

The Selection and Training Framework (STF) for Managers in Business Innovation and Transformation Projects

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The riskiest factor in transforming a traditional Business Environment (BE) into an innovative and automated BE is the role of the business and (e-)Business Transformation Manager (BTM). The basic profile of such a business transformation manager has not been sufficiently investigated in a holistic and educational manner. The specification of the optimal BTM profile is the main goal of the authors' research. This research paper deals with the research methodology and design model, that defines the optimal BTM profile who has to cope with complex business automation projects. These business transformation projects need specific set of skills, especially for the final and very difficult implementation phase. The implementation phase is the major cause of high failure rates in business transformation projects. The needed skills must encompass the knowledge of automated real-time business environments, project management, knowledge in organizational behaviour, management sciences methodologies and concrete implementation phase know-how. The researchers recommend the technocrats (Fahroomand, 2004) profile as a "base profile" for such projects that need cross-functional skills.

In this article of a series related to the process of research on business innovation and transformation, the authors focus on the research model that deals with the BTM's characteristics. Currently, the Selection and Training Framework (STF) is being designed to assist in the selection of a BTM who will be able to carry out the business transformation and successfully conclude the avant-garde technology based implementation phase. This framework will propose to the business executive management an optimal BTM profile, who's profile characteristics can be defined through the use of a tuneable action research based heuristics model.

More specifically, the research focuses on the influence of the transformation managers' hands-on experience, background and education in managing complex business transformations that integrate avant-garde innovation and

technology. "We know that those organisations that are consistently successful at managing innovation-related changes outperform their peers in terms of growth and financial performance" (Tidd, 2006).

*IMRA-2013-STF Design of the Research Methodology Page 1*The authors have based their approach on the main assumption and a fact that only around 12% of business organizations successfully manage innovation-related business transformations initiatives. Therefore, there is a crucial need for specialized and automated way of selecting and training the future BTMs; BTMs who would be capable of implementing such complex systems (Tidd, Bessant, 2009). In the literature review and exploration phase, the authors favoured mainly the resources on just-in-time, hands-on holistic approach to implementation knowledge. This knowledge is compulsory for a BTM, especially in the project's cross-functional implementation phase.

The literature review and exploration method was also based on the following sets of questions and assumptions:

- High failure rates due to the lack of business systems' integration knowledge.
- Any automated business scenario is based on business information technology.
- The BTM must be a communication and information technology specialist.
- The BTMs may lack managerial background in informatics.
- Managerial informatics is still in the pioneering phase.

In this research, the authors would like to apply an innovative and unconventional research method; that is by combining 1) the business engineering domain, 2) business integration techniques, 3) management science methods and 4) the link to innovation & technology. At the same time, they want to avoid old-fashioned massive literature scanning, and therefore they focus on a systemic and iterative approach, like the spiral model in building business information systems (Agarwal, Gupta, Tayal, 2009).

This article's main purpose is to offer a generic overview of a significant problem endemic to modern business and related research works. The review of literature and of related doctoral theses (Willaert, 2001) have proved the existence of a possible gap, justifying the necessity of the actual research project. The actions in literature review phase consisted of reviewing journal articles, books, frameworks, projects, dissertations, conference papers, that are relevant to the research question or the subareas of the researched topic; and to build the research model. The literature review and research model localized important books and methodologies related to transformations of business environments.

Introduction

The main purpose of this research article is to offer a generic overview of a significant problem and a related research works. Researching complex fields might generate complex research pattern and paradigms; that maybe difficult to understand; unfortunately that is the nature of the researched topic.

As the research aims to qualify the BTMs' profile capacities, background and skills, that are fundamental for the coordination of the implementation phase within the transformation phase. The notions of business engineering are important for this research. Therefore, the literature related to BTM's business engineering hands-on capacities are fundamental. In addition, it is essential to make the system function and to make it accessible to eventual

business users. Analysis of this category was again a new level of narrowing the research model and that helped to find the crucial research factors and dependant variables; which are used in the selection of BTMs among the middle managers. BTMs are basically technocrats and knowledge workers who support the transformation of the (e-) business environment.

In this research project, the authors present the primary and secondary resources of references that have influenced the research and the ones that justify its necessity. That concluded the literature review process. The main outcome of the literature review was the classification of the research resources in various categories and the choice of the main category that supports the research question.

(e-)Business transformations

This research focuses on the influence of the BTM's capacities, experiences, background, knowledge and education, on the transformation of (e-)business environments. These skills are crucial for the complex process of integrating innovative technologies in a business transformation project, especially in its implementation phase (Capgemini, 2007; Capgemini, 2009).

The research outcomes can be applied to the BTMs in (e-)business, who currently live highly turbulent times, and where transformations happen in very high rates; more than in any other conventional industry.

The STF will assist the executive management to select the BTM who will carry out the (e-

)business transformation process. The STF may also assist the BTMs in the reuse as much as possible of the existing business environment and knowledge system; that will help in the effective management of the implementation phase (Dayton, 1999; Trad, 1999).

This STF will propose a standard "BTM Profile" that has to be carefully selected followed and trained.

The Research Phases

This research project has been developed on the basis of the iterative spiral model, where the major phases of each iteration are:

- The proposal phase – in this phase the initial ideas for the topic were defined (Trad, 2011).
- The research question phase – in this phase the topic's research question was hammered (Trad, 2011).
- The literature review – in this phase the topic's literature review process and gap localisation was achieved (Trad, Kalpic, 2013).
- The research model phase – this is the current phase, where the authors present the applicative action research (AAR), a qualitative research approach for the research project (this research paper's content).
- The research project prototype phase is scheduled to start in July 2013.

