

The selection and training framework for managers in business innovation and transformation projects

The Profile and Education of a Business Transformation Manager – An enterprise architecture approach

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Keywords

Business transformation manager's profile and educational prerequisites and transformation project implementation, Architect of adaptive business information systems, business transformation projects, business transformation manager's profile, transformation project implementation, business integration, innovation failure rate and (e-)business.

Abstract

The riskiest factor in transforming a traditional business environment (BE) into a lean and automated BE is the role of the business and (e-) business transformation manager (BTM) in the implementation part of the business transformation project (BTP). The basic profile and education of such a business transformation manager has not been sufficiently investigated in a holistic manner in order to design the BTM's profile; and that is the main goal of the authors' research (Trad, Kalpic, IMRA, 2013).

This research paper deals with the optimal profile of the BTM that has to manage the implementation phase of complex business transformation projects. These business transformation projects require a specific set of business architecture and implementation skills, especially for the final and very difficult implementation phase. The BTP's implementation phase is the major cause of high failure rates (Cap Gemini, 2009).

Failure rates. The authors have constructed their research on the main fact that only around 12% of business organizations successfully finish innovation-related business transformations projects (Tidd, Bessant, 2009). Therefore, there is a tremendous need for more research on the BTM profile. Business transformation projects require BTMs who have the necessary business and information technology architectural skills for the implementation of complex business process management (BPM) based systems (Kelada, DBA Thesis, 2009).

The research question and knowledge gap is: "Which business transformation manager characteristic is optimal for the implementation phase of a(n) (e-)business transformation project?" (Trad, GEM, 2011) (Trad, Kalpic, IEEE, 2011). The knowledge gap was acknowledged and confirmed, due to the fact that the existing literature and various methodologies treating business transformations offer practically no insight into the profile of the BTM as an architect of adaptive business information systems (AofABIS), managing the implementation phase of a BTP (SAP, GBTM, 2013).

The literature review and research design phase have shown that the BTM's optimal characteristic is to be an architect of adaptive business information systems (AofABIS) (Trad, GEM, 2013)(Trad, Kalpic, 2014). The authors implemented the selection and training framework (STF) research methodology, design and prototype (Trad, BAME, IEEE, 2013).

Introduction

The riskiest factor in transforming a traditional business environment (BE) into a lean and automated BE is the role of profile and education of business and (e-)business transformation managers (BTM); the influence they have on the concrete implementation part of business transformation projects (BTP). The basic profile and educational prerequisites of such a business transformation manager has not been sufficiently investigated in a holistic manner in order to design the BTM's profile and its educational prerequisites; and that is the main goal of the authors' research

(Trad, Kalpić, IMRA, 2013)(Trad, Kalpić, IMRA, 2014). In fact actually, there is no concrete educational curriculum for such BTM profiles. This research paper deals with the optimal profile and educational prerequisites of the BTM who has to manage the technical implementation phase of complex business transformation projects; knowing that the BTPs' implementation phase is the major cause of very high failure rates (CapGemini, 2009). The implementations of such business transformation projects require a specific set of business architecture and implementation educational and training techniques. The authors have based their research on the main fact that only about 12% of business organizations successfully terminate innovation-related business transformations projects (Tidd, Bessant, 2009); therefore, there is an essential need for more research on the BTMs' profiles and educational prerequisites. "We know that those organizations that are consistently successful at managing innovation-related changes, outperform their peers in terms of growth and financial performance" (Tidd, 2006).

The methodology can be applied in a real-world case; that is, in fact, the final phase of the research project. This final phase completed the theory-based hyper-heuristics reasoning model (Wes, 2001). It is a mixed hyper-heuristics-based reasoning model, shortly labelled STF_MHM, a qualitative reasoning tree. This research aims to qualify the BTMs: 1) architectural capacities, 2) background and 3) skills. These characteristics are fed in the form of factors in the STF_MHM; that in turn should deliver the most important BTM profile characteristic and recommendations. These revealed factors are also fundamental for the future coordination of the BTP of the transformed business environment within the globally transformed business (e-)enterprise or "enterprise 2.0". BTMs who are basically technocrats, proactive project managers and advanced knowledge workers should be capable of supporting and designing the transformation of the (e-)business environment in a proactive manner (Walsh, Kefi, Baskerville, 2010)(Trad, Kalpic, IMRA, 2013)(Walsh, Kefi, Baskerville, 2010).

