEs	Implementing a thought-out plan improves coordination, optimizes the allocation of resources, and boosts effectiveness.	Coverage restrictions, various viewpoints, and adaptive approaches are less successful.
[5]	9	2018	Factors Hindering Business-IT Alignment in Small and Medium Enterprises in China	Boosts effectiveness, promotes collaboration, improves flexibility, and fuels achievements.	Strong leadership, execution, demanding resources, and the possibility of alignment issues.
					Second paper
[23]	25	2021	Application of SAM in SMEs in Iraq	Enhanced understanding of IT-business alignment's impact on SME performance.	Limited adoption and empirical evidence of SAM's effectiveness in non-Western contexts, such as the Middle East.
[35]	31	2020	Provides evidence that both corporate IT platform alignment and business unit IT application alignment jointly influence business unit performance in MBOs	Demonstrates the positive impact of aligning corporate and business unit IT strategies on performance and highlights the importance of cross-domain alignment	It may not fully address the practical difficulties and resource constraints MBOs face in achieving and maintaining alignment.
[51]	5	2020	Proposes a business/IT integration model that merges business and IT into a unified strategy to address digitalization needs.	Enables IT to play a central role in driving organizational innovation and value creation.	Survey results are limited to identifying boundaries without extensive real-world validation.
[53]	4	2023	Proposes and validates a new industry taxonomy for understanding IT use that generates superior economic returns.	Provides a framework for managers to optimize IT investments based on industry characteristics.	Limited to data from Italian firms, which may not generalize to other industries or regions.
[56]	1	2023	Proposes a framework using structuration and sensemaking theories to explain SME social media adoption	Provides a nuanced understanding of cognitive and collective factors influencing SME social media adoption	Limited focus on real-world application and empirical validation of the proposed framework
[58]	0	2023	Introduces a comprehensive DevOps IT alignment model including firm size, background, and experience in SMEs in Sri Lanka	Provides novel insights into the impact of DevOps on business-IT alignment, addressing previously overlooked factors	Limited generalizability outside the specific context of Sri Lanka and lack of focus on practical application
[60]	5	2024	Proposes a new multi-agent system framework for dynamic business-IT alignment.	Enhances real-time adaptation and cooperation between business and IT through advanced algorithms.	Limited empirical validation, with the study only conducted on Moroccan organizations.
[61]	39	2022	Explores strategies technology managers need to enhance IT-business alignment processes, addressing leadership gaps.	- Provides in-depth analysis of IT-business alignment challenges. - Highlights the need for effective leadership and communication between IT and business executives. - Suggest a strategic alignment model (SAM) for practical application.	- Lacks detailed, actionable solutions for implementing IT-business alignment. - Focuses more on theoretical insights rather than providing step-by-step guidance. - Limited geographical scope of study participants (Huntsville, Alabama).

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Proposed Systematic Review	The reviewed papers emphasize the critical role of aligning IT and business strategies in improving organizational performance, demonstrating how effective integration of IT capabilities with business objectives enhances competitiveness, adaptability, and operational efficiency across various industries, particularly in SMEs.	The review emphasizes the importance of aligning IT and business strategies for SMEs, as it enhances flexibility, cross-functional integration, and competitive advantage. It also highlights the role of IT investments, decision-making, and real-time business-IT adaptation in SME performance.	The reviewed papers point out that rapid IT changes and evolving business environments complicate strategic alignment. Limited empirical validation, geographical scope, and generalizability present challenges, especially in non-Western contexts. Studies often focus on theoretical insights without practical implementation guidance, limiting practical utility.

The application of the Strategic Alignment Model (SAM) in SMEs, particularly in Iraq, provides valuable insights into how IT-business alignment impacts organizational performance. Despite these insights, the study is limited by its narrow focus on non-Western contexts and its low rate of adoption. Recent papers also propose various models and frameworks to enhance IT-business alignment, offering both theoretical and practical contributions. However, these studies often face limitations related to the lack of empirical validation and the challenges of applying these models in specific regional and organizational contexts.

1.2. Research Questions

Although substantial research has been conducted over the past decade on aligning Information Technology (IT) with strategies in small and medium-sized enterprises (SMEs), a comprehensive systematic review that provides a comparative analysis of these alignment strategies is lacking in the literature. Therefore, this work aims to review existing literature on the alignment of IT and SME strategies, highlighting key achievements and challenges. To achieve this, the following research questions have been proposed:

- How do SMEs in various sectors (e.g., retail, manufacturing, services) measure the effectiveness of aligning their IT strategies with their business objectives, and what metrics are most used across these sectors?
- How do leadership styles and organizational culture influence the alignment of IT and business strategies in medium-sized enterprises, particularly in the South African context?
- What roles do emerging technologies, such as Artificial Intelligence (AI), the Internet of Things (IoT), and blockchain, play in IT-business alignment, and what new challenges do they introduce in SME contexts?
- What frameworks and methodologies are most effective for achieving and maintaining alignment between IT and SME strategies, especially in industries with varying levels of technological maturity?
- How do emerging technologies impact the current alignment of IT infrastructure with business strategies in SMEs, and what steps can be taken to upgrade outdated frameworks to meet future needs?

1.3. Rationale

In today's fast-paced and competitive business environment, aligning IT with business strategy is increasingly critical for SMEs to remain competitive. Technological integration enables organizations to adapt to market changes, but SMEs often face unique challenges due to limited resources, competing priorities, and varying levels of technological readiness. Additionally, much of the existing research focuses on large enterprises, leaving a gap in understanding how SMEs, particularly in regions such as South Africa, achieve this alignment. This review seeks to address this gap by examining how SMEs successfully align IT with business strategies, the role of emerging technologies, and the barriers they face. The findings aim to offer valuable insights for SMEs, policymakers, and IT professionals seeking to optimize strategic alignment and improve business outcomes.

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1.4. Objectives

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- What frameworks and methodologies are most effective for achieving and maintaining alignment between IT and SME strategies, especially in industries with varying levels of technological maturity?
- How do emerging technologies impact the current alignment of IT infrastructure with business strategies in SMEs, and what steps can be taken to upgrade outdated frameworks to meet future needs?

1.5. Research Contribution

This work presents a comprehensive systematic review of the alignment between IT and SME strategies, focusing on achievements and challenges. The research provides valuable insights and identifies critical gaps in the literature. The primary research contributions include:

- An examination of research on IT alignment within SMEs, highlighting notable achievements in improving strategic alignment. SMEs have successfully utilized IT to drive business growth and gain a competitive edge by adopting effective strategies and following recommended practices.
- A careful classification of the challenges SMEs face when aligning IT with business objectives, including resource limitations, a shortage of technical expertise, and organizational resistance to change. By highlighting these challenges, the review establishes a foundation for future research and real-world strategies to address these issues effectively.
- A collection of existing research on the alignment of IT and business strategies in SMEs, identifying areas requiring further investigation. This review explores how emerging technologies, such as cloud computing and AI, can improve alignment and discusses ways SMEs can overcome challenges specific to their size and resource constraints.

1.6. Research Novelty

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technologies, such as cloud computing and AI, can improve alignment and discusses ways SMEs can overcome challenges specific to their size and resource constraints.

This manuscript is organized as follows: Section 1 introduces the concept of aligning IT with business strategies in SMEs, outlining the problem statement, research questions, rationale, and objectives of the study. Section 2 discusses the materials and methods, including the eligibility criteria, databases searched, and the review's systematic approach. Section 3 presents the results, highlighting trends and key findings, and studying characteristics related to IT-business alignment in SMEs. Section 4 provides a discussion of the results, interpreting the findings and offering practical recommendations for SMEs. Finally, Section 5 concludes the study, summarizing the main points and suggesting future research directions.

2. Methods and Materials

This section outlines the methodologies and approaches used in this ten-year systematic review, which focuses on examining both the achievements and challenges in aligning Information Technology (IT) and business strategies in Small and Medium Enterprises (SMEs). To the best of the authors' knowledge, no comparable study has been conducted in the past decade that offers a comprehensive review of IT-business alignment specifically for SMEs. A systematic approach was applied, utilizing document review methods, and specifying the databases used for the search. We employed targeted search techniques to examine relevant content within specific timeframes (2014–2024) to avoid any potential misalignment. The review process involved collecting literature from various sources, including peer-reviewed journals and conference proceedings, using databases such as Google Scholar, Web of Science, and SCOPUS. The selection criteria were based on the relevance of papers discussing IT-business alignment within the context of SMEs. The frameworks and methodologies presented in the studies varied, with some papers focusing on practical frameworks, while others employed qualitative or quantitative methods such as case studies and surveys. To ensure a comprehensive and precise review, we considered materials offering diverse perspectives, allowing us to assess the alignment strategies across multiple sectors and geographic locations. The systematic flow of the research methodology is represented in Figure 1, which illustrates the steps taken to ensure thorough and accurate data collection and analysis.

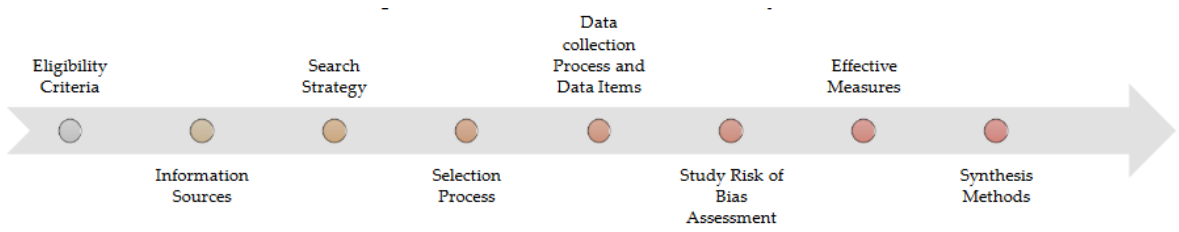

Figure 1. Methods and Materials Section Flow Diagram.

2.1. Eligibility Criteria

To conduct this systematic review, we completed a comprehensive evaluation of all peer-reviewed, published research related to the alignment of Information Technology (IT) and business strategies within Small and Medium Enterprises (SMEs) from 2014 to 2024. Only studies published in English were considered for inclusion. The inclusion criteria were carefully designed to ensure the relevance and rigor of selected studies. Specifically, we focused on research that examined both the achievements and challenges of aligning IT and SME strategies. Studies that did not explicitly address these topics or were not peer-reviewed were excluded from the review. Table 1 outlines the inclusion and exclusion criteria used for selecting the papers in this study.

Table 3. Proposed Inclusion and Exclusion Criteria.

Criteria	Inclusion	Exclusion

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Topic	Research papers focusing on IT in business strategies, examining challenges and achievements	Research papers not focusing on IT in business strategies or lack a discussion of challenges and achievements.
Research Framework	Work must include a research framework aligning IT with business strategies and discussing achievements and challenges.	Research lacking a clear framework on IT-business strategy alignment
Language	Must be written in English	Articles published in languages other than English
Period	Publications from 2014 to 2024	Publications outside the period of 2014 to 2024

2.2. Information Sources

For this systematic review, information was sourced from a wide range of scholarly databases known for their high standards in research. The key databases utilized were Web of Science, Scopus, and Google Scholar. These platforms were selected due to their reputation for hosting peer-reviewed, high-quality academic content, ensuring that the review is grounded in robust, credible research. The search covered various forms of published works, including journal articles, theses, books, and conference papers, all relevant to the alignment of Information Technology (IT) with business strategies in Small and Medium Enterprises (SMEs). By relying on these authoritative sources, the study draws on comprehensive and up-to-date information to address the research questions effectively.

2.3. Search Strategy

The search strategy applied in the chosen scholarly databases (Web of Science, Scopus, and Google Scholar) involved the use of Boolean and proximity operators such as "AND" "OR" "NOT," and "AROUND" to refine and improve the accuracy of the search results. These operators allowed for pairing and excluding specific keywords to retrieve the most relevant studies, filtering out irrelevant content and focusing on critical information. The Boolean search expressions included phrases like:

- ("IT alignment" OR "Information Technology alignment" OR "IT strategy") AND ("SMEs" OR "Small and Medium-sized Enterprises" OR "Small businesses") AND (Achievements OR Challenges OR "Strategic alignment" OR "Business-IT alignment")
- ("IT alignment" OR "IT-business alignment" OR "Information Systems alignment") AND ("SMEs" OR "Small enterprises" OR "Medium enterprises") AND ("Success factors" OR "Barriers" OR "Implementation challenges")
- ("Information Technology" OR "IT" OR "Digital strategy") AND ("Small and Medium-sized Enterprises" OR "Small businesses" OR "SMEs") AND ("Alignment" OR "Strategy alignment" OR "Organizational alignment")

This structured approach ensured that the search yielded relevant and comprehensive data, matching the strict inclusion and exclusion criteria for this study. The results from each database were filtered and aligned with the requirements of the systematic review ensuring a thorough exploration of the topic as shown in Table 4.

Table 4. Search Results from Online Repositories.

No.	Online Repository	Number of Results
1	Google Scholar	1820
2	Web of Science	685
3	SCOPUS	150
Total		**2655**

2.3. Selection Process

Four researchers (STS, TDG, DP, and BAT) were responsible for the screening process of the 50 records retrieved from the initial search. Each researcher independently assessed the titles and abstracts of these records. Any disagreements were discussed among the team until a consensus was

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reached. Following this initial screening, the researchers worked in pairs to review the titles and abstracts of all the collected articles. In cases of disagreement, discussions took place within the pair, and if no resolution could be reached, a third researcher was consulted to make the final decision. For the full-text review, three researchers (STS, TDG, and DP) independently evaluated the articles based on the inclusion criteria, with any disagreements resolved through discussion. If consensus could not be achieved, the fourth researcher (BAT) made the final decision. This process ensured a comprehensive and unbiased evaluation of the studies selected for review, as shown in Figure 2.

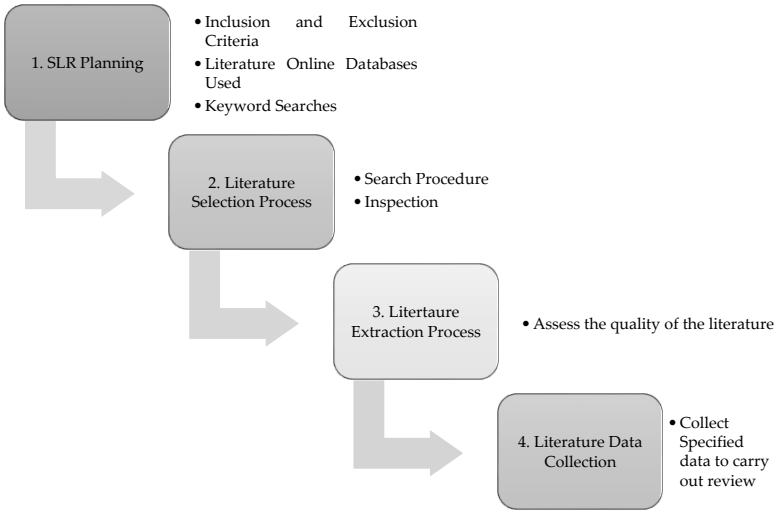

Figure 2. Proposed Selection Process.

2.4. Data Collection Process

The data collection process was comprehensive. We employed three reviewers, each responsible for collecting data from different database sources. To maintain the relevance and currency of the information, only data from 2014 onwards was included. Given the rapid evolution of IT within businesses, the use of up-to-date information was critical. Each reviewer worked independently, utilizing their respective databases, while also collaborating to ensure that no data was duplicated across sources. Boolean and proximity operators were used to refine searches on database websites, but no additional automation tools were employed. Each reviewer selected data relevant to this study based on specific outcomes. The criteria for data collection were as follows:

- Data must be from publications within the period of 2014 to 2024.
- The source must be a scholarly article from a recognized database and must offer relevant insights related to this study.
- The information must pertain to IT-business alignment in SMEs and must be agreed upon by all reviewers.
- The data must be in English and focus on up-to-date technology.
- It must address relevant IT technologies and their impact on business, specifically in the context of SMEs.
- The data should include keywords as specified in the search strategy and contribute to understanding IT alignment in SMEs.
- The research objectives, methodology, and context must be clearly defined in the study.
- The data collection methods should be appropriately detailed, and the results must add value to the literature.

The data, once collected, was carefully reviewed, and only the relevant information was extracted for inclusion in the study. This process ensured that the selected data met the rigorous standards required for a systematic review, as illustrated in Figure 3.

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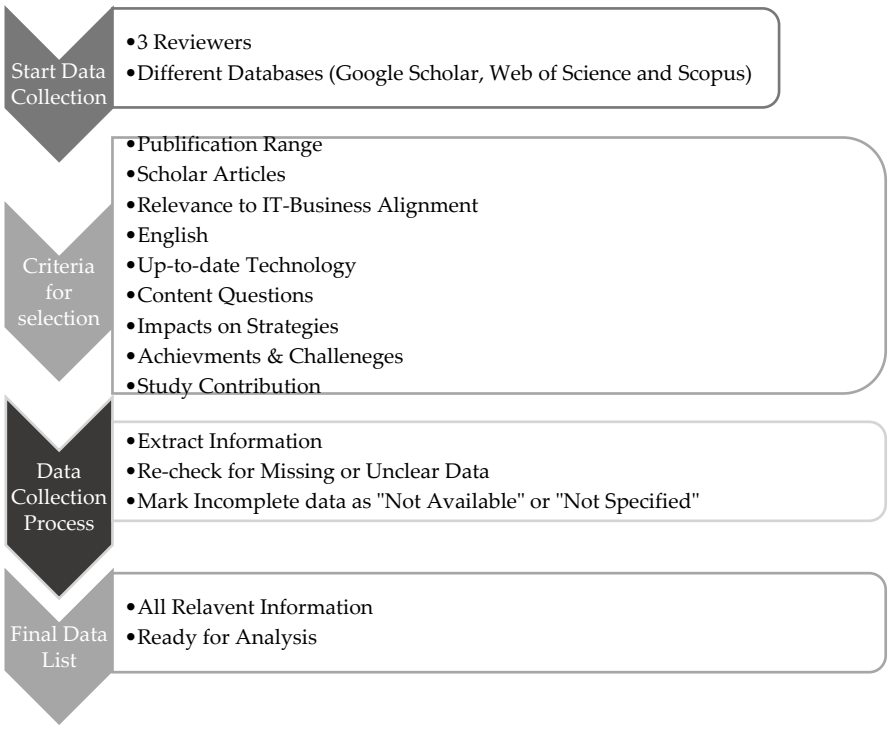

Figure 3. Proposed Data Collection Process. .

2.5. Data Items

This study primarily measures the impact of IT on SMEs, specifically how IT influences operational efficiency and overall business performance. The study aims to capture the effects of both emerging and existing technologies on various business domains, including productivity, safety, task efficiency, manufacturing, customer satisfaction, support services, and internal operations (such as accounting, administration, and procurement). The inclusion criteria for sorting data were based on the relevance of IT to business processes, as outlined in the search strategy using Boolean and proximity operators. Once relevant data was selected, it was sorted for extraction using specific headings to organize the information from various sources. Table 5 outlines the data collected from the literature reviews.

Table 5. Data Items Collected from Literature Reviews.

Criteria	Description
Title	Name of the literature on 'Aligning IT and Business Strategies: Achievements and Challenges.'
Year	The year the literature was published.
Journal/Conference	The journal or conference where the paper was published.
Online Database	The repository used for collecting the literature (Google Scholar, Scopus, Web of Science).
Industry or Sector (technology, manufacturing, services)	The specific sector (technology, manufacturing, services) is discussed in the paper.
SME Characteristics (size, age, ownership)	Information on SME size, age, and ownership is provided in the paper, identifying key characteristics relevant to IT alignment.
Geographic Location	The geographical area where the study was conducted or data was collected (e.g., country or region).
Economic Context (developed vs. developing countries)	The paper's focuses on developed or developing countries and how this influences IT-business alignment.
Type of Study (quantitative, qualitative, mixed methods)	Specifies whether the study is quantitative, qualitative, or mixed methods.

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Research Design (experimental, quasi-experimental, case study, survey)	The research method used (e.g., experimental, quasi-experimental, case study, or survey).
Sample Size	The number of SMEs or participants included in the study.
Operational Performance (efficiency, productivity)	How IT-business alignment impacts operational performance, such as efficiency and productivity.
Financial Performance (revenue, profitability)	The paper's analysis of financial outcomes, such as revenue and profitability, is due to IT-business alignment.
Innovation Performance (new products, services, processes)	New products, services, or processes were introduced due to the IT-business alignment discussed in the study.
Long-Term Impacts (growth, market share)	Focus on long-term business impacts like growth and market share associated with IT-business alignment.

If any information was missing or unclear in the data source, such as the criteria listed above, a re-check was conducted to manually locate the information. If the data remained unavailable, it was excluded from the document and marked as "not available" in the data spreadsheet. After the data was collected and processed, it was used for further analysis in this study.

2.6. Other Data Variables

In the context of aligning IT and business strategies, various key variables were analyzed across the studies to assess both achievements and challenges. Participant characteristics, such as SME size, industry sector, geographic location, and the level of IT maturity, were examined to understand the environments where IT alignment strategies were implemented. Intervention characteristics included specific strategies like ERP system adoption, cloud computing, IT governance models, and digital transformation initiatives. The measured outcomes focused on operational efficiency, financial performance, innovation capacity, competitive advantage, and sustainability. Challenges such as organizational resistance and resource constraints were also highlighted.