The Transformation Project and the Complex Implementation Phase

The transformation project's risk rises, as shown in Fig. 1, with the type of change strategy that is applied to the business system. The risk is especially high in the business transformation project implementation phase, that is a paradigm shift (Cappgemini 2009).

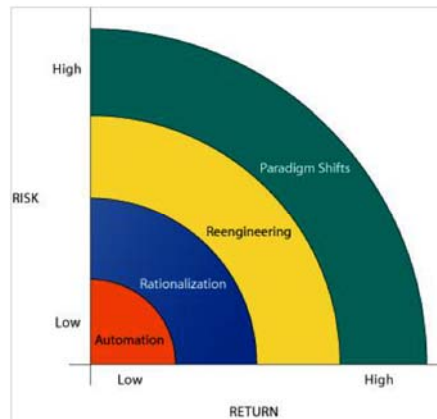


Figure 1. The risk spectrum of transformation projects, by type of change (Laudon, 2010)

The Transformation Project Implementation Phase and the Failure Rates

As already mentioned in this research article, the business transformation projects failure rates are still extremely high (Tidd, Bessant, 2009) and this article's authors estimate that the previous approaches were too traditional, specialized and managed from a very high level.

The authors would like to emphasize the total lack of hands-on approach by the majority of the actual BTMs. This causes the collapse of many (e-)business projects, especially during the implementation phase of the transformation initiative. To justify the critical importance of the researched subject, the authors relied on significant professional sources, which demonstrate the justification for such a framework; a framework like the STF. At the same time, this research article presents the importance of the confirmed failure rates in (e-)business transformations initiatives, and these sources are (Trad, Kalpic, 2013):

- The lack of skilled BTMs is a major issue for the complex process of business transformations. Especially, the ones who have to have skills for the integration of innovative technologies in a business transformation project (Cappgemini, 2007)(Cappgemini, 2009).
- One of the most famous quoted sources of metrics for transformation initiative failures are the Chaos Reports, produced by the Standish Group over the last fifteen years, which assert that only around 29% of transformations come in on time and budget (Chaos Reports, 2010)(Project Failure, 2011).
- Transformation initiative for change is a critical subject for organizations. Research

shows that the failure rate of such initiatives is at 70-80%, while other organizations are struggling for survival of their projects (RapidBI, 2007).

- 2009 Standish Group Chaos Report describes the "Worst Transformation Failure Rate in a Decade" (Bishop, 2009). This one is interesting for two reasons: a) The phenomenon is escalating and 2) this article's authors consider the previous works to be technically ineffective.
- "70% of transformation project members express dissatisfaction with the communication of objectives to employees, and 75% express dissatisfaction with training, commitment and people management" (Krigsman, 2008).
- BTMs fail in the implementation phase of the business transformation project (Gtwebmarque, 2010).
- Failure rates of business transformations integrating innovation are high. Studies confirm that only around 12% of organizations successfully manage innovation transformation changes (Tidd, Bessant, 2009).
- "The failure rate estimations represent a downturn in the success rates from the previous study, as well as a significant increase in the number of failures", says Jim Crear, Standish Group CIO: "They are low point in the last five study periods. This year's results represent the highest failure rate in over a decade"; (Chaos Reports, 2010).

(e-)Business transformation initiatives for change are a very critical subject for real-time business companies. Various researches show that the failure rates of such initiatives are very high, mainly due to problems in finalization of the implementation phase. The failure spectrum of such transformation projects enforces an empirical justification for exploring a gap. The efforts in this research concentrate on the transformation manager role and more specifically, on his/hers role during the implementation phase.

The BTM's Profile

The STF will be a concrete applicative framework that can be used by professionals. This framework will assist in the selection of the optimal BTM, who will have the right profile for the transformation and integration initiative. The profiles of BTMs to be considered, are the ones who have hands-on experiences and qualifications to integrate technology based innovation, market expectation and organizational change requirements; where the business information system (BIS) works as its "infrastructure"; as shown in Fig. 2 (Laudon, Laudon, 2010).



Figure 2. The BTM's cross-functional interventions and management (Laudon and Laudon, 2010)

This STF will also help to prepare the future BTMs and change designers in diagnosing: a) some of the problems endemic to transformation processes and be more efficient in solving them b). It can likewise be used to school BTMs (c) and thus to improve the success rate (Doyle, 1995).

Thus, it proposes an optimal use of the "Knowledge Management Capacities" of the BTM in concrete situations. The STF stands in contrast to the typical non-empirical "ad hoc" policy for transformations (Trad, Kalpic, 2013).

The BTM's hands-on knowledge. The STF also helps to coach the BTM on how to manage the risk factor and to avoid failure through proactive cross-functional assessment of his/hers capabilities to manage problems in the implementation phase. This assessment is done in real time and by the guidance and tuning of the STF. It mainly guides the BTM on how to integrate business, innovation and technology (Alvin, Arens, Elder, Beasley, 2010).

BTM's basic profile. The management is divided into three categories (Laudon, Laudon, 2010): a) executive management, b) middle management and c) production management. Managers; who can have one of the following profiles (Farhoomand, 2004): a) Advocates, b) Technocrats, and c) Samaritans. This research project concentrates on the technocrat profiles of the middle- management; and that is the STF's BTM's basic profile.

