An Organization-Wide Approach for Assessing Strategic Business and IT Alignment

Mathias Ekstedt PhD, Narcisa Jonsson PhD student, Leonel Plazaola PhD student, Enrique Silva Molina PhD student, Norman Vargas PhD student
Industrial Information and Control Systems, KTH - Royal Institute of Technology
Osquldas väg 12, SE-10044 Stockholm, Sweden

Abstract

Contemporary firms operate in a dynamic environment for a number of reasons such as new technologies, entrepreneurial ideas, strategic alliances, mergers and acquisitions, and regulatory changes. A key for a well-functioning company is an information technology (IT) that is efficiently deployed to support the business objectives.

Keeping business and IT strategies aligned as they evolve has been for several years in a row ranked amongst the top concerns of companies' executives. Despite this fact, there are few documented concepts and operation approaches for assessing business and IT alignment. This paper builds on one of the most well known works in this area, namely the alignment maturity model proposed by Jerry N. Luftman.

On-going research proposes further development of Luftman's approach in terms of measurability, traceability, and organizational involvement. This paper describes an organization-wide assessment approach, where the maturity model criteria and attributes are assessed with sub-questions for clarity. The questions are translated into a questionnaire that addresses a wider set of respondents from all levels of the business and IT organizations respectively. For the cause of credibility, the questionnaire triangulates the posed questions by collecting evidence from both direct interviews as well as alternative sources such as documents. Results from applying the proposed approach in two case studies in companies in Sweden and Nicaragua are presented.

I. INTRODUCTION

Contemporary firms operate in a dynamic environment for a number of reasons such as new technologies, entrepreneurial ideas, strategic alliances, mergers and acquisitions, and regulatory changes. A key for a well-functioning company is an efficiently deployed information technology (IT) supporting the business strategies, goals, and needs. The strategic business and IT alignment (from here on shortened to alignment) will be interpreted in this paper as a continuous process of conscious and coherent interrelation of all components and personnel of the business and the IT in order to contribute to the organization's performance over time [12]. This definition emphasizes the nature of alignment: it is evolutionary,

covers different levels of organizational hierarchy, it ranges from strategic to operational issues, and includes the human factor.

The importance of the alignment has been reported as an organization-wide issue that directly influences the company's overall performance [18]. It is claimed to be a necessity to realize benefits from investments in IT [9]. This realization grows in importance as companies strive to link technology and business in the light of dynamic business strategies and continuously evolving technologies [6]. The strategic benefit of deploying IT to support business functions is moreover seen as the basis for sustainable competitive advantage [13], and it has been reported to be positively associated with business performance indicators such as market growth, financial performance, and product-service innovation [1].

Taking into consideration the above, it is not surprising that Luftman, along with many other authors, reports that alignment has been at, or near to, the most prominent concern of business executives in studies conducted by academics, consultants, and research firms [7]. Accordingly alignment is also a recurrent theme in the information systems and information technology literature [17], [4], [2], [6], [9], [7], [12], [13], [15].

Despite the fact that alignment is an issue of utmost importance, the majority of publications are rather vague in terms of how to practice alignment [12]. Luftman has visualized the alignment problem by comparing the difficulty of aligning IT and business with drawing a line in the sand of Sahara dunes, and Ciborra portrays this complexity like building a bridge between two constantly moving shores, technology on the one side and business on the other side [2]. The complexity of this dynamic and evolutionary alignment has been tried to be pursued through assessments. Measuring the "as-is" alignment situation can serve as input for an informed decision-making process for a desired "to-be" scenario in terms of identifying and pinpointing problems and opportunities that need to be addressed to improve the alignment. Though, since there is no simple undisputed or absolute way to measure alignment, assessments have to be performed in according to the theoretical constructs of alignment that is currently being developed [2]. This paper makes a contribution within one such theoretical framework of alignment proposed by Jerry Luftman [9] by proposing an alternative organization-wide approach for performing assessments since the credibility of the originally suggested method can be enhanced.

In section two, the paper delves into the concept of alignment theory in general and briefly presents Luftman's theory in particular. Section three deals with the method of how value is ascribed to the theory where Luftman's method is

examined thoroughly. In section four, the organization-wide approach to strategic alignment assessments is described along with its benefits and drawbacks compared to Luftman's approach. Two case studies in witch the approach has been performed are presented in section five. Finally, the paper is concluded and further works is presented in sections six and seven respectively.

II. ASSESSING ALIGNMENT

The history of theory-building around the concept of alignment is still young and has only been going on approximately 15 years [16], [7]. The most widespread and accepted framework of alignment was proposed by Henderson and Venkatraman in 1993 [4]. This theoretical construct, also known as the strategic alignment model (SAM), describes the phenomenon along two dimensions, see Figure 1. The dimension of strategic fit differentiates between external focus, directed towards the business environment, and internal focus, directed towards administrative structures. The other dimension of functional integration separates business and IT. Altogether, the model defines four domains that have to be harmonized in order to achieve alignment.