The needed skills must comprise the knowledge of: business and enterprise architecture, automated real-time business process environments, agile project management, organizational behaviour, management sciences methodologies and concrete business information systems implementation phase know-how. The researchers recommend the profile of an AofABIS (Trad, Kalpic, 2014). It is a version of the technocrat (Fahroomand, 2004) profile, a profile adapted for such projects, with a set of cross-functional skills.

The STF_MHM will offer the relationships between the different factors and build an adequate algorithm to rate and weigh these factors. Accordingly, this research project unifies resources from two distinct but related areas: avant-garde business management and business-processes-based information technologies. It develops a concept for the BTM's selection and proposes a method to weigh and interrelate the BTM's various skills through the use of tuneable factors.

This research project presents an original set of factors and fulfils the need for an efficient STF_MHM. The sets of factors are presented in the form of a real-world framework and recommendations, which affect the BTM selection techniques. BTM selectors, professional analysts, project managers, auditors and advanced computer science students might benefit from this research project, while its ambition is to be considered as a major managerial benefit.

The mixed applied research model can be synthesized with the following facts: a) Grounded approach; Grounded research is to basically about generating a theory. Grounded theory is also primarily a method of iterative analysis and it sets guidelines call for using each phase of inquiry to raise the analytic level of the work. The goal was to narrow the literature review activities and helped to try find out more about the properties of the final category, that is the business transformation category and to find the dimensions of the relationships between categories (Strauss & Corbin, 1998). *The grounded approach helped in the finalization of the research's literature review;* b) The survey, the quantitative part, aim was o to find the basic profile a survey and interview protocols were developed; that were carried out (Doscher, Moore, Smallman, Wilson, Simmons, 2011); c) Linking the quantitative to the qualitative approach; the quantitative result is considered to be the root state of the hyper-heuristic decision tree; that needed a qualitative approach; d) Grounded heuristics, the qualitative part; practical and scientifically grounded heuristics can be derived to select, guide and to

identify the strategies for coordinating certain types business transformation project's phases; especially the implementation phase. In such phases facts, concepts, principles and rules, procedures, technical skills, interpersonal skills, and attitudes, are crucial (Ross, Morrison, Hannafin, Young, Akker, Kuiper, Richey, Klein, 2010). The aim of grounded hyper-heuristics approach is to implement a grounded heuristic process that generates solutions in an acceptable period of time (or just in time).

Where heuristics is a "rule of thumb," and a guide to implement problem solving decisions making systems (DMP), like the STF. In business information technology, heuristics refers specifically to algorithms, like the STF's goal function. The STF uses a grounded hyper-heuristics process that includes tuning and getting results by trial and error; with a factors based system. Data that comes out of the surveys' acquisition process are verified and filtered to build an efficient tree algorithm and to process solutions in the form of recommendations. Like all heuristics based systems, the STF reasoning engine will not be always perfect and adapted to all possible requirements, but it should be enhanced to make it capable of finding optimal results (TechTerms , 2013)(Oxford Dictionaries, "heuristics", 2013).

The grounded hyper-heuristics theory has become established as a qualitative methodology of choice for researchers in similar fields, using a holistic approach. It is apparent to many researchers that there are significant difficulties associated with defining what the grounded heuristics theory method actually is, and how it should be applied concretely in research projects or decision support systems. In addition, its popularity has tended to keep other qualitative approaches under-explored; it is an agile method that can be adapted to complex projects. Grounded hyper-heuristic method is a useful form of qualitative methodology for complex holistic research projects, because it develops a pluralistic approach to qualitative research and offers a possibility to develop a real world framework (Wes, 2001); based on an iterative approach; e) Hyper-heuristics; the need for an iterative approach promotes the hyper-heuristic approach for this research. "Hyper-heuristics are increasingly used in function and combinatorial optimization Rather than attempt to solve a problem using a fixed heuristic, a hyper-heuristic approach attempts to find a combination of heuristics that solve a problem (and in turn may be directly suitable for a class of problem instances). Hyper-heuristics have been little explored in data mining. Here we apply a hyper-heuristic approach to data mining, by searching a space of decision tree induction algorithms. The result of hyper-heuristic search in this case is a new decision tree induction algorithm" (Vella, Corne, Murphy, 2009).hyper-heuristics a methodology that aims towards domain-independence in the discipline of optimization (Swan, Woodward, Ozcan, Kendall, Burke, 2010).

