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IMPROVING THE ALIGNMENT BETWEEN IT PROJECTS AND STRATEGIC INITIATIVES: THE TARGET STATE SPECIFIC OUTCOME (TSSO) METHOD

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Abstract

There is little direct evidence that information systems (IS) deliver measurable value at the organizational level. This inability to measure IS value is often caused by an inability to directly allocate beneficial financial outcomes to IS. Therefore, an alternative approach to determining IS value is required. This paper builds on Kaplan and Norton's third-generation balanced score card to measure IS value. The authors propose a causal Target State Specific Outcome (TSSO) model to achieve the required IS alignment with strategic initiative objectives and measures.

Keywords: strategic, alignment, balanced-score card, project, scoping, methodology

Introduction

There has been an ongoing debate in the literature about how to measure information system's (IS) value. There seems to be little evidence that IS projects can deliver measurable value at the organizational level (Brynjolfsson 1993, Due 1993, Due 1994, Brynjolfsson & Hitt 1998, Dewan & Kraemer 1998). Kaplan and Norton state in their third-generation balanced score card "strategy maps" that knowledge and technology assets seldom have a direct impact on financial outcomes such as increased revenues, lowered costs, and higher profits. Kaplan and Norton also state that these assets which have an indirect value are the ultimate source for creating sustainable value for the organization. Therefore, project teams must improve their ability to deliver measurable business value for the sake of the organization as well as to increase IS project success.

IS projects must meet two objectives to deliver measurable business value and increase IS success. First, IS projects must be explicitly aligned and integrated with a strategic initiative. Second, IS projects must be shown to support the metrics that are relevant to the strategic initiative. Research studies have shown that two-thirds of organizations do not create strong alignment between their strategies and their HR and IS programs (SHRM 2002). When these objectives are met by an IS project, the IS can be evaluated within the context of the strategic initiative success.

While these alignment, integration, and measurement objectives must become an integral part of every phase of the IS lifecycle, this paper focuses on project scoping. This paper extends the Kaplan and Norton "Strategy Maps" framework (Kaplan & Norton 2004) by proposing a method that is driven by a target state specific outcome (TSSO) model. The method will leverage stakeholder objectives within the strategic initiative into the TSSO model and

define the IS project scope that will achieve the alignment, integration, and measurement objectives that are necessary to ensure recognizable business value.

Conceptual Model

The method to be described is based on a target state specific outcome (TSSO) model for defining project scope. The resulting hierarchy of objectives for the strategic initiative ensures the appropriate perspective and boundary of the problem to be solved. Stakeholders of the strategic initiative will define their needs using an adaptation of Kaplan and Norton's "Internal Perspective" of the organization (Kaplan & Norton 2004). The stakeholder needs will ensure that the IS objectives are comprehensive, aligned, and support the strategic initiative measures. This stakeholder input will also ensure that the IS project integrates the organization's other indirect value assets, as described by Kaplan and Norton. The proposed method includes the following steps:

- Identify Strategic Initiative
- Define Target State Specific Outcome (TSSO) Model
- Understand Strategic Initiative Design
- Identify Information System Objectives
- Create Information System Design
- Create Information System Plan

Identify Strategic Initiative

Software projects must be scoped based on the strategic initiative and not from the perspective of a requested "solution". Software development projects typically start with a request for a "solution" from the organization. Using an example from Kaplan and Norton (Kaplan & Norton 2004), assume that the organization requests a "crew scheduling system". The crew scheduling system refers to an IS necessary for an airline to schedule all tasks to prepare an arriving plane parked at a gate for departure from that gate. While this "crew scheduling" project may seem clear enough to the team, simply stating the "solution" is not enough information to appropriately scope the IS project.

It would be possible to come up with all kinds of different scheduling requirements when the "real goal" is not known. However, knowing that the "real goal" is the strategic initiative makes the project expectations become much clearer. Using the same example, the crew scheduling system is required to enable the organization to turn planes around in thirty minutes or less. In fact, the organization could really care less about a crew scheduling system assuming they could achieve the goal of thirty-minute ground turnaround without a system. So, the real project is not a crew scheduling system, but an IS to enable the organization to achieve thirty-minute ground turnaround. It is fully expected that crew scheduling is part of the IS, however delivering a crew scheduling system and not achieving thirty-minute ground turnaround cannot be seen as a successful project.

The boundary of an IS project is not the "solution" requested by the organization. The boundary of a software project is the strategic initiative. That is not to say that the scope of all IS projects be increased, but it is to say that the IS scope must be defined such that the organization can make explicit informed decisions about what IS support will and will not be included in the IS. The IS scope must clearly show how the IS is critical to the success of the strategic initiative and communicate the risks of declining IS support to the strategic initiative.