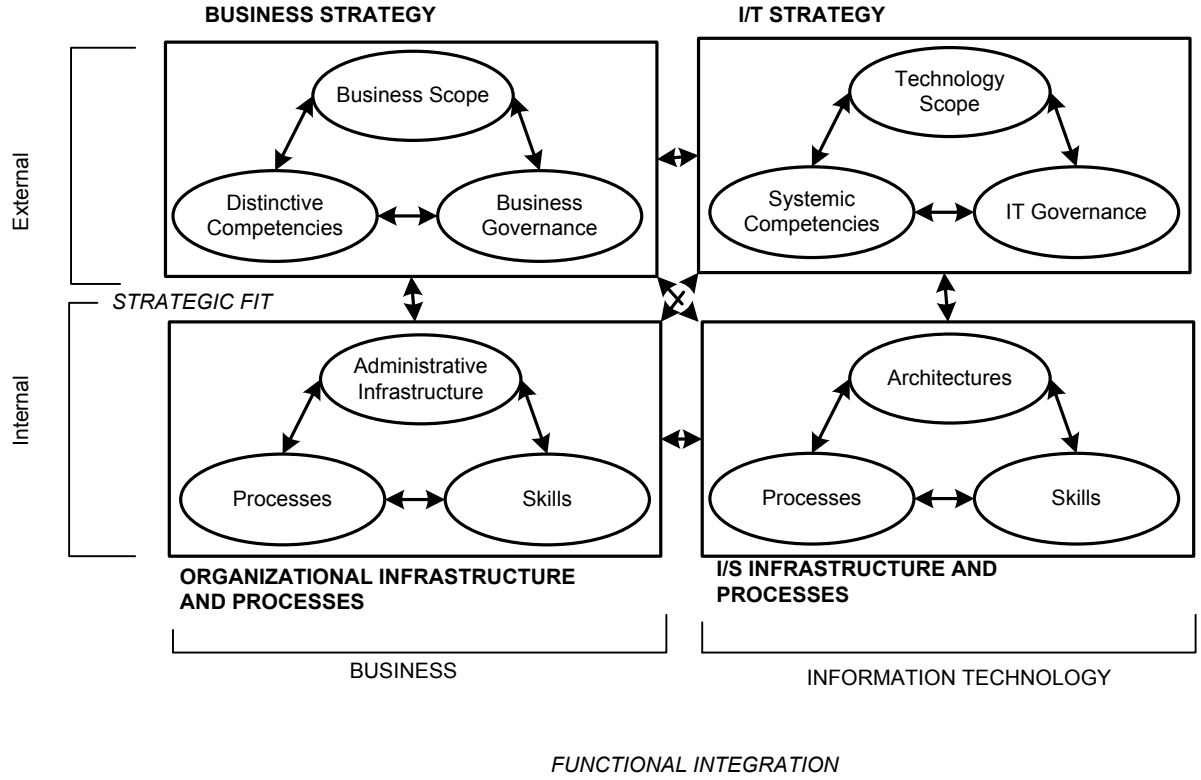

Figure 1 Strategic Alignment Model (SAM), adopted from [4]

Basically, all later alignment models and consulting practices start out from Henderson and Venkatraman [12]. For instance, Luftman [6] refined the strategic alignment model (on which the work presented in this paper is built) through developing critical management issues inside each of the four domains. The external dimension deals with scope, core competences, and governance. The internal dimension deals with work processes, skills required to manage and operate the processes, and administrative business/IT infrastructure. From such theoretical foundations, assessment models are being developed with the purpose to indicate a value of alignment.

A. Assessment as Theory

Assessment frameworks in general propose how a given phenomena can be described by a set of underlying components that can be measured in terms of some certain properties. Typically, these properties are used because it is easier to find empirical values for these compared to the original phenomenon as such. The assessment framework consists of a set of principles and rules that combine the sub-properties of the phenomenon, all with the purpose of performing analyses. We may think of the framework as a hierarchical breakdown structure of more and more concrete phenomena. Therefore, in other words, an assessment framework constitutes an operationalized theory of the original phenomenon under consideration. In principle we may differentiate amongst three types of theories; 1) those that define the phenomenon under consideration with other more concrete phenomena, 2) those that describe correlation relationships, and 3) those that describe causal relationships between the phenomenon under consideration and the sub-phenomena i.e. measurement points [5]. The weakest type of theory is the definitional theory since it cannot, by definition, be falsified by empirical data. Such theories can only be evaluated for relevance and reasonableness; in the end, we will have the choice of believing in them or not. The latter two, on the other hand, can be validated in relation to the real world. In order to falsify any theory some other "true value" of the property under consideration must exist to validate against. The same is also valid for causal relationships where an underlying explanation is needed for connection between cause and effect.

B. Strategic Business and IT Alignment Theory

In the field of strategic business and IT alignment, we typically find competing theories of the definitional kind since no true value of it is available to compare with. As already mentioned, there exist several theories (typically labeled models or frameworks) that describe the nature of the phenomenon alignment [4], [3], [12]. In particular, two assessment theories of alignment are widely published; one proposed by Jerry Luftman [9] and the one proposed by Raymond Papp [15],

[14]. In many respects the two theories are equal. Both aim at meeting the challenge of developing metrics that can be used across different organizations, as well as to keep the data of these metrics as objective as possible so that the interpretation of the same factor does not differ with different people across the organization.