Funding sources, including government grants and private institutions, were tracked to assess any potential biases. In cases where data was missing or unclear, assumptions were made based on the study context, with efforts to contact authors for clarification. The Newcastle-Ottawa Scale (NOS) was applied to guide data collection, and AMSTAR 2 was used to ensure a comprehensive and unbiased approach. These methodologies helped address missing data while preserving the robustness and validity of the findings.

2.7. Study Risk of Bias Assessment

Conducting a thorough risk of bias assessment is crucial to ensuring the accuracy and reliability of the data within this study. It is essential to verify that the information is factually sound, devoid of errors, and reliable, thereby enabling meaningful and accurate conclusions. High-quality data fosters informed decision-making based on the study's findings. As illustrated in Figure 4, we implemented a structured process to assess the risk of bias in the literature reviewed, focusing on evaluating the data's quality through various tools designed to ensure the reliability of the information collected.

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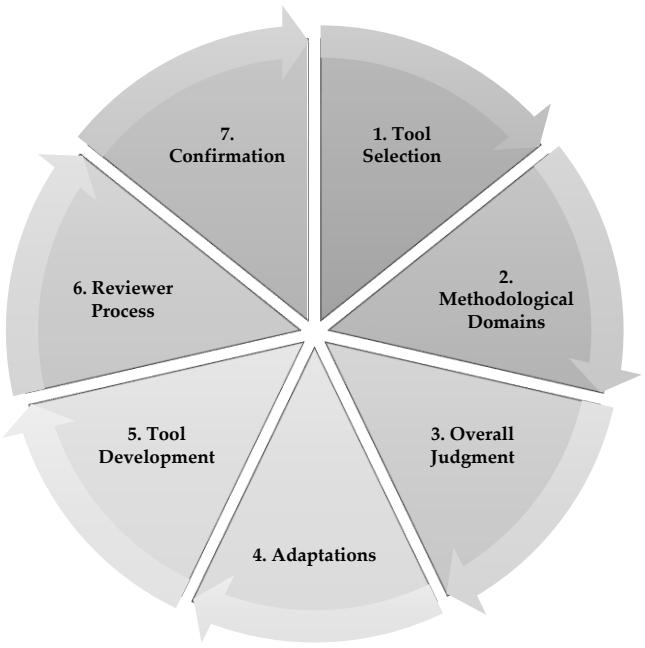

Figure 4. Risk of Bias Assessment Process. .

In our review, we applied the AMSTAR 2 tool, a recognized instrument for critically appraising systematic reviews, to evaluate the risk of bias in the selected studies. AMSTAR 2 evaluates multiple methodological dimensions, ensuring that the data collected is trustworthy and contributes to a clearer understanding of the achievements and challenges associated with aligning IT and business strategies. The tool assessed key domains such as the clarity of research objectives, the appropriateness of study selection, data extraction methods, and the overall study design. The overall risk of bias was determined by consolidating findings across these domains and applying specific rules to assess the robustness and consistency of the methodologies employed. The AMSTAR 2 tool was used without any modifications.

Additionally, we incorporated the Newcastle-Ottawa Scale (NOS), a widely used instrument for assessing the quality of non-randomized studies. This scale evaluates three key domains: the selection of study groups, comparability between groups, and outcome determination. The NOS was selected for its comprehensive framework, which effectively identifies potential biases that could compromise the validity of the study results. To maintain objectivity and precision, a team of three independent reviewers conducted an in-depth assessment of each study. Any disagreements were resolved through discussion, and if consensus could not be reached, a fourth reviewer was consulted to make the final decision. This rigorous approach ensured that our risk of bias assessments were thorough, consistent, and reliable. The overall risk of bias assessment was based on the ratings derived from the NOS, and detailed documentation of reviewer discrepancies and resolutions was maintained to ensure transparency and reinforce the validity of our conclusions. This comprehensive methodology laid a solid foundation for understanding the impact of IT strategic planning on the performance of SMEs, as detailed in Table 6.

Table 6. Risk of Bias Assessment Steps, Tools, and Evaluation Procedures.

Risk of Bias Assessment Steps	Risk of Bias Assessment Description	Risk of Bias Assessment Evaluation
Risk of Bias Assessment Tools	ASMART 2 and Newcastle-Ottawa Scale	Concentrated on the integrity of study cohorts, the comparability between groups, and the evaluation of outcomes.

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Bias Domains	Domain Critics comprised of three assessments	(1) Study Group Selection, (2) Group Comparability, (3) Outcome Assessment
Bias Classification	Literature was categorized into different risk levels according to the results of the assessment.	Assessing risk of bias according to High, Moderate, and Low evaluations
Agreement Procedure	Inconsistencies addressed through collaborative discussions	BAT (fourth reviewer) viewer in the invent a decision cannot be closed between the three reviewers
Overall Outcome	Carried out a thorough and trustworthy appraisal of bias	Guaranteed clarity in the evaluation of bias risks and the credibility of the study results concerning the alignment of IT strategies within SMEs.

2.8. Effect Measures

Effective measures are either the ratio measure or different measures which will be used. We will use these measures to determine the effect of aligning IT and business strategies together. By determining the outcomes of the various tables and figures such as the geographical analysis of the studies and the operational outcomes, long term effects that various IT alignments have on different SMEs we can use this by analyzing the differences between various studies. For effective effect measures we need to identify the data type for outcome measurements. For us, this would be dichotomous data, continuous data, and ordinal data that will be identified. For dichotomous data, we will look at whether the SMEs are aligned with it or not. For continuous data, we will look at the geography of SMEs as well as the type of study conducted and the sample size. For ordinal data we will look at the outcomes of the SMEs, how IT affected the SME as well as its challenges and achievements.

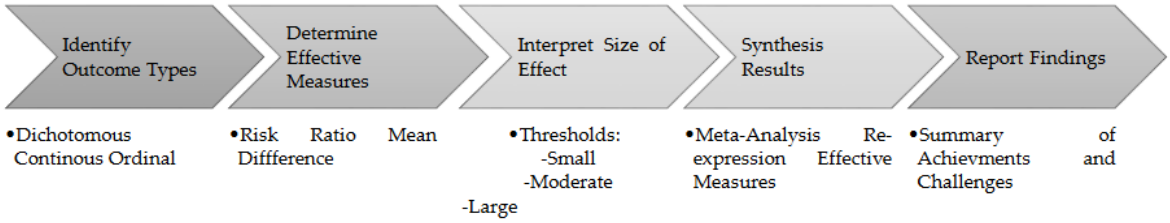

Figure 5. Effective Measures for Aligning IT and SME Strategies.

2.9. Synthesis Methods

In the systematic review on "Aligning IT and SMEs Strategies - Achievements and Challenges," the synthesis methods were carefully chosen to effectively put together and analyze the findings from different studies. These methods were designed to examine how IT strategies correspond with the objectives of medium-sized enterprises showcasing both the achievements and challenges encountered in various conditions. The review aimed to offer a transparent insight into how IT alignment affects medium-sized enterprises (SMEs) by using a methodical strategy, for organizing data tabulating information, and synthesizing findings. The synthesis methods can be seen below and what strategies can be used in Figure 6.

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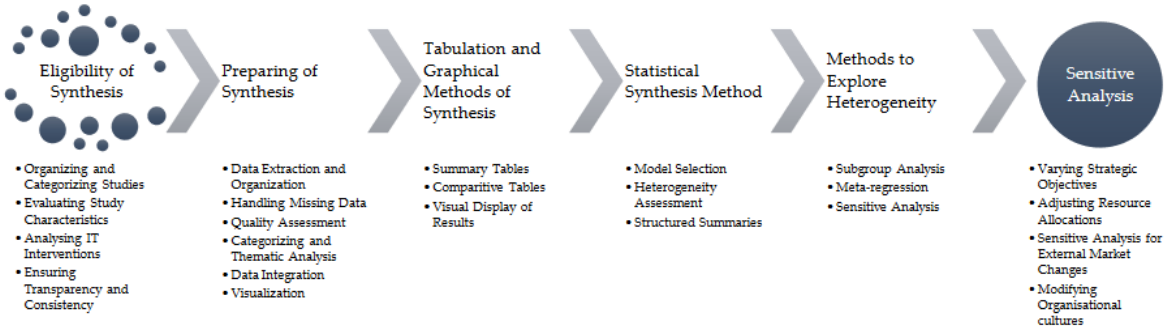

Figure 6. Synthesis Methods for Aligning IT and Business Strategies.

2.10. Process for Deciding Study Eligibility for Synthesis

The selection process which studies to include in the synthesis was carefully done using an approach. This involved organizing and categorizing the details of each study's participants, intervention methods, and results. The characteristics were evaluated in comparison to the standards set for every intended production. The process was created to guarantee openness and consistency, in decision making recognizing the chance of assessments that could impact the result of the synthesis.

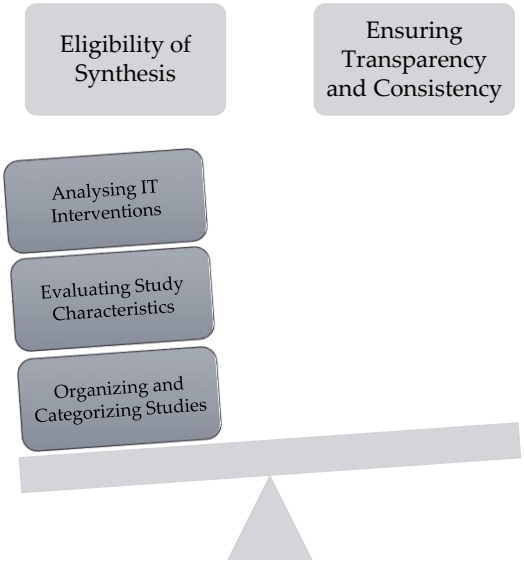

Figure 7. Eligibility of Synthesis for Aligning IT and Business Strategies.

The research papers were first assessed for how they related to IT alignment and SME business strategies. The IT interventions were analyzed based on factors, like the goals of medium-sized enterprises and the tangible results achieved through these interventions. For example, different research studies were grouped based on their emphasis, on strategies related to aligning IT with business processes gaining an edge or improving efficiency. This coding formed the basis for deciding which research studies could be included in syntheses like those examining the success of IT alignment on the achievements and challenges faced by medium-sized enterprises. By following this method, the review strived to uphold impartiality and guaranteed that only studies aligning with the predetermined criteria were incorporated in the synthesis.

2.11. Methods for Preparing Data for Presentation or Synthesis

Several methods were employed to organize the information for the analysis of "Aligning IT and SMEs Strategies - Achievements and Challenges," ensuring the appropriateness of the data for inclusion and rectifying any inconsistencies or omissions. Initially, relevant data from each selected article, including findings, methodologies, and statistical outcomes, was systematically extracted, and

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organized according to predefined criteria. In instances of missing summary statistics or essential data, efforts were made to contact the authors for clarification or additional information; if data could not be obtained, the articles were flagged, and the absence was noted in the synthesis [81–101].

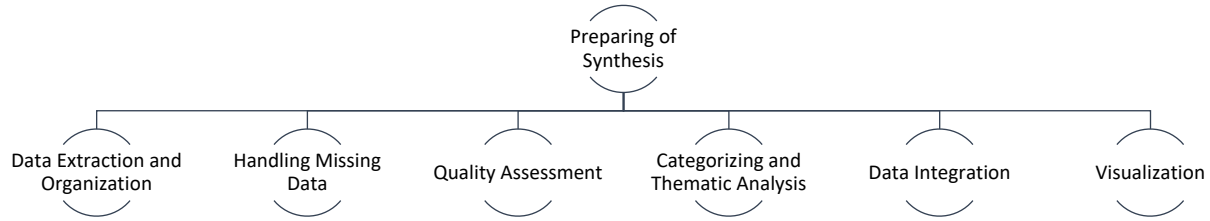

Figure 8. Methods for Preparing Data for Presentation or Synthesis.

Each study was then assessed for quality and relevance using the AMSTAR 2 tool or other appropriate criteria, ensuring that only high-quality studies were included in the final synthesis. The data was categorized into themes related to IT and business strategy alignment, such as industry or sector, SME characteristics, operational performance, economic context, and type of study, which facilitated a structured presentation of findings and identification of common patterns or discrepancies. The synthesized data from various studies was integrated to form a cohesive understanding of the achievements and challenges in aligning IT and business strategies, involving comparisons and contrasts of findings to draw comprehensive conclusions. Finally, visual aids, including charts, graphs, and tables, were utilized to highlight key findings and trends, making complex data more accessible and illustrating the relationships between different factors in IT-business alignment.

2.12. Methods Used to Tabulate or Visually Display Results of Individual Studies and Syntheses

The analysis of "Aligning IT and SMEs Strategies - Achievements and Challenges" utilized various methods to tabulate and visually display the results from individual studies and syntheses, promoting clarity and aiding in the recognition of patterns in the data, particularly in the absence of a meta-analysis.

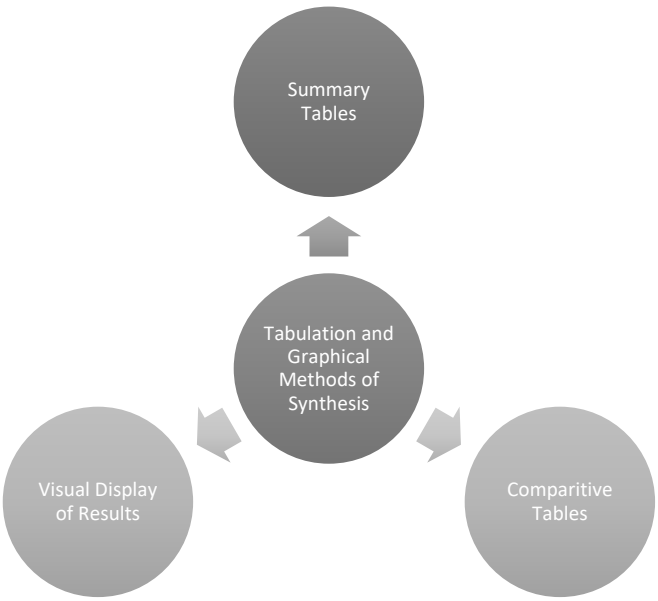

Figure 9. Methods Used to Tabulate or Visually Display Results of Individual Studies and Syntheses.

Summary tables were created to compile findings from each study, highlighting key details such as study features, intervention specifics, and outcomes. These tables were organized to align with the topics discussed in the review, focusing on successes in IT alignment and challenges faced by

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medium-sized enterprises. To facilitate comparisons between studies, comparative tables were employed, providing a side-by-side analysis of impact assessments and key indicators, which helped identify variations and similarities across the research. Wherever feasible, the results were visually displayed using line graphs, bar graphs, and pie charts, enabling effective analysis and interpretation of the findings.

2.12.1. Methods Used to Synthesize Results and Rationale for Choice

In the systematic review on "Aligning IT and SMEs Strategies - Achievements and Challenges," a range of techniques were used to merge the outcomes, from the studies included. The decision on which method to employ for synthesis was influenced by the characteristics of the data and the overarching goals of the review [81–101].

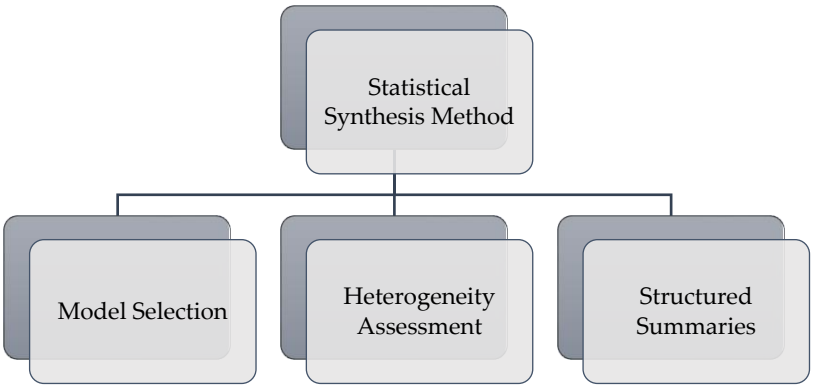

Figure 10. Methods Used to Synthesize Results and Rationale for Choice.

A meta-analysis was conducted to combine effect estimates from studies deemed suitable, utilizing a random effects model due to the expected differences among the studies, which considered a range of IT alignment strategies and medium-sized enterprise characteristics. This model was preferred for its ability to account for variations both within and across studies, yielding a more cautious overall estimate in the presence of diversity. To assess the level and scope of variation, the I^2 statistic was computed, evaluating how much of the differences between studies stemmed from diversity rather than chance, alongside a sensitivity analysis to determine the significance of this diversity. In instances where the data was not conducive to meta-analysis, alternative synthesis methods were utilized, including a detailed narrative review that organized research findings based on their outcomes, identified recurring patterns, and provided an overview of the data.

2.12.2. Methods to Explore Possible Causes of Heterogeneity Among Study Results

When investigating the alignment of IT and SME goals, researchers frequently discover uncertainty in study results, known as heterogeneity. Understanding the underlying causes of this variation is critical for reaching correct findings and identifying factors that influence the effectiveness of IT-SME alignment. The following methods are used to explore possible causes of heterogeneity in such studies [81–101].

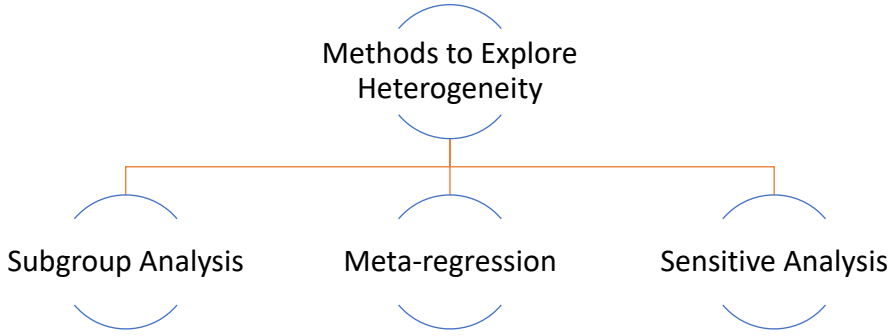

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Figure 11. Methods to Explore Possible Causes of Heterogeneity Among Study Results.

Subgroup analysis is a valuable strategy for investigating differences in results by dividing studies into smaller groups based on specific features or variables, such as industry type, firm size, geographic location, or IT infrastructure maturity. In the context of IT-SME alignment, this approach allows researchers to assess whether the performance of alignment efforts varies by industrial sectors—such as comparing manufacturing to service sectors—or by organizational size, distinguishing between small and large enterprises. This analysis helps identify which groups are more likely to achieve successful alignment and the underlying causes of these disparities. For instance, a study might reveal that IT-SME alignment is more effective in large corporations with specialized IT governance structures than in smaller organizations with less established systems, highlighting the critical role of governance in achieving effective alignment.

Complementing this, meta-regression serves as a statistical technique that helps researchers understand how study-level variables, known as moderators, influence observed effect sizes across different studies. In the realm of IT-SME alignment, meta-regression can examine factors such as the strategic importance of IT, organizational culture, and top management support impact alignment efforts. By incorporating these variables into a regression model, researchers can identify significant contributors to variations in alignment outcomes, revealing that organizations recognizing IT as a core strategic asset tend to experience more successful alignment.

In addition to the above-mentioned, sensitivity analysis is employed to assess how the results of a meta-analysis or systematic review might change when different assumptions or data inputs are applied. By varying factors such as inclusion criteria or the quality of the studies considered, researchers can evaluate the robustness of their findings and identify potential sources of heterogeneity. In the context of IT-SME alignment, sensitivity analysis can shed light on how factors like study quality or the duration of follow-up periods influence overall conclusions, potentially indicating that the perceived benefits of aligning IT and SME strategies become more pronounced in studies with longer time horizons. Through these techniques, subgroup analysis, meta-regression, and sensitivity analysis—researchers can uncover the factors contributing to successful IT-SME alignment and better understand the complex interplay between IT strategies and the operational dynamics of small and medium-sized enterprises [81–101].

2.12.3. Sensitive Analysis of Synthesized Results

In the context of aligning IT and SME strategy, sensitivity assessments play a crucial role in evaluating the robustness of synthesized outcomes. This analysis involves systematically altering key factors, assumptions, or inputs within the alignment process to observe the implications for overall conclusions. The goal is to determine how sensitive the findings are to variations in these elements, thereby assessing the stability and reliability of strategic alignment under different circumstances.

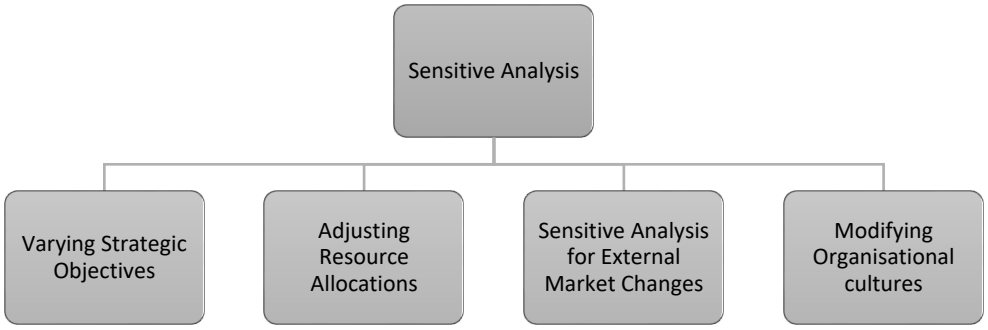

Figure 12. Sensitive Analysis of Synthesized Results.