Define Target State Specific Outcome (TSSO) Model

An important element in IS scoping is formulating the problem, defining context, and identifying expectations. A TSSO model is used for problem formulation, context definition and expectation identification. A TSSO model is a hierarchy of objectives model that identifies business outcomes that must be achieved in order to achieve the strategic initiative. This TSSO model is a technique focused on formulating the problem, defining organizational responsibilities, and defining IS context. The technique does not imply methods for outcome achievement and leaves the organization free to explore, select, and design solutions. In this way, a TSSO ensures communication and collaboration with the organization, reduces barriers of communication, and increases goal understanding.

A TSSO model is a hierarchical model that identifies sub-outcomes that must be achieved before the higher-level outcome can be achieved. Multiple levels of dependency can be defined for each outcome. A TSSO has the following characteristics:

- Stated unambiguously – an outcome is designed to reduce or eliminate ambiguity
- Stated in past, or current, tense as though the outcome has already been achieved
- Stated in terms of a specific business concept
- Stated in terms of a specific state, or condition, of the business concept

A TSSO model is an extension of Kaplan and Norton's third-generation balanced scorecard cause and effect modeling (Kaplan & Norton 2004). Multiple levels of detail can be defined, but one is typically all that is required for IS scoping. Focus must be on outcomes whose process must change in order to achieve the strategic initiative. An example of a TSSO model using the example strategic initiative is shown in Figure 1: TSSO Model for Achieve Fast Turnaround Example.
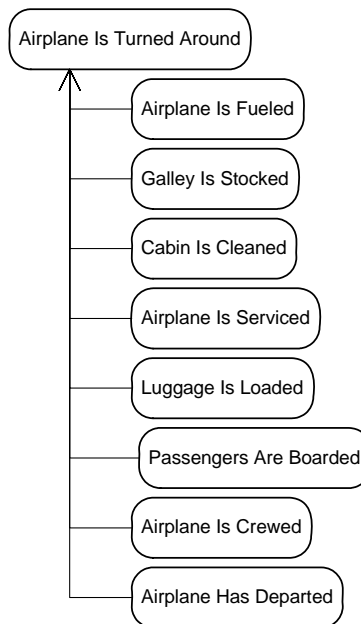

Figure 1: TSSO Model for Achieve Fast Turnaround Example

Understand Strategic Initiative Design

Upon completion of the outcome model, a responsible organization is assigned to each outcome and the responsible organization determines the outcome's characteristics. The responsible organizations are the operational organizations that do the work of achieving the outcome. The responsible organization will explore, select, and design a solution to achieve the outcome within the context of the strategic initiative and document the solution design as characteristics of the outcome.

A TSSO's characteristics document what must be done differently in outcome achievement to support the highest-level outcome and support the strategic initiative objective and measurements. If the outcome is new, the characteristics define the new outcome solution. These characteristics are derived from Kaplan and Norton's "Internal Perspective" and "Learning and Growth Perspective" (Kaplan & Norton 2004). It is suggested that this work be done using a time-boxed approach that will prevent excessive time lapses between plan iterations. A TSSO's characteristics are defined below:

- Definition – What is the meaning of the outcome and how must it change to achieve the strategic initiative?
- Responsibility – What role is responsible for outcome achievement?
- Measurement – What must be measured to ensure achievement of the strategic initiative?

- Changes/Risks/Issues/Barriers – What are the changes, risks, issues, and barriers in each of the following categories that must be made, addressed, and surmounted to achieve the strategic initiative?
  - Facilities, equipment, tools, processes, and techniques
  - People, skills, and training
  - Culture, leadership, motivation, and teamwork
  - Information and technology infrastructure
  - External factors (Customers, regulators, vendors, etc)

Once each responsible organization has completed their solution definitions, the resulting outcome characteristics are summarized in a table. An example of a strategic initiative design table using the example strategic initiative is shown in Figure 2: Abbreviated Strategic Initiative Design, which was abbreviated to a single TSSO, "Luggage Is Loaded", due to space limitations in this paper. Management and the responsible organizations review this initial strategic design in order to eliminate conflicts and ensure validity of overall design. Several iterations of the strategic design may be required in order for management and the responsible organizations to agree on a satisfactory strategic initiative design.

This step in the method may appear to exceed the scope of the IS project that was requested, but the IS project must not be based on the "solution" that was initially requested: the IS project must deliver software support that will enable achievement of the strategic initiative. The only way to provide management with the explicit information required to appropriately define the IS project's scope is to first understand the strategic initiative design.