In this paper we adopt Luftman's Strategic Alignment Maturity Model [7] is the theory that correctly describes the complex phenomena alignment since it is empirically well founded. It is based on a combination of twelve relationships between components of SAM and research results from previous studies on inhibitors and enablers of alignment [11] and has been used in 60 global companies [8]. The fact that we consider the Strategic Alignment Maturity Model as truly representative theoretical constructs of alignment might, of course, be argued against by some. However, that discussion is not the subject of this paper.

Luftman defines alignment by six criteria [7]:

Communications: The exchange of ideas, knowledge, and information among the IT and business organizations, enabling both to have a clear understanding of the company's strategies, business and IT environments, priorities, and what must be done to achieve them.

Competency/Value Measurements: The use of measures that demonstrate the contribution of IT and the IT organization to the business in terms that the business understands and accepts.

Governance: The degree to which the authority for making IT decisions is defined and shared among management, and the processes managers in both IT and business organizations apply in setting IT priorities and the allocation of IT resources.

Partnership: The relationship among the business and IT organizations, including the IT organization's involvement in defining business strategies, the degree of trust between the two organizations, and how each perceives the contribution of the other.

Scope and Architecture: The extent to which IT is able to provide a flexible infrastructure, evaluate and apply emerging technologies, enable or drive business processes, and provide customized solutions to meet customer and internal needs.

Skills: The practices such as training, performance feedback, encouraging innovation, and providing career opportunities, as well as the IT organization's readiness for change, capability for learning, and ability to leverage new ideas.

For each criterion Luftman further defines several (sub-) attributes, to be exact, thirty-eight for the six criteria in total [7], [9]. The criterion and belonging attributes are presented in the table below:

Table 1 The Communications criterion and its belonging attributes

Criterion	**Attributes**
Communications	Understanding of business by IT Understanding of IT by business Inter/intra organizational learning/education Protocol rigidity Knowledge sharing Liason(s) effectiveness

The attributes constitute the lowest, hence the operationalized, level of the theory. Luftman bases the assessment on the concept of identifying a maturity level (in line with the Software Engineering Institute's Capability Maturity Model concept), hence each attribute is to be assessed on a Likert scale from one to five. The numbers of the scale follow a general meaning for all attributes: 1 - means that this does not fit the organization, 2 - stands for low level fit for the organization, 3 - is moderate fit for the organization, 4 - determines that this fits most of the organization, and 5 - describes strong level of fit throughout the organization. The maturity level of a criterion is calculated as an average of the below attributes, and the overall maturity level of business and IT alignment is calculated as an average of the six criteria.

Luftman argues that experience shows that no single activity will enable an organization to attain and sustain alignment since there are too many variables to deal with. The knowledge of the maturity of the strategic choices and alignment practices makes it possible to see where the organization stands and how it can improve. Once the maturity is understood, the assessment method provides the organization with a road map that identifies opportunities for enhancing the harmonious relationship of business and IT. The careful assessment of an organization's alignment maturity is an important step in identifying the specific actions necessary to ensure that IT is being used to appropriately enable or drive the business strategy [9].

We stand behind the concept that the final score of alignment is not the most important output from the assessment of alignment; at least not in the case that assessment of alignment has been performed for the first time in an organization in order to understand alignment. In the case that assessment of alignment is incorporated in an organization as a dynamic process repeated regularly then the score of assessment becomes important for comparison. The most probable case is that the organization would like to investigate relative development of alignment: "Are we doing better now than last

time?" Over a longer period it would probably be interesting for the organization to correlate the improvement in alignment to other indicators of the business result: "Does better alignment result in business benefit?" or "Does better alignment result in decreased return on investment for IT-systems?" The importance of assessment score increases if assessment of alignment is to be used as an instrument for continuous organizational improvement.

III. CONDUCTING ASSESSMENTS

A. Applying Theory

As argued in section two, this paper will not discuss correctness of the theory; rather Luftman's Strategic Alignment Maturity Model is simply used as a true theory of alignment. The quality of the result produced by the theory may however vary depending on the correctness of the empirical data used. If we feed non-credible data to the theory, our resulting assessment will also be non-credible and consequently of little value. Two standard ways of ensuring quality of empirical data is to perform data validation and verification. Validation is the process of ensuring the absence of systematical biases in the empirical data measurement. Verification is the process of ensuring accuracy of correctness or truth.

Not only the empirical data that we use in the theory must have high quality, also the theory as such must be explicit and clear in its analysis procedures. A quality strived for in all research studies is replicability, and in order to achieve this, the theory must require operationalized inputs. If the theory does not clearly define how the phenomenon under consideration in the end is to be measured, then the results will greatly vary depending on the facilitator; this is an undesired property for any theory.

B. Applying Luftman's Theory

Luftman proposes that his theory should be applied in workshops. The assessment of each criterion is to be determined through achieved consensus between business and IT-executives. Luftman claims that according to his experience discussions among the executives help to ensure a clearer understanding of the addressed problem [13]. In the assessment of an organization typically ten to thirty of IT and business executives participate, depending on whether a single business unit or the entire enterprise is being assessed. This can be done in three ways: in a facilitated group setting, by having each member complete a survey and then meet to discuss the results, or by combining the two approaches if it is not possible for all the group members to meet. The team agrees on a score for each attribute. The group of executives

reaches a consensus on what level to assign the organization. Averaging the individual scores does this, in most cases. Some companies adjust the average because they give more weight to particular practices [9], [7].