The BTM's holistic profile. A BTM with cross-functional capabilities is basically a technocrat who has access to concrete knowledge in real-time. Such projects need a special "holistic profile" of BTMs. In the current research, the authors try to define the optimal profile through the use of factors that are to be tuned in the

STF. The main issue here, is how to define the background and skill aspects of such a BTM. Some questions are fundamental for the research: a) How does the "Knowledge Management System" help the BTM? And how to interrelate the different profile aspects? (The Open Group, 2011).

The BTMs as technocrats. The BTM's profile definition depends on the nature of the transformation mission as well as on the type of the transformed BE. Mainly the BTM must be a technocrat from the middle- management (Farhoomand, 2004), with profound information technology hands-on knowledge. These characteristics will insure that the BTM is capable of finalizing the implementation phase (Trad, Kalpic, Fertalj, 2002).

The roles of Technology and innovation

The STF is a selection framework but it can be also used for the "just-in time" assistance to BTMs in establishing the coherence of the relationship between: a) business requirements, b) transformation process, c) the human factor (related to the resistance phenomena), d) business services oriented architecture and e) the implementation phase of the innovation (for example the usage of the business process model technologies), in a hands-on manner.

BTM's integration capabilities. Hence, the STF focuses on the BTM's background aspects related to his/hers capabilities in integrating innovation and avant-garde technologies through the access to instant knowledge and the use of advanced enterprise application integration infrastructure (EAI) (Gold-Bernstein, William, 2005).

The technological hyper-evolution. The role of the technological hyper-evolution that happened due to the standardization of the technologies in general and more specifically the internet-related technologies, like the business process management "BPM" and EAI (Smith, Fingar, 2003)(Schmidt, Lyle, 2010) that are crucial to the transformation of the business environment.

The impact of these technologies on the Electronic Lean BEs (ELBE) is enormous (Maskell, Baggaley, Katko, Paino, 2007). The STF should propose how to manage the knowledge related to BPM and EAI, and other avant-garde technologies in the transformation and innovation process.

These technologies glue the business knowledge and information system; knowing that innovation is advancing with great paces

and has given significant integration capacities to the business environments. The major breakthrough was the internet and its related technologies, but standardization of methodologies has structured the business world (Farhoomand, 2004).

Managers, business analysts and business information systems. As shown in Fig. 3., the role of the BTM is central, where she/he has to interact with the business users, business system and system implementers.

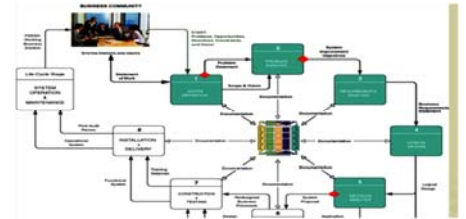


Figure 3. The BTM, business users and business system interaction is intensive (Whitten and Bentley, 2011)

Where the link between business users and the business information system is very strong. Standardized methodologies like the unified modelling language and BPM help these two categories to communicate.



Figure 4. The strong link between business and business information systems (Whitten and Bentley, 2011)

The BTM implementation capabilities and feasibility. Business system implementations recognise various types of feasibilities, which the BTM must be capable of checking and insuring (Whitten, Bentley, 2011):

- Technical feasibility – checks if the solution is technically practical, and does the transformation project staff have the right technical expertise to design and implement the transformation and integration process?
- Operational feasibility – Checks if the solution will fulfill the business users' requirements (thru uses cases and prototypes), and if yes to what extent? Checks also what is the change's impact on the system users', and will they create resistance?

- Economic feasibility – Checks if the solution is cost-effective and that the transformation budget is not over-run?
- Schedule feasibility – Checks if the solution can be designed, analyzed and implemented within the allocated timelines?

The Research Topic and Question

The link to the research question. In this section the authors will try to explain the link between what was existing (and done in the initial research phases) and the research question; and hence show the relationship between the functional domain of the transformation process and the research topic.

The research question and the knowledge "GAP". The actual and future research phases focus and pursue the process research to consolidate the knowledge "gap". The literature treating managers' specialized skills in relation to personal, just-in-time, transformations, implementations and standardized knowledge management is very scarce. As already written before, the STF is to be used by the BTMs in concrete "problem-solution" situations in the complex implementation phase, where he/she might not be connected to a business information system and to its knowledge management subsystem.

The research question. The research question is: "Which business transformation manager profiles are suited for the implementation phase of a (e)business transformation project?" (Trad, GEM, 2011)

The Link to the Research Design and Methodology

This research methodology focuses on 1) middle managers, 2) who are technocrats and who are transforming a lean electronic business environment.

This research paper defines the basis of a STF that consists of factors and (dependant) variables that are used to build a heuristics model to support the selection of the BTM and directly influence the success of the transformation process. The STF also helps the BTM to access just-in-time knowledge, to permit him to interact with a business environment of highly automated components, and in a virtually multicultural environment (Render, Stair, Hanna, 2010).

The Literature Review Phase

The literature review formed an important building block in the STF research

methodology; where its main purpose was to provide the background to and justification for the research topic on the research question. Another very important outcome of the literature review was the resultant set of factors to be used in the research model and reasoning engine. The review of relevant literature and resources covered various categories of resources.

After the selection of major books that are relevant to the research topic and model, the authors realized their usefulness, noticing the lack of significant literature handling the topic (e-)business transformations failures, in a holistic and hands-on manner. What mostly struck the authors was that after so many years and efforts, the failure rates are still very high and are even increasing.

