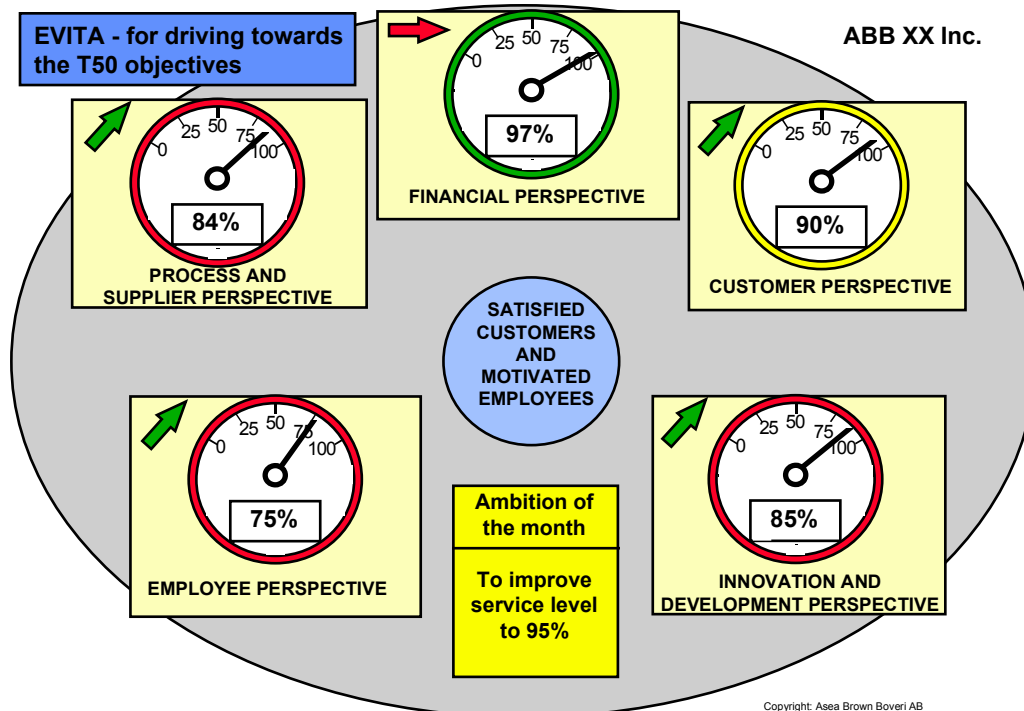# The Balanced Scorecards at ABB Sweden - the EVITA project

by

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and

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Preface

This report [1] is the result of an invitation for co-operation from ABB Sweden, their CFO Peter Fallenius and the project director for EVITA Lennart Lundahl, also co-author of this paper. We researchers involved in this project wish to express our gratitude to Peter and Lennart. We also wish to thank everybody involved in the EVITA project for allowing us to interrupt them in their ordinary work and ask them a lot of questions.

As researchers in the field of management control, or may be better management support, we don't have access to laboratories and experiments. It is vital to get access to the place where the action takes place. At the same time we hope that we can give some hints and ideas back to the companies, in the short run directly for today's activities, in the long run by educating young students so when they are entering into business they have the competence needed.

So once again - Thank You very much!

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[1] Earlier versions of the paper has been presented at International Workshop on Cost Management, Venice Italy, June 27 - 29, 1996 and at the 19th Annual Congress of the EAA, 2 - 4 May 1996, Bergen , Norway

Content

Introduction

As many other companies, Asea Brown Boveri, ABB, a multinational group in the electrical engineering industry, has developed customer focus programs aiming to move the group in the direction of what sometimes is referred to as "the Lean Enterprise[2]." In ABB-Sweden this effort has been accomplished through the T-50[3] project. The experiences and the effects from this programme have been very positive. In order to strengthen the T-50´s message even more and to integrate the programme more strongly within the company's ordinary control system, the CFO has initiated a project called EVITA, an abbreviation of the project's Swedish name, or in English "Business Control in the T-50 Spirit". It is the first parts of the EVITA project which are described here. In this project a measurement based control concept and model has been developed inspired by and with in some respects a close resemblance to the concept of Balanced Scorecard[4]. One of the main differences however in the two approaches is the role of the hierarchy. Specially in Kaplan and Nortons first articles the balanced scorecards are designed for and used by top management looking "down" on the organisation. In ABB Sweden already from the very start, the idea has been to create a tool for units on all levels to look on their **own** activities.

The cornerstones of the EVITA project are sometimes summarised as follows:

- the notion of viewing the business in different perspectives
- a support and control system for the units own activities
- the vision and overall strategies are the foundation for the system
- the "cockpit" as model for the presentation system
- IT - Presentation Support System

The ABB group, which was formed in 1988 through the merger of Swedish Asea and Swiss BBC Brown Boveri, has more than 200,000 employees and reported revenues for 1995 of 33,700 million US dollars. The ABB Group is a federation of national companies active around the globe within a number of business areas.

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[2] Womack and Jones, 1994
[3] T-50 stands for " 50 % of times" as the initial objective of the programme was to half all cycle-times.
[4] Kaplan and Norton, 1992,1993

Sweden is one of the ABB Group's most important domestic markets and, moreover, the base for the successful exporting of products and systems throughout the world. The Swedish ABB Group is comprised of approximately 130 companies with something over 28,500 employees and a turnover in 1995 of 40 billion SEK (6 billion USD).
The chief control philosophy as communicated by ABB´s President Percy Barnevik in various connections[5] can be summarised by the four concepts of decentralisation, customer focus, productivity improvement and competence development. Seen in a more long-term perspective Percy Barnevik´s main message has been increased competitiveness and flexibility through a far-reaching decentralisation of decision-making and responsibility for profitability. One way of realising these aims has been through the customer focus programme which has been co-ordinated and supported by group management but is being operated more or less locally.

