Business Process Automation Factors for Decision Making

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BPAC – Business Process Automation Committee

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Introduction

Various factors should be weighed when considering the automation of a business process. Many of those factors are outlined in this tool and supporting appendices.

The evaluation of these criteria should help to decide if a project is worthwhile to implement. The bottom line is that the project should yield more benefit than it costs. Benefits include those that are tangible such as reduced software costs or reduced resource requirements as well as those that are intangible such as increased customer service, compliance with policy and procedure, meeting an Arizona Board of Regents' expectation or increased security. Costs can be difficult to quantify. It may seem easy to name the cost as that of the technology or services purchased, however, change management, difficulty of implementation, a high level of ongoing administration and other issues need to be considered as costs when comparing "present" to "future" models.

Project scope is bound by three constraints: human resources, financial resources and time. Resource availability is addressed below. The element of time in a project is a tricky one. It is quite common for a project to be delayed or to be delivered past the original target date. Please keep in mind that an aggressive time line may be appealing during the "sales pitch" for the project but can be a political disappointment if the expected target date is not met.

Descriptions for the factors

Arizona Board of Regents (ABOR) expectations

Often times, ABOR will have expectations that the three universities operate similarly and share resources where possible. The larger and more costly the project, the greater their expectations may be. The expectation should be balanced, however, with the need to maintain autonomy, flexibility, efficiency and effectiveness with our business processes at NAU. Remember when automating a business process, things like controls, audit points, and security standards will be of concern to them. The NAU Financial Controls department (Comptroller), NAU Internal Audit, and the NAU IT Security department (ITS) are good resources to check with related to these items. These units will also be aware of ABOR expectations with regard to previous audits findings that may impact your project. Additionally, seeking input from the Vice President for your area, Chief Information Technology Officer, and the VP for Finance and Administration about ABOR expectations related to your project is a best practice.

Executive commitment

Executive Commitment is ensuring that a project has support from executive management at the university to ensure project success. This is where the budget, resource and strategic direction are administered.

Executive management is someone who has the ability to make decisions regarding budget, resource and strategic direction of the university. This may require executives from more than one area of the organization. Without this level of support a project will run into road blocks which may not be overcome, therefore causing a project to fail in achieving its intended goal. This level of management has the ability to effect and approve changes which are needed for your project to be successful.

The size and scope of your project will determine the proper level of executive management needed for the project to be successful. Not all projects require the President's name on it to get it completed (or that should not be the case). The degree of executive commitment required is based on identifying who has the decision responsibilities for resources and budget - this may be someone within one area or involve others across two or more areas in the university.

Legal requirements

NAU is governed by state, federal and the Arizona Board of Regents (ABOR) rules and regulations. Rules and regulations that govern the process associated with your project must be identified and considered. In the event that rules and regulations will be administered through a resulting project, you must work through the area VP/Provost to obtain confirmation from Legal Affairs that your project will meet all legal requirements.

Customer service

Customer service is a series of activities designed to enhance the level of customer satisfaction. In the case of business process automation this would include who will be answering questions about the system that is put in place as well as how these questions will be answered. Examples of this would include online frequently asked questions, phone/email support and system tutorials. Consideration should be given to the customer services aspect of any automation solution. Project review should include the answers to questions like, "in what ways will customer service be enhanced" or "might automation of this business process have a negative impact on customer service and are there ways to avoid that."

Interdepartmental impact

Rarely does a process change affect only the department responsible for implementing it. In the planning phase, consider asking the following questions:

- Who is affected upstream and downstream by this change?
- Who are the stakeholders?
- Whose buy-in do you need and how do you get it?
- Whose input do you need?
- Who needs to be informed as the project progresses?
- Who needs to be trained and what is involved in providing the training?

