

INFORMATION SYSTEMS AND INFORMATION TECHNOLOGY INVESTMENT MANAGEMENT AS AN INSTRUMENT FOR CREATING ORGANIZATIONAL STRATEGIC VALUE

Sururi Ikfi

UIN Maulana Malik Ibrahim Malang
240106210022@student.uin-malang.ac.id

Abstract

This article examines the management of Information Systems and Information Technology (IS/IT) investments from a strategic value creation perspective based on the framework developed by Ward and Peppard. Despite substantial organizational spending on digital technologies, many IS/IT initiatives fail to generate proportional business value, a phenomenon widely referred to as the IT productivity paradox. Using a conceptual literature-based approach, this study synthesizes key theoretical insights from Ward and Peppard and related IS/IT value creation literature to analyze how IS/IT investments should be planned, evaluated, and managed. The analysis shows that IS/IT investments should be treated as a strategic portfolio rather than as isolated technical projects. Value does not emerge from technology deployment alone, but from the organizational changes in processes, behaviors, and decision making that technology enables. The Ward and Peppard model highlights the central role of benefits management, including benefits ownership and the use of the Benefits Dependency Network, to ensure that anticipated business benefits are explicitly defined, managed, and realized. The findings suggest that organizations must shift from a technology-driven to a value-driven approach in managing IS/IT investments. Senior managers and business units need to take responsibility for realizing benefits, while IS/IT functions should act as enablers of strategic change. This conceptual framework provides both theoretical clarity and practical guidance for improving the effectiveness of IS/IT investment decisions and enhancing organizational performance.

Keywords: IS/IT investment, benefits management, strategic information systems, value creation, Ward and Peppard.

Introduction

Investment in Information Systems and Information Technology (IS/IT) has become a central component of contemporary organizational strategy. Organizations across sectors allocate substantial resources to the development of applications, digital infrastructure, and information-based systems in order to enhance operational efficiency, improve decision-making quality, and strengthen competitive advantage. However, the magnitude of these investments is often not

matched by commensurate improvements in organizational performance. This phenomenon is widely known as the *IT productivity paradox*, referring to the condition in which increased spending on information technology is not directly reflected in higher productivity or organizational performance (Brynjolfsson, 1993; Brynjolfsson & Hitt, 1996).

Subsequent studies suggest that the primary source of this paradox does not lie in technological failure, but rather in organizations' inability to convert IT investments into tangible business value. Soh and Markus (1995) argue that information technology generates value only when it is accompanied by changes in business processes, organizational structures, and work practices. In this sense, IS/IT functions as an enabler, while the actual creation of value occurs through organizational transformation mediated by technology.

Consistent with this view, Ward and Peppard (2002) emphasize that IS/IT investments should be understood as part of an organization's strategic investment portfolio rather than merely as technical or operational expenditures. They contend that information systems and information technology play different roles in supporting business strategy, and therefore their management must consider the contribution of each investment to the organization's long-term objectives. Within this framework, the success of IS/IT investment is not assessed by whether a system has been delivered, but by the extent to which it produces identifiable and well-managed business benefits.

Nevertheless, prevailing practices indicate that IS/IT investment decisions are still largely dominated by narrow financial and technical perspectives, such as cost analysis and technological feasibility. Project evaluation often stops at the initial justification stage, while systematic processes to ensure that expected business benefits are actually realized after implementation are rarely undertaken (Ward & Peppard, 2002). This condition explains why many IS/IT projects are considered technically successful yet fail to deliver significant strategic impact for the organization.

To address this problem, Ward and Peppard (2002) developed the *benefits management* approach, which places benefits realization at the core of IS/IT

investment management. This approach emphasizes the importance of explicitly linking technology investments to business process changes and expected performance outcomes, including the assignment of managerial accountability for each promised benefit. Through this perspective, IS/IT is not treated merely as a tool for automation, but as a strategic instrument for organizational value creation.

Based on this background, this article aims to conceptually examine Ward and Peppard's IS/IT investment management model and to analyze its role in the creation of organizational strategic value. This study is expected to strengthen the theoretical understanding of the relationship between information technology investment and organizational performance, while also providing a conceptual foundation for IS/IT investment practices that are more strongly oriented toward value and business benefits.