At the moment of writing, the authors find that there are few credible literature items that can be considered for serious usage and adoption; thus the authors consider the research topic as acceptable and beneficial for the wider business community. This research modelling phase tackled the review of literature comprising of articles, books and related sources (e.g. projects, dissertations, conference papers) relevant to the research question, or its subarea of research. The research model, abstracts the research question, and as described in the previous sections, the outcome is an action research heuristics based selection framework.

This literature review and research activity provided the description, summary, and critical evaluation of each relevant work that the authors estimated to have a relation with the research question and topic.

The literature review proved the existence of a knowledge gap and the necessity of the STF research project (Santa Cruz University, 2011).

The journey from theory to practice. The literature review phase was based on researching the existing written resources and insured the migration from the empirical (practical) world to generate a set of rules or theories for the final thesis; that is the main sense of a "Doctorate in Business Administration" (DBA) (Rülling, 2011).

The design of the literature review component. The authors have designed the literature review and decided to implement the resultant factors in the action research based research model; and as the most essential step of the STF research project was the review of relevant literature and related resources, the authors dedicated a long phase to achieve a set of high quality factors.

The authors were keen to avoid deviations from the original research question and maintain the links to all the components of the research model. There were crucial and justified reasons for long planning and for investing efforts in the literature review phase (Bourner, 1996) because the literature review was the jumpstart for the research project. Bruce (Deakin University, 2010), who has published widely on the topic of the literature review concepts, has identified six elements of a literature review document; these elements which the STF research project has adopted. These elements comprise:

- A survey or reasoning engine will confirm the research's hypothesis;
- A method for learning and evolution;
- A research facilitator for future works;
- A credible final research report.

The literature review knowledge management system. The STF "Knowledge Management System", is a system organized to store the discovered relevant works in a structured manner. The goal was permit to search important information quickly and to permit the development of future works easier. Relevant knowledge is stored in "Knowledge Items and Clustered Knowledge Items"; which are data objects in the "Knowledge Management System Database". In this database, these objects are classified in "Knowledge Categories". Knowledge Items may generate factors or (dependent) variables that may be used by the research model, that in fact is a primitive "decision support system", as shown in Figure 5. The authors use also the term heuristics instead of primitive.

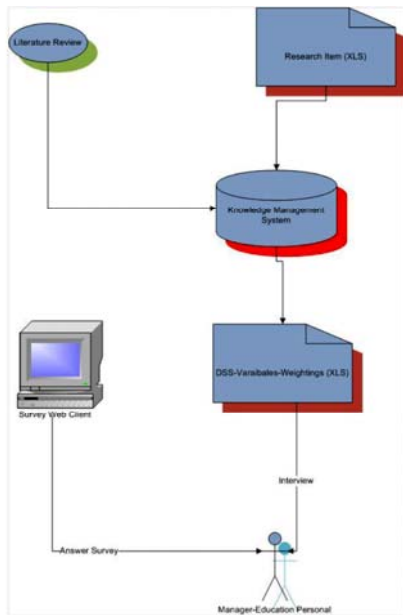


Figure 5. The STF Research Model-Knowledge Access

The literature review component structure. The authors have build categories of literature to be used in the research project. The idea was to structure the research project and to void the immense mountain of information that drowns the reader and creates a hairball of un-useful islands of information.

The terminated literature review intended to find if there are similar and conclusive approaches. The review's second main aim was to find complementary works that can be used to support the research's topic.

All the findings and research-associated works are stored in this research's database that will be used in the next research phase. That database is a part of the STF's "Knowledge Management System" (KMS).

The Literature review categories

The STF's literature review content is subdivided into the following knowledge categories that are stored in the KMS database:

- The Similarity Category (EQU)
- The Organizational Category (ORG)
- The Management Category (MNG)
- The Methodology Category (MTH)
- The Finance Category (FIN)
- The Educational Category (EDU)
- The Knowledge Category (KNW)
- Agile Holistic Management (AHM)
- Business Transformation Managers (BTM)

The business transformation manager's category (BTM), is the one that the authors have selected to concentrate on and to build upon the research model.

The BTM literature review category. In this research model, the authors will use only the BTM category. This is the category with which the authors have concluded the literature review that was a logical continuation from the review's educational category that was too generic to be inspected.

The BTM category works are „essential“, for the calibration of the research model and its relevance to the research question.

The authors are researching the managers' profiles and backgrounds; and taking into account the possibility to enhance their skills after their selection; they are also trying to define a research model with concrete artefacts that can adapt easily to concrete transformation situation (and just in time), as shown in Figure 6.



Figure 6. How to define the model artefacts (Marciano and Moore, 2001).

The Literature review outcomes. In this section, the authors present the concrete literature review outcomes that are implemented in the research project:

- The gap in the existing literature and resources, was identified.
- Avoided reinventing the wheel (that has saved valuable time and prevented the research project to fail and; above all, it insured a good jumpstart for other researches).
- Continued the research based on other researchers' works, who have already reached a specific result (reviewing the field allows the researcher to build on the works of existing knowledge and recommendations).
- Found fellow researchers working in the same field (and created a researcher network that is a valuable resource)

- Improved the authors' knowledge related to the researched area
- Found seminal works related to the research question.
- Gave a holistically an intellectual depth to the research topic, in linking and defining links to other research works.
- Found credible arguments to opposing views
- Gave the research work a methodological perspective
- Showed the capability to access previous research works in the topic area
- Capacity to design information and hypotheses that are the base artefacts of the research project's model
- Integrated methods and methodologies that structure and implement the research project
- Developed basis of a feasible and extensible research model

The BTM category synthesis

The authors considered the BTM category as the central category for the research project and the needed factors were extracted.

