

Strategies for Managing the Supply of Information Technology Services, Application Development, and Infrastructure in Modern Organizations

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ABSTRACT

The development of information technology (IT) has transformed the role of information systems from merely operational support tools into strategic organizational assets. Managing IT service delivery, application development, and IT infrastructure has become a crucial factor in supporting the achievement of business objectives. This study aims to analyze IT service management strategies, IT service classification, application development strategies based on application portfolios, and IT infrastructure management aligned with business strategies. The study employed a library research method utilizing various sources such as books, scientific journals, research articles, and relevant academic materials. The results show that an organization's success in utilizing information technology is determined not only by the sophistication of the technology used, but also by the organization's ability to manage IT services, select appropriate application development strategies, and build infrastructure that supports current and future business needs. Effective management of these three aspects can improve operational efficiency, service quality, organizational flexibility, and sustainable competitive advantage.

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1. INTRODUCTION

The development of information technology has had a significant impact on how organizations conduct their business activities. Digital transformation encourages organizations to integrate information technology into various business processes, thereby improving operational efficiency, service quality, and organizational competitiveness. In the digital era, information technology is no longer viewed simply as an administrative support tool, but has evolved into a strategic asset that plays a role in creating competitive advantage and supporting the sustainable achievement of organizational goals (Laudon & Laudon, 2018; Porter & Millar, 1985). The increasingly widespread use of information

technology has led to organizations being highly dependent on information technology (IT) services. IT services are not only required to maintain the operational continuity of information systems but also to provide added value to the organization by providing quality, responsive, and user-oriented services. Effective IT service management is a crucial factor in increasing organizational productivity, reducing operational costs, and enhancing user satisfaction with the services provided (Fitzsimmons & Fitzsimmons, 2011; Peppard & Ward, 2016).

In addition to IT service management, application development is a strategic investment that determines the success of information technology implementation. Every organization has different application needs according to the characteristics of its business processes, organizational goals, and implemented strategies. Therefore, the application development strategy must be aligned with the application portfolio so that information technology investments can provide optimal benefits for the organization. Appropriate application development will increase the effectiveness of business processes while supporting the organization's ability to adapt to increasingly dynamic business environments (Avison & Fitzgerald, 2006; Ward & Peppard, 2002).

On the other hand, the implementation of Enterprise Systems (ES) is a form of digital transformation widely adopted by modern organizations. Enterprise Systems enable the integration of various organizational functions, such as finance, marketing, production, logistics, and human resources, into a single, integrated information system. This integration produces more accurate information, improves coordination between work units, and supports faster and more accurate decision-making. However, the success of Enterprise Systems implementation is not only determined by the success of software installation, but is also influenced by the organization's readiness to carry out changes to business processes and comprehensive change management (Davenport, 1998; Markus et al., 2000). The success of IT services and application implementation is inseparable from the quality of an organization's information technology infrastructure. IT infrastructure is the primary foundation that supports the operation of all information systems through the provision of hardware, software, computer networks, databases, and technology management policies. A properly designed infrastructure will increase organizational flexibility, strengthen information security, support innovation, and prepare the organization for future technological developments (McKay & Brockway, 1989; Willcocks et al., 2006).

From a strategic management perspective, information technology should be viewed as an organizational resource capable of creating business value when managed in an integrated manner with the organization's strategy. Therefore, organizations require a comprehensive approach to managing IT services, developing applications, implementing Enterprise Systems, and building IT infrastructure so that all components can support each other in achieving organizational goals effectively and efficiently (Galliers & Leidner, 2003; Turban et al., 2018). Based on the description, this study aims to examine the strategy of managing information technology services, application development based on application portfolios, implementation of Enterprise Systems, and management of information technology infrastructure as an important part in supporting digital transformation and improving the performance of modern organizations.

2. METHODS

This research employed a library research method with a qualitative descriptive approach. This approach was chosen because it provides a comprehensive understanding of various concepts, theories, and strategies related to information technology service management, application development, enterprise systems, and information technology infrastructure, based on various relevant scientific sources (Creswell, 2014). The research data sources consisted of primary and secondary data. Primary data were obtained from learning materials on information technology service management, application development, enterprise systems, and IT infrastructure. Meanwhile, secondary data were obtained from various scientific books, research articles, national and international journals, and other references related to information systems, information technology management, and digital

transformation. The literature used was selected based on its relevance, credibility, and contribution to the research topic (Laudon & Laudon, 2018; Turban et al., 2018).