Holistics and managing complexity applied research method requires a mixed method that is mainly based on a hyper-heuristics model. The transformed organizations and BTMs need more than basic business information systems to exploit the avant-garde technologies in order to successfully conduct the BTP. Such BTMs and organizations need holistic just-in-time (JIT) methodologies, like SAP's BTM2, that encompass (e-)business process architecture and the management of BTPs (Uhl, Gollenia, 2012). This research shows that the BTM is an AofABIS with holistic or cross-functional skills (The Economist, E-management, 2000).

The survey is a quantitative part of the mixed method. The STF survey templates were developed from the set of resulting factors and questions. They were derived from the research hypothesis. The considered types of specialists and managers to be surveyed or interviewed were: business and information technology school professors and directors, managers of information systems, senior project managers, human resources specialists, educational professionals, transformation managers, executive managers, senior business analysts and auditors (Trad, Kalpic, 1999). A group of experienced executive managers and BTMs (limited to 10 members, because of the research question's complexity) filled in the surveys. The research process surveyed "very experienced" domain specialists and generated the collected data sets used in the next qualitative process. The surveys confirmed the research project's hypothesis. The research shows that the BTM is an architect of adaptive business information systems (Trad, IMRA, 2014).

BTM as an AofABIS, with an understanding of business environments and the factors that affect their survival and competitiveness, is only the first step towards the implementation of a successful BTP. The BTM must have in-depth knowledge of: 1) electronic lean business environment architectures, 2)

integrated development environments, 3) business people integration, 4) agile project management and 5) coordination of computer engineers. The BTM acts as business and information systems solution designer and implementation architect (SAP, GBTM, 2013) (SAP, BTM2, 2012). Estimated BTM skills require a profound knowledge of the enterprise business architecture, business processes, services technologies and business project management issues. That rounds up the profile of an AofABIS. The BTM is in fact an AofABIS, where he/she acts as a coordinator of enterprise architecture teams and coordinates their various activities. The STF will also support him or her in managing problems in real-time. (Trad, Kalpic, IMRA, 2014).

The STF business transformation manager's pattern (STFBBTMP). The authors' aim is to convert their relevant research outcomes into a managerially useful framework (Markides, 2011), and its hyper-heuristics tree processing model is used as a template that is suitable for a future class of problem instances. The authors regard this as a business benefit (Vella, Corne, Murphy, 2009). Therefore, it is planned to create a concrete STF environment based on a business-process-oriented transformation pattern (SAP, BTM2, 2012). This STF pattern will be in fact an STF business transformation manager's project pattern (STFBBTMP).

The STF proof of concept (POC) and the final interviews should deliver the research's final recommendations on how to improve the BTPs in their implementation phase and the method of selecting and training the right BTM profiles. The STF research project proposes a concrete framework on how to select, train and evaluate a BTM (Trad, Kalpic, ITI, 2014).

Managerial benefits. The qualitative hyper-heuristics decision making process (DMP) model will try to confirm the outcomes of the quantitative phase from the previous survey and deliver managerial recommendations (managerial benefits) that may be used as a template suitable for similar management disciplines (Vella, Corne, Murphy, 2009). The STF can be also used to establish future innovation and transformation-related training recommendations; and with that tool, the enterprise avoids risky traditional business transformation habits, such as "let's change the whole BE" without taking seriously into account the BTM's profile. That approach can create major problems and this is the principle reason for failure.

The STF is a just-in-time (JIT) systems managerial framework or "management 2.0" component for the selection of business transformation managers.

