



Research Article

The Impact of Information Technology Driven Innovation Management on IT Service Management Effectiveness and Competitive Value Creation in Smart Organizations

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Abstract: This study examines the impact of IT-driven innovation management on IT service effectiveness and competitive value creation within smart organizations. As digital transformation accelerates across industries, organizations are increasingly leveraging advanced IT solutions to enhance service delivery, responsiveness, and customer satisfaction. While traditional IT service management (ITSM) models focus on efficiency and structured processes, the integration of innovation management introduces new opportunities to improve service quality and operational agility. Through a quantitative research design, this study employs regression modeling to assess the relationship between IT-driven innovation management and two key outcomes: IT service effectiveness and competitive value creation. Data were collected from 100 technology-intensive organizations that actively integrate innovation into their IT service management processes. The results demonstrate that IT-driven innovation significantly enhances service quality, customer satisfaction, and organizational competitiveness. Furthermore, a curvilinear relationship was identified, indicating that while moderate innovation leads to improved outcomes, excessive innovation may have diminishing returns. These findings highlight the importance of balancing innovation efforts with business goals to achieve optimal performance. The study also compares innovation-driven IT service management with traditional models, illustrating how innovation fosters agility, responsiveness, and long-term value creation. The implications for smart organizations are clear: integrating innovation into IT service management is essential for maintaining a competitive edge in the rapidly evolving digital landscape. Future research should explore the long-term impact of innovation management on organizational sustainability and growth, considering external factors such as market volatility and technological disruptions.

Keywords: Competitive Advantage; IT Innovation; Service Effectiveness; Smart Organizations; Value Creation.

Received: November 20, 2025

Revised: Desember 30, 2025

Accepted: January 14, 2026

Published: January 17, 2026

Curr. Ver.: January 19, 2026



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1. Introduction

The concept of smart organizations has emerged as a critical driver for competitive advantage in today's technology-driven market. Enabled by advancements in information and communication technology (ICT), the Internet of Things (IoT), big data, and artificial intelligence (AI), smart organizations integrate digital technologies to optimize their operations, enhance decision-making, and ultimately improve competitiveness in the marketplace [1]. The adoption of smart services is particularly transformative in industries undergoing digitalization and servitization, such as manufacturing [2]. These smart organizations are distinguished by their ability to integrate physical, smart, and connectivity components supported by embedded ICT and data analytics, which facilitates both operational efficiency and innovative service offerings [3].

In an increasingly dynamic business environment, the need for continuous innovation is paramount for sustaining a competitive edge. Smart organizations recognize that innovation is not merely about technological advancements but also involves strategic management and organizational restructuring [4]. Effective management of innovation includes investment in smart financial systems, research and development (R&D), and talent development, which collectively contribute to the long-term success of the organization [5]. Moreover, organizations must maintain the ability to adapt to changing market demands, ensuring that their services and products remain relevant in a competitive landscape [6].

IT service management (ITSM) plays a vital role in enabling smart organizations to function effectively. By utilizing smart systems to manage and optimize data, network, security, and resource management, these organizations can enhance service delivery and operational performance [7]. The incorporation of AI and intelligent agents into smart service systems allows for automation and augmented services, promoting value co-creation with stakeholders [8]. However, the transition to smart services also presents challenges, particularly with regard to digital transformation and changes in organizational design and processes [9]. Balancing technological innovation with human factors such as talent development and organizational well-being remains a critical challenge in the journey toward becoming a fully integrated smart organization.

The integration of IT-driven innovation management with IT service management (ITSM) effectiveness in smart organizations represents an emerging area of research that has gained increasing attention. While extensive studies have focused on the implementation and benefits of ITSM frameworks such as ITIL [10], there is a notable gap in the literature regarding the synergistic effects of integrating innovation management processes with ITSM. This gap is significant, as smart organizations, which leverage advanced technologies like AI, big data, and IoT to enhance their service delivery, need a deeper understanding of how these integrations can maximize value creation and improve service effectiveness [3], [11].

Smart organizations, which are increasingly at the forefront of leveraging digital technologies, operate in a fast-paced, technology-driven environment, where continuous innovation is essential for maintaining service quality and staying competitive [12]. Innovation management is critical, not only in terms of technology but also as part of the strategic and organizational restructuring required to adapt to new market conditions [13]. The need to integrate innovation with ITSM is crucial, especially as organizations look for ways to improve service quality, customer satisfaction, and operational efficiency [14]. However, despite these advancements, the rapid technological changes and complex management processes pose significant challenges in sustaining service effectiveness and value creation [15].