3. FINDINGS AND DISCUSSION

Information Technology Service Management Strategy

Information technology services (ITS) are a set of activities designed to provide technological support to users so that an organization's business processes can run effectively, efficiently, and sustainably. In modern organizations, IT is no longer viewed as a support function but has evolved into a strategic asset capable of creating added value (business value) for the organization. This paradigm shift encourages organizations to shift the orientation of IT management from merely managing hardware and software to service management, oriented toward user needs and the organization's business objectives (Laudon & Laudon, 2018; Peppard & Ward, 2016). The IT service concept emphasizes that the success of an information system is measured not only by the sophistication of the technology used, but also by the service's ability to deliver tangible benefits to users. In other words, IT services must be able to support business activities by providing accurate, fast, secure, and easily accessible information. This approach aligns with the development of digital transformation, which positions information technology as an enabler for creating innovation, increasing productivity, and strengthening organizational competitiveness amidst global competition (Turban et al., 2018).

IT service management strategies must begin with an understanding of the organization's business needs. Information technology units need to understand business processes, strategic objectives, and stakeholder expectations before designing the services to be provided. By understanding these needs, organizations can produce IT services that have business value and effectively support the achievement of organizational goals. Therefore, collaboration between IT units and business units is a crucial factor in ensuring that information technology investments truly benefit the organization (Ward & Peppard, 2002). In addition to alignment with business needs, service quality is also a key indicator of successful IT service management. Quality service is characterized by a level of reliability, responsiveness, assurance, empathy, and tangibles that meet user expectations. The higher the quality of service provided, the higher the level of user satisfaction with the organization's information technology services. On the other hand, low service quality can cause various problems such as decreased productivity, increased operational costs, and reduced user trust in the function of information technology (Parasuraman et al., 1988).

In practice, IT service management strategies must also consider operational efficiency. Organizations are required to provide services at optimal costs without compromising the quality of service received by users. This efficiency can be achieved through the implementation of standardized work procedures, automation of service processes, utilization of cloud computing technology, and optimal management of IT resources. These steps not only increase cost efficiency but also accelerate service delivery and increase organizational flexibility in responding to changing business needs (Willcocks et al., 2006). Furthermore, IT service management must apply the principle of continuous service improvement. A dynamic business environment causes user needs to constantly change, making it impossible for organizations to maintain a static service model. Regular evaluation of service quality is necessary through measuring user satisfaction levels, analyzing service performance, identifying operational issues, and developing continuous improvement plans. This approach enables organizations to maintain service quality while increasing their ability to adapt to developments in information technology (Peppard & Ward, 2016).

IT service management is also closely related to risk management. An organization's dependence on information systems means that service disruptions can directly impact operational activities and the organization's reputation. Therefore, IT service strategies must be supported by information security policies, risk management, incident management, and disaster recovery planning to ensure service availability in the event of a system disruption. This ensures business continuity is maintained even when the organization faces various technological risks and cybersecurity threats (Galliers & Leidner, 2003). Overall, an information technology service management strategy is not only

oriented toward providing technology, but also toward creating value for the organization through the provision of high-quality, efficient, secure, and user-centric services. Organizations that are able to manage IT services effectively will reap various benefits, such as increased productivity, improved decision-making quality, user satisfaction, operational efficiency, and sustainable competitive advantage. Therefore, IT service management should be viewed as an integral part of an organization's business strategy, not simply a technical function within information technology management (Porter & Millar, 1985; Peppard & Ward, 2016).

Classification of Information Technology Services

Information technology services have varying characteristics depending on the level of interaction between the service provider and the user and the level of customization required. To simplify management, Fitzsimmons and Fitzsimmons (2011) developed a service classification based on two main dimensions: the degree of customer contact and the degree of customization. Based on these two dimensions, information technology services are grouped into four categories: Service Factory, Job Shop, Mass Service, and Professional Service. This classification helps organizations determine resource management strategies, operational standards, and the human resource competencies required for each type of service (Fitzsimmons & Fitzsimmons, 2011).

