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The Selection and Training Framework (STF) for Managers in Business Innovation Transformation Projects - Business enterprise architecture integration

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Abstract

An important factor in the business transformation process of a traditional business environment (BE) into an electronic lean and automated (ELBE) one [1] is the role of the profile and educational background of the business and (e-)business transformation managers (BTM) [32]. The profile of a BTM and its relation to business enterprise architecture integration skills that have an enormous impact on the concrete implementation phase of business transformation projects (BTP). The basic profile and managerial aspects of such a business transformation manager has not been sufficiently researched in a holistic manner in order to hammer the BTM's profile and to propose the related business enterprise architecture integration recommendations, as a conclusion to this research phase; and that is the main goal of the authors' research topic [3][4][5]. In fact, currently there is no business enterprise architecture integration set of recommendations and educational curriculum for such BTM profiles [6].

This research paper deals with the business enterprise architecture integration for the BTM selection, training and evaluation; the BTM who has to manage the technical implementation phase of complex business transformation projects; knowing that the BTP's implementation phase is the major cause of very high failure rates [9][10]. The implementation of such business transformation projects require a specific knowledge of enterprise business architecture. The authors have based their research on the main fact that only around 12% of business organizations successfully terminate innovation-related business transformations projects [7]. There is evidence that that those organizations that are consistently successful at managing innovation-related changes, outperform their peers in terms of growth and financial performance [8]. Therefore, there is an essential need for more research on the BTMs' profiles and a necessity to propose the related concept of business enterprise architecture integration. Increasingly competitive business environments; like mechanistic organisations [11] are the main driving forces for investment in the transformation of flexible and efficient business environments. The success of such transformations, implementation and maintenance of business environments influences the way business-oriented processes are managed and integrated, that consequently forces business enterprise to continuously innovate. Many BTM selection factors directly or indirectly affect the business environments' transformation, into a mechanistic organisations; they especially affect their implementation phase. These factors are based on the business transformation manager's skills. In this

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research project the authors introduce a complex methodology for selecting a business transformation manager in order to finalize the implementation phase which should fully support the company's strategic and business needs. The Selection and Training Framework (STF) uses different components of the business environment to promote an iterative process of selection and training. The framework promotes the needed BTM's skills to insure the high level of reusability of existing artefacts, components and enterprise architecture paradigms. Components of this methodology have been successfully applied in the authors' consultant careers, and results are implemented in various mechanistic business environments. The optimum choice among suitable BTM profiles is the main goal of the authors' selection and training framework (STF) research project.

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"Keywords: Enterprise arcitecture, business transformation manager's profile, selection and transformation project implementation."

1. Introduction

In this research paper, the authors will try to present the business enterprise architecture integration role for the BTM selection, training and evaluation process. The STF is a step-by-step methodology that can help executive management select a BTM and help the implementation of BTP within any stage of the development; it helps in the maintenance of the resulting system. Most mechanistic organizations will be challenged to use their BTP results in order to change their business operations, re-engineer their business environment, or to re-schedule various tasks of project management plans; which could result in automating tasks that might have been performed manually in the past. Various solutions, as a result of the BTP process, could be offered: 1) implementing new transformation paradigms from emerging technologies, 2) solutions that are based on legacy systems as a better balance between costs, benefits and risk and 3) a new business environment. These adaptive business environments, which are based on stateless business objects in the form of business services, are a paradigm shift within a paradigm shift; this is a new client server revolution within the client server revolution. Stateless business objects in business services format break-up the client and server sides of an application into independent components that can interact together and roam across networks, with a unique and flexible interface definition. This paper proposes using the STF's OMS (Object Mapping System) architecture concept, to help system designers in building modern generic business services [1]. However, in all cases the STF will enable the BTM to have clearer ideas of what his or her (in further text "he") businesses and information technology needs to transform, and that will give him a clear list of all benefits of using different technologies for BTP that supports its strategic business objectives. This might be of significance when knowing that only 26% of BTPs succeed [11]. Hence the BTP activities, or BTMs, are becoming a very common intervention to save them from failure. "These facts and numbers represent a downtick 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". That is confirmed with: "2009 Standish Group CHAOS Report: Worst Transformation Failure Rate in a Decade" [15]. The author uses the most famous quoted sources of metrics for failures of transformation initiatives, which are the Chaos Reports, produced by the Standish Group over the last fifteen years. They assert that only about 29% of transformations come in on time and budget" [12][16][17].Transformation initiative for change is a critical subject for organizations. Research shows that the failure rates of such initiatives is at 70-80%, while other organizations are struggling for their projects' survival. "70% of business users of transformed systems express their dissatisfaction with the communication of objectives to employees, and 75% express dissatisfaction with training" [18].