The literature review link to the research design and methodology. As far as the literature review process concerns, ultimately the main goal for the researchers was to complete the review in the context of the research question and to further tune it and link it to the research model, by the use of variables and factors (Deakin University, 2010).

The resultant literature review category (BTM) offered a set of dependent variables (factors) that are the physical link to the research design model and form its data sets.

The authors consider the "Heuristic_Manager_HandsOn_Knowledge_Model_Metric" variable as the most relevant and would have the highest weighting.

The Research Design Methodology

Up to this section, the research authors have made a summary of what was already achieved until now in the STF research project. The first part mainly served to define the initial research question and to localize the main research category.

This actual research project is based on the "Analytical Applicative Research" (AAR) (Chanaron, 2010); that is basically a heuristics model that uses technology, innovation and organisational factors.

The authors have decided to integrate the action research method based on a heuristics model; where the spiral model was adopted to structure and implement the research project.

As this research project is based on action research and on a positivist qualitative approach, the authors designed a factors based reasoning model. This model should help to define the BTMs' optimal profile.

This research avoids to reinvent the wheel and tries to find its added-value to existing works; hence it researches to fill the gap to the existing major works, concerning the (e-)business transformations and their complex implementation phase. The STF's most important characteristic is to manage the risk factor of transformation projects; that helps to avoid failures through the cross-functional assessment and selection of the optimal BTM. This assessment and selection will be done by the evaluation and monitoring of the BTM's ability to integrate innovation into the existing BE (David, Linthicum, 2000).

Applicative research. The STF research is based on the naturalistic approach that seeks to structure the research question in context-specific settings, that is the context of a (e-)business transformation initiative. Therefore this research is majorly focuses on the "Analytical Applicative Research" (AAR), where the role of technology and innovation on organisational transformations is fundamental (Aubert, 2011).

In STF research model, is based on the AAR with a flair on logical positivism that promotes an empirical approach (Chanaron, 2011); where its initial model was presented in the GEM Workshop (Trad, 2011).

Holistic research. Fig. 7 shows the flow of the research design concept, in which the readers see the structure of the research's heuristics components.

As mentioned before, today's highly complex ELBEs that use business information systems extensively have become very hard to manage and the failure rates in managing their transformations are very high.

The STF proposes the use of metrics and critical success factors (CSF) to control the risk factor related to the selection of the optimal BTM profile; as shown in Fig. 7. These factors based research method is mainly constructed on the holistic analytical action research approach to define the basic and holistic BTM profile. The word holistic refers to the cross-functional BTM's characteristics and factors.

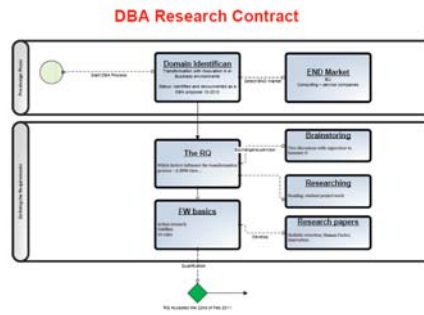


Figure 7. The STF research pattern (Trad, Proposal, 2011)

The analytical action research. Analytical action research is a special type of research mostly applied in education research, which fits right the STF framework (ECS, 2004), here the authors want to prove that BTMs profile is very much influenced by his business education and background.

The "action research = action and research" artifact is optimal for this research question and project. As described, most action research applications are cyclic or spiral and that fits this research project's requirements.

The STF research project alternates between "action" and "in-depth reflection" as it advances towards the research's conclusion. The reflection started with critical review of the transformation projects' situations and of past related actions. It is assessed by controlled planning of the next research action's to be taken.

It is a spiral approach because there are cycles within iterations. These iterations will extend across the STF research. Each cycle defines the problem to be solved and a set of actions to be taken. The BTM's staff and business information systems environment are concerned by the change are involved in the action and the related critical reflection. As it is a cross-functional method and is widely shared between all the company's staff, and so the it should be planned.

The analytical action research certainly is not the only research method; but, it is very much suited to the STF's research project, because it is the case where the BTM wishes to unsure change (the "action") and understanding (the "research" or implementation) at the same time (Dick, 2002).

Action research example

"A teacher wants to know if group activities will improve the performance of her students in math. She measures the performance of her students on math problems after using whole-group instruction for three weeks. She then

supplements her instruction with small-group learning activities for three weeks and again measures student performance. She finds that student achievement increased with the use of group activities compared to whole-group instruction. On the basis of these action research results, she changes her approach to teaching math" (ECS, 2004).

The previous example shows the action research approach, that is an optimal research method in education and evolution; that can be also applied to the STF in a concrete business context. Because the BTM's profile is a very much influenced by his level of education, experience and his evolution.

The analytical action research steps

The analytical action research is applied to the STF research, and it involves the following features (ECS, 2004):

- Selecting the optimal BTM
- The collection of data about the current BTM's capacities and ongoing practice or program. It presents the reasoning outcomes
- Reflection or reasoning on the acquired status (data)
- Tuning of the model factors and gives the possibility of implementation of a new iteration (the action)
- The new iteration; processes the collection of data about the current BTM's capacities and the ongoing practice or program. Then, it presents the reasoning outcomes; and checks if there improvement or regression.
- If the results are satisfying, then the BTM can develop a conclusion(s) about the improvement(s) on the ongoing transformation project.
- Otherwise the framework proposes another iteration or the transformation project's final stop.
- This AAR based framework can be coordinated by the: a) human resources, b) (e-)business managers, c) auditors, d) business designers, e) enterprise architects and groups of business analysts.