Research Overview

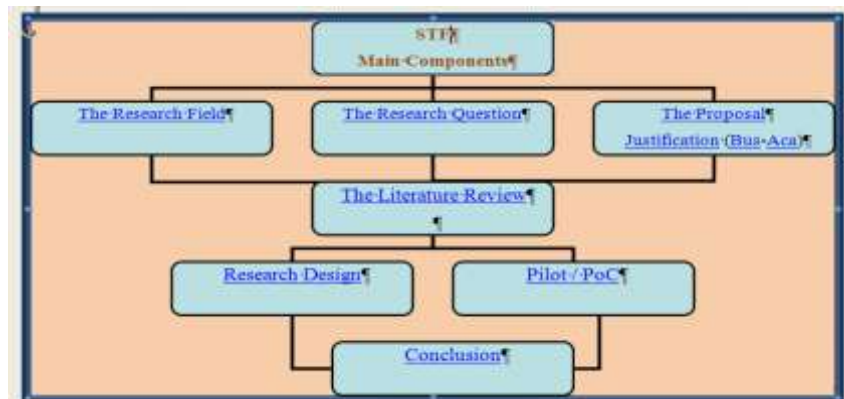


Figure 1 The Proof of Concept (PoC) development is the current research phase (Trad, A., Kalpić, 2013).

The characteristics of a suitable BTM profile and his or her (for simplicity, in further text "his") corresponding educational background, is the main goal of the authors' selection and training framework (STF) research project, which started in year 2010. In this research paper, the authors will try to present the educational prerequisites for such a BTM and make a summary of the research's managerial recommendations & benefits. This research's final phase uses a theory-based hyper-heuristics reasoning model (Birudavolu, 2011). This reasoning model offers the optimal BTM profile and educational characteristics that are adapted to complex BTPs. These skills and educational prerequisites are fed in the form of factors into the reasoning model, which will deliver the most important BTM characteristics (Trad, COSC, 2011).

The actual research results show that a BTM is an “architect of adaptive business information systems” (AofABIS) (Trad, IMRA, 2014). The BTP's implementation phase is the main cause of high failure rates in BTPs; that is why BTMs need hands-on skills and educational requirements that encompasses the following set of skills: 1) knowledge of business architectures (BA) and business processes (BP), 2) automated business environments (Willaert, 2010), 3) agile project management, 4) knowledge management & integration, 5) organizational concepts, 6) management sciences methodologies 7) enterprise architecture and other concrete BTP implementation artifacts (TOGAF, 2014). Therefore, the researchers recommend the technocrat profile (Farhoomand, 2004) as a management profile for such BTPs and the corresponding educational curriculum (Trad, Survey System, 2013).

Research methodology and design

The research question and knowledge gap

The work's research question is: “Which business transformation managers' characteristics are optimal for the implementation phase of (e-) business transformation projects?” (Trad, GEM, 2011)(Trad, Kalpić, IEEE, 2011). The knowledge gap was acknowledged, due to the fact that the existing literature and various methodologies, treating business transformations offer practically no insight into the profile of the BTM as an architect of adaptive business information systems (AofABIS), managing the implementation phase of BTPs (SAP, GBTM, 2013).

The literature review

The literature review has shown that the BTM's optimal characteristic is to be an AofABIS; and an important part of that phase was dedicated to the education of BTMs (Trad, GEM, 2013) (Trad, Kalpić, 2014).