Identify Information System (IS) Objectives

The IS objectives are identified using the strategic design. While particular attention is paid to the information technology column, the IS project team will review each cell of the strategic initiative design (see Figure 2: Abbreviated Strategic Initiative Design) and identify the IS objectives. These objectives identify the IS support required for each component of the strategic design.

The identified IS objectives will be reviewed with the responsible organizations to identify and resolve all conflicts and issues. This negotiation is part of the organizational collaboration that will improve overall coordination of the strategic initiative implementation. Conflicts that cannot be negotiated to resolution are passed to management for review, resolution, and prioritization.

Continuing to extend the previous example, the IS objectives for the thirty-minute ground turnaround example are shown in Figure 3: Abbreviated Information System Objectives. In order to reduce space requirements in the example, only the IS objectives are shown in the cells, but a more comprehensive approach would have the IS project team provide feedback to the other responsible organizations on each cell based on their perspective of what will be required to achieve the strategic design. Objectives identified in this manner will insure that the IS project is a project for the entire strategic initiative. This task, as much as any other, insures the alignment, integration, and measurement of the IS project supports the strategic initiative.

Create Information System (IS) Tactical Design

A tactical design of the IS is derived from the list of IS objectives. First, each IS objective is assigned to an existing, or to be built, IS and each assigned IS is listed with the TSSO to which it will provide support. More than one IS is commonly associated with a TSSO since interfaces between IS's are commonly objectives and functionality for an objective may require features from more than one IS.

Each of the assigned IS's will explore, select, and design a solution (at a very high level) to achieve the objective within the context of the strategic initiative. Characteristics of the design are similar to the characteristics defined in the strategic initiative design. The difference is that the characteristics defined in the IS tactical design will be from the perspective of the needs and implications of the final IS that supports the strategic initiative. The characteristics for the IS tactical design include:

- Outcome – What TSSO is being supported?
- Information and Technology – What is the objective?

- Responsibility – What IS is responsible for supporting outcome achievement?
- Schedule – What is the expected duration of the task, or project, necessary to deliver the appropriate support for outcome achievement?
- Changes/Risks/Issues/Barriers – What are the changes, risks, issues, and barriers in each of the following categories that must be made, addressed, and surmounted to achieve the IS objective?
  - Facilities, tools, equipment, processes, and techniques
  - People, skills, training, motivation, and compensation
  - Culture, leadership, motivation, and teamwork
  - Information and technology infrastructure
  - External factors (Customers, regulators, vendors, etc)

These characteristics will ensure sufficient understanding to estimate and plan with a higher degree of accuracy than would be possible without the focus, context, and additional levels of detailed information. The authors extended Kaplan and Norton's example further to provide an illustration as highlighted in Figure 4: Abbreviated Information System Tactical Design. The IS tactical design will be reviewed with the other responsible organizations to identify and resolve all conflicts, issues, and barriers to implementation. This negotiation is part of the organizational collaboration that will improve overall coordination of the implementation. Conflicts that cannot be negotiated to resolution are passed to management for review, resolution, and prioritization.

Create Information System (IS) Plan

The IS project team will create a plan using the IS tactical design after conflicts and priorities have been resolved and suitability to the strategic design has been approved. Schedules, budgets, resources, risk mitigation plans, and other artifacts of IS project management will be created. The design of the tactical solution and resolution of conflicts through negotiation, and collaboration ensures that this plan supports, aligns, and integrates with the strategic initiative implementation as a whole.

Implications/Conclusions

The proposed method provides the required information on which to build IS project estimates and to demonstrate the alignment, integration, and value (through measures) of the proposed IS with regards to the strategic initiative. One difficulty with implementing this approach is the fact that organizations tend to simply request a solution and ask for an estimate to build the solution. Performing the necessary analysis of the problem domain that is required to create this estimate and to verify that the requested solution is, in fact, the appropriate solution may be a difficult proposition. This approach may be viewed as "too much" when what is requested from the organization is a "solution". However, IT organizations must ensure that they are delivering the appropriate solution and those solutions must deliver enough value when balanced against the solution's cost. The proposed method provides that assurance of solution appropriateness and value.