The heuristics model as the reasoning engine.

The STF's positivist AAR is designed on a heuristics model that is being developed. This heuristics model is based on a pseudo beam (tree) search method (Jaskiewicz, Sowiński, 1999).

STF's migrated components

The STF uses some of the authors previous "Information System Risk Qualification Check Coefficient" (ISRQCC) framework's major components.

The ISRQCC framework was specialized mainly in Information Technology (IT) and Information System (IS) control, audit and

transformation (Trad, Kalpic, 1999)(Trad, Kalpic, 2002).

More specifically, this work uses an enhanced version of the "Team Design Quality Coefficient Check" (TDQCC) component (as shown in Fig. 8); that is the reasoning part of the ISRQCC (Trad, Kalpic, 1999; Meier, 1997).

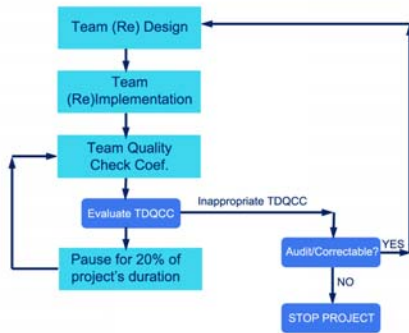


Figure 8. A previous reasoning approach (Trad, 1999)

STF's model solutions

The STF will contain a heuristics decision model (on the basis of AAR and factors), which will help the BTM in the transformation of traditional BEs into an ELBE. The STF concentrates on the defined set of requirements that defines the BTM's profile; to find the set of possible solutions (in the form of profiles and improvements).

The STF is used also to define future innovation and change adaptation steps in the form of recommendations; and with that the company avoids the blind and risky traditional business transformation methods such as "let's re-transform" the whole ELBE, without taking into consideration the BTM's profile (and his implementation capacities); that can create resistance.

Consulting cases as the research's empirical basis.

As the STF research methodology is based on applicative and positivist AAR, existing case studies and the authors empirical experiences are the basis of the methodology's hypothesis and factors. That concept was used for the proposal for the "Doctorate of Business Administration" (Trad, Proposal, 2011); that is based on empirical cases like the "Mobiliere Business Transformation using SOA Technologies" (Trad, 2008).

The Prototype

The prototype design. This research project will mainly use the qualitative research for the proof of concept - (POC), added to that, the authors will use some surveys to confirm the outcomes of the POC outcomes.

These surveys will be used to interview executive managers' on the research's topic; and the POC's outcomes.

For processing of surveys the authors will implement a quantitative processing module, that uses an experimental method and uses quantitative measures to test the hypothetical "generalizations", sourced from the surveys' outputs. (Quantitative, 2010) (Hoepft, 1997).

The prototype components. The components of the prototype (POC) are:

- The STF KMS (STF_KMS)
- The STF Hypothesis (STF_HYP)
- The STF Factors (dependent variables) (STF_FAC)
- The STF Questions (STF_QUE)
- The STF Data Model (STF_DAT)
- The STF Reasoning Model (STF_ALG)
- The STF Application (STF_APP)
- The STF Results (STF_RES)

The POC's implementation. The STF's POC is being designed and developed and it will be used to collect the various sources of data; that will represent the major qualitative part and a minor quantitative part (for surveys).

- The STF implementation (or application) main tasks are:
- Managing the research project's categories in KMS
- Defining the factors and dependant variables
- Produce the BTM basic profile, for the qualitative part
- Possible questions for the surveys, for the quantitative part, that should confirm the previous step
- Create the surveys' templates
- Experienced executive managers and TBMs will fill the surveys

The POC's general overview

The STF application or prototype is being developed using the Microsoft Visual Studio 2012 MVC4 architecture. The POC will contain the STF's major components, as shown in Fig. 9.



Figure 9. The STF survey main menu (Trad, STF, 2013)

The POC is used to define the STF's factors that will be used in the reasoning model, as shown in Fig. 10.



Figure 10. The STF factors creation (Trad, STF, 2013)

Domain specialist - interview. The research process previews to interview domain specialists to collect the data for the final quantitative process. The considered types of specialists, to be reviewed are:

- Business schools professors and directors
- Human resources specialists
- Educational professionals
- Transformation managers
- Executive Managers
- Senior Business Analyst and Auditors (Trad, 1999)

A list of 2-5 persons will be selected to go thru the interviewing exercise of filling and discussing the survey.

STF's POC Application Data Model

Variables (dependant and independent). The STF KMS, that was the concrete result of the literature review phase will deliver the set of factors to be used to define: a) the dependant variables, b) independent variables and c) survey questions.

STF POC's Application Data Collection

The data collected from the STF application surveys and the heuristics model will be stored in the STF's data base, that will have a query interface. This interface will help the researchers to define the data patterns.

Quality and reusability of data. The STF POC's data base, from the research's prospective, can have many benefits in terms of centralization of data sources. These data sources are reusable in future iterations. These

centralized sources enable also the reach to more precise definition of the BTMs profile, while minimizing risk, thus increasing the success factor of the business transformation initiative.

By having a synchronized flow of STF data, the researchers will be able to have access to precise information for crucial decision making for the companies' strategic business transformations. (Laudon, Laudon, 2010).

Conclusion

The research's focus is on the business transformation managers' profile, hence the capabilities to holistically manage the design process and also manage the implementation of the (e-)business transformations project.