As argued above, the alignment assessment will never be more accurate than the accuracy of values assigned to the low-level attributes of the theory. If the executives who evaluate these attributes do not have a common perception of the attributes they can reach consensus on different issues without being aware of it. We claim that descriptions of maturity levels that attributes may reach are abstract and can be interpreted differently by different people. Although a professional facilitator leads an assessment session, it is still possible that executives agree on a value having different things in mind.

In addition, even though a single assessment led by a facilitator may be accurate there is a problem of reusing the theory since many of the thirty-eight attributes are not clearly operationalized. For instance, in the attribute IT- business relationship the organization scores one if IT/business relationship isn't managed, scores two if it is managed on ad-hoc basis, three if processes exist but are not always followed, four for processes that are complied with, and five if processes are continuously improved. What exactly do those levels mean? From an executive's standpoint, it might be enough that a process exists and that there is a person responsible for it to make a conclusion that processes are continuously improved (level 5). Somebody else within the same assessment team may lean more towards the interpretation that the process is not managed if it is not followed up and reported regularly (level 1).

Yet another problem is identified if we go a step further and presume that an organization actually encourages executives by relating their personal bonus to implementation of processes across the organizational boundaries, we may find that executives within that organization are particularly keen to have a positive consensus on this category. Here we can also see an advantage of using clearly operationalized metrics.

According to Luftman [13], the main benefit of the alignment maturity assessment process is that business and IT-executives become aware of issues related to alignment and understand their implications and what needs to be done to improve it. The examples above illustrate that there is always considerable risk and potential perturbing impact on the results of the method and theory if the used terminology for the description of the alignment attributes may be understood and interpreted differently, even though people gathered in the same room have actually a pretty good chance of making sure that they mean the same thing by means of the directly asked questions. However, considering the fact that the

assessment team consists of executives, we can argue that bias is another factor to be considered as notable risk, since the executives may be too optimistic on achieving a consensus or simply not be proper representatives for the whole organization in achievement of consensus through a one or two days assessment session. The reason for this is the inevitable human factor. On the other hand, we can argue that Luftman's assessment method induces normalization on the language used at different departments within the company, by discussing and reaching consensus around a delimited and predefined attribute and criterion under analysis. The method is fairly inexpensive; in total it costs no more than the summarized time for all included executives at each workshop or assessment session. The implementation of workshops also increases the knowledge shared among the participants. However, it is also important to give some thoughts on the credibility of the results of such assessment by the rest of organization.

IV. AN ORGANIZATION-WIDE ASSESSMENT APPROACH

A. General Method Description

Compared to Luftman, our approach assumes that a credible value of alignment is best obtained if all parts of the organization are represented in the data collection. Consequently, the biggest difference between the two methods is that the one proposed in this paper includes opinions from many different stakeholders in the organization, not only the executives. This information is for practical reasons not gathered at a single event, but rather through a set of serial interviews and document reviews. In addition, the way the measure of alignment is expressed is changed. Instead of expressing the alignment maturity level, we introduce an alignment index.

As said previously, the approach starts out from Luftman's theory. However, since the organization-wide approach prevent us from having a discussion on any uncertainties in the meaning of the different attributes and their levels, a more detailed operationalization is needed. Consequently, we have refined the attributes and descriptions of levels of the Strategic Alignment Maturity Model [7] so that each of the 38 attributes assigned to the 6 alignment criteria are further broken one level into a set of direct discrete questions. So, instead of estimating the level of maturity for an attribute (on the scale ranging from 1 to 5), we measure the attribute by obtaining a couple of "yes" or "no" answers. This gives us a more precise and repeatable application method. For instance, in Luftman's criteria "Competency/Value Measurements" each of the 7 attributes assigned to it (i.e. IT Metrics, Business Metrics, Link between IT and business metrics, Service Level Agreements (SLA), Benchmarking, Formal assessment of IT investments, and Continuous improvement practices) is broken down into questions for a clearer assessment of it. As an example the attribute IT Metrics is assessed by the

following questions: “Is the quality of the IT systems measured?,” “Is the cost of the IT systems measured?,” “Is the quality of the IT organization measured?,” “Is the cost of the IT organization measured?,” “Are the metrics used regularly?,” “Are the results acted on?,” “Is quality measured locally per IT unit?,” “Is quality measured as an entire group?,” “Is the risk of IT investments measured?.” The ambition is that the answers of these questions should reflect the original levels proposed by Luftman. In other words, if all of the above questions are answered “yes” this corresponds to level 5 (and consequently only “no” answers corresponds to level 1) for IT metrics. Theoretically speaking we define the subject more precise. However, consistency to Luftman’s definition has been a requirement throughout this process since our motivation is to increase credibility of assessments not to redefine the concept of alignment.

With some 200 “yes” or “no” questions in total interviews will easily become infeasible. The questions have consequently been categorized into six different groups of potential respondents: senior management, middle management, and staff for business and IT people respectively.

B. Assessment at the Organization

There are approximately 200 questions generically categorized into different respondents. Performing the assessment in an organization requires a couple of steps. In general, the method for organization-wide assessment consists of five steps where each step has one or several inputs and outputs, see Figure 2. However, this paper deals with only the first three steps. Steps four and five are presented just as an illustration of an organizational framework; how we think the assessment leads to improvement of alignment in an organization. Both steps require actions from the management of organizations that are unique for every company. The final output of the method is a road map defining measures to be taken in order to improve alignment.