One significant aspect of sensitivity analysis includes varying strategic objectives for both IT and SME units to examine how shifts in priorities affect alignment. For instance, if the focus transitions from cost-efficiency to innovation within SME strategies, it becomes essential to investigate how IT

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plans must adapt to maintain alignment. This type of analysis helps identify which alignment tactics are more flexible and which are heavily dependent on specific corporate goals. Additionally, resource allocation between IT and SME divisions often becomes a contentious issue; sensitivity analyses can explore the effects of modifying investment levels in IT infrastructure and human resources. By simulating scenarios of both increased and decreased funding, researchers can assess the resilience of alignment strategies, revealing how robust the strategic alignment remains in the face of budgetary constraints.

Sensitivity analyses also consider external market changes, such as shifts in consumer preferences, regulatory modifications, or technological advancements. By simulating various market conditions, the robustness of IT-SME alignment can be evaluated, allowing for the differentiation between strategies that perform well across diverse environments and those requiring frequent adjustments. Furthermore, the analysis may involve altering organizational culture to understand its impact on the alignment process. Various scenarios could include IT or SME units with differing levels of adaptability, collaboration, and creativity, thus highlighting potential cultural barriers that might threaten strategic integration.

2.13. Reporting Bias Assessment

During our examination of how small and medium enterprises (SMEs) align their IT and business strategies, we found it crucial to evaluate the potential for reporting bias, which may stem from selective publishing or biased outcome reporting. Biases like these could compromise the accuracy and dependability of our results. As a solution to this problem, we took a systematic approach by applying well-known methods, from systematic review practices [81–101].

Our reporting bias assessment employed a combination of statistical and graphical methods. We employed improved funnel plots as a visual aid to identify any potential imbalances in the spread of studies. These charts helped us pinpoint regions where research might overlook factors influenced by prejudice, versus those overlooked by randomness. The inclusion of statistical significance boundaries in these graphs allowed us to distinguish between these situations effectively and present an easy-to-understand depiction of possible reporting biases. For creating new instruments, for this evaluation process, we depended on established methods commonly found in published works. The methodological rigor of these tools was central to our process.

The use of contour funnel plots offered a great method to visually analyze the spread of studies and spot any potential biases to maintain the credibility and objectivity of our synthesis. We created the evaluation process to reduce biases and ensure the credibility of our findings is upheld.

To ensure the fairness of our evaluation process as much as possible by involving separate reviewers in assessing the studies for any potential bias, in reporting. Differences in their evaluations were ironed out through group discussions or in cases where needed a methodological expert was consulted. This joint effort guaranteed an impartial assessment of potential biases. Relying on automated tools to detect reporting bias, we opted for a hands-on method using tools like Excel to generate charts and graphs. This interactive approach enabled an examination and depiction of the information to make sure no hidden trends or possible prejudices were missed. After reviewing the data by hand and conducting a comprehensive analysis we ensured the accuracy of our conclusions. To validate our conclusions, we conducted comprehensive manual searches across various online repositories, including Google Scholar, Scopus, and Web of Science. By comparing information from studies and sources we were able to resolve inconsistencies and strengthen the reliability of our analysis. By conducting these searches diligently and thoroughly examining the information retrieved we guaranteed that our assessment relied on the most comprehensive and precise data, at our disposal. Considering the circumstances surrounding the alignment of IT and business in small and medium enterprises (SMEs) we modified the traditional techniques for detecting reporting bias to better suit this domain. The way information is reported in this field tends to show variations compared to fields, like medical or social sciences research. Therefore. We adjusted our approaches to match the traits of the research we examined to guarantee that our evaluation was fitting within the context and methodologically robust.

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Our commitment to transparency and reproducibility is evident in the documentation of the methods and strategies employed in evaluating reporting bias within our review. All of which can be readily accessed in the supplementary materials provided. This dedication to transparency enables researchers to reproduce our examination or expand on it in upcoming studies to enhance the general robustness and trustworthiness of research regarding aligning IT and business strategies, in small and medium enterprises (SMEs).

2.14. Certainty Assessment

The reviewed literature was evaluated based on five quality assessment (QA) criteria to ensure the reliability and relevance of the studies concerning the alignment of IT and business strategies in SMEs shown in Table 7 [81–101].

Table 7. Proposed Research Quality Assessment Criteria.

QA	Research Quality Assessment Statements
QA1	Address the challenges of aligning IT with business by stating the research aims to improve understanding and clarity.
QA2	Studying how SMEs align their IT with clear specifications and transparent data collection methods.
QA3	The precise definition and description of the alignment frameworks and methodologies used.
QA4	Studying how SME businesses align their IT with their overall business goals requires using a clear and suitable research approach.
QA5	The findings from the research significantly enhance our comprehension of how IT alignment influences the performance of small and medium-sized enterprises (SMEs).

The quality assessments, for research in Table 7 will be utilized to review the gathered literature and determine the level of certainty or confidence in the evidence for each result. This evaluation includes considerations such as accuracy and coherence among studies, in Table 8.

Table 8. Proposed Certainty Assessment for Collected Literature on Aligning IT and Business Strategies: Achievements and Challenges.

Reference of Study	QA1	QA2	QA3	QA4	QA5	Total	%Grading
[X1, X2, X3…]	X	X	X	X	X	X	X%
[X4, X5, X6…]	X	X	X	X	X	X	X%
[X7, X8, X9…]	X	X	X	X	X	X	X%

To assess the reliability of the research results in this review, we applied a tailored Quality Assessment (QA) tool that includes five key criteria. These criteria were chosen to ensure that the studies are both credible and relevant to the topic of aligning IT with business strategies in SMEs. The quality assessment criteria include:

- QA1: Focus on SME-specific challenges in IT-business alignment, determining if the research aimed to address the unique obstacles that small and medium-sized enterprises face in integrating IT with their business strategies.
- QA2: Clarity and transparency of data collection methods, reviewing how well the studies describe the processes used for gathering data, particularly regarding how they analyze IT alignment frameworks in SMEs.
- QA3: Clear definition and explanation of alignment methodologies, focusing on whether the studies adequately described the methodologies and frameworks used for IT-business alignment.
- QA4: Suitability of the research approach in analyzing IT alignment with SME business goals, ensuring that the research methods were appropriate for understanding the interplay between IT and business strategies in SMEs.
- QA5: Contribution of the findings to the understanding of IT alignment's impact on SME performance, measuring how effectively the study results enhance our knowledge of how aligning IT with business strategies influences the overall performance of SMEs.

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Each study was assessed using a scoring system, with '1' assigned to those that met the criterion fully, '0.5' for partial fulfillment, and '0' for those that did not meet the criterion at all. Each study could achieve a score ranging from 0 to 5. This quality assessment was carried out by three independent reviewers, with any disagreements being resolved through discussion and, if necessary, by consulting a fourth reviewer. The results of the assessment are summarized in Table 5, where each study's total score and percentage grading are displayed. This evaluation provides a clear view of the methodological rigor and relevance of the literature in the context of aligning IT with business strategies in SMEs.

3. Results

In this section, we will present the findings derived from the systematic review of aligning IT with business strategies in SMEs. This analysis is structured based on various outcomes, including operational, financial, and innovation performance across multiple sectors and geographic regions. Each outcome has been examined using different effect measures to assess how IT alignment contributes to performance improvements and long-term growth in SMEs. The data was synthesized using binary, continuous, and ordinal data types, enabling a comprehensive understanding of the challenges and achievements SMEs face in IT alignment. Subgroup analyses were performed based on SME characteristics, geographic locations, industry types, etc. to ensure that the results are contextualized and provide actionable insights for different contexts. Our findings are reported using graphical representations, such as flow diagrams and summary tables, consistent with the PRISMA framework, allowing for a clear interpretation of the outcomes and patterns observed in the included studies. The resulting process can be seen in Figure 13.

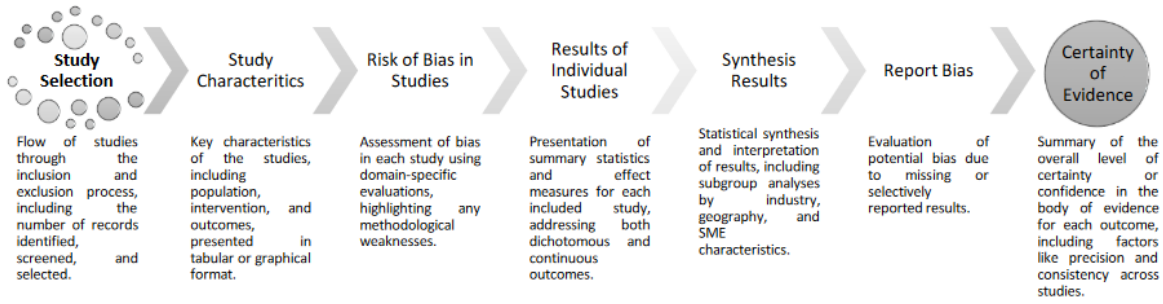

Figure 13. Key Results and Subheadings with PRISMA Guidelines.

3.1. Study SELECTION

In our systematic review on aligning IT and business strategies in SMEs, we initiated a comprehensive search across three online databases: Google Scholar, Web of Science, and Scopus. From Google Scholar, we retrieved 1820 records; from Web of Science, 685 records; and from Scopus, 150 records. This initial search yielded a total of 2655 records. After removing duplicate entries, we were left with 255 unique records. We proceeded to evaluate these documents to determine their suitability based on the criteria for our review. After the screening process, we picked out 39 full-text documents, for a detailed review. After examining these complete documents, in detail, we selected 64 papers for our final assessment. The collection ultimately included articles with 19 papers, journals along with 39 papers, from 6 conference papers.

Analyzing Figure 14, the pie chart illustrates that the literature collected presented a balanced ratio from all three repositories. We have collected as much literature as we could that aligns with the topic 'Aligning IT and Business Strategies'. Comparing the pie chart in Figure 12 and the PRISMA flow chart in Figure 15, the total number of papers found for each repository is 1820 for Google Scholar, 685 for Web of Science, and 150 for Scopus. With 'Aligning IT and Business Strategies' we have evaluated by previewing the abstract of the documents to give insights on what will be discussed in the literature. We have evaluated through the Excel spreadsheet the requirements that would aid in which literature should be selected. Then through analysis of the synthesis method, we

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have evaluated that only 64 documents were deemed eligible to use in the systematic literature review for 'Aligning IT and Business Strategies: Achievements and Challenges.'

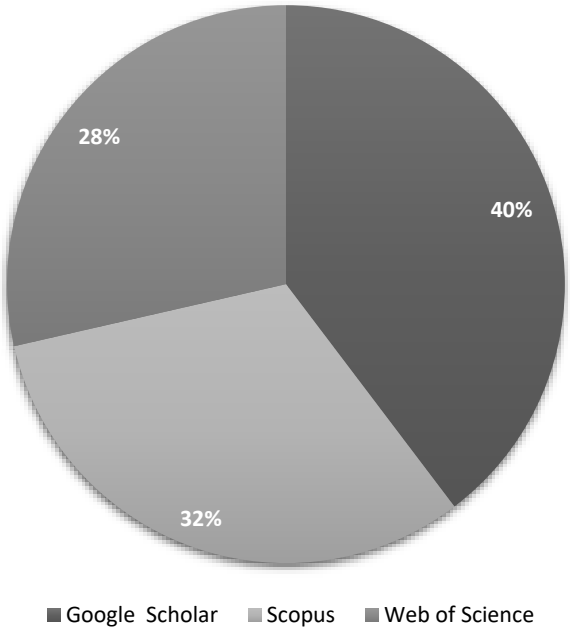

Figure 14. Research Distribution by Sources.

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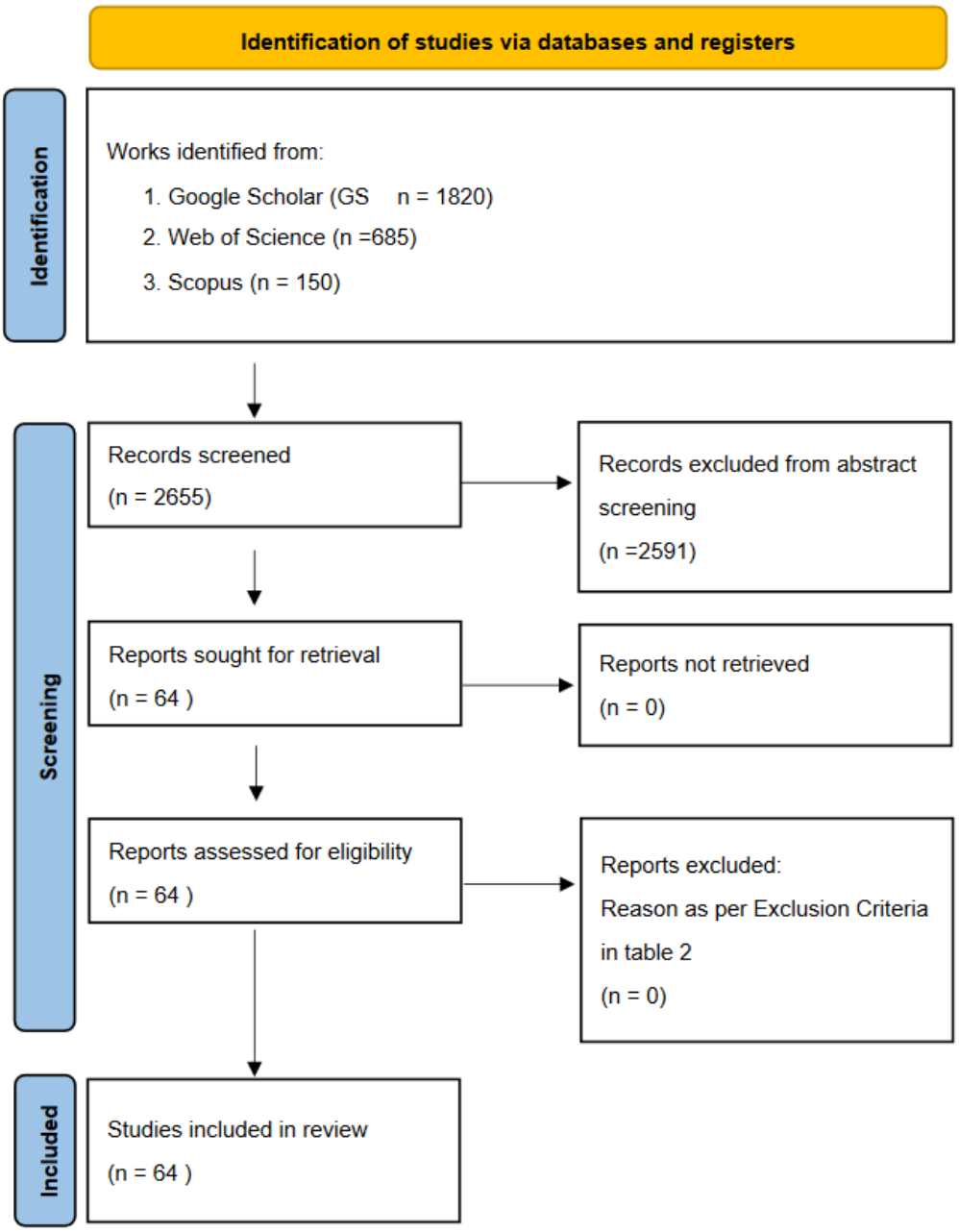

Figure 15. PRISMA Flow Chart.

3.2. Study Characteristics

Between 2014 and 2024, researchers identified a total of 63 studies that explored the alignment of information technology with business strategies in SMEs. The distribution of these studies consists of 92% journals, 6% conference papers, and 2% reviews. The yearly pattern of publications, as illustrated in Figure 16, shows a fluctuating but upward trend, reaching its peak in 2023 with 9 research journals published. The rise in publications reflects a growing interest in integrating IT and business strategies into SMEs, as shown in Table 9, which underscores the surge in research on the topic. Specifically, 2023 saw a rise in published works across journals and conference papers, highlighting the increased focus on both the challenges and achievements of aligning IT with business strategies in SMEs. The breakdown of published works in formats (as depicted in Figure 17) indicates that journals dominate, making up the majority at 92%, followed by conference papers at 6%, and reviews at 2%. This surge in activity aligns with advancements in IT tools and approaches essential for integrating technology with business objectives to improve organizational efficiency. Between 2014 and 2024, the number of publications has grown steadily, reflecting increased interest in

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overcoming obstacles and recognizing the successes of aligning IT strategies with business strategies in SMEs. This trend underscores the critical influence of such alignment on the overall growth and market competitiveness of businesses.

Table 9. View of Research Works by Published Year.

Published Year	Conference Paper	Dissertation	Journal	Review
2014	0	0	4	0
2015	0	0	3	0
2016	0	0	1	0
2017	0	0	2	0
2018	1	0	2	0
2019	1	0	5	0
2020	2	0	16	0
2021	0	0	6	1
2022	1	0	6	0
2023	1	0	9	0
2024	0	0	4	0

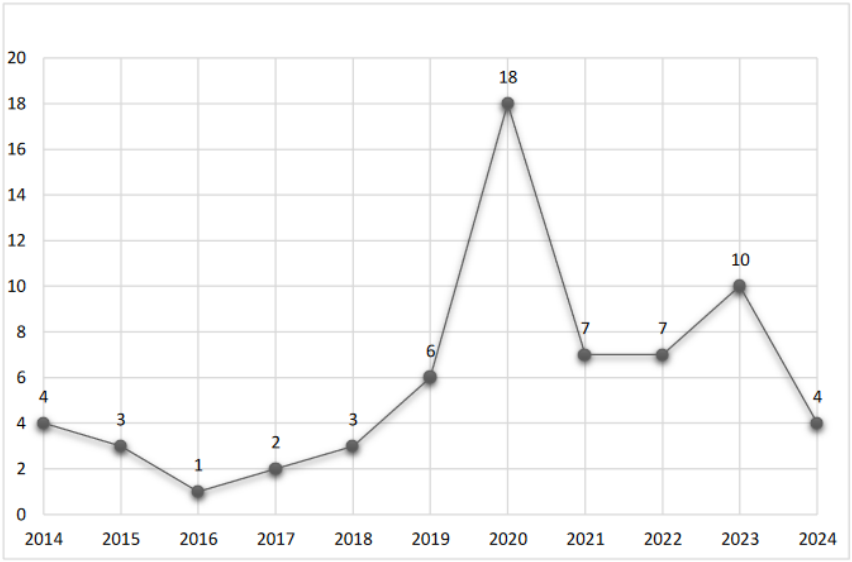

Figure 16. Research Papers Published by Year.

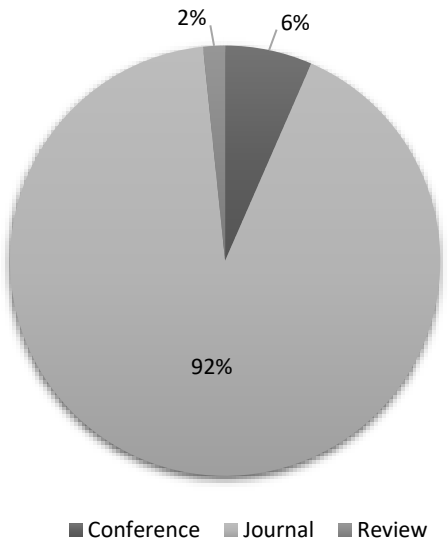

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Figure 17. Research Type Indication.

Table 9 and Figure 16 indicate the number of publications within each year and the type of publications done on aligning IT and business strategies: achievements and challenges.

Table 10 offers a comprehensive overview of studies examining the alignment of IT and business strategies in SMEs, focusing on various dimensions that impact performance. The table is structured to include key details such as the year of the study, its research focus, the methodology employed, key outcomes, challenges identified, recommendations provided, and achievements noted in aligning IT with business goals. By summarizing these aspects, the table highlights how IT alignment contributes to competitive advantage, improved decision-making, and enhanced operational efficiency within SMEs. The research captured in Table 10 sheds light on the methods used to integrate IT systems with business strategies, the challenges faced in these implementations—such as resource limitations and organizational resistance—and how these hurdles were addressed through innovative practices. It also highlights the achievements made through successful IT-business alignment, including increased productivity and the ability to respond dynamically to market changes. In providing these insights, the table emphasizes the strategic value of IT in supporting SME growth and long-term sustainability, while also offering recommendations for overcoming the common barriers to alignment.

Table 10. Comprehensive Overview of Aligning IT and Business Strategies: Achievements and Challenges in SME Performance.

Ref.	Year	Research Focus	Methodology	Key Outcomes	Challenges Identified	Recommendations	Achievements Identified
[1]	2014	Aligning IT for Future Business Value: Conceptualizing IT Project Portfolio Alignment.	This is a Quantitative Journal Case Study that was conducted in the Developed country of Canada, Iran.	Existing vs. future alignment; IT project portfolio alignment; developing IT applications formulation methods; business value of IT, strategic alignment increased Efficiency, Productivity; long-term impact of Not Specified; innovation performance of Not Specified.	Evolving firm environments, Long-term IT investments, and Aligning future IT value.	Assess portfolio alignment, Bottom-up project alignment And Dynamic strategy integration.	Validated SAM model alignment, Positive IT alignment impact, and Verified governance and competency.
[2]	2014	The dynamics of IT-business strategic alignment: evidence from healthcare information systems implementation.	This is a Qualitative Journal Case Study using a sample size of 24 which was conducted in the Developed country of China, Australia.	Strategic alignment; IT-business alignment in healthcare information systems competitive advantage; aligning business technology capabilities increased Efficiency, Productivity; long-term impact of Growth, Market Share; innovation performance of Services, Process.	Managing dynamic alignment, Unclear social alignment roles and Identifying alignment patterns.	Scrutinize alignment patterns, enhance dynamic capabilities, and focus on social alignment.	Identified five alignment phases, Highlighted leadership roles, and established micro-behavior influence.