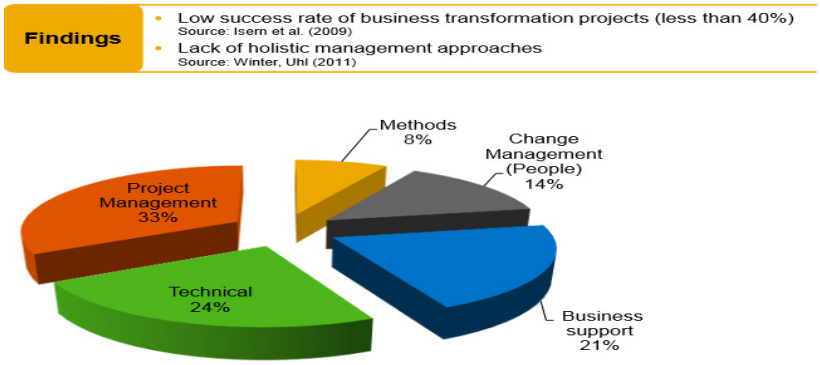

Fig. 1. The low success rate per activity in a business organization

The proposed framework assists in the selection of the managers' profile definition and in the initial coaching in the complex business transformation projects (BTP); where innovation is heavily used. Such a selection will hopefully help to minimize the failure rates in BTPs. These BTPs failure rates depend on the type of activity in the business transformation project; as shown in Fig.1., we see the technical holds a large portion. That is mainly related to the lack of a holistic approach. The STF is aimed to various business domains; to become mechanistic organizations. This framework will select the future BTMs, who are capable of designing the change processes; and who are also specialized in diagnosing some of the problems endemic to transformation processes. It can be likewise used to select the right BTM and thus to improve the success rate of BTPs [35]. Business transformation is a crucial business topic, and a set of frameworks exist for: 1) planning business transformation [26], 2) designing an overview of the transformation process [27], 3) alignment with strategic objectives [28] and many others. This proves the importance of business transformations for a business enterprise.

Business process modelling and business services

Figure 2. *The management pyramid* [3].

The BTP success risk is important, because it is an important business engineering paradigm shift, hence a very risky undertaking deed; that is why there are very high failure rates in such projects. Where the role of the BTM is fundamental. The paradigm shift in business is an important phenomenon and that adds difficulties to the business transformation projects. The main reason is that business strongly incorporates technology and currently witness the change in how the business is done and managed [45].
Today we have mainly intra and extra collaborative business process driven BTPs and they represent today's innovation's avant-garde. BTPs must glue the various levels of the business environment, through the technology stack, as shown in Fig. 2, which permits a holistic management of the BTP [36][37]. In avant-garde BTPs' related technologies, business service oriented architecture plays the most crucial role in interconnecting the company's various business processing nodes. That is fundamental for the BTP and the corresponding implementation of enterprise's business integration activities. This activity of interconnecting the company's various business processing nodes, is known as unbundling, that is an extremely complex and causes major resistances; consequently that causes the BTPs to fail [38]. The STF offers a selection and training framework, where the training part is supposed to enhance the BTM's knowledge by adopting a Business Process Oriented Knowledge Management approach (BPOKM) [43].

Research methodology and design

This research phase, that focuses on the impacts of the mechanistic enterprise's architecture integration, uses the hyper-heuristics reasoning model [50]. This reasoning model offers the optimal BTM's profile and offers guidance for the business enterprise architecture integration for the complex and lean BTPs [1]. This business enterprise architecture integration concept is fed in the form of factors into the framework's reasoning model, which will deliver the most important BTM characteristics who can handle such an undertaking [13].
The project's research question is: "Which business transformation managers' characteristics are optimal for the implementation phase of (e-)business transformation projects?" [6][22]. The knowledge gap was acknowledged, mainly due to the fact that the existing literature, on failure rates and on various methodologies treating business transformations, offer practically no insight into the profile of the BTM as an architect of adaptive business environments (AofABE). A profile who proposes a set up of business enterprise architecture integration concept and who can manage the implementation phase of BTPs to finalize the mechanistic business environment [21][24]. The research model confirmed the BTM's profile, which is mainly based on the AofABE profile. The researchers have decided to interview specialists in this field. With The STF research was concluded with the managerial recommendations.