Figure 2 Steps in the Organization-wide Assessment Method

In-Depth Interview: The first step in the method addresses to the limited number of management representatives from the business organization and IT organization. Input from this step is the starting set of standard questions. This step has a multifaceted purpose. Firstly, the interviewer aligns the terminology to the company standards by making necessary

adjustments so the questions are easily understood. Secondly, a fairly good general understanding of the company is required in order to be able to make the analysis of the collected data, and the interviewer obtains through these interviews a perspective of the organization and its work processes (unless the this was not already obtained). In addition, some questions do not need to be collected statistically; it is enough to get an answer once for questions such as the ones about the reporting structure of the CIO. Thirdly, the interviewer needs to identify people and documents to be addressed in short interviews. It is important to address the questions to people having knowledge and experience in the particular area of interest. In addition, if the "right" people provide answers, the acceptance and the credibility of the result report that will be used as the main document for eventual decisions on actions to be taken in the organization increase. Outputs from the first step are improved set of questions in terms of terminology used at the company, list of people to be interviewed, and the choice of documents.

Short Interviews: The purpose of the second step in the method is to collect alignment data. Input from this step is the improved questionnaire from the previous step and the output is the collection of data wide enough for statistically based conclusions. In this step we do not satisfy with only posing the short "yes" or "no" questions of the questionnaires, in order to obtain credible results we perform additional document reviews and supplementary interviews to validate the obtained answers. For instance if the question "Does the company have a communicated business strategy?" is answered "yes", the validation of the answer could be to ask for the actual strategy document, or if the question is "Is the quality of the IT systems measured?" its validation may be to ask a supplementary question like "Do you have a document describing the process measuring the IT-system quality?" All questions are not asked of all interviewees, some answers obtained from management may be validated by staff, and vice versa, answers from IT may be validated by business and vice versa. For some attributes is very difficult to identify a validating question. E.g. the attribute Social interaction is supposed to measure the level of social interaction between business and IT people: does it occurs, does it have strictly formal character, is there a trust between the two groups of employees (business and IT-staff) or if the interaction is so highly developed that even external partners are included. One of direct questions aiming to measure this attribute is "Does informal meetings between business and IT people occur regularly?" A validating question is simply to be more precise: "In which form?"

Validation is the reason why the data are collected through an interview performed by an interviewer, not through a questionnaire to be answered, since the validation may depend on the obtained answer.

Data Analysis: The assessment of the level of business and IT alignment is performed in the third step of the method. The level of alignment is expressed in an alignment index, which is equal to the percentage of "yes" answers per criteria and is an indicator for the company on how well adapted the IT and business processes are to one another. The input is data collected through interviews, the output is a report. The result also acts as a guide to what the company needs to focus on to improve their business and IT alignment. Verification has been achieved previously by the triangulation of the answers, i.e. when probes like documents are asked to be presented from the interviewed person who has referred to them..

Workshop: This forth step should follow assessment. However, this step should be performed by the organization applying usual practice according to the existing company's unique internal culture. It is important to perform this step for creating the acceptance of the assessments result within the organization. Management and key persons from the company whose work is relevant for achieving better alignment participate in this final workshop, for example, process owners or system owners, or similar, who are parts of the company culture. The input into this step is the report resulting from the data analysis. The advantage of having a workshop based on the report is that tinkering in discussion can be minimized. Furthermore, the importance of alignment, as well as clear finding of the opportunities of actions for increasing the alignment to be achieved that could and should be taken, stand in focus. A road map for the proposed actions to be taken is suggested at this meeting is the output from this step. This step is however not dealt with in this paper.

Decision on action to be taken: Also, this step is an issue for the organization and its management practice. We do not go further with this step beyond the recognition that it should exist. Input into this step is the proposed road map for actions to be taken in order to improve alignment. The suggested actions from the workshop most likely need some investigation on required resources, impact on the organization, value the company will achieve versus costs, etc. Output from this phase is the concrete plan on measures to be taken and followed-up until the next assessment of alignment

C. Issues Addressed by Organization-Wide Alignment Assessment Method

The choice of practical application of Strategic Maturity Alignment Model [7] is determined by the need to address the following issues:

Organization-wide perspective. Data for evaluating the alignment are collected from the people working in the different hierarchy levels particularly covering business and IT, management and staff. Data for evaluation of alignment are collected from the people who are most likely in the position to provide relevant and precise answers due to their everyday work. Target groups are executives, middle management, and staff. A question is addressed to a person based only on the presumption that the person may be most knowledgeable in providing the best answer within the organization.

Measurability. Each attribute is broken down into an easily understandable direct question that is to be answered by a direct "yes" or "no". Each yes "scores" one. Every person is interviewed by an interviewer who addresses the questions depending on which target group the person belongs to. Possibility of misinterpreting the question is further reduced by using an interviewer for interviews who can provide additional explanations if necessary.