Research Method

This study adopts a qualitative approach using a conceptual library research method. This approach is selected because the objective of the study is not to test empirical relationships among variables, but to analyze and synthesize theoretical concepts related to the management of Information Systems and Information Technology (IS/IT) investments in the context of organizational strategic value creation.

The primary data source of this study is Ward and Peppard's *Strategic Planning for Information Systems and Information Technology*, particularly Chapter 9, which discusses *Managing Investments in IS/IT*. This book is positioned as the main theoretical framework because it provides models, principles, and a systematic approach to how IS/IT investments should be planned, evaluated, and managed in order to generate sustainable business benefits. In addition, this study draws on relevant scholarly journal articles, such as the works of Brynjolfsson and Hitt on the IT productivity paradox and Soh and Markus on the mechanisms of value creation from information technology, in order to strengthen and contextualize the theoretical arguments.

Data collection is conducted through a systematic search and selection of literature relevant to IS/IT investment, value creation, and benefits management. The selected literature includes both seminal textbooks and reputable journal articles in the fields of information systems and strategic management. Each source is examined based on its contribution to understanding the relationship between IS/IT investment, organizational change, and business performance.

Data analysis is carried out using content analysis and conceptual synthesis. Content analysis is employed to identify key themes, core concepts, and relationships within Ward and Peppard's model, while conceptual synthesis is used to integrate insights from multiple sources into a coherent analytical framework. Through this process, the study not only summarizes existing theories but also constructs a more systematic understanding of the role of IS/IT investment management as an instrument for organizational strategic value creation.

The Concept of IS/IT Investment from a Strategic Perspective

a. IS/IT Investment as a Strategic Portfolio

Ward and Peppard (2002) emphasize that investments in Information Systems and Information Technology (IS/IT) are not homogeneous, but rather consist of diverse applications and initiatives that contribute differently to organizational strategy and performance. Therefore, IS/IT investments should be treated as a strategic portfolio rather than as a collection of stand-alone technical projects. The portfolio approach enables management to understand how each application or system contributes to operational efficiency, managerial support, and the creation of competitive advantage.

This portfolio concept is grounded in the view that information systems play different roles within organizations, ranging from purely operational systems to those that are strategic in nature. McFarlan (1984) and Ives and Learmonth (1984) demonstrated that information technology can function not only as a support for routine activities but also as a competitive weapon capable of

reshaping industry structures and firms' competitive positions. Evaluating all IS/IT investments using the same criteria therefore obscures the distinct strategic contributions of different systems.

Ward and Peppard (2002) further developed this perspective through the application portfolio framework, which classifies information systems into several categories based on their impact on current performance and their future potential. Through this framework, organizations can distinguish among support, key operational, high potential, and strategic systems. This classification is critical because each category requires different evaluation approaches, funding priorities, and management mechanisms. Strategic and high-potential systems, for example, demand greater top-management involvement and higher levels of organizational change readiness than routine support systems.

The portfolio approach also helps organizations avoid bias toward technologically attractive projects that are strategically weak. Galliers and Somogyi (1987) argued that the shift from data processing to strategic information systems requires a new perspective on IT investment, moving from an efficiency-oriented view to one focused on value creation and competitive advantage. Within this framework, IS/IT investment decisions are no longer driven solely by cost savings, but by their contribution to the achievement of organizational strategic objectives.

From this portfolio-based view of IS/IT, Ward and Peppard (2002) underscore that the primary challenge lies not in selecting the best technologies, but in balancing different types of investments so that, collectively, they support current performance while simultaneously preparing the organization for future change and competition. This perspective forms the foundation of a value-oriented IS/IT investment management model, which will be discussed in the subsequent sections.

b. Limitations of Traditional Evaluation Approaches in IS/IT Investment

Although the strategic role of Information Systems and Information Technology (IS/IT) is increasingly recognized, investment evaluation practices in

many organizations remain dominated by traditional approaches that focus on financial analysis and technical feasibility. Methods such as return on investment (ROI), net present value (NPV), and payback period are commonly used as the primary basis for decision making. These approaches assume that the value of IS/IT can be directly measured through a comparison between costs and financial returns, in the same way as physical investments. However, this assumption does not fully reflect the distinctive nature of IS/IT investments (Ward & Peppard, 2002).