The primary objective of this study is to evaluate the impact of IT-driven innovation management on IT service effectiveness and value creation in smart organizations. This study aims to assess how innovation management processes, when integrated with ITSM frameworks, can influence key factors such as service quality, customer satisfaction, and operational efficiency [11]. Additionally, it will explore the critical success factors that facilitate successful integration, including top management support, change management, and the introduction of quick-win processes [13]. Furthermore, this research aims to examine value co-creation mechanisms within the IT service ecosystem and their impact on both service providers and customers [15].

This study contributes to the existing body of knowledge by filling the gap in research regarding the integration of IT-driven innovation management and ITSM effectiveness. By developing a conceptual framework that integrates these two areas, this research will offer valuable insights into how such integrations can enhance service quality and operational efficiency, guiding practitioners to optimize their IT service management practices and innovation strategies for better value creation [12].

2. Literature Review

Information Technology Driven Innovation Management

The development of digital technology has encouraged organizations to develop innovation strategies based on the utilization of information technology. Information technology-driven innovation management is an approach that emphasizes the integration of various digital technologies such as artificial intelligence (AI), blockchain, machine learning, and the Internet of Things (IoT) in organizational innovation development processes. The integration of these technologies enables organizations to improve operational efficiency,

accelerate decision-making processes, and enhance the quality of services provided to users [16].

In the context of digital transformation, blockchain technology plays an important role in improving transparency, security, and data integrity within organizational systems. The implementation of blockchain in digital governance systems can support the development of more secure and trustworthy service systems, thereby strengthening the foundation of technology-based innovation in modern organizations [17]. Furthermore, the combination of AI and blockchain technologies can also be utilized to build a digital ecosystem that supports the development of a sustainable digital culture within organizations [18].

The utilization of machine learning technology is also an important component in the development of information technology based innovation. Machine learning models developed within cloud and edge computing environments are capable of improving system capabilities in detecting and responding to cybersecurity threats more effectively. This indicates that technology-based innovation not only enhances operational efficiency but also strengthens the resilience of organizational digital systems [18], [19].

IT Service Management in Smart Organizations

IT Service Management (ITSM) encompasses a set of frameworks designed to manage IT services throughout their life cycle, with the goal of ensuring consistent, high-quality service delivery. Among the widely adopted frameworks is the Information Technology Infrastructure Library (ITIL), which provides guidance on key areas such as Incident Management, Problem Management, Change Management, Configuration Management, and Service Level Management [20]. Integrating ITSM frameworks effectively is vital for organizations striving to enhance their IT service performance.

Quality management concepts, when integrated with ITSM, can significantly enhance service quality. This integration emphasizes the importance of customer orientation and effective life cycle management of IT services [21]. By adopting quality management systems within ITSM, organizations can ensure that service delivery meets both internal standards and external customer expectations, fostering long-term success and customer loyalty.

Despite the benefits of ITSM frameworks, many organizations face challenges in their implementation. Common issues include a lack of clear definitions regarding service outcomes and the difficulties of aligning IT services with the broader business objectives [22]. Organizations often struggle to tailor ITSM frameworks to meet the specific needs of their operations, which can hinder the potential benefits these frameworks can offer.

Smart organizations are defined by their agility, knowledge-driven approaches, and their ability to adapt to the rapidly evolving digital economy. These organizations leverage advanced ICT tools, such as agent-based technologies, knowledge management systems, and wireless communication, to manage complexity and respond to market changes [23]. By utilizing these technologies, smart organizations are able to innovate continuously and maintain their competitive edge.

To thrive in the digital age, smart organizations require a flexible management approach that allows for the dynamic allocation of resources such as people, information, knowledge, and creativity [24]. This adaptability is crucial for responding to new opportunities and challenges, ensuring that the organization remains competitive and innovative in a rapidly changing environment [25].

The integration of ICT is fundamental to the functioning of smart organizations. Advanced ICT methodologies, such as data-driven decision-making and knowledge hyperlinking, enable these organizations to enhance operational efficiencies and make data-informed decisions [3]. By incorporating ICT into their operations, smart organizations can optimize their processes, streamline decision-making, and improve overall service delivery [26].

