

Towards a Framework for B2B Integration Readiness Assessment and Guided Support of the SMEs

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Abstract. In today's world with companies operating in a global business environment. Most enterprises, and especially the SMEs, lack the necessary business culture, technical and non-technical infrastructure and economic flexibility in order to efficiently adjust to the environment of a B2B integration framework. This paper proposes an Enterprise Integration Assessment Framework (EIAF) and its support software system that aims to aid enterprises in adopting a multienterprise (B2B) integration approach by evaluating its situational status and by estimating the expected integration impact based on the evaluation results.

Keywords: B2B integration, readiness assessment, interoperability, impact assessment, performance indicators.

1 Introduction

In today's competitive business environment, companies are seeking ways to perform transactions efficiently and effectively. The Internet has created a flexible platform for the buying and selling of products and services. As businesses recognize the need for employing efficient methods for the vertical exchange of goods and services, they are considering the adoption of functional business-to-business (B2B) applications and technologies that allow transactions in "real time." [2]. The purpose of B2B integration is to improve profitability through establishing relationships with other organizations that will allow supply-chain planning, collaboration, product pricing, logistics and distribution management, and procurement efficiencies [1].

Modern B2B technologies, have solved major technical issues of traditional EDI but due to a vast number of non-technical adoption barriers, the efforts for business-to-business integration are still enormous [10]. Although there are some approaches and guidelines available that address the adoption phase, most Enterprises, especially the SMEs, struggle to overwhelming the existing hurdles due to the following key-barriers. To solve the current issues, we present a comprehensive framework that measures the readiness of an enterprise to adopt a multienterprise (B2B) integration approach and, based on the findings, provides thereafter guided support to the SMEs with a view to overcoming the related barriers.

2 Methodology

2.1 Framework Overview

The Enterprise Integration Assessment Framework (EIAF) presents a research framework and a web-based platform with an aim to aid the Enterprises, and especially the SMEs transition to a B2B integration environment. The EIAF will provide insight for the B2B integration adoption phase by:

- Recognizing and classifying common integration patterns and styles
- Identifying key technical and non-technical factors that affect the transition
- Presenting a comprehensive methodology for the assessment of an Enterprise's readiness to integrate with other Enterprises
- Identifying aspects that affect the integration impact
- Developing a "knowledge framework" which can support the enterprises in their brainstorming for B2B integration

2.2 Framework's Design Scheme

2.2.1 Modelling an abstract B2B integration framework

The first step in the conception of the EIAF framework is the abstraction of existing and upcoming B2B integration architectures and solutions. The abstraction process involves the study and analysis of the most important both dominant and promising integration technologies, solutions and standards. This analysis will lead to a categorization and classification of the involved patterns based on both technical and non-technical aspects of a B2B integration solution. Then, a generic model will be produced for each possible abstraction of two or more categories.

The output of this procedure will be a set of generic enterprise application integration models covering a broad range of integration styles and technologies.

2.2.2 Specification of the Assessment Indicators

In order to specify practical and appropriate evaluation indicators measurable objectives must be first identified clearly. Based on the prototype B2B integration framework model, a number of goals can be realized through discourse and negotiation with representative enterprises, such as seamless data exchange in automated transactions between suppliers and partners that is characterized by maintainability, trust and confidentiality, strong security, low implementation/integration cost/effort, low operational cost/effort, value-added functionality, high quality of service aspects, such as speed and availability. For each section and integration level the appropriate indicators are conceived on the basis of

that they are related to one or more of the defined goals. Since hundred of combinations can occur, the number of indicators must be set to the minimum possible by eliminating indicators that coincide with each other or indicators that are expected to offer the lowest visibility of the objectives.

2.2.3 Design and development of the evaluation methodology

EIAF's evaluation methodology will be based on one thorough questionnaire that will contain all the questions depending on the business sector of the enterprise. In both cases, questions represent one or more assessment indicators. A basic question for example could be "What is the number of (major) internal IT control breaches during this year?" Since most questions refer to intangible assets, a normalized performance scale must be defined, and all answers (belonging to different measures - percentage, numeric, pre-defined choices) must be transformed to values in the common normalized scale. In order to achieve this, for each question different quality points L_i should be defined that have corresponding points to the normalized performance scale. The performance indicators FID are conflated with given weights w_i in a similar way in order to produce a performance value for each Indicator Category. Then intermediate tables are used that contain the indicator value thresholds with the corresponding performance score descriptions (Excellent, Good, Fair, Poor, and Very Poor) for translating these values into graspable scores.

2.2.5 Performance Impact estimation design

Enterprise integration has been found to lead to improved enterprise performance [7][8][9]. In the context of EIAF's assessment framework performance impact means that a B2B integration solution when used in the enterprise and interdependencies environment will improve some unit level performance measure. EIAF's will provide a rough impact estimation that depends closely to a vast number of input parameters provided by the stakeholders in combination with the B2B integration readiness results. These parameters are organized to macroeconomics, legal and statutory framework, pricing, integration effort, the exchange's technology vendor relationships, the exchange's partnerships and members.

2.2.6. Design and development of the support software system

In the context of the EIAF project, a modern technological platform is developed to support the application of the EIAF methodology in a cost-effective and easy manner. This platform is an intelligent web based system which will evaluate the situational status of a member Enterprise. More specifically, it will provide the level of readiness to adopt a B2B integration solution, detailed analysis of the evaluation results and an in depth examination of the weak points that diminish the worth of the B2B integration

3 Conclusions and Future Work

The primary contribution of this paper was to propose a research methodology that evaluates the readiness of an enterprise to adopt a B2B integration solution. Future work includes collecting the complete set of the assessment indicators, adjusting the evaluation method and proving the framework's merits by collecting data and performing statistical analysis to validate each of the proposed methodologies. Work is going forward on using the research framework to understand SMEs B2B integration in the Greece. Additional findings and results are expected during the EIAF system's pilot operation that will be circulated through further dissemination activities.

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