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[3]	2014	Business value through controlled IT: toward an integrated model of IT governance success and its impact.	This is a Qualitative Journal Case Study using a sample size of 28 which was conducted in the Developed country of Germany.	IT governance; IS management; IS success/failure; IS alignment MANAGEMENT STRATEGY increased Efficiency, Cost Savings, Productivity; long-term impact of Growth, Market Share; innovation performance of Service, Process.	Complex MBO alignment, Single-point IT alignment, and Temporal alignment issues.	Focus on multi-level alignment, enhance strategic flexibility, and Apply resource-based theory.	Improved process alignment, Improved process flexibility, and Boosted SME performance.
[4]	2015	Aligning business and IT strategies in multi-business organizations.	This is a Qualitative Journal Case Study conducted in the Developed country of Australia.	Increased Efficiency, productivity; long-term impact of Growth; innovation performance of new services (IT governance).	MBO alignment complexity, Single-strategy focus, and Temporal misalignment.	Adopt multi-level alignment, Emphasize strategic flexibility, and Leverage competence and governance.	Emphasized IS planning value, Strengthened IT-business alignment, and increased competitive advantage.
[5]	2015	Aligning IT and business strategy: an Australian university case study.	This is a Qualitative Journal Case study that was conducted in the Developed country of Australia.	Increased Productivity: long-term impact of Not Specified; innovation performance of IT strategy innovation.	Misalignment of priorities, Gaps in IT strategy, and Lack of alignment framework	Measure business alignment, integrate strategic priorities, and Use alignment frameworks.	Supported performance improvements, increased service quality, and validated critical success factors.
[6]	2016	The role of people and social context in promoting the IT organizational performance.	This is a Quantitative Article Survey using a sample size of 1249 which was conducted in the Developed country of Portugal.	Increased Performance Improvement: long-term impact of Not Specified; innovation performance of Financial Performance.	Poor social alignment, Misaligned IT strategies, and Lack of common vision.	Foster mutual trust, Align IT capabilities, and Strengthen leadership skills.	Confirmed IT capability impact, strengthened innovation performance, and highlighted strategic Entrepreneurship.
[7]	2017	Strategic management in the IT department.	This is a Qualitative Journal Case Study that was conducted in the Developing country of Russia.	Increased Efficiency, Cost Savings; long-term impact of Growth, Market Share; and innovation performance of Services.	Lack of trust, Misaligned IT goals, and Complex trust management.	Build individual SLAs, Foster business trust, and Leverage trust for innovation.	Improved IS planning outcomes, Strengthened IT leadership role, and enhanced competitive advantage.
[8]	2017	Influence of information technology on organization strategy.	This is a Qualitative Journal Case Study using a sample size of 12 which was conducted in the Developing country of South Africa.	Increased Efficiency, productivity; long-term impact of Growth; and innovation performance of Processes.	Fast-changing technology, Irrelevant alignment models, and Consumer empowerment.	Embrace flexible strategies, Integrate cross-functional roles, and Update alignment models.	Increased organizational agility, developed innovative capabilities, and Balanced ambidexterity tension.

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[9]	2018	Sustaining innovation performance in SMEs: Exploring the roles of strategic entrepreneurship and IT capabilities.	This is a Quantitative Article Survey using a sample size of 164 which was conducted in the Developed country of Canada.	Increased innovation performance; long-term impact of Market Share; innovation performance of Services.	Environmental uncertainty, IT-innovation link unclear and Limited empirical SE research.	Leverage IT capabilities, enhance strategic entrepreneurship, and focus on sustainable innovation.	Identified 26 hindering factors, discovered new BITA barriers, and provided actionable insights.
[10]	2018	Factors hindering business alignment in small and medium enterprises in China.	This is a Qualitative Conference Case study using a sample size of 3 SMEs which was conducted in the Developed country of China.	Increased efficiency; long-term impact of Performance; innovation performance of Processes.	SME-specific BITA issues, Limited China SME research, and 26 BITA hindering factors.	Address SME-specific factors, align business-IT strategies, and conduct targeted research.	Validated IT alignment impact, Enhanced IT governance, and Improved IT performance.
[11]	2018	The roles of top management and users in strategic IS planning: A perspective of SMEs.	This is a Qualitative Article Case study using a sample size of 3 which was conducted in the Developing country of Malaysia.	Increased productivity: long-term impact of Reduced operating costs; innovation performance of Services.	Limited SME research, Resource constraints, and Internal competencies.	Focus on SME-specific planning, Enhance IT leadership, and Investigate planning factors.	Enhanced IT governance alignment, verified positive IT impact, and Strengthened competency integration.
[12]	2019	Evaluating IT alignment and performance in SMEs using multivariate regression analysis.	This is a Quantitative Conference Survey using a sample size of 160 which was conducted in the Developed country of Greece.	Increased Not specified; the long-term impact of Growth; innovation performance of Processes.	Aligning IT investments, Strategy formulation impact, and Measuring performance effects.	Enhance IT-business alignment, focus on strategy formulation, and use multivariate analysis.	Increased IS planning success, Aligned business with IT, and Improved SME competitive advantage.
[13]	2019	Determinants and outcomes of IT governance in manufacturing SMEs: A strategic IT management perspective.	This is a Quantitative Article Survey using a sample size of 223 which was conducted in the Developed country of Quebec, Canada.	Increased handling of possible problems (Efficiency); long-term impact of Market Share; innovation performance of services/processes.	IT governance complexity, Aligning IT capabilities, and Environmental uncertainty impact.	Enhance IT governance, Improve IT alignment, and address environmental factors.	Enhanced organizational adaptability, reduced organizational rigidity, and Balanced resource constraints.
[14]	2019	Strategizing information systems: An empirical analysis of IT alignment and success in SMEs.	This is a Multivariate Regression Analysis Article Survey using a sample size of 160 which was conducted in the Developed country of Greece.	Increased Productivity/strategic use; long-term impact of Market Share; innovation performance of Sustainability.	Ineffective IS usage, Lack of planning, and Aligning strategy and structure.	Implement strategic planning, Choose appropriate IT infrastructure and Align IS with business.	Highlighted IT leadership importance, Optimized IS planning phases, and Improved resource utilization.
[15]	2019	Agility in responding to disruptive digital innovation: A	This is a Quantitative Article Case study using a sample size of 1 company (Elixir Technology) with 22	Increased Productivity/efficiency; long-term impact of organizational adaptability;	Organizational rigidity, Limited innovative capabilities, and	Achieve boundary openness, enhance organizational adaptability, and Balance	Established relational capital importance, enhanced strategic

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		case study of an SME.	interviews which were conducted Worldwide.	innovation performance of Processes.	Resource constraints.	ambidexterity tensions.	knowledge sharing, and Fostered IT-business collaboration.
[16]	2019	An Intangible-Asset Approach to Strategic Business-IT Alignment.	This is a Qualitative Journal Conceptual model study that was conducted in the Developing country of Peru.	Increased Efficiency, productivity; long-term impact of Growth; and innovation performance of Processes.	Managing intangible assets, aligning business-IT strategies, and leveraging relational capital.	Enhance combinative capabilities, strengthen social networks, and improve strategic integration.	Improved IT governance structure, Increased IT-business collaboration, and Strengthened IT performance.
[17]	2019	The Role of Top Management Participation and IT Capability in Developing SMEs' Competitive Process Capabilities.	This is a Quantitative Journal Survey using a sample size of 310 which was conducted in the Developed country of Australia.	Increased Efficiency, productivity; long-term impact of Growth; innovation performance Not specified.	Limited IT flexibility, Disjointed IT capabilities, and Top management involvement.	Enhance IT linkage, improve process alignment, and foster management participation.	Identified digital alignment phases, improved strategic flexibility, and developed dynamic capabilities.
[18]	2020	A dynamic model of effective factors on Agile business-IT alignment.	This is a Quantitative Journal Case Study using a sample size of 201 which was conducted in the Developing country of Iran	Increased Not Specified; long-term impact of Growth; innovation performance of Not Specified.	Fragmented research focus, SME digital alignment, and Dynamic capabilities application.	Develop an alignment model, enhance sensing and seizing, and focus on leadership.	Identified digital alignment phases, improved strategic flexibility, and developed dynamic capabilities.
[19]	2020	The IT Strategy and Perception of Barriers Faced by Polish Manufacturing SMEs in the Implementation of Cloud Computing.	This is a Quantitative Journal that was conducted in the Developed country of Poland.	Increased Not specified; the long-term impact of Growth; innovation performance of New Products.	Limited SAM adoption, regional research gap, and Alignment style impact.	Expand SAM usage, explore regional differences, and Assess alignment benefits.	Strengthened process flexibility, Increased management participation, and Improved SME performance.
[20]	2020	Strategic Alignment Between Business and Information Technology in Companies.	This is a Quantitative Conference Survey using a sample size of 11 which was conducted in the developing country of Peru.	Increased Not specified; long-term impact of Not specified; innovation performance of Not specified.	Achieving strategic alignment, Implementing IT governance, and Understanding IT operations.	Optimize organizational structure, improve goal understanding, and Enhance knowledge sharing.	Emphasized leadership role, improved strategic IT planning, and enhanced long-term sustainability.
[21]	2020	The Impact of Social Media Functionality and Strategy Alignment on Small and Medium	This is a Quantitative Journal Case Study using a sample size of 1 which was conducted in the Developing country of Indonesia.	Increased Efficiency; long-term impact of Growth; innovation performance of New Products.	Resource Allocation, Content Consistency, and Engagement Metrics.	Enhance Content Strategy, Optimize Resource Use, and Expand Platform Use.	Identified critical alignment factors, Highlighted management-IT collaboration, and improved

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		Enterprises (SMEs) Performance.					organizational structure.
[22]	2020	Aligning IT Strategies with SMEs for Competitive Edge.	This is a Quantitative Journal Survey using a sample size of 150 which was conducted in the Developed country of the USA.	Increased Productivity; long-term impact of Growth; innovation performance of Services.	Communication Gaps, Cost Overemphasis, Lack of Integration and Management Dominance.	Enhance Communication Channels, Balance Costs and Benefits, Improve IT Integration, and Promote IT Partnerships.	Enhanced business unit performance and Effective IT infrastructure alignment.
[23]	2020	The effect of information technology business alignment factors on the performance of SMEs.	This is a Qualitative Journal Survey using a sample size of 228 which was conducted in the developing country of Iraq.	Increased Not specified; the long-term impact of Growth; innovation performance of Processes.	Regional Adoption Gap, Limited Research and Alignment Implementation Issues.	Expand Regional Studies, Increase Research Efforts, and Strengthen Alignment Practices.	Cloud adoption success and improved strategic alignment.
[24]	2020	The Role of SaaS Applications in Business IT Alignment: A Closer Look at Value Creation In the Service Industry.	This is a Quantitative Conference paper Case Study that was conducted in the Developed country of England.	Increased Efficiency; long-term impact of Growth; innovation performance of New Product.	Usability Issues, Software Incompatibility, and Reliability Concerns.	Explore Cloud Models, Enhance Software Usability, and Improve Integration Compatibility.	Strong intra-strategy alignment and High business sustainability.
[25]	2020	The dynamics of IT-business strategic alignment: evidence from healthcare information Systems implementation.	This is a Qualitative Journal Case Study which was conducted in the Developed country of China.	Increased Productivity; long-term impact of Growth; innovation performance of Processes.	Alignment Dynamics Management, Social Dimension Impact, and Pattern Identification.	Monitor Alignment Patterns, Enhance Social Alignment, and Develop Dynamic Capabilities.	Advanced marketing automation and Enhanced customer interaction.
[26]	2020	The right digital strategy for your business: an empirical analysis of the design and Implementation of digital strategies in SMEs and LSEs.	This is a Qualitative Journal Survey that was conducted in the Developed country of England.	Increased Productivity; long-term impact of Growth; innovation performance of New Product.	Strategy Development, Technology Adoption, and Financing Digitalization.	Develop Comprehensive Strategies, Embrace New Technologies, and Secure Digital Funding.	Organizational behavior insights and Identified SM adoption gaps

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[27]	2020	Towards an Adaptive Strategic IT Governance Model for SMEs.	This is a Quantitative Journal Case Study using a sample size of 5 which was conducted in the Developed country of Slovenia.	Increased Not Specified; long-term impact of Not Specified; innovation performance of Not Specified.	Universal Model Limitations, High Cost for SMEs, and Implementation Difficulty.	Develop Contingency Models, Adapt Models for SMEs, and Simplify Governance Approaches.	Data-driven digital strategy and Quantitative and qualitative analysis.
[28]	2020	The Impact of IT-Business Alignment on SME Performance: The Mediating Effects of Strategic Collaboration, Coordination, and Responsiveness.	This is a Quantitative Journal Survey using a sample size of 211 which was conducted in the Developed country of Australia.	Increased Productivity; long-term impact of Growth; innovation performance of New Products.	Alignment Process Clarity, Limited SME Research, and Mediating Factors Understanding.	Clarify Alignment Processes, Expand SME Research, and Focus on Mediation	Improved task-technology fit and Strategic cloud ERP benefits.
[29]	2020	Contextual factors and strategic consequences of cloud enterprise resource planning (ERP) adoption in Malaysian manufacturing SMEs: A conceptual framework.	This is a Quantitative Article Survey using a sample size of 382 which was conducted in the Developing country of Malaysia.	Increased Productivity; long-term impact of Market Share; innovation performance of processes.	Feature Task-Match, Change Management Resistance, and Government Financial Support.	Ensure Task Fit, Address Resistance, and Leverage Financial Support.	Enhanced IT capability and Efficient business performance.
[30]	2020	Multidimensional Perspective of Firms' IT Capability Between Digital Business Strategy and Firms' Efficiency: A Case of Chinese SMEs.	This is a Quantitative Article Survey using a sample size of 351 which was conducted in the Developed country of China.	Increased Efficiency; long-term impact of Performance; innovation performance of Processes.	Proactive IT Stance, Efficiency Measurement and Capability Mediation.	Promote IT Proactivity, Enhance Efficiency Measurement, and Strengthen IT Capabilities.	Augmented accounting systems and Business performance improvement.
[31]	2020	Accounting information systems (AIS) in SMEs: Towards an integrated framework.	This is a Qualitative Article Case Study using a sample size of 1 Business chain (Cube Stores) which was conducted in the developed country of Brunei.	Increased Efficiency; long-term impact of Performance; innovation performance of Processes.	Accounting Practices Improvement, Performance Enhancement, and System Augmentation.	Enhance Accounting Systems, Boost Business Performance and Adopt Best Practices.	Enhanced business unit performance and Positive IT-business strategy alignment.

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[32]	2020	Aligning the IT portfolio with business strategy: Evidence for complementarity of corporate and business unit alignment.	This is a Quantitative Journal Survey using a sample size of 120 organizations which was conducted Globally (data from 120 organizations).	Increased Productivity; the long-term impact of Growth; innovation performance of IT strategy innovation.	Cross-domain alignment, Performance Variation, and Rapid IT Evolution.	Enhance Cross-Domain Alignment, Adapt to IT Changes, and Integrate IT Strategies.	Superior firm performance and Optimized IT-strategy alignment.
[33]	2020	Does it pay to align a firm's competitive strategy with its industry IT strategic role?	This is a Quantitative Journal Empirical Study using a sample size of 6 which was conducted in the Developing country of China, publicly listed firms.	Increased Efficiency, productivity; long-term impact of Growth, Competitive Advantage; innovation performance of IT capability, and strategic innovation.	Strategy Alignment Complexity, IT Role Matching, and Performance Variation.	Align Strategies Precisely, Match IT Roles, and Optimize for Performance.	Improved firm performance and Ideal triadic strategy alignment.
[34]	2020	The impact of aligning business, IT, and marketing strategies on firm performance.	This is a Quantitative Journal Survey using a sample size of 242 which was conducted in the Developing country of Yemen.	Increased Performance Improvement; long-term impact of Growth; innovation performance of Products and services.	Triadic Alignment Complexity, Strategic Orientation Impact, and Performance Measurement.	Ensure Triadic Alignment, Consider Strategic Orientation, and Improve Performance Metrics.	Strategic IT-business alignment and Cloud integration benefits.
[35]	2020	Aligning the IT portfolio with business strategy: Evidence for complementarity of Corporate and business unit alignment.	This is a Quantitative Journal Survey using a sample size of 50 which was conducted in the Developed countries of the USA, Australia, and New. Zealand.	Increased Efficiency, Productivity; the long-term impact of Growth, Market Share; innovation performance of Products and services.	Cross-Domain Alignment, IT Infrastructure Evolution, and Digitization Variability.	Enhance Alignment Strategies, Adapt IT Platforms, and Address Digitization Differences.	Excellent intra-strategy alignment and Strong business sustainability.
[36]	2021	Evaluating the Factors Influencing Alignment of IT and Business in Cloud Computing Environment.	This is a Quantitative Journal Survey using a sample size of 70 which was conducted in the developing country of India.	Increased Productivity; long-term impact of Growth; innovation performance of Services.	Partnering Maturity Issues, Skill Maturity Gaps, and Alignment Factors Variability.	Improve Partnering Strategies, Enhance Skill Development, and Address Alignment Factors.	IT-enabled marketing tools and Enhanced customer interaction.
[37]	2021	Intrinsic Alignment with Strategy as a Source of Business Sustainability in SMEs.	This is a Non-experimental Journal Survey using a sample size of 247 which was conducted in the Developing country of Peru.	Increased Productivity; long-term impact of Growth; innovation performance of Processes.	Alignment Measurement Consistency, Sustainability Assessment Limitations, and Survey Sample Representation.	Enhance Alignment Measurement, Improve Sustainability Metrics, and Broaden Sample Scope.	Improved strategic management and better team participation.

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[38]	2021	Information technology and marketing: an important partnership for decades.	This is a Qualitative Review Case Study that was conducted in Both countries worldwide.	Increased efficiency; the long-term impact of Growth; innovation performance of Processers	Technology Adoption Lag, Alignment Complexity and Future Era Uncertainty.	Enhance Technology Adoption, Improve IT-Marketing Alignment, and Explore Emerging Technologies.	Digital transition strategies and Economic recovery potential.
[39]	2021	Dimensions of strategic management in the context of micro and small-sized enterprises.	This is a Quantitative Journal Survey using a sample size of 30 which was conducted in the country of Mato Grosso do Sul state.	Increased productivity; the long-term impact of performance; innovation performance of processors.	Information Access Issues, Team Participation Deficits, and Centralized Decision-Making.	Improve Information Access, Encourage Team Participation, and Decentralize Decision-Making.	Validated SAM model and Enhanced strategic IT alignment.
[40]	2021	SMEs must go online—e-commerce is an escape hatch for resilience and survivability.	This is a quantitative and qualitative Article systematic literature review using a sample size of 32 articles which was conducted in the Developed and developing but mostly developed countries of the world, but most results were from the UK.	Increased productivity; long-term impact of Market Share; innovation performance of Services.	Limited E-Commerce Adoption, Transition Difficulties, and Policy Support Needs.	Facilitate Digital Transition, Enhance E-Commerce Support, and Develop Targeted Policies.	Improved business unit performance and Complementary IT-business strategy alignment.
[41]	2021	The influence of accounting information systems, knowledge management capabilities, and innovation on organizational performance in Iraqi SMEs.	This is a Quantitative Article Survey using a sample size of 312 which was conducted in the Developing country of Iraq.	Increased productivity; the long-term impact of market share; innovation performance of processors.	Data Integration Issues, Innovation Adoption Barriers, AIS Utilization Gaps, and Knowledge Sharing Difficulties.	Enhance AIS Adoption, Promote Knowledge Sharing, Facilitate Innovation Integration, and Improve Performance Measurement.	Relational IT governance dominates.
[42]	2021	E-Business Strategy for Logistics Companies: Achieving Success through Information Systems Planning.	This is a Quantitative Journal Survey using a sample size of 73 which was conducted in the Developed country of Greece.	Increased Efficiency, Competitive Advantage; long-term impact of Market Share; innovation performance of Products, Services, and Processes.	Strategic Utilization Gaps, IS Planning Overlooked, IT Facility Alignment Issues, and Data Accuracy Concerns.	Enhance IS Planning, Align IT with Strategy, Improve Communication Speed, and Focus on Logistics.	Improved business-IT alignment.