Today's (e-)business transformation projects have to take into account the integration of just-in-time knowledge management technologies in the organizational business processes; that is to insure a good business communication infrastructure.

The BTM's capabilities to integrate avant-garde technologies is the major factor in insuring the functioning of real time enterprises, like for example the transportation industry, and to

deliver real business performance (Markides, 2011).

The STF's research main goal is to convert practice and experience to management theory on how to select a business transformation manager. The research shows that the traditional managers are (or were strongly) influenced by a conventional academic model that forges a silo-based profile. The schooling of business managers that is based on very strict objectives and outcomes in well defined context might not be an optimal environment for the development of cross-functional managers, who have to manage complexity and chaos. These schooling environments in general generate specialized profiles that can hardly cope with heterogeneous complexity and fast evolution of technology. That is the main reason why BTMs fail to finalize the implementation phase of business transformations projects.

There has been a lot written on how to achieve success, maybe it is more efficient to talk why business transformation managers fail. A major cause of managers' failure is the lack of knowledge in managing business integration and implementation, where there is an important use of innovation and integration technologies; added to that there is a long business information technology lead times.

The STF research recommends to improve the success rates, by providing training, education strategy and a framework to select the optimal BTM profiles (Kelada, 2009).

The research's outcome will propose a framework on how to select, train and evaluate a BTM. The STF literature review proved the credibility of a knowledge "gap". The gap that exists between the traditional management skill building and the complex projects' realities. With the literature review's termination the authors presented the STF research design and model, that is based on factors.

This is the sixth article in a series of research articles that represent the research design pattern of the STF, that is based on applicative action research. Where the factors come from the literature review and are the base of the AAR's heuristics model.

This article is a jumpstart to the seventh article in which the authors will present the prototype that is related to the research topic and the achieved results. This prototype is based on an AAR reasoning engine and a survey that has to be filled by domain specialists.

References

- Agarwal, B., Gupta, M., Tayal, S. (2009). *Software Engineering and Testing*. Jones & Bartlett Learning, USA.
- Alvin A., Arens, A., Elder, R., and Beasley, M. (2010). *Auditing and Assurance Services: An Integrated Approach*, 13/E, Prentice Hall, USA.
- Aubert, B., (2010). *DBA Workshop Grenoble 2011- Part B- Rules and regulations*, Grenoble, France.
- Bishop, M. (2009). *Standish Group CHAOS Report: Worst project failure rate in a decade*. <http://www.irise.com/blog/2009/06/08/2009-standish-group-chaos-report-worst-transformation-failure-rate-in-a-decade/>
- Bourner, T. (1996). *The research process: four steps to success*, in Greenfield, T. (ed), *Research methods: guidance for postgraduates*, Arnold, London, United Kingdom.
- Cap Gemini. (2007). "Trends in Business Transformation - Survey of European Executives". Capgemini Consulting and The Economist Intelligence Unit, France.
- Capgemini Consulting. (2009). *Business transformation: From crisis response to radical changes that will create tomorrow's business*. A Capgemini Consulting survey. France.
- Chanaron, E. (2010). *DBA Workshop*, GEM, France.
- David, S., and Linthicum, D. (2000). *Enterprise Application Integration*, Addison-Wesley Professional, USA.
- Dayton, D. (1999). *Information Technology Transform Handbook*. Daytonassociates USA.
- Deakin University. (2010). *The literature review*. <http://www.deakin.edu.au/library/research/literature-review.php>
- Dick, B., (2002). *Action research: action and research*. <http://www.aral.com.au/>
- ECS. (2004). <http://www.ecs.org/html/educationIssues/Research/primer/appendixA.asp>
- Farhoomand, A. (2004). *Managing (e)business Transformation*. UK: Palgrave Macmillan.
- Gold-Bernstein, B., and William, R. (2005). *Enterprise Integration: The Essential Guide to Integration Solutions*, Perason, USA.
- Gtwebmarque. (2010). http://gtwebmarque.com/wikis/gtwm/index.php/Project_Failure
- Hoepft, M. (1997). Choosing Qualitative Research: A Primer for Technology Education Researchers, *Journal of Technology Education*, Virginia Tech.
- Jaszkievicz, A., and Sowiński, R. (1999). The 'Light Beam Search' approach - an overview of methodology and applications, *European Journal of Operational Research* **113** (1999) 300-314.
- Kelada, J. (2009). *Why do the majority of change initiatives fail and what to do about it - The example of TQM - DBA*. GEM, Grenoble, France.
- Kringsman, M. (2008). *Business change failures: 9 success tips*. <http://www.zdnet.com/blog/projectfailures/business-change-failures-9-success-tips/1080>
- Laudon, K., and Laudon, J. (2010). *Management Information Systems*, 11th Edition, Prentice Hall, 2010, USA.
- Markides, C. (2011). Crossing the Chasm: How to Convert Relevant Research Into Managerially Useful Research, *Journal of Applied Behavioral Science*, March 2011, **47** (1) 121-134. London, UK.