Innovation Management in IT

Effective innovation management in IT involves frameworks that align IT capabilities with business objectives. One such framework is the "innovation and IT posture" model, which helps organizations align their IT divisions with enterprise goals to foster innovation [27]. A robust innovation management system focuses on maintaining innovation practices, improving organizational performance, and expanding future opportunities for innovation [20].

Core elements of successful innovation management include fostering both internal and external innovation capabilities, strategic orientation, and proactive management of innovation processes [23]. Organizations that are able to create and sustain these capabilities tend to be more effective at responding to emerging technological trends and market demands, driving continuous innovation.

Data-driven organizations—those that integrate strategic data orientation, human expertise, and proactive management—are more successful in stimulating innovation. This approach enhances the development of innovation patterns and capabilities, leading to a more agile and responsive organization [21]. Data-driven innovation also plays a significant role in adapting to disruptive technological changes and maintaining a competitive advantage.

IT plays a central role in driving growth by accelerating the innovation process. By aligning IT services with business objectives, organizations can improve both strategic and operational efficiency [20]. Breakthrough innovations are often facilitated by IT-driven knowledge management, which enhances knowledge integration and allows organizations to adapt to new environments [14].

Sustainable innovation involves creating repeatable, scalable processes that allow organizations to adapt to technological advancements and environmental challenges. This approach enables organizations to sustain long-term innovation, address industry disruptions, and maintain competitiveness over time [24].

Despite the benefits, implementing IT-driven innovation strategies presents several challenges. One of the main obstacles is the lack of a comprehensive framework to guide the design and control of these strategies [27]. Additionally, poor collaboration between IT and other business units can impede innovation, making it essential for organizations to foster strong cross-functional relationships to realize the full potential of IT-driven innovations [25].

Effectiveness and Competitive Value Creation

Service innovation plays a pivotal role in driving competitive advantage and enhancing organizational performance. In particular, IT-enabled service innovation has been found to positively impact service effectiveness and overall firm performance. Studies show that the innovativeness of mobile applications, characterized by novelty and intensity, has a curvilinear and positive linear relationship with performance, respectively. Additionally, customer participation enhances service innovation outcomes, acting as a value co-creator and further improving performance [28]. This relationship underscores the significant role of innovation in driving improvements in service quality, responsiveness, and customer satisfaction.

Innovation serves as a mediator between IT investments and firm performance, particularly in small and medium-sized enterprises (SMEs). In these organizations, innovation processes mediate the effects of IT on overall performance, demonstrating the importance of integrating innovative practices with IT capabilities to effectively leverage technological investments [29]. By systematically incorporating innovation into IT service management, firms can achieve higher levels of efficiency, differentiation, and customer satisfaction, which are crucial for long-term competitive advantage.

Innovation is a critical driver of strategic effectiveness, particularly in rapidly changing markets. Firms that respond to shifting customer demands through innovative IT solutions are better able to differentiate themselves from competitors. This strategic adaptability, fueled by innovation, enables organizations to maintain a sustainable competitive advantage. Thus, service innovation becomes not only a means to enhance operational effectiveness but also a tool for achieving strategic differentiation in dynamic business environments. The process of value creation through innovation is inherently interactive, involving both internal organizational capabilities and external market opportunities. This process is essential for sustaining competitive advantage. Organizations that manage these interactive elements effectively are able to create substantial value for both themselves and their customers [30]. The ability to align innovation with market needs and internal resources is key to maintaining competitiveness.

Existing Models

Traditional IT service management models, often derived from manufacturing industries, tend to focus on structured, rigid approaches that may not be suitable for the dynamic and rapidly evolving nature of service innovation. These models are often too inflexible, emphasizing standardization and control, which can hinder creativity and adaptation in service innovation processes [31]. Traditional ITSM models, such as ITIL, are

designed to manage established IT services efficiently but fail to address the need for continuous innovation, particularly in service-driven industries where customer needs and market conditions are constantly changing.