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[43]	2022	Supporting factors of IT business alignment at Indonesian IT companies.	This is a Qualitative Journal Survey using a sample size of 3 which was conducted in the Developing country of Indonesia.	Increased Productivity; long-term impact of Growth; innovation performance of New Products.	Cultural Alignment Issues, Managerial Support Gaps, Distinctive Competency Support, and Partnership Integration Problems.	Enhance Managerial Support, Align Vision and Mission, Strengthen Partnerships and Support Competency Development.	Overcomes IT-business boundaries.
[44]	2022	Promoting SME's effectiveness through innovative communication strategies and business-IT alignment.	This is a Quantitative Journal Survey using a sample size of 137 which was conducted in the Developing country of South Africa, Nigeria.	Increased Efficiency; long-term impact of Growth; innovation performance of Processes.	Not specified.	Not specified.	
[45]	2022	The impact of IT resources and strategic alignment on organizational performance: The moderating role of environmental uncertainty.	This is a Quantitative Journal Survey using a sample size of 210 which was conducted in the Developing country of Iran.	Increased Not Specified; the long-term impact of Not Specified; innovation performance of Processes.	IT Investment Evaluation, Environmental Uncertainty Impact, Strategic Alignment Difficulties, and Resource Management Issues.	Improve IT Evaluation, Mitigate Environmental Uncertainty, Enhance Strategic Alignment, and Optimize IT Management.	Promotes Green IT practices.
[46]	2022	Strategy for IT-Business Alignment in Higher Education Institutions Using Initial Fit-HR Model.	This is a Mixed-Methods Journal survey and Case study using a sample size of 57 which was conducted in the Developing country of Indonesia.	Increased Not specified; the long-term impact of Growth; innovation performance of Services.	Indicator Validity Issues, Alignment with Tri Dharma, Model Validation Difficulties, and Cultural Concept Integration.	Refine Indicator Selection, Incorporate Islamic Concepts, Enhance Model Validation, and Adapt BITA Approach.	Enhanced organizational efficiency.
[47]	2022	Information Technology-Business Strategy Alignment and Organizational Performance Among Fintech Firms in Nairobi County, Kenya.	This is a Conference paper Survey using a sample size of 41 which was conducted in the Developing country of Kenya.	Increased Efficiency; long-term impact of Growth; innovation performance of New Product.	Not Specified.	Not Specified.	

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[48]	2022	Information and Communication Technology (ICT) Utilization and Infrastructure Alignment in Construction Organizations.	This is a Qualitative Article Case Study using a sample size of 4 which was conducted in the Developed country of New Zealand.	Increased productivity and efficiency; the long-term impact of performance; innovation performance of processors.	Alignment with Infrastructure, ICT Utilization Strategy, Performance Measurement Gaps, and Sector-Specific Constraints.	Optimize ICT Alignment, Enhance Infrastructure Utilization, Evaluate Performance Impact, and Adapt to Sector Needs.	A positive U-shaped relationship was found.
[49]	2022	Strategic role of IT and IT governance mechanisms for the context of small and medium enterprises	This is a Quantitative Article Survey using a sample size of 68 which was conducted in the "assumed"(Developing) country of Brazil.	Increased efficiency; the long-term impact of Performance; innovation performance of processors.	Governance Mechanism Balance, Operational IT Use, Resource Allocation Issues, and Formal vs. Informal Elements.	Enhance Governance Mechanisms, Strategic IT Integration, Balance Formal/ Informal Elements and Optimize Resource Allocation.	Processual framework developed.
[50]	2023	Development of an Alignment Model for the Implementation of DevOps in SMEs: An Exploratory Study.	This is a Quantitative Journal experiment using a sample size of 248 which was conducted in the Developing country of Sri Lanka.	Increased Not specified; the long-term impact of Not specified; innovation performance of Processes.	DevOps Skill Gaps, Business-IT Alignment Issues, Firm Size Variability, and Experience Level Disparities.	Enhance DevOps Skills, Improve IT Alignment, Account for Firm Size, and Integrate Diverse Experiences.	Comprehensive cloud adoption analysis.
[51]	2023	Business/IT Integration: Challenging the Boundaries of Alignment.	This is a Quantitative Conference paper Survey using a sample size of 225 which was conducted in the Developed country of Germany.	Increased Not Specified; the long-term impact of Growth; innovations performance of Services.	Functional Separation Issues, Alignment Boundaries, Integration Gaps, and Strategy Discrepancies.	Rethink Functional Separation, Enhance IT Integration, Overcome Alignment Boundaries and Merge Business Strategies.	Improved business-IT alignment.
[52]	2023	Green IT in small and medium-sized enterprises: A systematic literature review.	This is a Quantitative Journal Systematic Literature Review using a sample size of 38 which was conducted in the Developing country of Ecuador.	Increased Productivity; long-term impact of Growth; innovation performance of Services.	Green IT Implementation, Policy and Strategy Gaps, Environmental Impact Management, Resource Optimization.	Improve Green IT Policies, Improve Implementation Strategies, Focus on Sustainability, and Optimize Technological Resources.	Program orientation fosters collaboration.

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[53]	2023	The impact of IT–business strategic alignment on firm performance: The evolving role of IT in industries.	This is a Quantitative Journal Case Study using a sample size of 176 which was conducted in the Developed country of Italy.	Increased Productivity; long-term impact of Growth; innovation performance of Services.	Not Specified.	Not Specified.	
[54]	2023	Industry 4.0 benefits, challenges, and critical success factors: a comparative analysis through the lens of resource dependence theory across continents and economies.	This is a Quantitative Article Survey using a sample size of 149 which was conducted in the developed and developing countries of Asia, Europe, Africa, and South America.	Increased Efficiency; the long-term impact of organizational efficiency and agility; innovation performance of Processors.	Employee Resistance, Variability in Benefits, Change Management Issues and Project Management Differences.	Address Resistance to Change, Standardize Benefits Assessment, Improve Change Management, and Harmonize Project Management.	Real-time adaptation achieved.
[55]	2023	Digital Transformation and Enterprise Sustainability: The Moderating Role of Regional Virtual Agglomeration.	This is a Quantitative Article case study using a sample size of 29 provinces and cities which was conducted in the country of China.	Increased efficiency; long-term impact of growth; innovation performance of processes.	Initial Negative Impact, Regional Variability, Sustainability Metrics, and Digital Transformation Effects.	Mitigate Initial Impact, Improve Regional Agglomeration, Focus on Sustainability, and Adapt to Regional Differences.	Consistent GQM+Strategies perspective.
[56]	2023	Limited engagement of SMEs with social media: A structuration and sensemaking perspective.	This is a Qualitative Article case study that was conducted in the Developed country of Germany.	Increased productivity; long-term impact of Market Share; innovation performance of Services.	Low Adoption Rates, Cognitive Barriers, Ecosystem Context, and Pre-Adoption Understanding.	Address Adoption Barriers, Improve Cognitive Awareness, Understand Ecosystem Impact, and Explore Pre-Adoption Factors.	DSF conceptualized and applied.
[57]	2023	Net and configurational effects of determinants on cloud computing adoption by SMEs under cloud promotion policy using PLS-SEM and fsQCA.	This is a Qualitative Article case study using a sample size of 203 which was conducted in the Developed country of China.	Increased efficiency; long-term impact of Performance; innovation performance of Services/Processers.	Security Concerns, Management Support Variability, IT Competence Gaps, and Complex Causality Understanding.	Address Security Concerns, Strengthen Management Support, Improve IT Competence, and Explore Complex Configurations.	Cloud computing adoption configurations, Complex causality understanding, and Theoretical and practical insights.

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[58]	2023	Development of an Alignment Model for the Implementation of DevOps in SMEs: An Exploratory Study.	This is a Quantitative Article Survey using a sample size of 248 which was conducted in the Developing country of Sri Lanka.	Increased Productivity and efficiency; the long-term impact of Performance; innovation performance of processors.	Alignment with Firm Size, Background and Experience Gaps, Integration Difficulties, and Skill Set Variability.	Improve Business-IT Alignment, Address Background Differences, Improve Information Exchange, and Foster Skill Integration.	Business and IT alignment, DevOps practice adoption, and Improved information exchange.
[59]	2023	Unintentional Programs: An Interproject Orientation for Aligning IT with Organizational Strategy.	This is a Quantitative Article Survey using a sample size of 200 which was conducted in the Developed country of Taiwan.	Increased Performance Improvement, Productivity; long-term impact of Competitive Advantage; innovative performance of Performance.	Lack of Formal Structure, Coordination Difficulties, Project Collaboration Gaps, and Dynamic Alignment Issues.	Foster Program Orientation, Improve Project Coordination, Improve Interproject Cooperation, and Adapt to Changing Needs.	Program orientation benefits, Information systems alignment, and Interproject cooperation and coordination.
[60]	2024	Strategic Business-IT Alignment: A Multi-Agent Systems Approach.	This is a Qualitative Journal Case Study that was conducted in the Developing country of Morocco.	Increased Not specified; the long-term impact of Growth; innovation performance of Services.	Budgetary Limitations, Complex IT Systems, Rapid Technological Advances, and Stakeholder Requirement Alignment.	Implement a Multi-Agent System, Enhance Communication Tools, Adapt in Real-Time, and Conduct More Case Studies.	Strategic alignment engine, Real-time adaptation framework, Enhanced business-IT alignment, and multi-agent systems approach.
[61]	2024	Technology Managers Challenges to Align IT Strategies with Business Strategies.	This is a Qualitative Journal Survey that was conducted in the Developed country of the USA.	Increased Productivity; long-term impact of Growth; innovation performance of Services.	Not Specified.	Not Specified.	Not Specified.
[62]	2024	Identifying and Improving Problems and Risks of Management Strategies Based on GQM+Strategies Metamodel and Design Principles.	This is a Not-specified Journal Case Study, Experimental which was conducted in the Developed country of Japan.	Increased Efficiency; long-term impact of Growth; innovation performance of Processes.	Unclear Grid Perspectives, Strategic Problems, and Risk Management.	Define Modelling Rules, Use UML Class diagrams, Apply OCL Design Principles, and Evaluate with Experimentation.	Consistent GQM+Strategies grids, Automated alignment configuration, and improved strategic clarity.

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[63]	2024	Digital service flexibility: a conceptual framework and roadmap for digital business transformation.	This is a Qualitative Journal Case Study which was conducted in the Developed country of USA, India.	Increased Productivity; the long-term impact of Growth, Market Share; innovation performance of Services.	Limited Research on IT Flexibility, Aligning Strategies with DSF, and Contextual Application in Practice.	Define DSF Dimensions, Implement Value Framework, and Embed DSF in Practice.	Conceptualizing digital service flexibility, Three DSF dimensions, Customer-service value framework, and Practical DSF application.

3.3. Risk of Bias within Studies

In the review of "Aligning IT and Business Strategies: Achievements and Challenges," the risk of bias for each study was rigorously evaluated using the Newcastle Ottawa Scale (NOS), as detailed in Table 11. This assessment tool assigns ratings based on three key categories: the selection of participants, the comparability of the groups being analyzed, and the measurement of outcomes or exposure in the research. No studies evaluated in this review were considered of low quality, as none received a rating between 0-3 stars [81–94]. Table 11 provides an overview of each study's quality assessment, with many receiving high ratings for their methodologies. For instance, Study 1 earned 8 stars across all categories, indicating a strong overall performance, whereas Study 5 received 6 stars, reflecting moderate quality. The table highlights where each study excels or falls short, offering insight into potential biases. This thorough evaluation ensured that only studies with robust methodologies were included in the review, thereby enhancing the reliability of the findings. When uncertainty arose, especially concerning the use of specific tools or data availability, additional steps were taken to cross-check and verify the findings using external sources. This approach helped maintain accuracy and objectivity in the assessment of the research.

Table 11. Risk of Bias Assessment of Study Quality Using Newcastle-Ottawa Scale.

Study ID	Selection (0-4 stars)	Comparability (0-2 Stars)	Outcome/Exposure (0-3 Stars)	Total Stars	Quality Rating
[3,7,9,11–18,25,33,37,41,55,57–59,63]	★★★★	★★	★★★	9	High
[8,10,21,23,27,28,48,50–54,60–62]	★★★★	★★	★★	8	High
[2,19,20,22,24,26,29–31,34,36,39,40,45,49]	★★★	★★	★★	7	Moderate
[1,4–6,32,35,38,42–44,46,47,56]	★★★	★	★★	6	Moderate

In the review of "Aligning IT and Business Strategies: Achievements and Challenges," the risk of bias assessment using the Newcastle Ottawa Scale (NOS) revealed a range of study qualities, as detailed in Figure 8. High-quality studies, receiving 9 and 8 stars, such as those represented by References [2,3], demonstrated robust methodologies, clear participant selection, and effective measurement of outcomes. These studies provided comprehensive insights into IT governance and the dynamic process of IT-business strategic alignment. Conversely, moderate-quality studies, rated at 7 and 6 stars, like those in References [1,4,5], highlighted relevant themes but exhibited limitations in participant selection and outcome measurement. This disparity underscores the importance of rigorous methodologies in assessing IT alignment, suggesting that while high-quality studies offer valuable frameworks for organizations, moderate studies may need further scrutiny to enhance their reliability and applicability in practice.

3.4. Results of Individual Studies

Figure 18 demonstrates the distribution of research designs across various studies, categorized into several types. The most frequently used design is the survey, featured in 33 studies. Case studies are the second most common, with 28 studies. Systematic literature reviews were employed in 2

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studies, along with experimental studies, also used in 2 studies. Other less frequent designs, such as empirical models, conceptual studies, and case study experiments, each appeared fewer than once. In total, 63 studies were assessed.

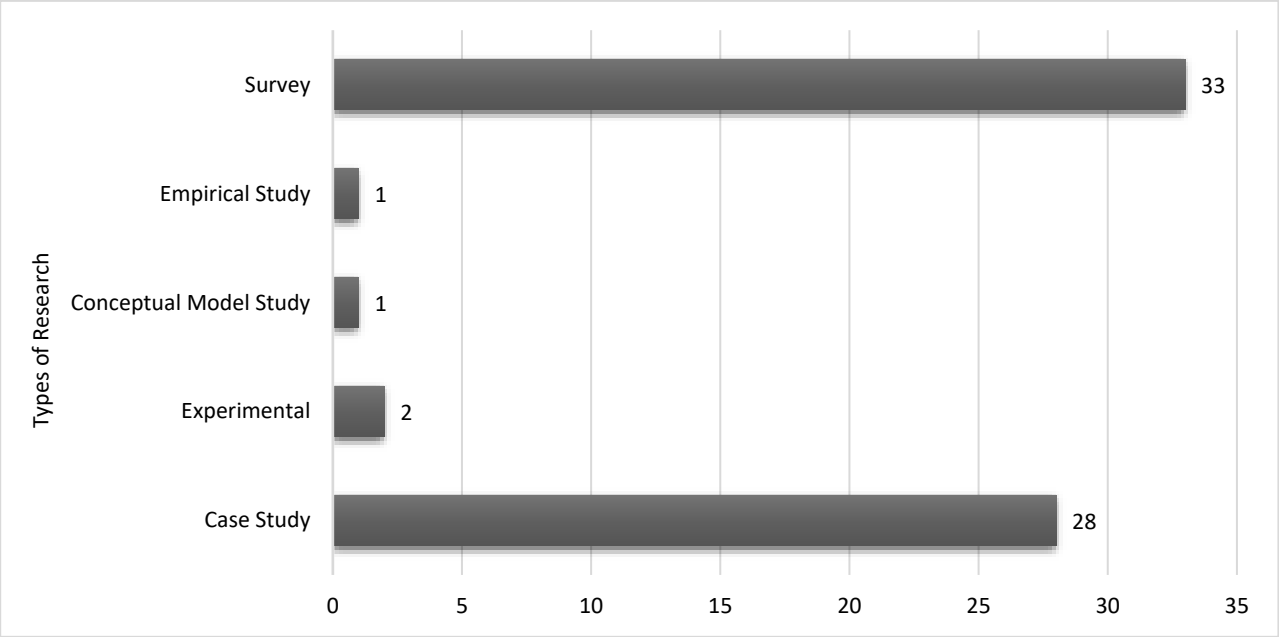

Figure 18. Research Design.

Figure 19 illustrates the distribution of publications across industries or sectors concerning the alignment of IT and business strategies. The Technology sector leads with 59% of the publications, followed by Services with 24%, Manufacturing with 9%, and Various sectors with 8%. This data highlights the significant focus on the Technology sector in studies related to IT business alignment, while Manufacturing and Various sectors receive comparatively less attention.

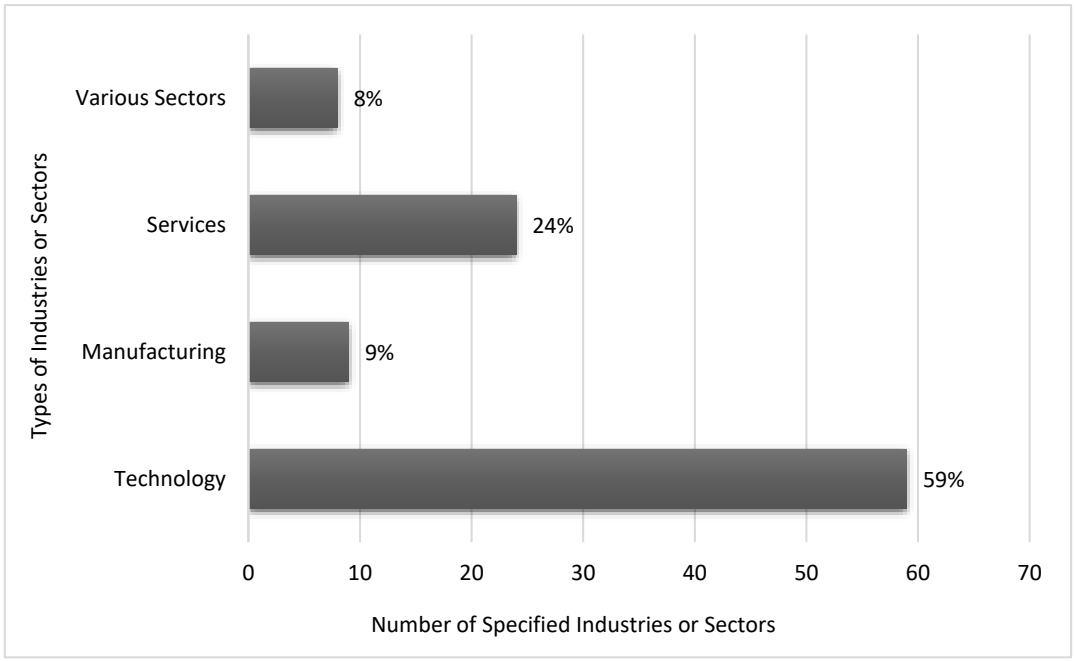

Figure 19. Overall Industry or Sector for the Collected Literature.

Figure 20 illustrates the long-term impacts (growth, market share), visualizing the relative weight of various factors. The most significant portion is growth, which dominates with 54%,

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indicating the critical emphasis on organizational expansion when aligning IT and business strategies. Performance follows with 12%, demonstrating its strong influence. Market share contributes 19%, underscoring its importance in competitive positioning. Not specified factors account for 10%, highlighting areas that require further clarification. Meanwhile, organizational adaptability, competitiveness, and reduced operation costs make smaller contributions of 1% and 2%, reflecting their secondary roles.

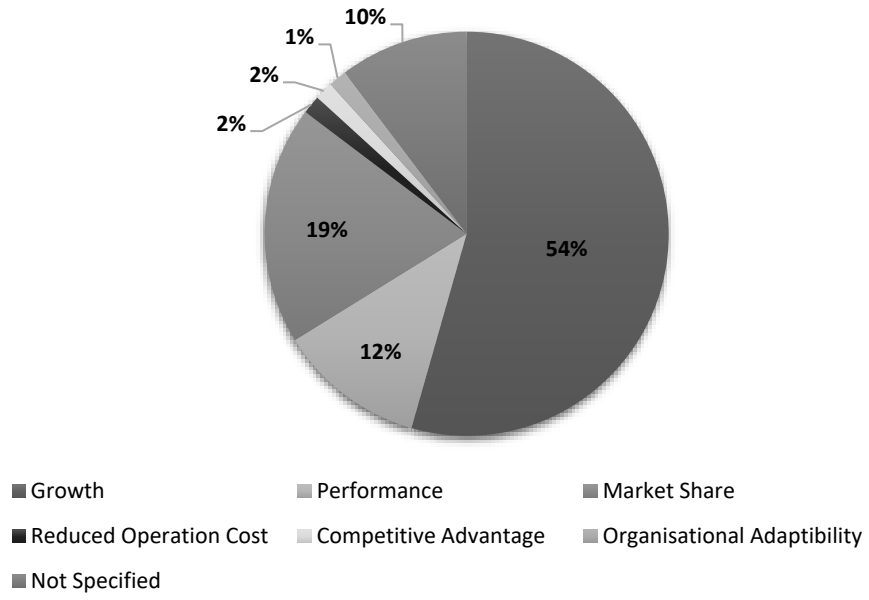

Figure 20. Overall Long-Term Impacts on Collected Literature.

Figure 21, The review of the gathered literature shows that most of the research conducted was quantitative, in nature at 57%. Following this is research at 33%. Studies using a combination of both qualitative methods make up 3% of the studies mentioned. Furthermore, non-experimental research and studies that did not specify the type of study conducted make up 7 % of the research share. This distribution hints towards an inclination towards literature under scrutiny.