Figure 2: Abbreviated Strategic Initiative Design

Airplane is Turned Around	Definition	Responsibility	Measurement	Facilities, Tools, Equipment, Processes, and Techniques	People, Skills, and Training	Culture, Leadership, Motivation, and Teamwork	Information and Technology	External Factors
Luggage Is Loaded	Offloading arriving flight luggage and cargo and loading departing flight luggage and cargo.	Baggage Handling Crew	Supervisors measure random flight baggage times Critical measures are unload luggage in 8 mins, load departing luggage in 8 mins, load connecting luggage in 8 mins and with 6 mins contingency	Connecting flight luggage is biggest baggage issue. Change process and increase current equipment. That could increase baggage train equipment requirements by 15%.	After process change, hire some additional people (probably one per active gate) to specifically handle connecting flight baggage. Train baggage crew on new process.	Motivation might be improved via posting of baggage crew rankings (with a small monthly bonus for highest ranking crew) and a periodic crew shuffling to strengthen weak handlers and crews	Create connecting baggage plan per flight and deliver to arriving flight connecting baggage handler. Identify large, tight, or special handling requirements	This will increase baggage train traffic on the ramp that could be an issue with the ramp safety folks

Figure 3: Abbreviated Information System Objectives

Airplane is Turned Around	Definition	Responsibility	Measurement	Facilities, Tools, Equipment, Processes, and Techniques	People, Skills, and Training	Culture, Leadership, Motivation, and Teamwork	Information and Technology	External Factors
Luggage Is Loaded	Create connecting baggage plan per flight and deliver to arriving flight connecting baggage handler. Identify large, tight, or special handling requirements	CIO	Baggage supervisor to record random times for process improvement.	Must identify equipment shortages in schedule. Facilitate change in process and base connecting baggage system on new process.	Update baggage supervisor training to measure random crew times. Update supervisor and crew training for new scheduling system.	Include crew assignment and rankings in system.	Deploy durable handheld devices and wireless network to ramp. Prove communications non-interference. New interface to HR Motivation system.	Review and update gate assignment algorithm in flight ops system to minimize this issue.

Figure 4: Abbreviated Information System Tactical Design

Airplane is Turned Around	Information and Technology	Responsibility	Schedule	Facilities, Tools, Equipment, Processes, and Techniques	People, Skills, and Training	Culture, Leadership, Motivation, and Teamwork	Information and Technology	External Factors
Luggage Is Loaded	Create connecting baggage plan per flight for arriving flight connecting baggage handler. Identify large, tight, or special handling requirements	Ground Scheduling System	Schedule: 180 day duration Resources: 1 analyst/1mth, 1 tech arch/1mth, 3 developers /3mth, & 2 testers/1mth	Will require handheld devices and wireless network on the ramp due to frequent updates required to keep plan current. Automation will significantly change process.	Train 5 developers in wireless implementations for handheld devices before project start. Must train all connecting baggage handlers in new process and system.		Deploy durable handheld devices and wireless network to ramp to use new baggage scheduling subsystem. Prove communications non-interference.	Airport authority approval required for new wireless network on the ramp. Approval time could create significant deployment risk
	Feed crew rankings and crew assignments to HR system and implement new motivation program.	HR Motivation Programs System	Schedule: 30 day duration Resources: 1 analyst/1wk, 1 tech arch/2dy, 1 developer/2wk, & 1 tester/1wk	Implement crew motivation program process	Communicate to and train crew on motivation program		Create new interface between Ground Scheduling System and HR Motivation Programs System	Resolve any union contract issues
	Baggage supervisor to record random times for process improvement. Ground Crew Director (GCD) to record missed time, not actual time.	Ground Turnaround Metrics System	Schedule: 45 day duration Resources: 1 analyst/2wk, 1 tech arch/1wk, 1 developer /3wk, & 1 tester/3wk	Add metric recording steps to baggage supervisor process Add metric recording steps to GCD process	Will have to train all baggage supervisors in metric recording process Update GCD training for metric recording		Will require GCD and baggage supervisor to have mobile automation	Airport authority approval required for new wireless network on the ramp.

References

Brynjolfsson, E. (1993). The productivity paradox of information technology. *Communications of the ACM,* 36(12), 67+.

Due, R.T. (1993). The productivity paradox. *Information Systems Management*, 10(1), 68.

Due, R.T. (1994). The productivity paradox revisited. *Information Systems Management*, 11(1),74-77.

Brynjolfsson, E., & Hitt L.M. (1998). Beyond the productivity paradox, *Communications of the ACM*, 41(8), 49-56.

Dewan S., & Kraemer K.L. (1998). International dimensions of the productivity paradox. *Communications of the ACM*, 41(8), 56-62.

Kaplan, R.S., and Norton D.P. (2004). *Strategy Maps: Converting Intangible Assets into Tangible Outcomes*, Boston: Harvard Business School Press.

SHRM (2002). Balanced scorecard collaborative, aligning HR with organization strategy survey research. Study 62-17052 (Society for Human Resource Management): "The Alignment Gap," CIO Insight, July 1.