Accuracy of collected data. Improvement is achieved through two kinds of interviews: in-depth and short interviews. The purpose of in-depth interviews is to adjust used terminology to the organization, to reduce possibilities of wrong interpretation of asked questions, and to collect input that may be used for verification of answers obtained in short interviews. E.g. if for an existing process within the organization, documentation and a responsible person exist, that is a proved fact. It is quite meaningless to ask staff in the organization if the process exists, but in order to verify regular application of the process, the staff should be able to point out the responsible person and how the process is described. The results of the short interviews contribute to statistical information.

Credibility of the data. For most of questions there is a validation question to validate the first one, then credibility is achieved by triangulation. Another type of validation is the number of people giving the same answer to the same question. The higher the number of obtained identical answers ("yes" or "no"), the higher the credibility of the assessed value for the attribute.

Repeatability. Every interview is well documented. The data obtained through interviews is processed and its analysis is also well documented, which provides good conditions for the repeated assessment, regardless if the goal of the repeated assessment is benchmarking or improvement of the assessment.

Analysis. On the highest level, the assessment output is a single index number expressing the alignment, e.g. 90%. If a purpose is to achieve improvement in alignment by regularly repeated assessments, it is important to be able to measure

relative progress even of small steps. In addition, answers may indicate a reason for the poor or good score on some attributes. Moreover, some groups of respondents may score likewise. For instance, one could imagine the manager having access to the document describing company's business strategy assumes that all employees within the company are familiar with it. However, if IT-staff answer that they do not know exactly what the strategy is, then we have a documented base for the conclusion that the communication within the company needs improvement. In addition, this answer is an indirect validation on direct questions about criteria communication. If respondents give positive answers on good relations between IT-staff and business-staff at the same time they are not aware of fairly obvious facts related to each other's work, than we cannot consider the answers credible. Great dispersion of answers for the same attribute may indicate e.g. communication or relationship problems within the organization. During the analysis, triangulation is applied by using multiple sources of evidence.

Finally, results are added and weighted when they are aggregated upwards in the theory structure. The results are normalized on the 6 criteria, i.e. counted as one-sixth weights each.

Report. The final report provides more trustworthy results that can be more easily accepted by the whole organization. Since the executives are those who must adopt results of assessment in order to turn them into actions, the workshop is necessary but also more efficient if it is based on verified date.

D. Benefits and Drawbacks of the Organization-Wide Approach

Compared to the organization-wide approach described here, an obvious advantage of Luftman's workshop based assessment method is that it is relatively easy to use since it does not require more time than one to two days from business and IT management and results in a road map that will improve alignment. According to Luftman, one of the major benefits of using assessment of strategic maturity in a large number of organizations is the possibility of benchmarking between companies.

However, the credibility of assessment results through workshops can be questioned since only chosen representatives from top management participate can bias the results. The more dictatorial style in management – the easier acceptance of similar output from top management. Our intuitive feeling was that such a managerial style is not successful in large organizations, such as big international corporations, where many IT systems are in use and where many different kinds of boundaries are to be crossed. Credibility of assessment is a prerequisite for commitment to any action that might be

required for improvement of alignment. Furthermore, risk of different perceptions related to the used terminology as well as bias in achieving the consensus on particular attributes is most likely to be realized due to human nature. In addition, it is not clear how consensus among management on the state of alignment results in actions that will improve alignment. The only documentation is a tally sheet of the level of maturity of single alignment attributes eventually combined with some notes from the discussions. This documentation is probably insufficient for both repeated benchmarking and repeated assessment since limitations and presumptions are unknown.

Comparing to Luftman's strategic alignment maturity assessment method, the identified benefits and drawbacks of the organization-wide assessment approach suggested in this paper is summarized in Table 2.

Table 2 Benefits and drawbacks of the organization-wide assessment approach.

Advantages	Drawbacks
Addressing whole organization at levels of the hierarchy	Requires time for interviews and analysis of obtained data and additional steps for making decisions on action to be taken for alignment improvement
Increases accuracy in measurement of alignment	
Provides wider acceptance of the proposed road map in the organization which may have an impact on increased commitment to the improvement of alignment	
Higher credibility of assessment results through increased confidence using triangulation	
Documentation of assessment that makes possible repetition of the assessment	
More reliable benchmarking	
Identifies the need for further steps required for translation of assessment results towards actions taken to improve alignment and measuring its benefits	

V. CASE STUDY

A. A Short Description of the Two Case Studies

The purpose of the case studies was to evaluate the proposed organization-wide assessment approach. We were looking for the answers to the following questions:

- Is the approach easily applicable?
- How will the assessment itself be accepted by companies?

- What is the quality that can be expected of the output results?
- How will the company accept the outcome of the analysis?
- Do the assessment results lead to alignment improvement actions?
- How does the cultural (organizational and national) environment of the company influence the application of alignment assessment?

The first case study was performed in Nicaragua, at a major state agency. The subject of the alignment assessment was the part of the organization that uses computers and it has considered IT in general. The second case study was performed in Sweden, the Swedish part of an international energy enterprise. The subject of the alignment assessment was the service order process used by several companies and the ERP system related to the process. It was clearly stated that other IT-systems such as that used to calculate travel costs were not to be included in the study. The purpose of the both studies was to be a pilot case to test the potential and applicability of the organization-wide approach. Both studies have applied the Case-Study methodology [19].