Project and outcome benefits

Project benefits under this section include hard-dollar cost savings, not limited to increased revenue and lower personnel costs. Additional outcomes include improved compliance, employee or student

satisfaction, increase productivity. It is recommended that your project proposal be specific about the outcomes. In the event that implementing your project results in the need for fewer staff associated with the business process you are automating, you must consider whether the impact will result in adjustments of roles and responsibilities, reassignment of staff or a reduction in staff altogether. Consider whether a case can also be made that an automation project may result in reducing the need to hire additional staff in the future.

Strategic benefit

Strategic benefits would be the advantages that you would get from using a given system. For example, by automating a business process you may free up personnel to perform fewer routine or transactional tasks and therefore use their skills more effectively or you may speed up a process thus increasing customer satisfaction and allowing for increased volume. Consider how this project aligns with the strategic plan and priorities of your unit, division and/or the university priorities. Determine and point out the opportunities within this automation project that are forward-looking and establish proactive solutions for future events or trends.

Risk

Risk has many facets. Risk is unavoidable. The bullet list below summarizes basic areas of risk, and an expansion may be found later in this document; see the Appendix – Risk section.

- Economic Risk - Considers the confidence that funding requested will be received is sufficient to complete the work needed to meet the project goals, that all cost/benefit factors have been factually considered, and that alternatives to local action have been taken into account.
- Enterprise Structural (Social and Cultural) Risks - Considers whether the project goals meets NAU needs and can be completed with the resources identified without unacceptable institutional trauma.
- Political Risk - Considers if the project SHOULD be done; includes the internal and external perception of the project, addressing legal and compliance issues, the commitment of stakeholders to the project's success, the abilities and capabilities of project management, and the overall ability of the institution to accept the goals of the project within the time allowed.
- Technical Risk – Considers if the project CAN be done; includes fact-based reviews of the technology and technical resources available to complete then sustain the project's products, a review of the technology to be used including access security and data protection, a review of the abilities and track-record of the vendor(s) chosen, an evaluation of the use of project information once the work completes.

Resource availability

Resource availability simply represents an evaluation of what resources (financial, personnel, etc.) will be needed to accomplish a particular task, where those resources exist, and the best way to access them. Also consider the training, functional/business, technical and other resources needed to complete the project.

Return on Investment (ROI)

Return-On-Investment (ROI) is a calculated ratio of benefit to cost. The cost of a project comes in many forms and must all be considered in the calculation, same for benefits of a project. Resources and time saving or expense are a few of the items that must be considered when calculating ROI. The formula is as follows:

ROI = ((total benefit - total costs)/total cost) * 100, represented in a percentage.

1. Total benefit = the payback to a business unit for a given time, in dollars, this will include any material saving also.
2. Total cost = cost to implement and maintain for a given time period, in dollars

Note: Though ERE (employer-related expense) is not contained in the ROI, ERE may affect project budgets (for example the ERE associated with a special assignment may be an increase in cost that affects the cost of the project, particularly for non-state funded positions).

It is important to note that the university has policies regarding capitalization of assets. Equipment, such as computer equipment, must be capitalized if the cost of $5,000 or greater and depreciated over a period of 5 to 15 years per policy CMP 130. Additionally, non-tangible assets, such as software and websites, may also have capitalization requirements. These assets may be purchased or internally generated. Please see policy CMP 140 for guidance.

Opportunity cost

Opportunity cost represents the benefits not realized by choosing one option over another. For example, a choice to invest resources in project A might exclude those resources from contributing to project B. Thus, any benefit gained from project B is the opportunity cost of project A. In other words, the benefits of one choice represent the opportunity cost of making another choice. A list of examples can be found at: http://en.wikipedia.org/wiki/Opportunity_cost. In some cases the opportunity cost is very clear and in others it's more obscure.