1. The role of experience

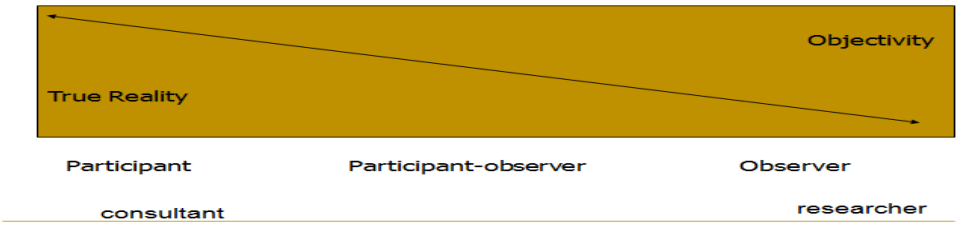

Figure 3. The synergy between real world experience and research outcomes [29].

This research project is based mainly on the authors' experiences as a lecturer, senior transformation

consultant, system designer, project manager and auditor in the domains of business engineering and respective information systems consultancy. In their carriers, the authors often encountered projects with serious problems having a very high rate of unsuccessfully terminated BTPs. That is the authors' main motivation to pursue this research and to contribute to this endemic problem related to complex BTPs in mechanistic business environments; and to promote an effective business transformation manager selection and training concept. The authors' real world experience is optimal for formalizing the research project's theory, where they are observers and actors at the same time. Unfortunately the difficulty lies in the duration of business transformation projects that take many years to be finalized.

2. The model's factors and managerial recommendations

There is a need for a specific holistic profile definition for BTMs and in this research project we defined the managerial recommendations and business benefits; through the framework's concrete decision support system (DSS) that would helps to fulfil the BTM's selection task; where a holistic business and enterprise architecture profile is essential [28]. The main issue here was how to define the background and selection aspects of the BTMs' profile; and how to interrelate the different business-enterprise architectural skills that are required [40][41]. This research paper proposes a concrete framework based on factors that support BTMs selection and it directly influences the success of the BTPs, especially in an environment of highly automated BEs and in a virtual multicultural environment [42].
The research model and the proof of concept defined this research project's set of managerial recommendations for the BTM selection, training and evaluation; 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 [9][10].
In this section the authors present a short list of the STF research managerial recommendations. The research methodology is based on the axiom that "1" hypothesis has a "1:1" relationship with "1" managerial recommendation and also a "1:1" relationship with a corresponding factor. These managerial recommendations are sorted by the order of importance:

1. The BTM must be an AofABE.
2. The BTM must have experience in business transformation projects.
3. The BTM must be an avant-garde innovation project manager.
4. The BTM has a holistic profile.
5. The STF is an applicable framework.
6. The BTM profile definition, managerial recommendations, educational curriculum and a real-world STF framework, round up the STF's BTMs' pattern.

The market actually needs optimal BTMs profiles that have an adequate academic background, which is adapted to the middle and executive management levels, in order to manage and integrate complex BTPs successfully. The basic BTM profile must be schooled to be able to: 1) use a decision making processes, 2) design and coordinate the BTP's implementation phase, 3) preferably he has to have two majors (business and information technology) and 4) to monitor the ELBEs' status in real-time. The result of the STF is a concrete real world framework. The impact of the articles related to the STF research, can be resumed in the following facts: 1) that the research methodology and design, as well as the mixed mathematical model are credible and 2) the global overview hammers the holistic view [31].

The proof of concept

The survey is a quantitative part of the mixed method that is based on a set of resulting factors and hence the questions, stemming from the literature review [30][31]. This research process and the executed survey have also shown that the BTM is an AofABE [4]. The qualitative hyper-heuristics qualitative part can be used to tune the STF factors [14]. A concrete STF environment was built; and is considered as the STF's proof of concept (PoC) and the final interviews have delivered the research business enterprise architecture integration concept on how to select and train the right BTM profiles and to define his educational curriculum. The educational curriculum is essential for such a BTM [32][33]. The STF research project generated a set of concrete software based framework elements, as shown in Fig. 4. This framework in the form of proof of concept is made up of the following concrete software components:

1. The cockpit that manages all the other STF components.
2. The survey artefact is a dynamic Microsoft word document that reflects the survey results to the STF framework.
3. The aggregator samples and aggregates the presented survey results.
4. The charting component presents the results as charts and diagrams.
5. The STF system can receive input from a flat file or a relational database.
6. The heuristics module represents the research's model.