Each organization was interviewed by one interviewer. The interviewers were part of a larger research team that jointly prepared the starting set of questions for the deep interview, first in English and then translated into Spanish and Swedish. The first interview took place in Nicaragua and was conducted in November 2004. The interviews continued intensively during December 2004. In total 31 interviews were carried out in Nicaragua and took three weeks to complete including some preliminary analysis of the results. The first interview in Sweden were conducted in November 2004, but the coming interviews have not been performed at the same pace as in Nicaragua. In total 20 interviews have been performed in Sweden.

In the study in Nicaragua, the addressed respondents belonged to different divisions of the assessed organization, and the target groups were represented in the following way: two persons were interviewed as IT management, seven as IT staff, eight as business management, and fourteen as business staff. The person performing the interviews in Sweden had the access to information on the progress of interviews in Nicaragua. The primary interest of exchange between the two interviewers in Nicaragua and Sweden was how long did it take to interview one person, how did people react to the question, is the behavior of the respondents similar? However, in order to avoid bias, interviewers did not share experiences related to the analysis of empiric data, they followed the overall rules decided in advance.

Four in-depth interviews were completed during the case study in Nicaragua as a first step to the proposed method. The aim of these interviews was to get a better understanding of the assessed organization and test if apriori chosen terminology was understandable for the organization. Some adjustments in terminology were necessary in order to make questions understandable by interviewees, e.g. call IT unit, IT division, and metrics measurements. Also during this step it was learned that expressions such as SLA and CIO need to be further explained. Questions were added to make the assessment questions clearer. Twenty-seven short interviews were performed; the aim of these interviews was to collect statistical (qualitative and quantitative) information. Some complementary interviews were also carried out with the respondents or persons with specific knowledge within the area of the investigation. The time needed in Nicaragua to complete one short interview varied between 30 – 90 minutes, depending on how knowledgeable the interviewee was. In Sweden, four in-depth interviews and 16 short interviews were carried out. The short interviews took 45 - 90 minutes; management staff had the tendency to definitely take longer time.

The in-depth and short interviews were performed in Nicaragua using a tape recorder and a sheet table designed for collecting the "yes" or "no" answers. In Sweden, only the table sheet was used in combination with notes obtained through the interviews and collected documentation. The interviewer took total control of each question and answer in order to reduce subjectivity and the risk of missing information or misunderstanding the answers. Apart from the in-depth and short interviews themselves, the executed case studies included the review of documents, the direct and participant observations by the interviewee, and verification techniques used during the interviews or afterwards, depending on the specific circumstances, as possible sources of information.

B. Experiences from Case Studies

From the suggested organization-wide approach, qualitative and quantitative data or information and evidence from different sources can be obtained, e.g. from persons, documents, observations, etc. Some adjustments should be made based on the results of the in-depth interviews and the organizational knowledge and complexity, i.e., such as adjustment of the terminology used, formulation of some of the questions, the selection of personnel to be interviewed, etc. Clearly the method can be improved in terms of effectiveness, by dividing data collection into three categories: interviews, studying the documentation, and collection of statistical data through a questionnaire.

Interviews are important for learning about the company's background, for being able to adjust the terminology used in the interviews, and for identifying advantageous data that can be collected from existing documentation. Another

important identified aspect was the importance of identifying the most knowledgeable persons to be interviewed in terms of the different criterion. Non-credible answers have a significant impact on the statistical result. The strategy in the selection of the personnel to be interviewed, is also considered flexible and is just an indicative tool in our approach because of the diversity of organizations and their specificities in the distribution of functionalities. It is not convenient to fix a method or way for selecting personnel and respondents who should be involved in the alignment evaluation process.

Further, devoting time to the identification of questions that require statistical evidence and answers that can be obtained through questionnaires can save a considerable amount of time and thus reduce costs of the assessment. Unfortunately, these questions may be unique for every organization and probably cannot be used as a set of generally applicable questions.

The set of proposed questions in the suggested approach, and the selected terminology for different criteria and sub-criteria (proposed by Luftman), could be adjustable to the concrete situation or priorities in an organization. It depends on the different factors identified by the teamwork, i.e., in-depth interviews, level of organizational knowledge, organizational needs, level of documentation, etc.

A starting assumption when deciding to test this approach was that culture, both organizational and national, might have a significant impact on the assessment of alignment. Luftman presents very impressive empirical evidence for his approach. However, it was quite obvious that the same approach would not be equally successful e.g. in Sweden. Commitment and responsibility for own work is different in Sweden, and there is an obvious risk that the result of assessment of alignment maturity of the kind Luftman performs with success in the U.S. lacks commitment and credibility in Sweden. Therefore it was interesting to develop the method further in terms of improvements in these areas and test how the culture could have an impact on the results. The organizations where the case studies were performed in Nicaragua and Sweden differ significantly, including attitudes towards use of IT, and personal attitudes of people working at the company and providing answers. In Nicaragua, the general tendency was to answer “yes” in cases where the respondent did not understand the question, did not know the answer to the question, or was not familiar with the terminology. In Sweden, in such cases, the preferred answer was “I don’t know.” Also, in Nicaragua people tend to accept existing situations as well as decisions made other people, and consequently express a high satisfaction with all benefits provided by IT. This leads to a lack of interest in making big efforts on possible improvements. On the other hand, people in Sweden expect to take a greater responsibility for their own work, and are not unfamiliar with initiating

and accepting changes. The analysis of obtained results in Nicaragua has showed a large deviation between verified answers and answers obtained apriori verification. In Sweden the deviation was not significant.