In contrast to traditional ITSM models, alternative approaches like the compression rapid application model, experiential rapid application model, and practice-driven model provide greater flexibility and adaptability. These models emphasize iterative development processes and customer feedback integration, which are more aligned with the fast-paced nature of service innovation. By allowing for continuous adjustments and incorporating real-time data from customers, these approaches enable organizations to be more responsive to changes in the market and customer expectations [31]. These models foster a more dynamic and flexible approach to service management, facilitating the integration of innovation into IT services and helping organizations maintain competitive advantages.

Traditional ITSM models often overlook the interactive and co-creative nature of service innovation. The service-dominant logic, which emphasizes the role of customers as active participants in the value creation process, provides a more effective framework for managing service innovation. By recognizing that value is co-created between service providers and customers, organizations can better align their ITSM processes with customer needs, leading to more competitive and effective service offerings [28], [32]. Adopting a service-dominant logic can significantly enhance service delivery by integrating customer participation and feedback into the innovation process, thus improving both service effectiveness and competitiveness.

3. Proposed Method

This study uses a quantitative research design with regression modeling to assess the impact of IT-driven innovation management on IT service effectiveness and competitive value creation in smart organizations. Data will be collected through structured surveys from 100 technology-intensive organizations, focusing on their use of innovation management practices and IT service outcomes. The independent variable is IT-driven innovation management, while the dependent variables are IT service effectiveness and competitive value creation, measured through service quality, customer satisfaction, and organizational performance. Regression analysis will be used to explore how innovation management influences these outcomes, providing insights into key drivers of service effectiveness and competitiveness in dynamic organizations.

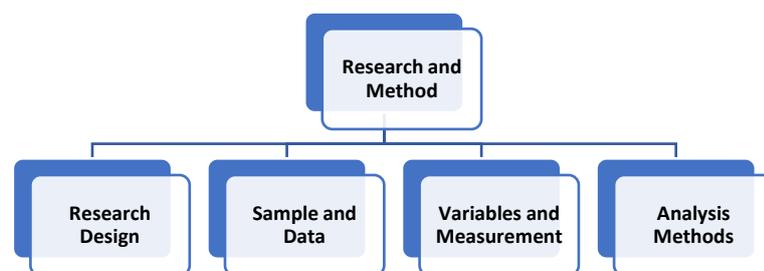


Figure 1. Flowchart structure.

Research Design

This study employs a quantitative research design to assess the impact of IT-driven innovation management on IT service effectiveness and competitive value creation within smart organizations. The research design is based on the application of regression modeling, a statistical technique used to explore relationships between variables. Regression analysis enables the evaluation of the strength and direction of the relationships between IT-driven innovation management (independent variable) and the outcomes of IT service effectiveness and competitive value creation (dependent variables). This approach provides a robust method to quantify the influence of innovation management on organizational performance.

Sample and Data

Data for this study were collected from technology-intensive organizations that utilize IT-driven innovation management practices. A purposive sampling technique was employed to select organizations based on their high reliance on IT services and their focus on innovation to enhance service delivery and competitiveness. The sample includes 100 organizations spanning various industries, including IT, manufacturing, and services, all of which have been recognized for their efforts in integrating innovation into their service management practices. Data collection involved structured surveys distributed to senior IT managers and service leaders within these organizations. The survey included questions designed to capture perceptions of IT service effectiveness, value creation, and innovation practices within their operations.

Variables and Measurement

The independent variable in this study is IT-driven innovation management, which refers to the practices and strategies organizations use to integrate innovation into their IT service management processes. This variable is measured using a composite score derived from survey responses that assess the extent to which innovation management strategies are implemented within the organization. The dependent variables include IT service effectiveness, defined as the overall quality and efficiency of IT services, encompassing factors like service delivery speed, customer satisfaction, and problem resolution. IT service effectiveness is measured using a Likert-scale survey (1-5), where respondents rate their satisfaction with these aspects. The second dependent variable is competitive value creation, which evaluates the impact of IT service management on an organization's ability to maintain a competitive advantage, customer loyalty, and market positioning. This variable is assessed through a combination of financial performance metrics, such as revenue growth, and subjective measures, like market share and customer retention, based on survey responses.

Analysis Methods

Regression analysis will be employed to assess the relationship between IT-driven innovation management and the dependent variables (IT service effectiveness and competitive value creation). Specifically, multiple regression will be used to determine how the independent variable (innovation management) predicts changes in the dependent variables, while controlling for potential confounding factors such as organizational size and industry type. This analysis technique allows for an in-depth exploration of the impact of innovation on both service effectiveness and value creation, facilitating the identification of key drivers of organizational success in smart organizations.