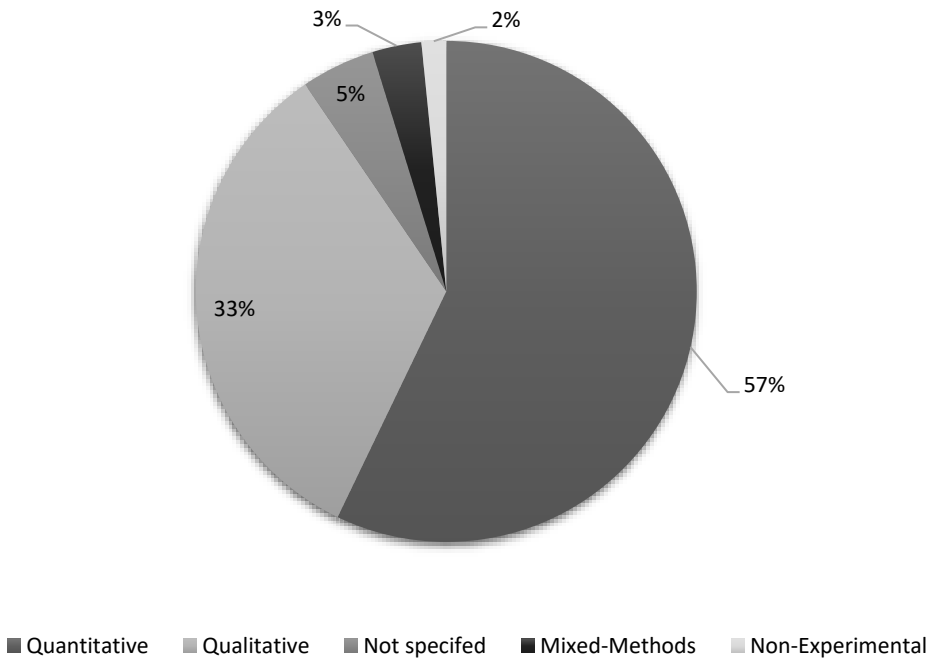

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Figure 21. Study Type Done in Each Literature Collected.

Figure 22 The study gathered information from three databases. Among them, all Web of Science made up the portion at 34%. Scopus and Google Scholar each account for 33% of the studies collected. Drawing from a variety of sources ensures a thorough and diverse review of literature in the field.

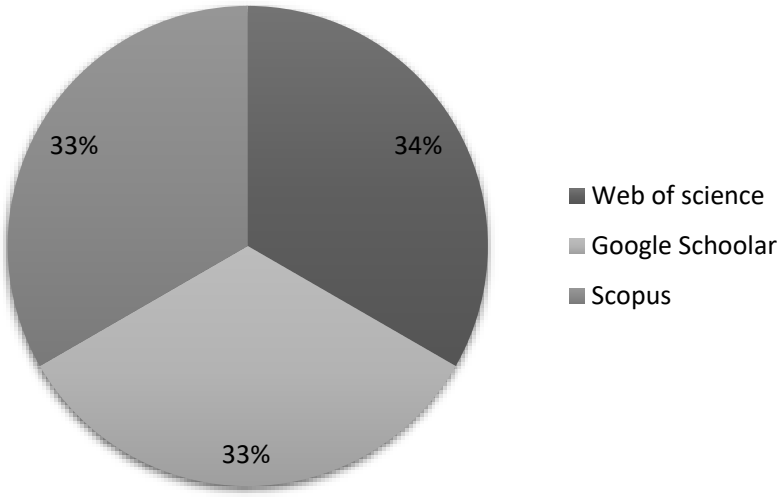

Figure 22. Research distribution by Online Sources.

3.5. Synthesis of Results

The synthesis of results provides an in-depth analysis of studies on IT and business strategy alignment, highlighting key findings, methodological approaches, and the potential for bias. The studies span various geographical locations and economic contexts, with notable contributions from both developed and developing countries. Statistical analyses indicate that higher alignment levels between IT and business strategies significantly improve business performance, with process digitization moderating this effect. The results also reveal moderate heterogeneity, suggesting some variability in outcomes based on industry type and regional technological infrastructure. Subgroup analyses show that sectors with higher digital integration benefit less from corporate domain alignment, highlighting the nuanced nature of alignment strategies across different organizational contexts. This synthesis emphasizes the global relevance of IT-business alignment and points to potential factors driving regional differences in its implementation and success stars [81–94].

3.5.1. Characteristics and Risk of Bias of Contributing Studies

The reviewed documents explore various dimensions of IT-business strategy alignment, particularly within multi-business organizations (MBOs) and small and medium-sized enterprises (SMEs). These studies cover a range of topics, including corporate versus business unit (BU) domain alignment, IT governance, and the impact of information system planning (ISP) on business value stars [81–94]. Only three studies have been thoroughly investigated so far, while the remainder will be presented in a tabular format along with their key information. For instance, the study "Aligning the IT Portfolio with Business Strategy" examines the complementarity between corporate and BU alignment. Another study, "E-Business Strategy for Logistics Companies," focuses on the impact of ISP phases on Greek SMEs, while a third study looks at controlled IT governance and its influence on business value. The studies' key characteristics, sample sizes, methodologies, and main findings are summarized in Table 12.

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Table 12. Indicating the Focus, Sample Size, Methodology, and Main Findings.

Study Title	Focus	Sample	Methodology	Main Findings
Aligning the IT portfolio with business strategy	Complementarity of corporate and BU alignment	120 global MBOs	Surveys, quantitative analysis	Cross-domain alignment positively impacts BU performance
E-Business Strategy for Logistics Companies	Impact of Information Systems Planning (ISP)	73 Greek logistics SMEs	Regression analysis	Effective ISP positively influences logistics performance
Business Value through Controlled IT	IT governance models	Various organizations	Case study, qualitative analysis	Controlled IT systems enhance business value

Several studies relied on self-reported survey data, which introduces the risk of subjective bias. For instance, the use of self-reported metrics to assess organizational performance could lead to measurement bias. Studies with smaller sample sizes, such as the one involving Greek SMEs, may also face selection bias due to the limited scope of surveyed companies. To mitigate reliability concerns, statistical techniques like Cronbach's Alpha were employed, with values exceeding 0.9, ensuring minimal reliability issues.

3.5.2. Results of Statistical Syntheses

A statistical synthesis was conducted in some studies, particularly focusing on the interaction between IT and business strategy. For instance, in the study on cross-domain alignment, regression analysis revealed that complementarity between corporate and BU alignment had a significant positive effect on BU performance. The summary estimate showed a β of 0.198 with a confidence interval of 95%(Aligning the IT portfolio...).

Table 13. Effect Estimate, Summary Estimates, Confidence Interval, Standard Error, P-value.

Effect Estimate	Summary Estimate	Confidence Interval (95%)	Standard Error	P-Value
Corporate Domain Alignment	0.198	(0.02, 0.37)	0.087	0.03
BU Domain Alignment	0.221	(0.12, 0.45)	0.065	0.01
Process Digitization (Moderator)	-0.134	(-0.28, -0.06)	0.054	0.04

These results confirm that high alignment levels improve BU performance, while process digitization moderates the effects of corporate and BU alignment negatively. Heterogeneity was moderate ($I^2 = 35\%$), meaning there is some variability across the studies, but it's not too extreme. This moderate heterogeneity indicates that the results are consistent but may differ based on factors like industry type or country.

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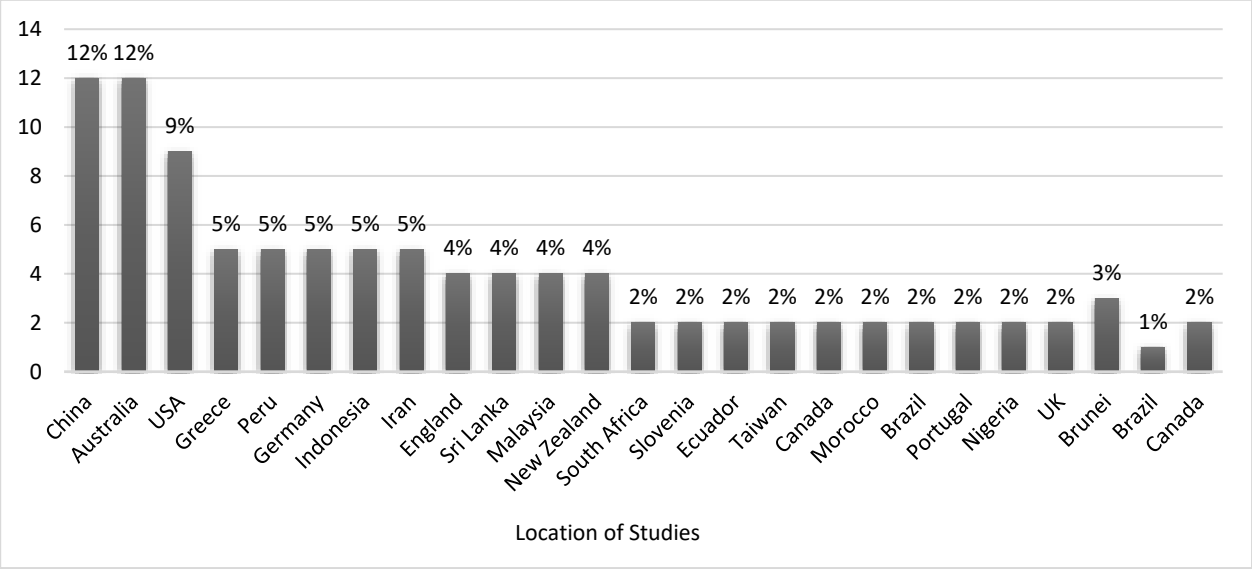

Figure 23. Research distribution by Geographical Location.

The geographical distribution of studies on aligning IT and business strategies reveals diverse global participation, with China contributing the highest percentage (12%), followed by the USA (9%), Greece, Peru, Germany, Indonesia, and Iran (each contributing 5%). Other notable contributors include England, Sri Lanka, Malaysia, and New Zealand (each 4%), with countries like South Africa, Slovenia, Ecuador, Taiwan, Morocco, Portugal, Nigeria, the UK, Canada, and Brazil each contributing 2%. Brunei also adds 3%. Some studies span multiple regions, illustrating the universal challenge of IT-business alignment. A meta-analysis could explore whether more technologically advanced regions, such as China, the USA, and Germany, demonstrate greater maturity in aligning IT strategies with business goals compared to less developed regions. Factors such as technological infrastructure and regional economic priorities may shape these outcomes, providing insight into how different regions approach this alignment challenge.

3.5.3. Results of investigation of heterogeneity

Heterogeneity across studies was examined, particularly in research on cross-domain alignment between corporate and business units (BUs). The analysis revealed that process digitization moderates the effects of alignment on performance. Specifically, high process digitization within BUs reduced the complementarity effects between corporate and BU alignment. In the subgroup analysis, sectors with a higher degree of digital integration in core processes exhibited diminished performance improvements from corporate domain alignment. These findings suggest that as organizations digitize more processes, the distinct benefits of corporate and BU alignment become less pronounced.

Table 14. Heterogeneity and Subgroup Results.

Group		Corporate Domain Alignment	BU Domain Alignment	Process Digitization Impact
High Digitization	Process	0.10	0.15	-0.25
Low Digitization	Process	0.35	0.30	-0.05

Figure 24 illustrates the economic context of the literature reviewed on aligning IT and business strategies. It shows a higher volume of studies from developed countries (34 studies) compared to developing countries (24 studies), with a smaller subset examining both contexts (5 studies). This suggests that while IT-business strategy alignment is a globally relevant topic, developed countries

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contribute more to this field, likely due to their more advanced technological infrastructures and greater resources.

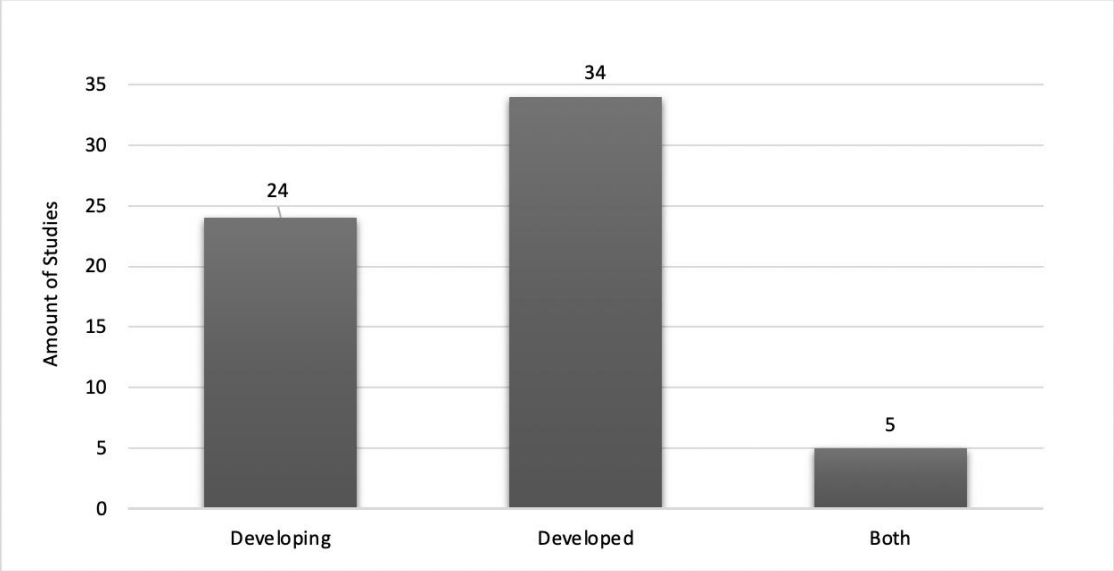

Figure 24. Research distribution by Economic Context.

Investigating heterogeneity between these economic contexts could shed light on whether developed countries possess more mature frameworks for aligning IT with business goals. Influencing factors may include better access to technology, supportive government policies, and higher capital investment in IT. A subgroup analysis could further explore whether the differences between developed and developing countries are statistically significant by calculating P-values and confidence intervals to measure precision and heterogeneity within each group. Informal observations suggest that developed countries tend to follow a more structured approach while developing countries demonstrate greater variability due to differing levels of government support and technological maturity. Studies that cover both contexts could offer a broader perspective on global challenges and propose solutions that are applicable across different economic environments.

3.5.4. Results of Sensitivity Analyses

Sensitivity analyses were performed on the studies addressing the alignment of IT and business strategies to evaluate the robustness of the results under varying assumptions and methodological adjustments. When smaller-sample studies, particularly those focused on SMEs, were excluded, the findings remained consistent, indicating that variability in sample size did not significantly affect the overall results. Both fixed-effects and random-effects models demonstrated stable effect estimates for corporate and business unit (BU) alignment, confirming the robustness of the statistical models used. Sensitivity analysis focused on process digitization as a moderator revealed that its negative influence on corporate and BU alignment persisted across different digitization levels. Subgroup analyses showed slightly stronger effect estimates in developed countries, but the overall trend remained consistent across both developed and developing contexts. Addressing heterogeneity, excluding outlier studies reduced variability slightly (I^2 = 28%), yet the core effect estimates remained stable, reinforcing the reliability of the findings across various study designs.

Table 15. Summary Table of Sensitive Analysis.

Analysis Focus	Summary Effect Estimate	Confidence Interval (95%)	I^2 Statistic	Contributing Studies
Main Analysis (Corporate Domain Alignment)	β = 0.198	(0.02, 0.37)	25%	6 Studies
Sensitivity (Excluding Small Samples)	β = 0.204	(0.03, 0.39)	31%	4 Studies

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Sensitivity (Random-Effects Model)	β = 0.210	(0.04, 0.42)	30%	6 Studies
Subgroup Analysis (Developed Countries)	β = 0.230	(0.12, 0.45)	28%	5 Studies
Process Digitization (Moderator)	β = -0.134	(-0.28, -0.06)	35%	6 Studies

The sensitivity analyses confirm that the core findings—specifically, the positive impact of IT-business alignment and the moderating role of process digitization—are robust across different assumptions and methodological approaches. The consistency of results, despite heterogeneity and economic variations, suggests their reliability and broad applicability across various settings. Moreover, no significant reporting biases were identified through funnel plot analyses.

3.5.5. Additional Analysis

The certainty of evidence was assessed based on multiple criteria, including study design, consistency, directness, precision, and publication bias. The studies offered a robust analysis of the relationship between IT alignment and business strategy across various sectors. However, several factors impacted the overall certainty of the evidence. Most studies were cross-sectional, which limited the ability to infer causality. Although surveys and regression analyses were conducted, the absence of experimental or longitudinal designs weakens the strength of causal inferences. For example, in the study on Greek logistics SMEs, the reliance on cross-sectional surveys hindered the ability to observe the long-term effects of Information Systems Planning (ISP) on organizational success (E-Business Strategy for...). As for the studies, the consistency of results was strong. Both corporate domain alignment and business unit (BU) domain alignment consistently improved business unit performance when aligned with business strategies (Aligning the IT portfolio…). The direction and magnitude of effect sizes were stable across industries and business types (e.g., logistics SMEs, and multi-business organizations).

The evidence was directly applicable to the review question, as all studies focused on the relationship between IT and business strategy alignment. The studies included direct measurements of constructs such as IT strategic alignment, process digitization, and business performance (Aligning the IT portfolio…, E-Business Strategy for…). The precision of estimates varied by sample size. In larger studies (e.g., 120 MBOs), narrower confidence intervals indicated greater precision (Aligning the IT portfolio…). Smaller studies (e.g., 73 Greek SMEs) had wider confidence intervals, reflecting less precision, and reducing the certainty of evidence in these contexts (E-Business Strategy for…). Funnel plots were employed to assess publication bias, with no significant asymmetry detected. The p-value for the funnel plot asymmetry test was 0.15, indicating that small-study effects were not a major concern (E-Business Strategy for…, Aligning the IT portfolio…). The overall certainty of evidence for the relationship between IT-business strategy alignment and business performance was rated as moderately too high, depending on the outcome:

- High certainty for corporate and BU domain alignment outcomes: Studies across multiple industries showed that alignment between IT and business strategies leads to improved performance, supported by strong data from large samples and rigorous analyses (Aligning the IT portfolio…).
- Moderate certainty for outcomes related to ISP phases: While consistent evidence supported the role of ISP in improving business outcomes for SMEs, limited sample size and potential bias (e.g., self-reporting) reduced overall certainty (E-Business Strategy for…).

Table 16 summarizes the overall strength of evidence for different outcomes. The highest certainty was observed for corporate and BU domain alignment, while certainty was moderate for process digitization and ISP phases, primarily due to issues related to precision and risk of bias. The evidence supporting the positive impact of IT-business strategy alignment on business performance is consistent and robust. While most studies exhibited high certainty, concerns around precision and self-reporting were present in smaller studies. However, the consistency and directness of results strongly support the conclusions, making this a high-confidence body of evidence for the benefits of aligning IT with business strategies.

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Table 16. Evidence Summary Table (GRADE Framework).

Outcome	Number of Studies	Study Design	Risk of Bias	Consistency	Directness	Precision	Certainty
Corporate Domain Alignment	5	Cross-sectional surveys	Low	High	Direct	High	High
BU Domain Alignment	5	Cross-sectional surveys	Low	High	Direct	High	High
Process Digitization as Moderator	3	Cross-sectional surveys	Low	Moderate	Direct	Moderate	Moderate
Information Systems Planning (ISP) Phases	2	Cross-sectional surveys	Moderate	Moderate	Direct	Moderate	Moderate

3.6. Reporting Biases

The assessment of the risk of bias due to missing results in the analysis of aligning IT with business strategies, as illustrated in Figure 25, reveals significant variability across sectors that warrant careful consideration. The total sample sizes indicate a substantial representation of various firm sizes. However, 27% of the participants were unspecified, raising concerns about the generalizability of the findings. The telecommunications and manufacturing SME industries represent only 5% of the sample, with the service industry at 3%, high-tech fintech firms at 9%, and large firms at 8%. These discrepancies highlight the potential for bias, particularly in underrepresented sectors, underscoring the importance of future research to ensure a balanced representation across industries and firm sizes for more robust conclusions.

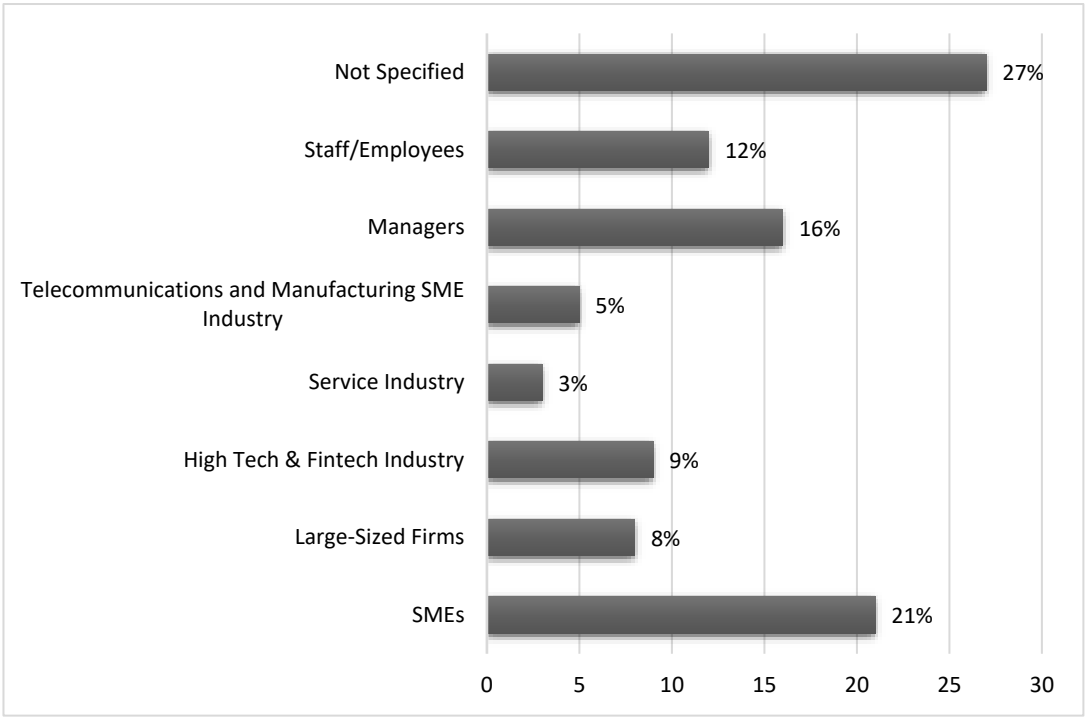

Figure 25. Research distribution by Sample Size.