Security considerations

Security considerations should be based on the sensitivity of the data and its corresponding level of confidentiality, integrity and availability. Part of the project risk assessment should include a review of the level of data being processed by the system and any regulatory requirements for its protection such as Health Insurance Portability and Accountability Act (HIPPA), Family Education Rights and Privacy Act (FERPA), or Purchasing Card Industry (PCI) data security standards, etc. The NAU Information Security Team is available to help with this review and should be contacted at the beginning of any such project.

Solution life-span

Solution life-span includes both business life and cost. The ROI formula section, above, examines cost. Business life refers to the length of time a business process (business solution) is expected to exist. A key component to estimating solution life-span is a comparison of stability and flexibility needs. When analyzing a process solution consider the business process flexibility needed over time. If the business unit has a history of redeveloping itself, changing direction more frequently or the unit's processes are

subject to external drivers changing and extending them, then business solutions for that unit will need flexibility to sustain a long life-span. Increasing need for flexibility increases cost, risk, time, and sustainability resources. Identifying the number of business unit change events is very important in design and acquisition. Accurate measurement is essential to keeping overall business cost low.

Records management issues/implications

Processes leave footprints in the form of records. As a public agency, NAU must protect, preserve and dispose of the public's information in a manner consistent with Arizona Statute and policy. Policy is reflected in the General Retention Schedule for All State Agencies. General information about records retention may be found at URL http://www.lib.az.us/records/schedules_and_manuals.aspx. You should review your project for the specific category of document type that applies and ensure that records management guidelines will be followed with regard to creating and preserving that document type.

Each type of record may have a different retention schedule. Schedules change with policy and technology. At the time of this writing, the Cline Library is tasked with maintaining specific document-by-document type retention schedules. Guidance is available at URL http://www.nau.edu/library/speccoll/recordsmgmt.html.

Appendix I. Risk Supplement

As noted above, risk has many facets. Some risk is unavoidable. The following list of risks that should be considered during development of project plans is intended to promote thinking about the broadest impact of project funding, deliverables and goals.

The items in the following list are drawn from various publications, Educause, the Association of Institutional Research, various manager experiences, and from web-based resources. Following the risk-list are web resources that might prove useful in considering the risk of a project.

- Economic Risk - Considers the confidence that funding requested will be received and is sufficient to complete the work needed to meet the project goals, all cost/benefit factors have been factually considered, and that alternatives to local action have been taken into account.
    - What is the likelihood that funding will be sufficient to complete the work?
    - Is the work sustainable over the anticipated life-span of the deliverables?
    - Has sustainability funding been secured?
    - What is the confidence factor in the truthiness of scope and timeline estimates?
    - Have the benefits/costs been accurately measured?
    - Are the cost and benefit estimates based on factual, verifiable information?
    - Does the work enhance or frustrate efficiency and cost savings, and by how much?
    - Has the build/buy decision making process been thorough and fact-based?
    - Have the opportunities and challenges of Inter/Intra-Institutional collaboration been considered?

- Enterprise Structural (Social and Cultural) Risks - Considers whether the project goals meets NAU needs and can be completed with the resources identified without unacceptable institutional trauma.
    - Will the project and solution help maintain NAU's standing with peer institutions?
    - Will this help attract better/more students?
    - Is the project and solution in the best interest of NAU students, NAU Faculty, NAU Staff and Arizona taxpayers?
    - Will the project results be fair and equitable?
    - Does this provide for the needs of NAU faculty and staff?
    - Does this provide for the needs of prospects, current students and alumni?
    - Does this honor NAU mission, traditions and processes?
    - Is the effort aligned with current NAU goals and strategic vision?
    - Are goals aggressive yet realistic?
    - Are plans in place to positively impact those actually involved in success and to negatively impact those actually involved in failure?

- Political Risk - Considers if the project SHOULD be done; includes the internal and external perception of the project, addressing legal and compliance issues, the commitment of stakeholders

to the project's success, the abilities and capabilities of project management, and the overall ability of the institution to accept the goals of the project within the time allowed.