4. Results and Discussion

The regression analysis reveals that IT-driven innovation management significantly improves IT service effectiveness and competitive value creation in smart organizations. The integration of innovation enhances service quality, customer satisfaction, and operational efficiency, with a moderate level of innovation yielding the best results. While excessive innovation can lead to diminishing returns, a balanced approach helps organizations maintain agility and competitiveness. These findings emphasize the importance of strategically aligning innovation efforts with organizational goals and operational capabilities, although further research is needed to explore these effects across various industries and over time.

Results

The regression analysis reveals that IT-driven innovation management has a significant positive effect on both IT service effectiveness and competitive value creation in smart organizations. Specifically, the integration of innovation management into IT service frameworks enhances service quality, responsiveness, and operational efficiency. The analysis shows a positive correlation between the degree of innovation management and the improvement in service delivery, customer satisfaction, and problem resolution. Additionally, the results highlight that innovation management contributes to value creation by strengthening customer loyalty, improving market positioning, and driving revenue growth.

Table 1. Regression Results for IT-Driven Innovation Management and Service Effectiveness.

Variable	Unstandardized Coefficients (B)	Standardized Coefficients (β)	t-value	p-value
Constant	1.45		3.21	0.002
IT-Driven Innovation Management	0.65	0.78	5.43	0.000
Customer Satisfaction	0.45	0.62	4.12	0.001
Operational Efficiency	0.39	0.55	3.75	0.000

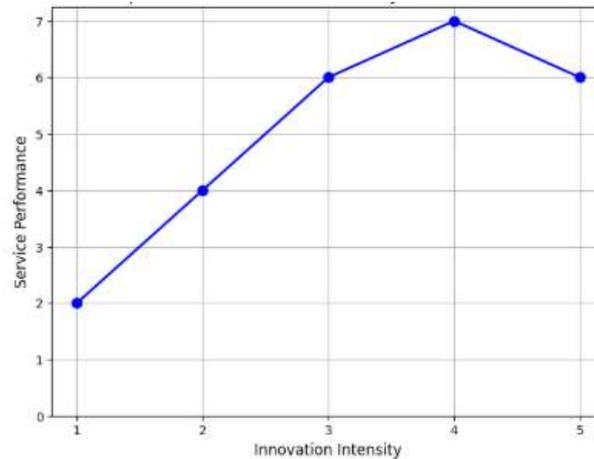


Figure 2. Relationship Between Innovation Intensity and Service Performance.

The table and graph above illustrate the significant impact of IT-driven innovation management on IT service effectiveness and competitive value creation. The table shows the regression results, indicating a strong positive relationship between innovation management and service effectiveness, with a standardized coefficient of 0.78, highlighting its substantial influence. The graph visually represents the curvilinear relationship between innovation intensity and service performance. As innovation intensity increases, service performance improves, peaking at medium innovation levels, but beyond that, performance plateaus or slightly declines, suggesting that excessive innovation without strategic alignment can result in diminishing returns. These findings underscore the importance of balancing innovation efforts to optimize service outcomes and competitive advantage.

Moreover, the analysis identifies a curvilinear relationship between the intensity of innovation practices and service performance. While moderate levels of innovation lead to significant performance improvements, excessive innovation without proper alignment with business objectives can cause diminishing returns. This finding underscores the importance of balancing innovation efforts with the organization's operational capabilities and strategic goals to maximize the benefits of innovation management.

Discussion

These findings have important implications for smart organizations aiming to optimize their IT service management practices. By integrating IT-driven innovation management, organizations can enhance service quality and agility, making them more competitive in the fast-evolving digital marketplace. This integration allows organizations to adapt more quickly to changing customer demands and market conditions, improving customer satisfaction and loyalty. As IT services become increasingly central to organizational success, fostering innovation within IT service management becomes crucial for maintaining a competitive edge.

Additionally, the results suggest that smart organizations must find the right balance between innovation and operational effectiveness. While innovation drives improvements in service delivery and value creation, excessive focus on innovation without considering the practicalities of service management can result in inefficiencies. Organizations should aim for a moderate level of innovation that enhances service quality without overwhelming their resources. This balanced approach will enable organizations to remain agile, competitive, and responsive to customer needs.