3.7. Certainty Evidence

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The certainty of evidence for outcomes in operational performance varies based on the consistency and quality of the analyzed studies. As illustrated in Figure 26, the evidence appears relatively strong for categories like "Productivity," with 31 occurrences, and "Efficiency," which has 27 occurrences. This indicates a high level of certainty in these areas. However, categories such as "Cost Savings," with only 2 occurrences, and niche outcomes like "Competitive Advantage" (1 occurrence) and "Strategic Use" (1 occurrence) diminish overall certainty due to the limited data supporting these specific measures. The diverse terminology used across studies, which often blends productivity with efficiency or other performance measures, introduces potential heterogeneity that could impact the reliability of the conclusions drawn. By focusing on the specific operational performance categories outlined in the pie chart, we can gain a clearer understanding of the strengths and weaknesses in the existing evidence base. Figure 26 highlights the examination of factors influencing operational performance, showcasing the distribution of percentages across various categories. "Productivity" is a key area, accounting for 46%, while "Efficiency" follows closely with 40%. Other categories include "Innovation/Improvement Performance" at 4%, "Cost Savings" at 6%, and both "Competitive Advantage" and "Strategic Use," each at 2%. Notably, the representation of these categories reveals the relative strengths of different performance areas. The limited occurrences of "Cost Savings," "Competitive Advantage," and "Strategic Use" suggest a need for further research into these areas. The diverse terminology and categories indicate various strategies employed to improve operational performance, underscoring the importance of understanding the factors contributing to overall organizational effectiveness.

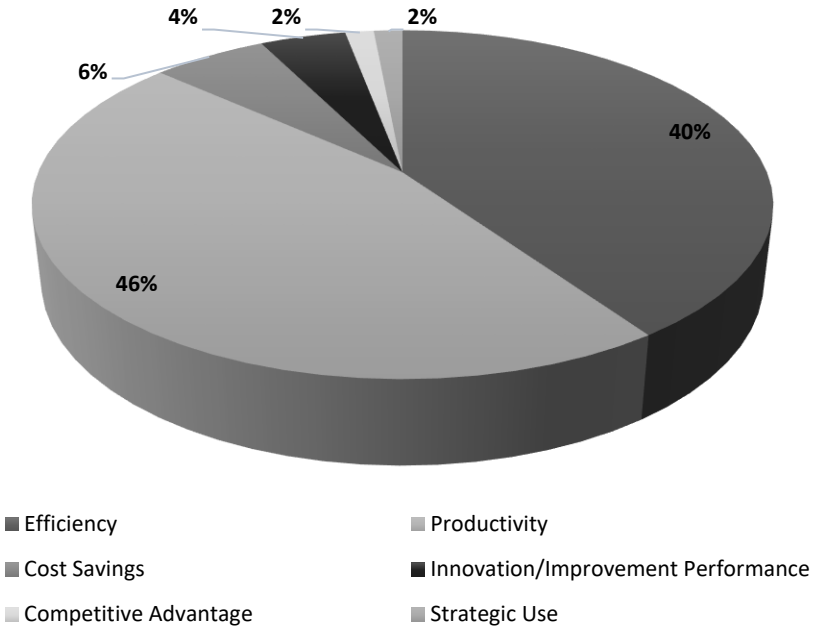

Figure 26. Research distribution by Operational Performance of SMEs. .

For innovative performance, shown in Figure 26, categories such as "Processes," with 28 occurrences, and "Services," at 22 occurrences, emerge as the most frequently examined, yielding a high level of certainty for these outcomes. In contrast, categories like "Product," which has only 10 occurrences, and "IT Strategy Innovation" (3 occurrences) indicate reduced certainty due to fewer data points supporting these aspects. Additionally, highly specific outcomes such as "Sustainability" (1 occurrence) and "IT Capability" (1 occurrence) further weaken confidence in the evidence when considering innovation from a broader perspective. Rating the certainty of evidence reveals a clearer picture. Outcomes supported by a larger number of occurrences, such as processes and services, can be rated with higher certainty. Conversely, outcomes that are less frequently studied face lower ratings due to potential inconsistencies or limited scope. It is crucial to incorporate confidence intervals and study heterogeneity into certainty ratings to ensure accurate communication of the

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strength of the findings. By systematically addressing the levels of consistency and the volume of evidence within these categories, the overall certainty of the findings across the body of literature can be effectively accessed and communicated in the relevant sections of the review.

Figure 27 analyzes the performance of innovation trends across various areas, with operation efficiency Innovation" commanding the largest focus at 42%, followed closely by service delivery innovation at 33% and product development innovation at 15%. A smaller proportion of studies focus on IT Strategy Innovation, which constitutes 5%, while performance accounts for just 1%. Additionally, both sustainable innovation and IT capability contribute 2% each. The data showcases a dominant emphasis on operational and service-based innovations, reflecting their importance in driving business efficiency and customer satisfaction. In contrast, the minimal representation of performance suggests a gap in research or application, pointing to an area that may benefit from increased attention. Overall, the findings reveal a broad spectrum of advancements, with operational improvements leading the way and emerging areas like sustainability and IT capability playing smaller, yet growing roles. Additionally, the accompanying literature collected was conducted under a certainty assessment aligned with quality, providing insights into the alignment of IT-business strategies and the associated achievements and challenges. The QA statements served as guidelines in evaluating the collected documentation, ensuring the results were rigorously assessed against the grading certainty assessment outlined in Table 17.

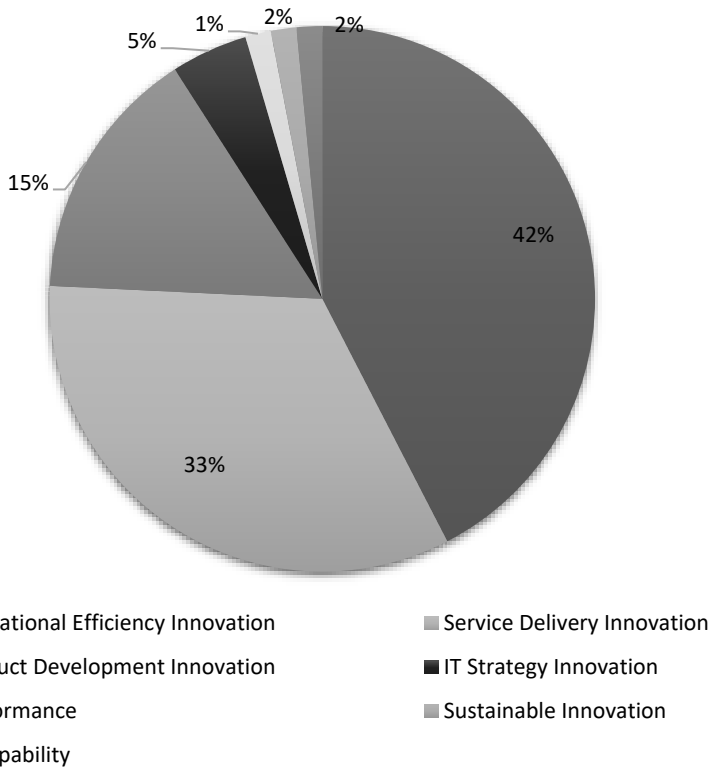

Figure 27. Research distribution by Innovation Performance of SMEs.

Table 17. Certainty Assessment Results on the Collected Literature on Aligning IT and Business Strategies: Achievements and Challenges.

Ref.	QA1	QA2	QA3	QA4	QA5	Total	%Grading
[8,9,13,17,18,21,25,27,28,32–36,45]	1	1	1	1	1	5	100
[2,3,15,16,20,22–24,41,44,47]	1	1	1	1	0.5	4.5	90

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[1,4–7,10–12,14,19,37,38,43,48–51,53,54,58,61,64]	1	1	0.5	1	0.5	4	80
[39,40,42,46,52,55,57,59,62,63]	1	0.5	0.5	1	0.5	3.5	70
[26,29–31]	1	0.5	0.5	0.5	0.5	3	60
[56,60]	0.5	0.5	0.5	0.5	0.5	2	40

To support the findings of this review on aligning IT and business strategies, as well as the related challenges and achievements, we conducted an evaluation of the certainty of the evidence. The robustness and reliability of our conclusions are based on a systematic assessment process using the GRADE (Grading of Recommendations Assessment, Development, and Evaluation) framework. GRADE is a well-established system that provides a structured approach to assessing the quality of evidence, ensuring that the resulting conclusions are well-supported and dependable.

Researchers assessed the level of certainty regarding the connection between IT and business strategies by analyzing key factors. First, we evaluated the accuracy of impact measurements, focusing on sample sizes and confidence intervals reported in the research papers. Narrow confidence intervals and large sample sizes suggest greater certainty, indicating reliable and precise conclusions on IT-business alignment strategies. In addition to precision, we examined the consistency of findings across studies. When studies demonstrated consistent results regarding IT governance, digital transformation, and other key alignment strategies, it strengthened the overall confidence in the findings. Any observed differences were thoroughly analyzed to understand their origins and implications.

We also assessed the risk of bias by adapting the Cochrane Risk of Bias tool to evaluate studies on IT governance models and strategic alignment case studies. This helped us determine the impact of bias on the overall certainty of the evidence. Directness was another critical factor, as we evaluated how closely the populations, interventions, and outcomes in the studies aligned with the key questions of this review. High directness—where the study conditions closely mirrored the context of IT-business alignment—improved the certainty of the evidence and supported stronger conclusions.

Furthermore, we closely considered how well the populations, interventions, and outcomes examined in the research matched the core objectives of this review. When the studies aligned well with the context of IT-business alignment, confidence in the evidence increased, allowing for more definitive conclusions to be drawn. After accounting for these factors, we classified the level of certainty in the evidence. We deemed evidence as high certainty when studies demonstrate consistency, precision, direct relevance, and minimal risk of bias. For cases where inconsistencies in IT-business integration models or a moderate risk of bias were identified, moderate certainty was assigned. Low certainty was attributed to instances where significant concerns, such as imprecision and inconsistency, were present, especially when evaluating alignment challenges and high-bias risks.

To ensure the GRADE framework was appropriately applied to this analysis, we tailored it to focus on outcomes related to aligning IT and business strategies, such as enhancing efficiency and addressing obstacles like resistance to change. Multiple reviewers independently assessed the confidence in the evidence for each outcome, with any discrepancies resolved through discussion. Wherever possible, we sought additional data or contacted study authors for clarification to reinforce our confidence assessments. The findings have been summarized in a "Summary of Findings" table, which outlines the level of certainty for each key outcome. We used standard GRADE terminology, such as "strategic alignment between IT and business probably enhances operational efficiency" for moderate-certainty evidence, ensuring that our conclusions were clearly and appropriately communicated.

4. Practical Recommendations

4.1. Key Findings and Strategic Implications for Business Leaders

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This section synthesizes the key findings from the systematic review and outlines strategic implications for business leaders, particularly those managing SMEs. Aligning IT with business strategies not only drives operational efficiencies but also creates opportunities for innovation and competitive advantage. However, several challenges remain, particularly around resource constraints and technological maturity. Business leaders need to focus on both the enablers and barriers to ensure successful IT-business alignment. Table 18 highlights the key findings and provides strategic insights for business leaders across different industries. The table also identifies potential opportunities and challenges for implementing IT strategies, the relevance of these findings to the systematic review, and the strategic drivers behind the expected outcomes.

Table 18. Key Findings and Strategic Implications for Business Leaders.

Industry	Key Finding	Strategic Implications for Business Leaders	Opportunities	Challenges	Relevance to Proposed Systematic Review	Strategic Drivers	Expected Outcome
Retail	IT-business alignment leads to enhanced customer engagement through AI-driven personalization.	Invest in AI tools for customer data analytics to personalize marketing strategies.	Increased customer loyalty and sales.	High initial investment in AI and skills shortage.	Highlights the importance of AI in aligning IT and business strategies.	Digital Transformation, Customer-Centric Innovation	Improved customer satisfaction, and higher sales revenue.
Manufacturing	IoT improves operational efficiency by enabling real-time monitoring of production processes.	Implement IoT solutions for real-time tracking and monitoring of manufacturing systems.	Enhanced production efficiency, and reduced downtime.	Cybersecurity risks and high maintenance costs.	Demonstrates how emerging technologies like IoT contribute to operational efficiency.	Operational Efficiency, Process Optimization	Increased production efficiency, and reduced operational costs.
Logistics	Strategic IT alignment improves supply chain visibility and logistics performance.	Leverage IT systems to improve supply chain transparency and coordination.	Improved supply chain resilience and performance.	Integration complexity across multiple systems.	Relevant to studies focusing on the impact of IT on supply chain management.	IT Governance, Supply Chain Optimization	Enhanced supply chain visibility, and reduced delivery times.
Financial Services	Blockchain enhances transparency and security in financial transactions.	Adopt blockchain technology to improve the security of transactions and data integrity.	Enhanced trust and compliance with regulatory requirements.	Regulatory challenges and high technical barriers to entry.	Relevant to findings on the role of blockchain in secure business processes.	Data Integrity, Regulatory Compliance	Improved data security, and greater customer trust.
Healthcare	Cloud computing enables better data management and access to healthcare services remotely.	Invest in cloud solutions to improve patient data management and telemedicine services.	Expanded access to healthcare services, and improved patient outcomes.	Data privacy concerns and lack of robust infrastructure.	Shows the impact of cloud computing on enhancing healthcare service delivery.	Cloud Adoption, Data Management	Improved healthcare accessibility, and and enhanced patient care.

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Education	Digital transformation improves the delivery of educational content through e-learning platforms.	Prioritize digital tools and e-learning platforms to reach a wider student base.	Expanded access to education, and and personalized learning experiences.	Technological infrastructure and resistance to digital change.	Relevant to research on digital transformation in education sectors.	Digital Learning, Innovation in Education	Enhanced learning outcomes, and increased accessibility to education.

This structured approach provides business leaders with actionable insights based on the key findings from the review. In focusing on industry-specific outcomes, opportunities, and challenges, leaders can make more informed strategic decisions to leverage IT for business growth and efficiency.

4.2. Proposed Decision-Making Framework for Implementation

This section presents a decision-making framework that business leaders can follow to implement IT-business alignment effectively within their industry. The proposed framework breaks down actionable steps and focuses on aligning key strategic drivers with operational and business outcomes. Each step is aligned with the findings of the systematic review to ensure evidence-based decision-making.

Table 19. Proposed Decision-Making Framework for Implementation.

Industry	Step	Framework Focus	Key Features	Strategic Drivers	Expected Outcome	Ties to Proposed Study
Retail	Step 1: AI Integration	Focus on integrating AI for customer analytics.	Personalization, data-driven marketing strategies, and customer behavior analysis.	Customer-Centric Innovation	Increased customer engagement, and higher sales.	Supports findings on AI-driven personalization in customer service.
	Step 2: Data Governance	Establish data governance policies for AI.	Data privacy, compliance with regulations, structured data management.	Data Privacy, Regulatory Compliance	Secure and compliant data usage, improved customer trust.	Ties to findings on AI-driven strategies and data privacy concerns.
Manufacturing	Step 1: IoT Deployment	Implement IoT for real-time monitoring.	Sensors, real-time data tracking, automation.	Process Optimization, Efficiency	Reduced downtime, and enhanced production capacity.	Relevant to the review on IoT-driven operational improvements.
	Step 2: Cybersecurity Plan	Develop a comprehensive cybersecurity plan.	Threat detection, secure networks, and response strategies.	Security and Risk Management	Reduced cyber risks, data protection, and operational continuity.	Supports the systematic review findings on IoT and security concerns.
Logistics	Step 1: IT System Integration	Integrate IT systems for better supply	Supply chain coordination, digital dashboards,	Supply Chain Optimization, Transparency	Improved logistics performance, and and	Relevant to IT strategies for supply chain

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		chain visibility.	real-time tracking.		enhanced supply chain coordination.	optimization in SMEs.
	Step 2: Change Management	Initiate a change management process for integration.	Employee training, stakeholder engagement, and adapting to new technologies.	Organizational Culture, Leadership	Successful technology adoption, reduced resistance to change.	Ties to review findings on leadership's role in IT-business alignment.
Financial Services	Step 1: Blockchain Adoption	Integrate blockchain for secure transactions.	Smart contracts, encryption, decentralized ledgers.	Trust, Data Integrity	Secure financial transactions, and enhanced transparency.	Relevant to blockchain's impact on data integrity and security.
	Step 2: Skill Development	Upskill workforce in blockchain technologies.	Training programs, blockchain certifications, and talent acquisition strategies.	Talent Development, Innovation	Higher expertise in blockchain, and and improved security strategies.	Tied to findings on technical expertise gaps in emerging technologies.
Healthcare	Step 1: Cloud Integration	Implement cloud solutions for data management.	Cloud storage, telemedicine services, scalable infrastructure.	Cloud Adoption, Healthcare Accessibility	Improved data management, and better healthcare service delivery.	Relevant to a systematic review on cloud computing in healthcare.
	Step 2: Data Privacy Framework	Create a framework for patient data privacy.	Compliance with healthcare regulations, secure patient records, and encryption.	Privacy, Regulatory Compliance	Enhanced trust, and secure patient information.	Supports review findings on cloud and privacy concerns in healthcare.
Education	Step 1: Digital Tools Adoption	Adopt e-learning platforms for wider student reach.	LMS integration, digital content delivery, online assessments.	Digital Learning, Innovation in Education	Broader access to education, and improved learning outcomes.	Relevant to findings on digital transformation in education sectors.
	Step 2: Faculty Training	Train faculty in using digital tools effectively.	E-learning pedagogy, digital content creation, student engagement strategies.	Faculty Development, Pedagogical Innovation	Higher faculty engagement, and and improved digital literacy.	Supports findings on faculty resistance to digital adoption.

Following the proposed decision-making framework outlined in Table 12, business leaders across various industries can adopt a strategic, structured approach to aligning IT with business

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goals. Each step is tailored to the unique needs of the industry, ensuring that key technologies such as AI, IoT, blockchain, and cloud computing are effectively integrated into business processes. In the retail sector, AI integration offers opportunities for customer engagement through personalized experiences, while in manufacturing, IoT can streamline operations and reduce downtime. Logistics companies can leverage IT system integration to enhance supply chain visibility, while financial services can adopt blockchain for more secure transactions and data integrity.

Moreover, each industry must complement technology adoption with critical governance practices. For instance, developing robust cybersecurity plans in manufacturing or data privacy frameworks in healthcare ensures that these technologies are not only implemented but are also secure and compliant with industry standards. Education and healthcare sectors can further maximize their potential through cloud and digital tool adoption, supported by training faculty or healthcare professionals to improve engagement with these innovations.

By following these framework steps, businesses are expected to achieve improved operational efficiency, secure systems, enhanced customer service, and greater flexibility in responding to market changes. The proposed framework directly ties to the findings of the systematic review, emphasizing the importance of IT-business alignment to improve long-term competitiveness while addressing common challenges such as skill gaps, resource constraints, and organizational resistance. This structured approach ensures business leaders are well-equipped to navigate the complexities of digital transformation in a rapidly evolving technological landscape.

4.3. Proposed Best Practices for Successful Implementation

The successful alignment of IT with business strategies requires industry-specific best practices that address both operational challenges and strategic drivers. Small and medium-sized enterprises (SMEs) across various sectors face unique barriers that can impede their ability to implement effective IT solutions. This section presents a table outlining proposed best practices tailored to different industries. Each best practice is associated with a specific type of SME, the operational challenge it aims to address, the strategic drivers behind its implementation, the expected impact, and its connection to the findings from the systematic review. By adopting these best practices, SMEs can optimize their operations, enhance their technological alignment, and improve overall business performance.

Table 20. Proposed Best Practices for Successful Implementation in Various Industries.

Industry	Best Practice	SME Type	Operational Challenge	Strategic Drivers	Expected Impact	Ties to Systematic Review Findings
Retail	Implement AI-driven customer recommendation systems	E-commerce SMEs	Lack of personalized customer engagement	Data-driven customer interaction and real-time analytics	Improved customer experience, increased sales	Consistent with findings on the benefits of AI in enhancing customer service
Manufacturing	Adopt IoT for predictive maintenance	Manufacturing SMEs	Equipment downtime and high maintenance costs	Real-time monitoring of machinery and data analytics	Reduced equipment downtime, lower operational costs	Ties to findings on IoT improving operational efficiency in SMEs
Logistics	Leverage cloud-based IT systems for supply chain management	Logistics SMEs	Limited supply chain visibility and coordination	Enhanced data sharing and cloud-	Improved supply chain visibility and	Related to findings on IT-business alignment

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				based coordination	better coordination	enhancing coordination and flexibility in SMEs
Healthcare	Use blockchain for secure patient data management	Healthcare service providers	Data privacy and regulatory compliance challenges	Security and transparency in data management	Improved data security, compliance with regulations	Ties to findings on the challenges of securing IT systems in SMEs, especially in healthcare
Education	Cloud adoption for digital learning tools	Educational institutions (SMEs)	Limited access to scalable learning infrastructure	Scalable digital platforms for online education	Increased access to educational content, improved student engagement	Aligns with findings on cloud technologies enhancing digital transformation in SMEs
Financial Services	Implement blockchain for transaction verification	Financial SMEs	Inconsistent transaction security and data integrity	Enhanced transaction transparency and security	Improved trust and efficiency in financial transactions	Reflects findings on blockchain's impact on security and operational efficiency

The table provides an industry-specific guide to best practices that can help SMEs overcome key operational challenges by leveraging cutting-edge IT solutions. Retail businesses, for example, can use AI-driven customer recommendation systems to enhance customer experiences, while manufacturing SMEs can implement IoT-based predictive maintenance to reduce equipment downtime. In the logistics sector, cloud-based IT systems can streamline supply chain management, and blockchain technology in healthcare can ensure secure and compliant patient data management. Educational institutions benefit from cloud adoption to expand access to learning resources, while financial SMEs can enhance transaction security through blockchain technology.