1. **Service Factory** A service factory is a type of service with a relatively low level of user contact and a low level of customization. In this category, service processes are routine, repetitive, and utilize standardized operational procedures, resulting in high operational efficiency. Examples of services included in this category include data center management, computer network management, data backup (backup system), server management, and network security monitoring. These activities generally occur behind the scenes (back office), so direct interaction with users is relatively limited (Fitzsimmons & Fitzsimmons, 2011). The primary advantages of a Service Factory lie in cost efficiency, consistent service quality, and the ability to handle large volumes of work. However, organizations must ensure that all operational procedures are well-documented and supported by a monitoring system capable of quickly detecting service disruptions to maintain operational continuity (Laudon & Laudon, 2018).
2. **Job Shop** The Job Shop category has a relatively low level of user contact but requires a high level of customization. Each service is typically tailored to the specific needs of an organization, thus requiring experts with high technical competency. Examples of services in this category include custom software development, information systems audits, cybersecurity analysis, technology evaluation, and the development of artificial intelligence-based solutions. The process of completing work in this category tends to be complex because each project has unique characteristics (Avison & Fitzgerald, 2006). The success of a Job Shop is greatly influenced by the ability of human resources to analyze needs, solve problems, innovate, and master the latest technology. Therefore, organizations need to continuously develop competencies to produce solutions that meet user needs (Ward & Peppard, 2002).
3. **Mass Service** Mass Service is a service with a high level of user contact but a low level of customization. In this category, organizations serve many users using relatively similar service procedures. Examples of implementations include help desks, call centers, user training, technical support, and information systems administration services. The main focus of this category is speed of service, ease of access, and the ability of staff to communicate with users (Fitzsimmons & Fitzsimmons, 2011). Although the services provided are standardized, the quality of communication and staff responsiveness are crucial factors in determining user satisfaction. Therefore, organizations need to establish response time standards, complaint handling procedures, and user satisfaction evaluation mechanisms to maintain service quality (Parasuraman et al., 1988).
4. **Professional Services** The Professional Services category features a high level of user contact and customization. These services generally involve consulting activities that require intensive interaction between the service provider and the user. Examples include information systems

consulting, information technology strategy development, business process reengineering, IT governance, and organizational digital transformation. Each service is specifically designed to meet the needs of the organization, so its success depends heavily on the professional competence of the service provider (Peppard & Ward, 2016).

In this category, the quality of human resources is the most crucial factor. Consultants or experts are required not only to possess technical skills but also to understand business strategy, communication skills, leadership skills, and organizational change management. This ensures that the resulting solutions are not only technically feasible but also capable of supporting the achievement of the organization's strategic goals (Galliers & Leidner, 2003).

Information Technology Service Quality

The quality of information technology services is one of the main indicators determining the success of information technology management in an organization. The success of a service is measured not only by the system's ability to operate without interruption, but also by the extent to which the service meets user needs, expectations, and satisfaction. In an increasingly competitive business environment, IT service quality is a strategic factor because it directly impacts employee productivity, business process effectiveness, decision-making quality, and user trust in the organization's information technology functions (Laudon & Laudon, 2018; Peppard & Ward, 2016). Essentially, service quality describes the degree of conformity between the expected service and the service actually received by users (perceived service). The smaller the difference between expectations and reality, the higher the service quality perceived by users. Conversely, if the service received falls below expectations, users will be dissatisfied, which can reduce trust in the information technology unit. Therefore, organizations need to establish evaluation mechanisms capable of regularly measuring user perceptions of service quality (Parasuraman et al., 1988).

From a modern service management perspective, IT service quality also encompasses an organization's ability to co-create value with users. Information technology is not only responsible for providing services but also for ensuring that those services truly benefit business activities. Therefore, the success of IT services is greatly influenced by collaboration between service providers, users, organizational management, and various other parties involved in the service delivery process (Axelos, 2019). One of the most widely used models for measuring service quality is SERVQUAL, developed by Parasuraman, Zeithaml, and Berry (1988). This model explains that service quality is influenced by five main dimensions: reliability, responsiveness, assurance, empathy, and tangibles. In the context of information technology services, these five dimensions serve as the basis for organizations in evaluating the quality of services provided to users.

The reliability dimension refers to the service provider's ability to deliver services accurately, consistently, and in accordance with established standards. An IT service is considered reliable if the system can operate stably, has a high level of availability, and minimizes downtime. Reliability is a crucial factor because most organizational activities today rely on information systems that must be readily available when needed (Laudon & Laudon, 2018). The responsiveness dimension demonstrates an organization's ability to respond quickly to user requests and issues. In practice, responsiveness is demonstrated through the speed of incident management, complaint resolution, and the provision of technical assistance to users. Organizations with fast response times tend to achieve higher levels of user satisfaction than those that are slow in providing services (Axelos, 2019). Furthermore, the assurance dimension relates to the competence, professionalism, and ability of the service provider to provide a sense of security to users. Users will have greater confidence in services if staff possess adequate technical skills, understand work procedures, and are able to provide appropriate solutions to various IT issues. Furthermore, information security is also a crucial aspect in ensuring the quality of IT services (Willcocks et al., 2006).