The research methodology

The authors have implemented the STF research methodology, design and prototype (Trad, BAME, IEEE, 2013), to support the selection of the optimal BTM profile. Such selections can be only evaluated with the help of mixed-models that are very similar to the (re)-scheduling of activities techniques. These mixed models are based on: 1) quantitative based survey analysis and 2) qualitative beam search and grounded hyper-heuristics; that are in fact a dual-objective decision-making process (McMullen, Tarasewich, 2005)(Wes, 2001). This mixed hyper-heuristics-based reasoning model, shortly labelled STF_MHM, is a qualitative reasoning tree. The tree factors are fundamental at the future selection of the BTMs for the transformed business environment within the globally transformed (e-) enterprise. BTMs who are basically technocrats, proactive project managers and advanced knowledge workers should be capable of supporting and designing the transformation of the (e-)business environment in a proactive manner (Walsh, Kefi, Baskerville, 2010)(Trad, Kalpić, IMRA, 2013)(Walsh, Kefi, Baskerville, 2010). Accordingly, this research project unifies resources from two distinct but related areas: 1) avant-garde business management and 2) enterprise business processes-based information technologies (ABPMP, 2014). It develops a concept for the BTM's selection and proposes a method to ponder and inter-relate the BTM's various skills through the use of tuneable factors (Trad, Kalpić, EUROPMET, 2014). BTM selectors, professional analysts, project managers, auditors and advanced computer science students might benefit from this research project and methodology, which delivers major managerial recommendations and benefits. The authors have decided to select Analytical Applicative Research (AAR) methodology, for the selection and training framework (STF) research project (Chanaron, 2010) because it is compatible with the research heuristics model based on categories of factors; and is optimal for educational-based research. This research that is conducted in the context of a doctorate in business administration was validated by the researcher's supervisor (BSI, 2013).

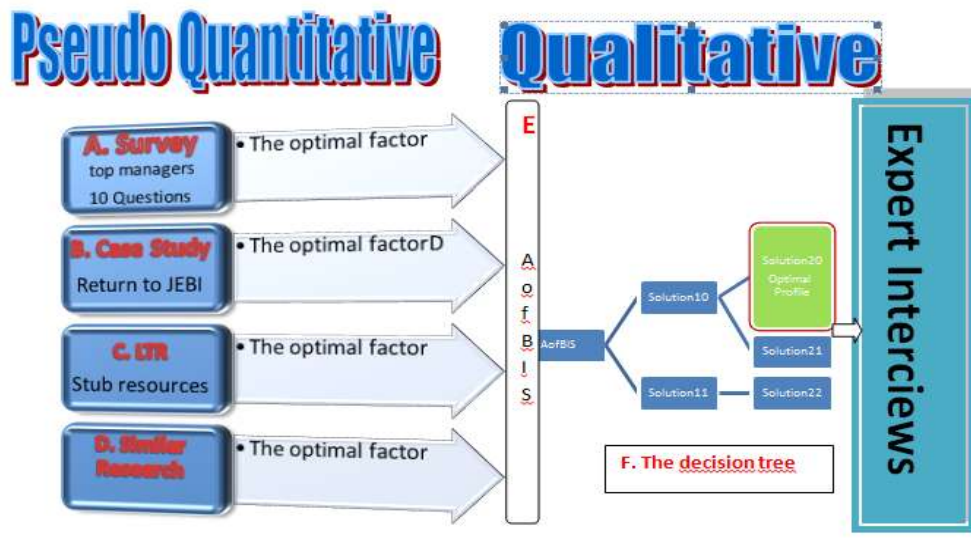


Figure 2 The mixed method flow diagram Interviews

Holistics

Transformed organizations and BTMs need more than basic Business Information Systems (BIS) knowledge and educational techniques to exploit the avant-garde technologies in order to successfully conduct BTPs. Holistics, managing complexity skills and educational concepts, require a mixed method that is mainly based on action research; a hyper-heuristics model. Such BTPs and organizations need holistic just-in-time (JIT) methodologies and educational concepts, similar to the SAP’s BTM2; that encompasses TOGAF (TOGAF, 2014)(Uhl, Gollenia, 2012). This research shows that the BTM is an AofABIS with holistic cross-functional skills (The Economist, E-management, 2000); with a business engineering education (HEC, 2014).

The Survey and proof of concept

The survey is the quantitative part of the mixed method that is made up of the set of resulting factors and questions (Trad, Kalpić, 2013). The surveyed types of specialists and managers (limited to 20 members) were: 1) business and information technology school professors and directors, 2) managers of information systems, 3) project managers, 4) human resources, 5) educational professionals and transformation managers. The surveys confirmed the research project’s hypothesis. The research shows that the BTM is an AofABIS (Trad, IMRA, 2014). Therefore, a concrete STF environment was built; this STF PoC and the final interviews should deliver the research’s final recommendations on how to select and train the right BTM profiles and to define his educational curriculum (Trad, Kalpić, ITI, 2014)(SAP, BTM2, 2012).