Fig. 4. A view on the STF's real world software components.

As shown in Fig. 4, the heuristics software component can be launched independently. This component is used to tune the characteristics of the BTM, who should adapt to the specific situation. The STF research offers a set of BTM profile selection, training and evaluation-related managerial recommendations; that are supported by a real world software framework. This framework also includes a BTM and BTP in a central knowledge database, as shown in Fig. 5. These components are well interconnected and they are bounded by the flow of information. This information derived from the literature review and brings a pool of factors and hypotheses. From there the questions are extracted for the survey setup, the result of the surveys is fed into the STF aggregator and a set of reports are generated from these resources. These components were built in various laboratory works at Webster University in Geneva [13]. These models suit the research model for the characteristics of an "ideal" business transformation manager who can manage complex changes and innovation processes. The pilot is composed of the following most important sub-systems:

1. A design document; that should present the pilot's structure.
2. The DSS as a heuristics knowledge model; the pilot's DSS is not meant to replace a decision maker, but to extend his decision making capabilities [49]. In this work it is done so that the manager extends his knowledge.
3. The survey system to be used by business transformation managers.
4. The literature review components, which factors are fed in the knowledge management system database.
5. These factors are formatted in the form of research items.
6. The knowledge management system database serves as the research items database.
7. The support system (DSS) is the STF's reasoning, which factors are extracted from the knowledge management system database.
8. The STF web client interface, serves to setup the system for the BTM's selection.

The STF cockpit manages all the STF real-world components and synchronizes the streams of data. The cockpit is the STF research project's proof of concept. It makes easier for the future users of the STF to manage the various aspects of the selection and training processes.

The proof of concept uses the "model view controller" (MVC) architectural pattern, that collects the model data. This prototype is a real world decision support system (DSS) that can be used by middle managers. The proof of concept is a real world system and is considered to be a concrete managerial benefit [34]. The heuristics software component can be launched independently. This component is used to tune the BTM's characteristics who should adapt to specific situation.

Business enterprise architecture integration

The STF research offers a set of requirements for BTM profile's selection, training and evaluation related to business enterprise architecture integration; that are supported by a real world software framework. This framework also includes a BTM and BTP knowledge database, as shown in Fig. 5. Such a company-specific framework can be integrated in real world enterprise architecture frameworks, like The Open Group Architecture Framework (TOGAF) [31].