Brynjolfsson and Yang (1997) as well as Brynjolfsson and Hitt (1996) demonstrate that many of the benefits of information technology are intangible in nature, including improvements in decision quality, organizational flexibility, and innovative capability. Such benefits typically emerge over the long term and are highly dependent on changes in business processes and organizational structures, making them difficult to capture through short-term financial evaluation models. This condition reinforces the IT productivity paradox, in which IT investments appear unproductive when assessed solely using traditional financial indicators.

Soh and Markus (1995) further argue that information technology does not automatically generate value, but operates through a chain of processes involving system use, changes in work activities, and the realization of performance outcomes. Consequently, the failure of many IS/IT projects is not caused by technological shortcomings, but by organizations' inability to manage the changes required to enable effective use of the technology. Evaluation approaches that focus only on costs and system outputs tend to overlook this critical organizational change dimension.

Ward and Peppard (2002) criticize IS/IT justification practices that stop at the project approval stage and are not followed by mechanisms to ensure that promised benefits are actually realized. They emphasize that investment evaluation should be continuous throughout the system life cycle, from planning to post-implementation. Without such an approach, organizations risk allocating

resources to projects that appear financially viable but make little contribution to business strategy and performance.

These limitations of traditional approaches highlight the need for a new paradigm in IS/IT investment management, one that views technology as part of a broader social and organizational system. This perspective underpins the development of the benefits management approach proposed by Ward and Peppard, which places the realization of business benefits at the core of IS/IT investment management.

The IS/IT Investment Management Cycle According to Ward and Peppard

a. Identification and Formulation of IS/IT Investments

Ward and Peppard (2002) argue that the earliest and most critical stage in the management of Information Systems and Information Technology (IS/IT) investments is the process of investment identification and formulation. At this stage, organizations must ensure that every IS/IT initiative is derived from business needs and priorities, rather than from technological impulses or external pressures such as vendors and market trends. In other words, the central question to be addressed is not “which technology should be adopted,” but rather “which business problems or opportunities are to be addressed through IS/IT.”

This approach is consistent with the principle of business-driven IS/IT, which positions business strategy as the starting point for information systems planning (Ward & Peppard, 2002). Within this framework, IS/IT investment opportunities are identified through analyses of business strategy, core processes, and environmental factors that shape organizational competitiveness. Earl (1989) characterizes this shift as a move from *technology push* to *business pull*, in which business needs drive the development and deployment of technology.

Furthermore, Ward and Peppard (2002) emphasize that IS/IT investment identification should consider not only potential efficiency gains, but also opportunities to enhance effectiveness, service quality, and competitive

advantage. Consequently, IS/IT opportunities should be formulated as business change initiatives rather than merely as system or application specifications. Such formulation includes descriptions of how the technology will be used, the expected changes in processes, and the business benefits to be achieved.

Soh and Markus (1995) demonstrate that without a clear articulation of the relationship between technology and organizational change, IS/IT investments are likely to fail in delivering value. When systems are designed and implemented without an understanding of how they will transform work practices and decision-making, the technology tends to function merely as an automation tool with limited impact. Therefore, investment formulation must integrate technological, process, and human dimensions from the outset.

It can be concluded that the identification and formulation stage in Ward and Peppard's (2002) model is not merely an administrative process for proposing IT projects, but a strategic process for defining how IS/IT will contribute to the achievement of organizational objectives. Clarity at this stage provides the foundation for subsequent evaluation, management, and realization of IS/IT investment benefits.

b. Evaluation and Selection of IS/IT Investments

After IS/IT investment opportunities have been identified and formulated, the next stage in Ward and Peppard's (2002) model is the evaluation and selection of investments. At this stage, organizations are faced with multiple IS/IT initiatives that all appear promising, while available resources are inherently limited. Therefore, an evaluation approach is required that assesses not only financial feasibility but also the strategic contribution and organizational risk associated with each investment.

Ward and Peppard (2002) criticize the exclusive reliance on financial indicators such as return on investment or payback period in the selection of IS/IT projects. They argue that most IS/IT benefits are intangible and long-term in nature and thus cannot be adequately represented through traditional financial measures. Brynjolfsson and Hitt (1996) demonstrate that the impact of

information technology on firm performance often materializes in the form of enhanced organizational productivity and innovative capability, which become evident only after structural and process changes have occurred.