Factor in the form of question	Label	Answers
AofABIScharacteristics	The BTM must an AofABIS	7
...

Table 1 The STF research survey results, showing the “best” factor (question)

Managerial educational benefits and recommendations

The STF research offers a set of BTM profile and education recommendations & benefits. The STF’s qualitative reasoning process model uses the recommendations to give the BTP to tune the details of the BTM’s profile (Vella, Corne, Murphy, 2009).

By Importance	Label	...
1	The TBM must be an excellent architect of adaptive BISs (AofABIS)	

2	The BTM must have extensive experience in business transformation projects	
3	The BTM must be an excellent agile project manager	
4	Implement a light version of TOGAF/SOA/BPM	
5	BTM selection depends on the project/company and BIS context	
6	Education and training - bachelor of business engineering	
7	Basic profile a flexible and intelligence based person	
8	The BTM should be supported with a configurable decision making system.	

Table 2 The STF research list of recommendations

The profile, curriculum and pattern

The authors based their research on an AAR mixed method, that is mainly based on a hyper-heuristics approach. Such BTMs selection and education need holistic JIT methodologies, similar to BTM2 (Uhl, Gollenia, 2012). The BTMs' educational curriculum must comprise the knowledge of: business and enterprise architecture (TOGAF), automated real-time business process environments, agile project management, organizational behaviour, management sciences methodologies and concrete BISs implementation phase know-how. The researchers recommend the profile of an AofABIS and a syllabus that is adapted to such a profile (Trad, Kalpić, 2014). The profile and educational curriculum round up the STF's business transformation managers' pattern (STFBTMP). The authors' aim is to convert their relevant research outcomes into a managerially useful framework and pattern (Markides, 2011), and its hyper-heuristics tree that is suitable for a wide class of problem instances. *The authors regard this as a major business and educational benefit* (Vella, Corne, Murphy, 2009).

Conclusion

This is another article in a long series of research articles related to the STF research, which is based on the action research mixed method; the STF factors are the result of the literature review and the surveys outputs. These factors are the base of the STF's based hyper-heuristics research model. In this article, the focus is on the STF's mixed model's reasoning engine, which is specialized in finding the optimal BTMs' capabilities and educational prerequisites, through factors. These BTM's characteristics and educational prerequisites are needed to holistically manage the design and implementation of a BTP. The research will try to define the optimal BTM's profile and his educational curriculum, which should be adequate for the finalization of the implementation phase of BTPs. There has been a lot developed and written on enabling success in transformation projects, but the authors propose to inspect why BTMs fail in the implementation phase of BTPs. That is mainly due to the BTMs' lack of knowledge in managing business integration and implementation and the non-existence of an adequate educational curriculum. The most important findings in this phase are:

- *Knowledge gap*: The literature review proved the existence of a knowledge gap between the traditional management skills and educational prerequisites for BTPs (Trad, Kalpić, 2013).
- *Evolutionary Mixed Method*: This research uses an evolutionary research model in order to create the initial BTM profile and educational prerequisites (Trad, A., Kalpić, 2013).
- *The STF proof of concept (PoC)*: The PoC and interviews delivered the research's recommendations on how to select and educate BTMs' (Trad, Kalpić, Centeris, 2014).
- *Managerial recommendations, benefits and framework*: The qualitative hyper-heuristics model confirmed the survey outcomes; and delivered the managerial recommendations and benefits. The STF research project proposes a concrete framework on how to select, train and evaluate a BTM.
- *BTM Profile and educational prerequisites*: Actual environments produce general profiles that can hardly cope with heterogeneous complexity and fast changes. These high frequency changes are mainly due to the hyper-evolution of technology. The research confirms the role of BTM as aAofABIS.
- *The STF BTM pattern (STFBTMP)*: The STF's research defines the BTM profile and educational prerequisites that round up a selection and educational pattern, on how to select and train a BTM.

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