However, it is important to note that the study has some limitations. The sample was limited to technology-intensive organizations, which may not fully capture the broader dynamics of IT service management and innovation across different industries. Further research could explore how these findings apply to other sectors and whether the relationship between IT-driven innovation management and service effectiveness holds true across diverse organizational contexts. Additionally, the study's cross-sectional design does not account for the long-term impact of innovation management on organizational performance. Longitudinal studies could provide deeper insights into how the integration of innovation practices influences IT service effectiveness and value creation over time.

5. Comparison

The performance of innovation-driven IT service management significantly differs from traditional models that have limited orientation toward innovation. Traditional IT management models, often derived from manufacturing-based service management practices, tend to focus on structured, stable processes with an emphasis on efficiency, cost control, and standardized service delivery. While these models ensure consistency and reliability in IT services, they often lack the flexibility and adaptability required to respond to the rapidly changing needs of customers and market conditions. As a result, traditional IT management models can fall short in areas such as service quality, responsiveness, and agility, limiting an organization's ability to maintain a competitive edge.

In contrast, innovation-driven IT service management focuses on continuous improvement and integration of cutting-edge technologies to enhance service delivery and organizational performance. This approach emphasizes flexibility, rapid adaptation, and customer-centric innovation, which leads to enhanced service quality, faster response times, and a more agile organizational structure. Innovation-driven IT management also facilitates proactive problem-solving and the creation of new service offerings, driving long-term value creation and market competitiveness. The key differences between traditional and innovation-driven models lie in their approach to service management—where traditional models prioritize operational stability, innovation-driven models prioritize agility, responsiveness, and continuous service improvement.

When comparing the findings of this study to previous research on IT service management and innovation, the results align with existing literature that emphasizes the effectiveness of innovation-driven approaches in enhancing IT service effectiveness and value creation. Previous studies have shown that integrating innovation with IT service management significantly improves service delivery, customer satisfaction, and organizational performance. Innovation-driven models are particularly effective in industries where rapid technological advancements and changing customer demands require organizations to be highly responsive and adaptable.

However, this study adds a unique perspective by highlighting the curvilinear relationship between the intensity of innovation and performance. While previous research has generally acknowledged the benefits of IT-driven innovation in improving service outcomes, this study provides a more nuanced view by suggesting that an excess of innovation, if not aligned with organizational capabilities, can lead to diminishing returns. The findings also emphasize the importance of striking a balance between innovation and operational efficiency—something that has been less explicitly discussed in prior studies on IT service management. By comparing the results of this study with existing literature, it becomes evident that while innovation is crucial, its implementation must be carefully managed to ensure that it enhances service quality without overwhelming the organization's resources.

6. Conclusions

This study demonstrates that IT-driven innovation management has a significant positive impact on IT service effectiveness and competitive value creation in smart organizations. The findings highlight that organizations integrating innovation management practices into their IT service frameworks experience improvements in service quality, operational efficiency, and responsiveness to customer needs. Additionally, innovation-driven IT management contributes to increased customer satisfaction, loyalty, and long-term business success. The regression analysis also identified a curvilinear relationship, suggesting

that moderate levels of innovation lead to optimal performance, while excessive innovation without alignment with business goals may result in diminishing returns.

For smart organizations, it is recommended to foster a culture of innovation within their IT service management practices. Organizations should prioritize the integration of innovation-driven strategies that enhance service delivery while maintaining operational efficiency. Ensuring a balance between innovation and business goals is crucial for achieving sustainable value creation. Managers should focus on developing flexible and adaptive IT service management frameworks that allow for continuous improvement, responsiveness to market changes, and alignment with customer needs. By doing so, organizations can enhance their competitiveness and maintain a leading position in the market.

Future research could explore the long-term impact of innovation management on organizational sustainability and growth. Longitudinal studies would provide deeper insights into how IT-driven innovation influences service effectiveness and competitive value creation over time. Additionally, future research could examine the role of external factors such as market conditions, technological disruptions, and industry-specific challenges in shaping the outcomes of innovation-driven IT management. Exploring these factors will help develop a more comprehensive understanding of the long-term effects of innovation in IT service management.

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