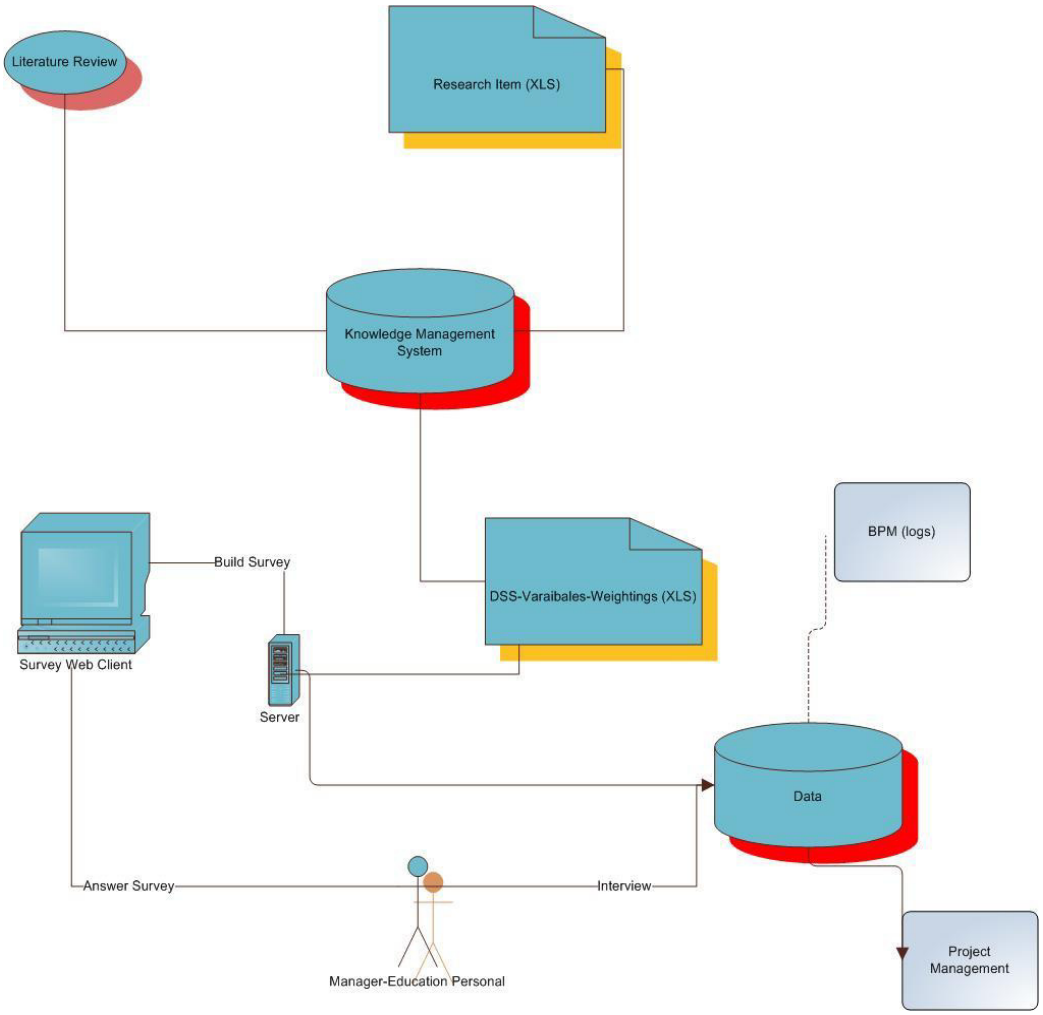

Figure 5. The PoC/pilot block diagram.

1. Holistic meta-management approach

For the BTM to have a holistic profile is the most important recommendation. This research shows that the BTM is an AofABE with holistic cross-functional skills [9]; with a business engineering education [46]. The preferred basic profile is a flexible and intelligence-based person that has cross-functional capacities. Transformed organizations and BTMs need more than basic business information systems (BIS) knowledge and educational techniques to exploit the inter-related avant-garde technologies in order to successfully conduct BTPs. Managing of complex skills and educational concepts, requires a mixed method that is mainly based on action research; a hyper-heuristics model [31][32]. The implementation in the real world is done by the selection of a right BTM that has his main quality and has been proven in the industry.

2. The role of experience

The BTM must have extensive experience in business transformation projects. The BTP's implementation phase is the main cause of high failure rates in BTPs; that is why BTMs need empirical hands-on skills that encompasses the following: 1) knowledge of business architectures (BA) and business process management (BPM), 2) automated business environments; like mechanistic organisations [11][19][47], 3) agile project management, 4) knowledge management & integration, 5) organizational concepts, 6) management sciences methodologies 7) enterprise architecture and other concrete BTP implementation artefacts [31]. Therefore, the researchers recommend experienced technocrat profile [38] as favourable for such BTPs with respective educational curriculum [34].

3. The role of an architect of adaptive business environments

Meta-management and business integration requires a special profile. The BTM must be an avant-garde innovation project manager. The BTM must be an excellent agile project manager, who is capable of implementing a very light version of the disciplines TOGAF, Service Oriented Architecture and BPM. The use of BPM will enhance the management of knowledge and help in the selection of a BTM. Such need for a specific profile requires a special educational curriculum. Future BTMs need to have the ability to deeply understand each company's unique business architecture, and to swiftly identify business transformation steps and to effectively implement them into their business processes as the basis for a future sustainable profitable based ELBE. According to the latest Gartner Study, "the ability to apply versatile and extensive methodological skills in managing business processes is the number one business priority for successful entrepreneurial activities" [32]. The implementation of this managerial recommendation in the real world is done by the selection (STF) of right BTM that has this main quality and at least some education in business and/or information technology.

4. Management decision support system

Such a profile in transformation project needs to be supported by a specialized support system. To support BTM, this paper will propose a framework to select, train and evaluate them. This framework will be in a form of a heuristic Decision Support System (DSS) [49].
The authors regard this as a major business and educational benefit [50]. The STF's decision tree, results in a set of possible solutions that determine BTM's skills. This tree can be also represented as an implementation of business processes modelling (BPM). Such a solution is optimal, because then the STF knowledge is stored in the business information system [21][34]. The implementation of this managerial recommendation in the real world is done by the selection of right BTM who has this quality and the experience in using decision support systems; here the authors consider that it is a selection, evaluation and training activity, while hoping that everything goes well.