VI. CONCLUSION

This paper puts forward an alternative and enhanced assessment method for the well-established strategic business and IT alignment theory of Luftman. The method suggests an organization-wide approach to in that more stakeholders are included in the assessment process and contributes by increasing credibility and transparency of the results. Credibility is addressed partly by broadening the assessment base in terms of more sources of information within the organization and partly by using different ways of measuring the same phenomena. Transparency is furthermore achieved partly by a articulating more detailed and particularized theoretical assessment measurements (questions), and partly because the method suggests a case study oriented and well-documented information collection procedure. Altogether, by doing this the paper addresses the general well-known problem related to business-IT alignment: lack of practical application of theory.

The method was deployed in two case studies in different cultural environments. Results from these two pilot studies show that the organization-wide approach as such is practically viable, but also that credibility of strategic alignment assessments is an issue in organizations.

VII. FUTURE WORK

This research project, which focuses on business-IT alignment, is part of ongoing research in the area of Enterprise Architecture at KTH, The Royal Institute of Technology, The Department of Industrial Information and Control Systems, Stockholm, Sweden. After completing these two pilot studies, the organization-wide method presented here will be tested further, after some improvements resulting from the two performed studies, as case studies in Latvia and in Sweden. The case study in Latvia began in February 2005; the next case study in Sweden is in the preparation phase, and the interviews will be carried out in April 2005. The objective of these two case studies is to improve the method in terms of measurability, effectivity, and used theory. In addition, preparations have begun for a study in the same company where the results obtained from the assessment maturity proposed by Luftman will be compared to the results obtained from the organization-wide approach for assessment.

Acknowledgments

The author wish to express their warm thanks to Helena Edman and Carina Matsåker for conducting interviews and helping to design questionnaires. This work was part of their respective master thesis.

References

[1] Chan, Y., Huff, S., 1993, "Strategic Information Systems Alignment," Business Quarterly, 58(1), 51-56.

[2] Ciborra, C., 1997, "De profundis? Deconstructing the concept of strategic alignment," Scandinavian Journal of Information Systems, 9(1): 67-82.

[3] Hackney, R., Burn, J., Dhillon, G., 2000, "Challenging Assumptions for strategic information systems planning: Theoretical perspectives", Association of Information Systems.

[4] Henderson, J.C., Venkatraman, N., 1993. "Strategic alignment: Leveraging information technology for transforming organizations", IBM Systems Journal, Vol 32, NO. 1.

[5] Johnson, P., Ekstedt, M., Silva, E., Plazaola, L., 2004, "Using Enterprise Architecture for CIO Decision-Making: on the Importance of Theory," In Proceedings of the Second Annual Conference on Systems Engineering Research, Los Angeles, U.S.A.

[6] Luftman, N.J., 1996, "Competing in the Information Age – Strategic Alignment in Practice", Oxford press.

[7] Luftman, N. J., 2003a, "Competing in the Information Age – Align in the Sand", Oxford press.

[8] Luftman, N. J., 2003b. "Measure Your Business-IT Alignment.The longstanding business-IT gap can be bridged with an assessment tool to rate your efforts" Optimize Magazine, Issue 26, (http://www.optimizemag.com/showArticle.jhtml?articleID=17701026)

[9] Luftman, N. J., 2000, "Assessing Business – IT Alignment Maturity", Communication of AIS, Volume 4, Article14.

[10] Luftman, N. J., Brier, T., 1999a, "Achieving and Sustaining Business-IT Alignment", California Management Review, No. 1, Fall 1999, pp 109-122.

[11] Luftman, N.J., Papp, R., Brier, T., 1999b, "Enablers and Inhibitors of Business-IT Alignment", Communications of AIS Volume 1, Article 11.

[12] Maes, R., Rijsenbrij, D., Truijens, O., Goedvolk, H., 2000, "Redefining Buisness – IT alignment Through a Unified Framework", white paper, http://imwww.fee.uva.nl/~maestro/PDF/2000-19.pdf.

[13] Papp, R., 2001, "Strategic Information Technology: Opportunities for Competitive Advantage", Idea Group Publishing.

[14] Papp, R., Fox, 2002, "Information Strategy Development: the Strategic Alignment Imperative", Eighth Americas Conference on Information Systems.

[15] Papp, R., 2003, "Strategic Alignment: Web-based Analysis & Assessment".

[16] Peppard, Breu, 2003, "Beyond alignment. A coevolutionary view of the Information Systems Strategy Process". Twenty-Fourth International Conference on Information Systems.

[17] Venkatraman, N., 1989. "The Concept of Fit in Strategy Research Academy of Management Alevi'ew", Volume 14, Number 3,1989a, pp. 423-444.

[18] Xia, W., King, W.R., 2002, "Determinants of organizational IT infrastructure capabilities", MIS Research Center Working Papers, http://misrc.umn.edu/workingpapers/fullPapers/2002/0210_030102.pdf.

[19] Yin, R. K., 1994, "Case Study Research: Design and Methods", Sage Publications.