The empathy dimension demonstrates an organization's ability to understand the needs, characteristics, and expectations of each user. Although information technology utilizes extensive automation, the interpersonal relationship between service providers and users remains a key factor

influencing perceptions of service quality. Organizations that provide personalized attention to user needs tend to achieve higher levels of satisfaction (Parasuraman et al., 1988). Meanwhile, the tangibles dimension relates to all facilities supporting service delivery, such as hardware, data center space, service documentation, application interfaces, and the professionalism of service personnel. Although this aspect is often considered less important than technical aspects, tangibles still influence user perceptions of the quality of an organization's services (Fitzsimmons & Fitzsimmons, 2011). In addition to the five dimensions of SERVQUAL, Parasuraman et al. (1988) also explained five service quality gaps that often lead to suboptimal service quality.

1. **Knowledge Gap** A knowledge gap occurs when a service provider fails to accurately understand user needs, expectations, and priorities. This condition is usually caused by a lack of communication between the IT unit and users or the absence of a mechanism for identifying service needs. As a result, the designed services do not align with the organization's actual needs, resulting in less than optimal benefits (Parasuraman et al., 1988). To reduce this gap, organizations need to conduct regular user needs analysis through satisfaction surveys, interviews, focus groups, and business process evaluations. This approach allows the IT unit to gain a better understanding of the organization's needs before developing or improving existing services (Peppard & Ward, 2016).
2. **Standards Gap** A standards gap occurs when an organization understands user needs but fails to translate them into clear operational standards or service policies. As a result, each employee provides services based on their own interpretation, resulting in inconsistent service quality. Therefore, organizations need to establish Service Level Agreements (SLAs), standard operating procedures (SOPs), key performance indicators (KPIs), and clear evaluation mechanisms so that all services can be delivered consistently and measurably (Axelos, 2019).
3. **Delivery Gap** A performance gap occurs when the service provided does not meet established standards. Causes can include limited human resources, lack of technical competence, inadequate infrastructure, or weak coordination between work units. Organizations need to improve employee competency through education and training, improve technological infrastructure, and implement regular performance monitoring systems to ensure that services provided truly meet agreed standards (Galliers & Leidner, 2003).
4. **Communication Gap** A communication gap occurs when the information conveyed to users does not align with the actual service provided. For example, an organization might promise a one-hour resolution time, but in practice, it takes two days. This situation can undermine user trust in the service provider. To avoid communication gaps, organizations must convey honest, realistic, and transparent information regarding the scope of services, resolution times, and limitations of available services. Effective communication will increase user trust while reducing the potential for conflict between service providers and users (Parasuraman et al., 1988).
5. **Perception Gap** A perception gap occurs when users have different assessments of service quality compared to the service provider's assessment. The service provider may feel they are providing the best service, but users have different perceptions due to unmet experiences, expectations, or needs. Therefore, organizations need to regularly evaluate user satisfaction through surveys, interviews, and feedback analysis. The results of these evaluations can serve as a basis for continuous service improvements, thereby improving user perceptions of service quality (Seddon et al., 2002). Overall, information technology service quality is the result of a combination of human resource competency, service process effectiveness, infrastructure adequacy, and the organization's ability to understand user needs. Systematic service quality management will increase user satisfaction, strengthen trust in information technology functions, and support the creation of long-term organizational competitive advantage (Peppard & Ward, 2016; Turban et al., 2018).

The discussion is highlighted through the title and subtitles of the section when needed

The study's findings indicate that the success of information technology implementation in an organization is determined not only by the sophistication of the technology used, but also by the organization's ability to manage all information technology components in an integrated manner. IT service management, application development, Enterprise Systems, and information technology infrastructure are interrelated elements in supporting the achievement of the organization's strategic goals. Therefore, organizations need to develop an information technology strategy aligned with their business strategy so that information technology investments can provide sustainable business value (Peppard & Ward, 2016; Laudon & Laudon, 2018). From the perspective of information technology service management, the study's findings indicate that service orientation has shifted from a technology-focused approach to a customer-centered approach. This requires information technology units to not only provide well-functioning systems but also ensure that the services provided meet user needs effectively, efficiently, and sustainably. Implementing sound service management principles will increase organizational productivity, accelerate work completion, reduce operational costs, and enhance user satisfaction with the services received (Axelos, 2019; Fitzsimmons & Fitzsimmons, 2011).