Accordingly, Ward and Peppard (2002) propose a multidimensional evaluation approach. IS/IT investment appraisal should incorporate analyses of expected business benefits, risk levels, the complexity of organizational change, and alignment with business strategy. Each investment proposal should be accompanied by a business case that explains how the technology will be used, what changes are required, and what benefits are expected to be generated. This approach ensures that funding decisions are driven by strategic value rather than by technical attractiveness or cost considerations alone.

Soh and Markus (1995) further note that many IS/IT project failures occur because organizations do not realistically assess their readiness to undertake the changes necessary for realizing technology benefits. Therefore, investment evaluation must also take into account factors such as top management commitment, human resource readiness, and organizational culture. Without such readiness, even the most advanced systems may fail to deliver meaningful value.

In conclusion, the evaluation and selection process in Ward and Peppard's (2002) model serves as a strategic filtering mechanism that ensures only those IS/IT investments with a clear contribution to business objectives and a credible likelihood of benefits realization are funded and implemented. This approach enables organizations to allocate resources more effectively while reducing the risk of technology investment failure.

c. Management and Realization of IS/IT Investment Benefits

Ward and Peppard (2002) emphasize that the success of Information Systems and Information Technology (IS/IT) investments is not determined when a system is technically completed, but when business benefits are actually realized in organizational practice. Many IS/IT projects are judged to be technically successful yet fail to create value because organizations do not actively manage the change processes required for technology to be used effectively. This

perspective places benefits realization at the core of the investment management cycle.

Soh and Markus (1995) explain that information technology generates value through a chain of processes involving system use, changes in work activities, and the achievement of performance outcomes. This model demonstrates that the mere presence of technology is insufficient to improve organizational performance. Value emerges only when users adopt the system and when business processes are transformed in line with the potential offered by the technology. Without such changes, IS/IT investments tend to produce only limited automation without strategic impact.

Ward and Peppard (2002) develop the benefits management approach to ensure that the benefits promised at the planning stage are actually delivered. This approach requires organizations to explicitly define expected benefits, establish measurement indicators, and assign responsibility for their achievement. Accountability for benefits lies with business managers rather than with the IT function, because benefits arise from changes in work practices and business decision-making.

Benefits management also involves continuous monitoring and adjustment during and after system implementation. Ward and Peppard (2002) note that organizational conditions, strategies, and business environments may change, requiring initial assumptions about benefits to be periodically reviewed. This process allows organizations to adapt technology use, work processes, and investment priorities in order to remain aligned with strategic objectives.

This approach to managing and realizing benefits underscores that IS/IT investment is a long-term process involving the interaction of technology, people, and organizational context. By focusing on benefits realization, IS/IT is positioned as an instrument of strategic transformation rather than merely as a tool for operational support.

Benefits Management as the Core of Value Creation

a. The Concept of Benefits Ownership

Ward and Peppard (2002) argue that one of the primary causes of failure in Information Systems and Information Technology (IS/IT) investments is the lack of clear accountability for the realization of business benefits. In many organizations, full responsibility for projects is assigned to the IT unit, even though most of the expected benefits arise from changes in work processes, decision-making, and managerial behavior. The concept of benefits ownership is designed to address this problem by assigning ownership of benefits to the business units that will use the system and derive value from it.

Each benefit identified in an IS/IT investment must have a designated owner from the relevant business unit. The benefits owner is responsible for ensuring that the necessary changes actually occur and that the defined performance indicators are achieved. Ward and Peppard (2002) emphasize that without clear ownership, benefits often remain merely stated in project justification documents and are never realized in operational practice.

Soh and Markus (1995) show that the value of information technology emerges when users change the way they work and use systems to achieve improved outcomes. Such changes cannot be enforced by the IT function alone, but require leadership and commitment from business managers. Assigning benefits ownership ensures that those who have authority over processes and resources also bear responsibility for delivering the promised benefits.

This benefits ownership approach also strengthens the linkage between IS/IT investment and organizational strategic objectives. When business managers are accountable for benefits, decisions regarding project priorities, resource allocation, and process adjustments are more likely to be aligned with strategic needs. This model positions IS/IT as an integral part of organizational performance management rather than as a separate support function.

b. The Benefits Dependency Network as a Mechanism for Value Creation

Ward and Peppard (2002) developed the Benefits Dependency Network (BDN) as a core tool for mapping how Information Systems and Information Technology (IS/IT) investments generate business value. This model demonstrates that the relationship between technology and organizational performance is indirect and mediated by changes in business processes and work behavior. The BDN visualizes the linkages among IT investments, required changes, and expected business benefits, thereby enabling organizations to understand the value creation pathway in a systematic manner.