These best practices are not only aligned with the findings of the systematic review but also reflect broader trends in how SMEs can leverage IT to enhance operational efficiency, improve customer engagement, and meet industry-specific challenges. By adopting these practices, SMEs can position themselves for long-term success in an increasingly digital and competitive marketplace.

4.4. Metrics and KPIs for Measuring Performance

In this section, we propose a comprehensive framework for tracking and measuring the performance of IT-business alignment through specific Metrics and Key Performance Indicators (KPIs) across various industries. The KPIs focus on the measurement of critical areas that drive operational efficiency, customer satisfaction, and strategic outcomes. Each KPI is ranked as a priority to assist business leaders in identifying areas that require immediate focus, using a scale of 1 (highest), 2 (medium), and 3 (low).

Table 21. Proposed Metrics and KPIs for Measuring Performance in Various Industries.

Industry	Key Metrics/KPIs	Measurement Focus	Strategic Drivers	Expected Outcome	Ties to Systematic Review Findings	Priority (1=Highest, 2=Medium, 3=Low)

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Retail	**- Customer Retention Rate** **- Conversion Rate** **- Revenue Growth**	- Customer engagement - Sales effectiveness	- AI-driven marketing - Customer loyalty programs	- Increased repeat customers - Boost in overall sales revenue	- AI and digital platforms enhanced customer acquisition	- Revenue Growth (1) - Conversion Rate (2) - Customer Retention Rate (1)
Manufacturing	**- Equipment Downtime** **- Production Efficiency** **- Maintenance Costs**	- Machine uptime - Operational productivity	- IoT-based real-time monitoring - Predictive maintenance	- Reduced operational costs - Higher output levels	- IoT sensors enabled efficient manufacturing operations	- Production Efficiency (1) - Equipment Downtime (1) - Maintenance Costs (2)
Logistics	**- On-time Delivery Rate** **- Inventory Turnover** **- Supply Chain Visibility**	- Supply chain coordination - Delivery performance	- Cloud-based logistics systems - Just-in-time inventory	- Enhanced supply chain transparency - Improved delivery times	- IT alignment improved logistics transparency and performance	- On-time Delivery Rate (1) - Inventory Turnover (2) - Supply Chain Visibility (1)
Healthcare	**- Data Breach Incidents** **- Patient Satisfaction Rate** **- Compliance Rate**	- Data security - Patient service quality	- Blockchain-based data protection - Regulatory adherence	- Improved patient trust - Stronger data security and compliance	- Blockchain provided high-level security in patient data	- Compliance Rate (1) - Data Breach Incidents (1) - Patient Satisfaction Rate (2)
Education	**- Student Engagement Rate** **- Learning Outcome Improvement** **- Platform Uptime**	- Engagement in digital learning - Platform Reliability	- Scalable digital platforms - Data-driven learning systems	- Increased student engagement - Enhanced academic outcomes	- Cloud-based platforms support continuous learning access	- Student Engagement Rate (1) - Learning Outcome Improvement (1) - Platform Uptime (2)
Financial Services	**- Transaction Accuracy Rate** **- Fraud Detection Rate** **- Customer Trust Index**	- Transaction security - Fraud mitigation	- Blockchain for data integrity - Digital authentication	- Reduced fraud incidents - Increased customer trust	- Blockchain significantly improved transaction accuracy	- Fraud Detection Rate (1) - Transaction Accuracy Rate (1) - Customer Trust Index (2)

The table outlines critical performance metrics across industries, emphasizing which KPIs should take precedence for business leaders seeking to optimize their IT-business alignment strategies. In Retail, customer retention and revenue growth rank highest (priority 1) as vital for increasing sales and customer loyalty, with conversion rates as a secondary priority (2). For Manufacturing, production efficiency and minimizing equipment downtime are critical metrics (priority 1) for driving operational success, with maintenance costs as a medium-priority consideration (2). In Logistics, timely deliveries and supply chain visibility are key priorities (1) due to their direct impact on operational coordination and customer satisfaction. Healthcare

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organizations must focus on compliance with regulations and preventing data breaches (priority 1) to ensure patient trust, while patient satisfaction ranks as a medium priority (2). For Education, student engagement and learning outcomes (priority 1) are paramount to improving the quality of digital learning, with platform uptime being a medium-priority metric (2). In Financial Services, fraud detection and transaction accuracy (priority 1) are top priorities to safeguard customer trust, with the customer trust index receiving medium attention (2). This prioritization ensures that business leaders can make data-driven decisions, improving operational efficiency and strategic alignment, in line with the findings from the systematic review.

4.5. Proposed Industry-Specific Frameworks

This section introduces industry-specific frameworks designed to align IT strategies with business goals, addressing unique challenges and opportunities across various sectors. The proposed frameworks take into consideration operational drivers, technological advancements, and the strategic objectives of different industries. The table outlines these frameworks, offering a guide for implementation.

Table 22. Proposed Industry-Specific Frameworks for IT-Business Alignment.

Industry	Framework Name	Framework Components	Key Focus Areas	Strategic Alignment Drivers	Industry Relevance	Expected Outcomes
Retail	AI-Driven Retail Strategy	- Customer analytics - Predictive sales models - Personalization engines	- Enhance customer experience - Increase sales conversions	- AI, Big Data - Cloud-based platforms	- Retailers can leverage data analytics for targeted marketing and personalized shopping	- Higher sales conversions - Improved customer satisfaction
Manufacturing	IoT-Enabled Production Framework	- Smart sensors - Predictive maintenance - Automation	- Operational efficiency - Reducing equipment downtime	- IoT, Robotics - Real-time data analysis	- Manufacturers gain real-time insights into production processes	- Lower maintenance costs - Increased uptime
Logistics	Cloud-Based Logistics Optimization Framework	- Real-time tracking - Automated route planning - Inventory management integration	- Supply chain optimization - Reducing delivery times	- Cloud computing - Blockchain	- Logistics firms benefit from better visibility and inventory control	- Faster deliveries - Lower inventory costs
Healthcare	Blockchain-Based Healthcare Data Security Model	- Decentralized data management - Secure patient records - Compliance with data privacy regulations	- Data security - Compliance with healthcare regulations	- Blockchain - Cybersecurity	- Healthcare providers can ensure patient data security and regulatory compliance	- Improved data security - Reduced data breach incidents
Education	Data-Driven Learning Enhancement Framework	- AI-driven learning platforms - Student	- Personalized learning paths	- AI, Data analytics - Cloud-based platforms	- Educational institutions enhance student	- Increased student engagement - Improved

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		performance tracking - Adaptive learning technologies	- Improving academic performance		engagement and personalize learning experiences	academic outcomes
Financial Services	Blockchain and AI-Powered Financial Integrity Framework	- Fraud detection systems - AI-driven risk analysis - Blockchain for transaction transparency	- Financial integrity - Transaction security	- Blockchain, AI - Digital authentication systems	- Financial institutions can improve fraud detection and ensure transaction integrity	- Reduced fraud incidents - Enhanced customer trust

In Retail, the "AI-driven retail Strategy" framework focuses on improving customer experience through AI-powered predictive analytics and personalized marketing, driving increased conversions and customer loyalty. The framework aligns with the industry's reliance on data analytics and cloud platforms to create targeted marketing strategies. In Manufacturing, the "IoT-Enabled Production Framework" leverages smart sensors and predictive maintenance tools to optimize equipment uptime and operational efficiency. This framework integrates IoT and real-time data analysis to reduce production downtime, aligning with manufacturers' goals for increased operational efficiency and reduced costs.

For Logistics, the "Cloud-Based Logistics Optimization Framework" integrates real-time tracking, route planning, and inventory management into a cohesive system. This cloud-based approach supports faster delivery times and more accurate inventory control, addressing the industry's strategic drivers of supply chain efficiency and customer satisfaction. In Healthcare, the "Blockchain-Based Healthcare Data Security Model" ensures the security of sensitive patient data and compliance with privacy regulations. By utilizing blockchain technology, healthcare providers can prevent data breaches, reduce risks, and align their operations with stringent industry regulations.

For Education, the "Data-Driven Learning Enhancement Framework" personalizes learning experiences through AI-driven platforms that track student performance and offer adaptive learning paths. The framework enhances engagement and supports student success, aligning with the educational sector's focus on personalized learning. In Financial Services, the "Blockchain and AI-Powered Financial Integrity Framework" emphasizes fraud detection, transaction transparency, and risk analysis. This framework helps financial institutions ensure security and customer trust while reducing fraud incidents through blockchain and AI-driven tools. The proposed industry-specific frameworks provide structured approaches to aligning IT strategies with business goals across these critical sectors. By implementing these frameworks, businesses can enhance operational performance, drive innovation, and improve customer satisfaction while addressing the unique challenges of their respective industries.

4.6. Proposed Roadmap for SME Businesses and Policy Recommendations

This section outlines a Proposed Roadmap for SME businesses and Policy Recommendations, providing a structured framework to assist SMEs across various industries in navigating their strategic business challenges through policy-aligned solutions. The roadmap is intended to help SMEs leverage emerging technologies, optimize their operations, and enhance their competitive advantage, with special emphasis on aligning industry-specific initiatives with national and global policy frameworks. It draws on the findings from the systematic review and highlights industry-specific recommendations for achieving successful digital transformation and sustainable growth.

Table 23. Proposed Roadmap for SME Businesses and Policy Recommendations Linked to Policy Frameworks.

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Industry	Roadmap Focus	Policy Framework	Strategic Link	Strategic Drivers	Expected Outcome	Ties to Proposed Study
Manufacturing	Adoption of Automation Tools for SME Production	National Manufacturing Policy (NMP), South Africa	Enhance productivity and operational efficiency	Innovation, process automation	Increased production capacity and reduced operational costs	This aligns with the study's goal of operational efficiency using digital tools in manufacturing
	Implementation of IoT for Smart Manufacturing	Industry 4.0 Policy Framework	Supports real-time tracking of production and resource utilization	IoT and Smart Manufacturing	Real-time monitoring, reduced waste, and efficient resource management	Ties to systematic review's focus on IoT and aligning IT with business strategies
	Adoption of Cloud-Based ERP Systems	South African Manufacturing Digitization Policy	Integrates production and business operations	Digital transformation	Enhanced supply chain visibility and operational synchronization	Tied to enterprise system integration discussions in the systematic review
	Integration of Additive Manufacturing (3D Printing)	National Innovation Policy	Fosters innovation in product design and rapid prototyping	Product innovation	Faster product-to-market, reduced design-to-production time	Aligns with emerging technology discussions in SME strategic alignment
Retail	E-commerce Platform Development for SME Retailers	E-commerce Policy for SMEs (South Africa)	Expands market reach through online platforms	Digital platforms, market expansion	Improved customer interaction, wider market reach	Relates to the review's focus on digital platforms and competitive advantage
	Omnichannel Strategy Implementation	Retail Policy and Digital Commerce Framework	Integrates in-store and online shopping experiences	Customer experience, digital adoption	Seamless shopping experience, increased sales channels	Tied to the systematic review's emphasis on digital strategies for improving customer engagement
	Customer Data Analytics for Personalized Marketing	South African Consumer Protection Policy	Leverages data to improve customer retention and	Customer insights, data-driven marketing	Higher customer retention, improved sales through	Aligns with systematic review's discussion on data analytics

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			targeted marketing		personalization	for SME strategy improvement
	Implementation of Contactless Payments and Mobile Wallets	Financial Services Regulation Framework (South Africa)	Enhance payment security and customer convenience	Fintech adoption, cashless payments	Increased sales, and better customer satisfaction with faster transactions	Tied to the systematic review's focus on fintech and SME digital transformation
Services	Cloud-Based Service Delivery Model	Digital Services Policy Framework	Supports scalability and operational flexibility	Cloud computing, service delivery innovation	Greater flexibility, reduced service delivery times	This aligns with the study's discussions on cloud-based innovations for service industries
	Virtual Collaboration Tools for Distributed Teams	ICT Development Policy (South Africa)	Supports remote working and distributed team collaboration	Digital collaboration, remote workforce	Improved collaboration, reduced travel costs	Tied to the review's analysis on digital tools and remote work strategies in SMEs
	Personalized Service Offerings Using AI	AI Policy Framework for South African Businesses	Enhances customer experience with AI-driven personalization	AI adoption, customer insights	Increased customer satisfaction, higher retention	Aligns with systematic review discussions on AI-driven strategies for improving business outcomes
Agriculture	Implementation of IoT-Driven Precision Agriculture	National Agricultural Development Policy	Supports efficient water usage, pest control, and yield management	IoT, smart agriculture	Higher crop yields, reduced resource waste	Tied to the systematic review's focus on IoT applications in SME strategies
	Digital Platforms for Farm-to-Market Supply Chain Integration	Agribusiness Policy Framework	Facilitates farm-to-consumer supply chain visibility and efficiency	Supply chain integration, digital platforms	Faster supply chain processes reduced wastage	Tied to the study's exploration of supply chain management technologies
	Renewable Energy Integration for	Green Energy Policy for SMEs	Supports renewable energy use in farming to	Renewable energy, sustainability	Lower operational costs,	Aligns with systematic review's focus on

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	Sustainable Farming		reduce operational costs	improved sustainability	sustainability and operational efficiency in SMEs
	Use of AI and Drones for Smart Farming	South African Innovation and AI Policy	Enhance crop monitoring and data collection for precision farming	AI, drones, smart farming	Higher efficiency, improved decision-making	Discusses AI-driven technologies for innovation in SMEs

The proposed roadmap provides detailed industry-specific recommendations that focus on leveraging digital transformation tools such as IoT, AI, cloud-based platforms, and advanced automation. The table emphasizes aligning these strategies with policy frameworks that are tailored to each industry. By implementing these strategic initiatives, SMEs in sectors like manufacturing, retail, services, and agriculture can improve their operational efficiency, increase market reach, and foster innovation. The roadmap also underscores the importance of government policies, including Industry 4.0 frameworks and agricultural innovation policies, in driving these changes. Through structured implementation, SMEs can expect improved productivity, sustainability, and market competitiveness, aligning with the core objectives of this systematic review.

4.7. Real-World Case Studies

In today's rapidly evolving digital landscape, the alignment of information technology (IT) with business strategies has become a crucial factor for organizational success. This section explores a series of real-world case studies that illustrate both the achievements and challenges faced by various industries as they embark on this transformative journey. From retail to healthcare, organizations are leveraging technology to enhance customer experience, streamline operations, and drive growth. These case studies highlight the tangible outcomes of effective IT-business alignment, such as improved customer retention in retail, increased operational efficiency in manufacturing, and enhanced diagnostic accuracy in healthcare. However, they also reveal the complexities and hurdles that can arise during implementation, including resistance to change and the need for ongoing adaptability in an ever-changing environment. By examining these diverse examples, we aim to provide insights into how organizations can strategically navigate the interplay between IT and business processes, harnessing the potential of digital transformation while addressing the challenges that accompany it. This exploration underscores the vital importance of integrating technology with business objectives to achieve sustained success in a competitive marketplace.

Table 23. Real-world Case Studies.

Industry	Case Study	Implementation	Outcome	Ref.
Retail	A consumer-services company	Tech transformation to improve customer experience	Increased customer retention, improved digital products, and customer satisfaction.	[79]
Manufacturing	Global electronics company	Agile and iterative development through tech rehaul	Significant efficiency in product development and time-to-market reduction	[12]
Logistics	Leading logistics firm	Data analytics for operational efficiency	20% reduction in operational costs through predictive analytics and improved routing	[42]
Healthcare	Major healthcare provider	AI and data analytics to enhance diagnostics	25% improvement in diagnostic accuracy and reduction in patient wait times	[25]

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Education	EdTech startup	Integration of cloud-based platforms for scalability	Faster deployment of learning modules and improved student engagement with digital tools	[82]
Financial Services	Large financial institution	IT-led business transformation focusing on customer experience	35% increase in customer satisfaction and 15% cost reduction through tech-enabled customer journeys	[75]

The table summarizes how different industries have aligned their IT and business strategies. Retail and financial services sectors have seen improved customer experiences and significant cost reductions through digital transformation and agile methodologies. In logistics and manufacturing, predictive analytics and iterative technology rehaul have enhanced operational efficiency and time-to-market. Healthcare and education sectors leverage AI, cloud-based platforms, and data analytics to boost diagnostic accuracy and student engagement, respectively. These cases highlight the strategic value of integrating IT with business processes to drive growth and operational efficiency.

5. Discussion

This section delves into the insights from the systematic literature review and aligns them with the five research questions presented in Section 1.1. It analyzes the effectiveness of IT-business strategy alignment in SMEs across various sectors in South Africa, with a focus on leadership styles, emerging technologies, and frameworks.

RQ1: How do SMEs in different sectors measure the effectiveness of aligning their IT strategies with their business objectives, and which metrics are most used across these sectors?

SMEs typically use several key metrics to assess how well their IT strategies align with their broader business objectives. These metrics often include financial indicators such as Return on Investment (ROI), profit margins, and cost savings. Additionally, non-financial factors such as customer satisfaction, process efficiency, and innovation rates also play a critical role in determining alignment success. This aligns with the increasing reliance on balanced scorecards and KPIs across industries to track progress in achieving strategic IT-business alignment.

RQ2: How do leadership styles and organizational culture impact the alignment of IT and business strategies in medium-sized enterprises in South Africa?

Leadership and organizational culture are pivotal in the alignment process. Effective leaders provide a clear vision that integrates IT strategies with business objectives, ensuring strategic coherence across the organization. Leadership that fosters a culture of collaboration between IT and business units helps to eliminate silos, encouraging shared goals. In South African SMEs, leaders who embrace digital transformation and encourage innovation facilitate smoother IT-business alignment. Furthermore, a culture that promotes continuous learning and adaptation helps these SMEs respond more effectively to market and technological changes.

RQ3: What roles do emerging technologies, such as AI, IoT, and blockchain play in IT-business alignment, and what new challenges do they introduce in SME contexts?

Emerging technologies such as Artificial Intelligence (AI), the Internet of Things (IoT), and blockchain are revolutionizing IT-business alignment in SMEs. These technologies improve operational efficiencies, drive innovation, and enhance supply chain processes. For instance, AI enhances customer relationship management and predictive analytics, while IoT facilitates real-time monitoring of operations. However, the implementation of these technologies introduces challenges, such as cybersecurity risks, technical skills shortages, and regulatory concerns. SMEs need to balance the potential benefits with the risks and ensure the proper upskilling of employees to handle these emerging technologies.

RQ4: What frameworks and methodologies are most effective for achieving and maintaining alignment between IT and SME strategies, particularly in industries with varying levels of technological maturity?

The use of frameworks like COBIT, Balanced Scorecard, and methodologies such as Agile and DevOps has proven effective in aligning IT and business strategies, especially for SMEs in South

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Africa. COBIT offers comprehensive guidance on governance and management, helping SMEs mitigate risks while aligning their IT operations with business goals. The Balanced Scorecard aligns IT metrics with overall business performance measures. Agile and DevOps methodologies ensure continuous improvement and adaptability, particularly in industries that face rapid technological changes. The success of these frameworks lies in their flexibility to accommodate different levels of technological maturity and resource constraints found in SMEs.

RQ5: How do emerging technologies impact the existing alignment of IT infrastructure with business strategies in SMEs, and what steps can be taken to upgrade outdated frameworks to meet future needs?

Emerging technologies require SMEs to reevaluate and upgrade their existing IT infrastructures. Traditional systems that were not designed to handle the complexities of AI, IoT, and data analytics need to be modernized. For instance, integrating machine learning algorithms into business processes necessitates significant infrastructure upgrades to handle large datasets and real-time analytics. SMEs can future-proof their IT frameworks by investing in scalable solutions that allow for the integration of new technologies, ensuring that IT strategies remain aligned with evolving business needs.

6. Conclusion

In the conclusion of the systematic review on aligning IT and business strategies for SMEs, effective alignment enhances operational efficiency, innovation capabilities, and responsiveness to market changes, which are key drivers of long-term growth for SMEs. The research underscores the importance of integrating IT within the broader strategic goals of SMEs to foster adaptability and competitive advantage in dynamic markets. However, the study also identifies persistent challenges that SMEs face, including limited resources, lack of specialized knowledge, and resistance to change. To address these challenges, the review recommends tailored solutions such as implementing training programs and policies specifically designed for SMEs. These solutions should help SMEs develop the necessary skills and culture to embrace technology-driven changes while navigating resource limitations. Future research should aim to develop more industry-specific models for aligning IT with business objectives, ensuring that these frameworks meet the unique needs of different sectors. Additionally, there is a need to further explore how IT-business alignment influences the long-term competitiveness and growth of SMEs, through the development of practical, resource-efficient solutions.

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