- Maskell, B., Baggaley, B., Katko, N., and Paino, D. (2007). *The Lean Business Management System; Lean Accounting Principles & Practices Toolkit*. Susan Lilly (Editor). USA.
- Meier, R. (1997). *Team Power*. Die Deutsche Bibliothek - CIP Einheitsaufnahme, Germany.
- Pol A. and Ahuja. R. (2007). *Developing Web-Enabled Decision Support Systems - Using VB.NET and ASP.NET*. Dynamic Ideas, Belmont, Massachusetts, USA.
- Quantitative. (2010). *Positivist research methods in information systems*. <http://dstraub.cis.gsu.edu:88/quant/2philo.asp>
- RapidBI. (2007). *Business transformation - a change strategy*. <http://rapidbi.com/management/businesstransformation/>
- Render, B., Stair, R., and Hanna, M. (2010). *Quantitative Analysis for Management*, 11/E, Prentice Hall, UK
- Rüling, Ch. (2011). *GEM DBA Workshop – Research Design, Workshop Manual*. DBA Workshop. March, 2011, Webster Grenoble Ecole de Management / University, Geneva, Switzerland.
- Santa Cruz University. (2011). Write a literature review. <http://guides.library.ucsc.edu/write-a-literature-review>
- Schmidt, J., and Lyle, D. (2010). *Lean Integration: An Integration Factory Approach to Business Agility*, Addison-Wesley Professional. USA.
- Smith, H., and Fingar, P. (2003). *Business Process Management (BPM): The Third Wave*, Meghan-Kiffer Press, USA.
- Süß, Ch. (2011). *Adaptive Knowledge Management, A Meta-Modeling Approach and its Binding to XML*. Fakultät für Mathematik und Informatik. Universität Passau. D-94030 Passau, Germany.
- Süß, Ch., B. Freitag, and P. Brössler. (1999). *Metamodeling for web-based teachware managment. Advances in Conceptual Modeling*. ER'99 Workshop on the World-Wide Web and Conceptual Modeling, volume 1727 of LNCS, pages 360–373, Berlin. Springer-Verlag. Germany.
- The Chaos Reports. (2010). http://gtwebmarque.com/wikis/gtwm/index.php/Project_Failure
- The Open Group. (2011). *TOGAF Version 9*. <http://www.togaf.org/>
- The Project Failure. (2011). http://gtwebmarque.com/wikis/gtwm/index.php/Project_Failure
- Tidd, J. (2006). *From Knowledge Managenet to Strategic Competence*, 2nd Edition, Imperial College, London, USA.
- Tidd, J., and Bessant, J. (2009). *Managing Innovation, Integrating Technological, Market and Organizational Change*, 4th Edition. USA: Wiley.
- Trad, A. (1999). Team Design Quality Check Coefficient – The TDQCC. Conference on Information Technology Interfaces; Dubrovnik; Croatia.
- Trad, A. (2008). The Mobilere Transformation, by the use of BPEL and SOA, Geneva, Switzerland.
- Trad, A. (2011). GEM DBA Workshop – Research Design – Poster Presentation, March, 2011, Webster University, Geneva, Switzerland.
- Trad, A, STF. (2013). *The Selection and Training Framework Research Survey System*. IBISM, Lausanne, Switzerland.
- Trad, A., and Kalpic, D. (1999). Transformation Quality and Risk Check (RQRC) – Theoretical Basis. In editor. Proceedings of the 23rd International Conference on Information Technology Interfaces; 1999 Jun 15-18; Pula, Croatia. Zagreb: SRCE University Computing Center, University of Zagreb; 1999. p. 497-502.
- Trad, A., and Kalpic, D. (2000). *Proactive Monitoring of the Information System Risk and Quality*, ITI 2002, Cavtat, Croatia.
- Trad, A., and Kalpic, D. (2002). *Information Systems Risk and Quality Check (ISRQC) – Theoretical Basis*. In: Proceedings of the International Conference on Information Technology Interfaces; 2002 Pula, Croatia. Zagreb: SRCE University Computing Center, University of Zagreb.
- Trad, A., Kalpic, D, and Fertalj, K. (2002). Proactive business monitoring of the information system risk and quality. *Proceedings of the 23rd International Conference on Information Technology Interfaces*; 2002 Jun 24-27; Dubrovnik, Croatia. Zagreb: SRCE University Computing Center, University of Zagreb; 2002. p. 497-502.
- Trad, A., and Kalpic, D. (2011). The "Selection, Training, Follow and Evaluation STF" (STF) for Manager's in Business Innovation Transformation Projects" A Holistic Overview. IEEE, Conference on Information Technology Interfaces; Dubrovnik. Croatia.
- Trad, A., and Kalpic, D. (2011). The "Selection, Training, Follow and Evaluation STF" (STF) for Manager's in Business Innovation Transformation Projects" The Human Factor. IEEE, Conference on Information Technology Interfaces; Dubrovnik; 2011.
- Trad, A. (2011). STF for BTMs. DBA Proposal. Grenoble Ecole de Management, Grenoble, France.
- Trad A. (2011). The "Selection and Training STF" (STF) for Manager's in Business Innovation Transformation Projects - The Proposal", GEM, France.
- Trad, A. and Kalpic, D. (2013). The "Selection, and Training STF" (STF) for Manager's in Business Innovation Transformation Projects" - The Background. IEEE, Conference on Information Technology Interfaces; Dubrovnik. Croatia.
- Trad, A., and Kalpic, D. (2013). The "Selection, and Training STF" (STF) for Manager's in Business Innovation Transformation Projects" - The Profile. IEEE, Centeris. Portugal.
- Whitten J., and Bentley, L. (2011). *Systems Analysis and Design Methods*. McGraw-Hill & Irvin, USA. 2011.
- Willaert, F. (2001). "XML-Based frameworks and standards for B2B e-commerce", PhD Thesis, Faculteit Economische en Toegepaste Economische Wetenschappen Department. Katholieke Universiteit Leuven.