The BDN maps four main elements: IS/IT initiatives, business changes, changes in behavior and system use, and business benefits. This structure is consistent with the value transformation model proposed by Soh and Markus (1995), which asserts that technology becomes productive only when it is accompanied by changes in work practices and effective use. By explicitly mapping these relationships, the BDN prevents organizations from assuming that benefits will automatically arise once a system has been implemented.

Ward and Peppard (2002) emphasize that the BDN serves as a bridge between strategy and implementation. The model forces management to explicitly define what changes must occur in order for benefits to be realized. Each expected benefit must be traceable to concrete behavioral and process changes, as well as to the supporting technology initiatives. This clarity strengthens accountability and facilitates the monitoring of benefits realization.

The use of the Benefits Dependency Network also supports IS/IT investment risk management. By mapping the relationships between technology and benefits, management can identify potential points of failure, such as user unpreparedness or process constraints. This information can then be used to design more targeted managerial interventions, thereby significantly increasing the likelihood that IS/IT investments will deliver their intended value.

Managerial Implications

The IS/IT investment management framework developed by Ward and Peppard (2002) has significant implications for technology management practice within organizations. This approach shifts managerial focus from the mere acquisition of systems toward the creation of business value through organizational change. Such a perspective requires executives to view IS/IT investments as an integral part of corporate strategy rather than as a separate support function.

The role of business leaders becomes critical under this approach. Benefits ownership by business units requires line managers and strategic leaders to be actively involved in the planning, implementation, and evaluation of IS/IT investments. This responsibility includes setting performance objectives, managing process changes, and overseeing the realization of benefits. Such involvement ensures that technology is used to achieve strategic goals, rather than merely to improve technical efficiency.

The use of the Benefits Dependency Network also provides management with a practical tool for mapping and communicating the relationships between technology and business outcomes. This mapping helps reduce the gap between IT teams and business units, as each party can understand its role in the value creation process. The explicit linkage between IS/IT initiatives, process changes, and expected benefits strengthens cross-functional coordination and enhances accountability.

The portfolio approach advocated by Ward and Peppard (2002) encourages organizations to manage IS/IT investments in a more balanced manner between short-term operational needs and long-term strategic opportunities. Classifying applications according to their strategic roles helps management set funding priorities and allocate managerial attention more effectively. This practice reduces the risk of overemphasizing technologically attractive but strategically weak projects.

This framework also strengthens IS/IT investment governance by positioning benefits realization as the primary indicator of success. Performance measurement systems that link technology use to business outcomes promote organizational learning and continuous improvement. This approach transforms IS/IT investment into a dynamic process that is continuously aligned with changing strategies and business environments.

Conclusion

This review demonstrates that the success of Information Systems and Information Technology (IS/IT) investments cannot be understood merely in terms of technical achievement, but must be evaluated in terms of their ability to create strategic value for the organization. The perspective developed by Ward and Peppard (2002) provides a comprehensive framework for understanding how IS/IT investments should be planned, evaluated, and managed so that they make a tangible contribution to organizational performance and competitiveness.

The portfolio approach underscores that each IS/IT application and initiative plays a distinct role in supporting business strategy and therefore requires differentiated managerial treatment. The limitations of traditional evaluation approaches that rely on short-term financial measures highlight the need for a broader paradigm capable of capturing intangible benefits and the long-term impacts of information technology. Ward and Peppard's investment cycle model integrates business need identification, multidimensional evaluation, and benefits realization management into a coherent and interdependent process.

The concepts of benefits ownership and the Benefits Dependency Network clarify that value from IS/IT emerges through changes in organizational processes, behaviors, and decision-making. Emphasizing business ownership of benefits strengthens accountability and ensures that technology is used to achieve strategic objectives rather than merely to improve operational efficiency. This approach

also provides a strong foundation for more effective and value-oriented IS/IT investment governance.

Overall, Ward and Peppard's IS/IT investment management model offers a theoretically grounded and practically relevant framework for organizations seeking to maximize the value of information technology. It positions IS/IT as an instrument of strategic transformation that must be managed systematically through the alignment of technology, organizational change, and measurable business benefits.

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