The classification of information technology services into Service Factory, Job Shop, Mass Service, and Professional Service illustrates that each type of service has distinct characteristics, resource requirements, and management strategies. Organizations cannot apply a single management model to all service types because each category has different levels of user interaction and customization. Therefore, understanding the characteristics of each service category will help organizations determine operational standards, human resource competencies, and the most appropriate service model, thereby continuously improving service quality (Fitzsimmons & Fitzsimmons, 2011). The results of this discussion also indicate that the quality of information technology services is a key factor in building user trust and satisfaction. The application of service quality dimensions such as reliability, responsiveness, assurance, empathy, and tangibles can help organizations evaluate service quality comprehensively. Furthermore, identifying five service quality gaps provides insight into the fact that most IT service issues are not solely driven by technological limitations, but also by ineffective communication, inconsistencies in service standards, low human resource competency, and a lack of understanding of user needs. Therefore, regular service quality evaluation is a crucial step in achieving continuous service improvement (Parasuraman et al., 1988; Axelos, 2019).

In terms of application development, the study results indicate that each organization requires a different strategy according to the characteristics of its application portfolio. Strategic applications require a high level of innovation and flexibility because they play a role in creating an organization's competitive advantage. Conversely, core operational applications emphasize reliability, security, and system availability because they support the organization's core activities. Meanwhile, supporting applications prioritize cost efficiency, while high-potential applications are developed through an experimental approach as an investment in future innovation. Therefore, application development strategies cannot be generalized but must be tailored to business objectives and the level of contribution to the organization (Ward & Peppard, 2002; Avison & Fitzgerald, 2006).

The discussion of Enterprise Systems (ES) demonstrates that data and business process integration is a key requirement for modern organizations. The implementation of Enterprise Systems, such as ERP, CRM, SCM, and EMR, enables organizations to integrate various business functions into a single, integrated information system, resulting in more accurate, consistent, and easily accessible information across all work units. Nevertheless, various studies show that the success of Enterprise Systems implementation depends not only on successful software installation but also on the organization's readiness to change business processes, develop human resource competencies, and the commitment of top management to support organizational transformation (Davenport, 1998; Markus et al., 2000).

Furthermore, studies indicate that information technology infrastructure is the primary foundation supporting the success of all information technology services and applications. The infrastructure, consisting of hardware, software, computer networks, databases, data centers,

middleware, and information security policies, must be designed in an integrated manner to meet the organization's current and future needs. Good infrastructure not only improves operational stability but also strengthens information security, increases organizational flexibility in adopting new technologies, and supports digital-based innovation. Therefore, investment in information technology infrastructure should be viewed as a strategic investment that provides long-term benefits for the organization (McKay & Brockway, 1989; Willcocks et al., 2006).

Overall, the results of the discussion show that the success of digital transformation is not only determined by the use of modern technology, but more so by the organization's ability to integrate IT services, application development, Enterprise Systems, and information technology infrastructure into the organization's business strategy. This integration enables organizations to increase operational efficiency, accelerate decision-making, improve service quality, strengthen competitiveness, and create sustainable innovation. Thus, information technology must be viewed as a strategic resource that requires good governance to be able to provide optimal business value and support the organization's success in facing the challenges of the digital era (Porter & Millar, 1985; Turban et al., 2018; Peppard & Ward, 2016).

4. CONCLUSION

Based on the results of the study, it can be concluded that information technology has a strategic role in supporting organizational effectiveness, efficiency and competitiveness. The successful use of information technology depends on managing quality IT services, developing applications that suit organizational needs, implementing Enterprise Systems that are capable of integrating business processes, and reliable information technology infrastructure that supports organizational operations. In addition, improving service quality through implementing service standards, developing human resources and continuous evaluation is an important factor in increasing user satisfaction. Therefore, IT service management, application development, Enterprise Systems implementation, and infrastructure management need to be carried out in an integrated manner to be able to support digital transformation and provide added value for achieving organizational goals.

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