- How will the project appear to the court of public, political and media opinion?
- Will the cost/benefit analysis stand up to public, political and media scrutiny?
- Does the solution comply with laws, regulations and policies?
- Will upper management and executives agree with the effort, direction and cost?
- Do enough significant people below the executive level care about the project?
- Are there sufficient non-affected faculty, staff and students willing to stand in the way of your projects success?
- Are the affected customers committed to the project's success?
- Are the affected customers committed to your personal success?
- Can the team identified to complete the task sell the need and product to the NAU communities and constituencies?
- Is there an exit strategy if the project fails?
- Is moving forward with this project a decision that you, personally, should make?
- Has the impact and likelihood of public records request for data and processes of the project been considered during design?
- Have the requirements and complexities of records retention rules governing project data after implementation been addressed during design or planning?
- Is there a plan for open/public access to project data after implementation?
- Has the risk, cost and likelihood for subpoena for project data (or for the data of others in the same cloud if a vendor-hosted solution is chosen) been considered?
- Is the organization mature enough to pursue the proposed solution?
- Is the organization able to control project creep?
- Is the organization mature enough to deflect unnecessary add-ons and features?
- Is project management available and capable?

- Technical Risk – Considers if the project CAN be done; includes fact-based reviews of the technology and technical resources available to complete then sustain the project's products, a review of the technology to be used including access security and data protection, a review of the abilities and track-record of the vendor(s) chosen, an evaluation of the use of project information once the work completes.
  - Can the work required be completed by available staff within available time and meet the projected schedules, or are heroic efforts needed?
  - Does the technical team have experience with the application code/package/type?
  - Does the technical team have experience with the technical environment?
  - Do the technical and functional teams have experience with the business application?
  - Will excessive schedule pressure lead to incomplete development?
  - Will excessive schedule pressure lead to incomplete testing?
  - Is an appropriate amount of training (functional, technical and end-user) included in the project plan and budget?
  - Are technical resource needs aligned with technical strengths?

- Are the resources impacted stable and committed to the project?
- How likely is a continuity of development and sustainability project staffing?
- Will the project rely on a few key personnel during and after development?
- Is there too much reliance on a single technical or development improvement?
- Are the functional users competent to develop a complete, mature design solution?
- Has post implementation configuration management been addressed in the problem definition?
- Have business processes been reviewed before a technical solution chosen?
- Does the project definition consider data protection?
- Has the cost of centralized physical data services been considered?
- Have the costs of backing up and recovering the data been evaluated?
- Is there a plan for technical resource conflict management?
- Is there a central point for data cleansing and Extract-Translate-Load (ETL) conflict management?
- Are the technology and/or vendor involved mature enough to deliver promised solutions?
- Is the project large and complex or has it/can it be broken into smaller sub-units?
- Are there a large number of complex-data structure internal or external data interfaces?
- Are there a large number of complex-data ETL internal or external data interfaces?

Selected risk evaluation resources

- http://readyset.tigris.org/nonav/templates/risks.html
- http://fox.wikis.com/wc.dll?Wiki~SoftwareDevelopmentRiskFactors~VFP
- http://*www.efst.hr/management/Vol8No2-2003/4-boban-pozgaj-sertic.doc*
- Various sites and publications from the Association for Computing Machinery, refer access to URL http://portal.acm.org/portal.cfm and the Greater Western Library Alliance: Northern Arizona University through the Cline Library

Appendix II. Return on Investment Tool

An Excel spreadsheet has been created to assist with the return on investment analysis. The blank template, as well as an example of a completed ROI analysis, can be found here.

Appendix III. Business Process Automation PPT Template

After all relevant factors for decision making have been considered, a presentation to stakeholders may be required. A Powerpoint template with slides for each other factors for decision making contained in the document has been created to help facilitate this discussion. Feel free to delete slides, add other factors that are relevant to your business or rearrange slides as best fits the needs of your project. The template file, as well as an example of a completed presentation, can be found here.