5. The role of existing business enterprise architecture frameworks

Such a profile in transformation project needs to be supported by a standardized business architecture framework. The leading framework in business enterprise architecture is the open group architecture framework that the business transformation manager can use to establish a business transformation architecture blueprint. That would be a recommended approach to follow in order to structure the business transformation projects implementation phase. Such a transformation approach should be based on the following steps: 1) Unbundling through atomic business services, 2) Business modelling and integration: To

become robust and available and Business infrastructure integration: It is an essential element today, especially for automated business environments to become robust and available. The implementation of this managerial recommendation in the real world is done by the training of the selected BTM who should have had the minimal experience before.

6. Uunbundling, the role of atomic business services and the unbundling of the monolithic system

The BTM must have extensive knowledge of service oriented architecture in BTPs to unbundle the actual business monolithic environment into an automatized bank of stateless business services. This process is setup in order that the BTM can rationalize the enterprise's resources and synchronize them with the business processes through the enterprise architecture framework. For various business environments; like mechanistic organizations; because it has a generic approach. This research and framework is a business driven and cross-functional approach where the technology is very important because it uses atomic business services to glue the various components of the business environment and it gives it the needed leanness.

7. Business modelling and integration

The BTM must have extensive knowledge of business process modelling in BTPs to manage the implementation of the existing business scenarios, into an automatized set of business processes. These process setups insure that the BTM rationalizes the enterprise's business scenarios and enable inter-enterprises eco-systems development through the business enterprise architecture framework. The implementation of this managerial recommendation in the real world is done by the training of the selected BTM who should have had the minimal experience before; here the authors consider it as a minor selection criterion.

8. Business infrastructure integration

The BTM must have extensive knowledge of business infrastructure integration in BTPs to manage the implementation of the existing platform nodes, into an automatized and highly available enterprise business infrastructure. This process is setup, in order to insure that the BTM can rationalize the enterprise's business platform nodes and to enable intranet and extranet business communication through the enterprise architecture framework control. For various business environments; those are transformed into mechanistic organizations; with a generic business driven approach, where the business infrastructure implementation is a very important factor to glue the transformed business environment to the external world, and to give it the needed leanness. The BTM should also implement the performance evaluation criteria used to monitor the progress of the architecture transformation [31]. The implementation of this managerial recommendation in the real world is done by the training of the selected BTM who should have had the minimal experience before; here the authors consider that it is an un-important selection criterion.

9. The role of soft skills

The subject of soft skills management is a subject to many writings and research projects, that is why in this paper the authors do not treat how does the BTM manage human factor, and the staffs behavioural and cultural aspects in the implementation phase. The implementation of this managerial recommendation in the real world is done by the selection of right BTM that has this very important quality and that he has proven it in the industry. This subject is out of the research scope and the authors consider that it has been already researched by many scholars.

Conclusion

This is another article in a long series of articles related to the STF research, which is based on the action research mixed method and motivated by high failure rates. The proposed STF factors and business enterprise architecture integration are a result of the literature review, surveys outputs and interviews. These factors and business enterprise architecture integration concept is the base of the STF's hyper-heuristics research model. In this article, the focus is on the STF's business enterprise architecture integration, which is needed for finding of the optimal BTM's profile to holistically manage the design and implementation phase of a BTP. 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 a BTP. That is mainly due to the BTM's lack of knowledge in managing business integration and implementation and the non-existence of adequate business enterprise architecture integration for such research question. The most important findings in this phase are: 1) The STF proof of concept (PoC): The PoC and interviews proved the approach and delivered the recommendations on how to select and educate BTMs [38] and Business enterprise architecture integration, benefits and framework: proposes a set of recommendations on how to proceed with the transformation process using a business enterprise framework. The business transformation manager must attempt holistic implementation that is "*a proven approach that unites all disciplines in an organization to collaborate together to enable disruptive change*" and where "*…a few things have become clear: business transformation leaders require technical skills to define comprehensive and complete technical solutions and equally important, also require skills to build consensus among all affected stakeholders*". In a meta-managerial business driven coordination, the information technology is a commodity used to glue the various business components [20].

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