Objectives for the study

Up till the change of year 1994/95 the EVITA-project focused on the development and design of the concept and model. Next steps of the overall project were to go forward along two parallel and somewhat interacting lines. One line was to use the suggested model to within the common perspectives develop a set of measures or measure-structures for each of a number of pilot units.

The other main line for the project was to design and develop in detail an IT-based Presentation Support System so it could be used successively by the pilot units. The use of the support system in the pilots should then provide information for the final adjustments of the information system at the same time as experiences would be made of the use of measure-structures

There are four main objectives for the study reported here;

1. To describe the main features of the EVITA-project up till the beginning of 1996 - the basic concept and model developed, the development of measure-structures, the development of the IT-based

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[5] An example of a written source is ABB annual report 1993

Presentation Support System and the first period of use of EVITA in the pilot-units.

2. To evaluate the model for development of measure-structures for units who use the EVITA-concept.
3. To evaluate the impact on the pilot-units of the use of the EVITA-structures.
4. To make a first evaluation of the EVITA-system as whole.

Action research, some notes

This report is a result of an action research co-operation between ABB Sweden and Stockholm School of Economics within the frame work of a larger research program ″Management Control in ″Lean Enterprise″ under the direction of professor Lars A Samuelson. The co-operation with ABB Sweden was the basic condition for the study. An approach was used where the researcher also played an active role as a resource to the EVITA -project. The double role of the researcher, being both a part of the process and an ″independent″ observer can create both opportunities and difficulties. It is important to be aware of how these have been handled in the project.

The positive aspects beside what already have been mentioned, are the possibilities to follow the project from an inside position. This gives the researcher a good idea of the culture and value system of the organisations studied. It also gives possibilities to form personal relationships with key actors and a confidence for researcher. The positive side of this is that when it comes to gathering of information, interviews, questionnaires etc. , the researcher has a good pre-understanding of the situation.

The risk is the researcher getting too involved and he loses his objectivity. He must, may be, even as a researcher criticise suggestions he has made as member of the project, which is difficult. In order to avoid the most obvious pitfalls , the researcher has assumed that he is biased. The analysis presented in this paper, as soon as it comes to opinions and values, is based on statements from other persons.

The information needed for the analysis was gathered in different ways. For general background, the overall value system of ABB, the ideas behind T-50 and the EVITA-project itself the sources were mainly external information, written policy-documents, notations from meetings, working papers, discussions and oral statements by key

persons. Information about the processes in the pilot-project stems from direct participation and observation by the researcher. Also two studies[6] based on interviews made by two groups of under-graduate students have been important sources. To get information needed for the analysis of the overall effect of the system when it had been in use for some months a series of personal interviews with key persons were conducted by the researcher. The persons interviewed were mainly people with some sort of management responsibility in the units involved and conducted with a pre-formulated guide.

At last, to get a solid ground for the discussions about realised effects and acceptance all persons directly involved were asked to complete a written questionnaire.

The pre-understanding of the researcher has been used when formulating the questions. The interview guide and questionnaire are available in Swedish from the researcher. In order to avoid to some extent "you get the answers you do depending on what questions you put", both questionnaires ends with open request to add whatever the respondent wishes regarding the EVITA system and its effects. Comments have also been made all from "this is the system of the future" to " skip the whole project as soon as possible".

The support for conclusions made are accounted for as far as it is reasonable. The interviews are documented on tape. The tapes and the written questionnaires are available from the researcher, at least for some years. The conclusions have also been validated by other persons, inside and outside ABB. With these precautions, the validity of the conclusions should not be less than in any ordinary case study. If there is some reason to be careful, it is more a question if the researcher unconsciously has omitted some important aspects.

The researchers involvement in the EVITA-project have naturally made it easier to document and describe the processes.

As always the question can be put if the results is purely a result of a Hawthorne-effect[7]. Two short comments, first the effects are there, what their reasons are and if they can be achieved in other ways are other questions. The employees were asked and some of them think the same things could be achieved in an easier way, others don't. The second comment is that the opinions about the effects of EVITA are not

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[6] Alvsäter, 1995
Bergmann-Stumpp and Sterner, 1995
[7] Roethlisberger and Dickson, 1939, 1964

homogeneous, far from it as will be reported later, so there must be at least something more than just the Hawthorne - effect.

The EVITA-concept - main perspectives for looking at the business activities.

A key issue in the formation of a control instrument following the ideas which have been discussed and the first part of EVITA´s basic concept is to identify and choose the main perspectives within which the key ratios are to be sought.
 One approach is, from the view of an interested party[8], to look for the perspectives of those people or external organisations who control those organisations' most critical resources. The perspectives which are looked for are those which illustrate the company's ability to satisfy these people or external organisations so that they are willing to contribute the necessary resources to the own organisation.
A somewhat other approach is to look for the perspectives which are thought to be the most important for forming and sustaining competitive superiority for the organisation. A more general formulation is to look for the perspectives which are the most important for the organisation in its activities to fulfil its long term aim.
A third approach is to choose the perspectives according to the overall objective of the control system. In this case the expressed objective of the EVITA-system is to support the values behind T-50.
It could well be that these approaches should be seen as to some extent completing each other.

In the EVITA- project five perspectives were chosen. The arguments for the choice went approximately as follows:

Two cornerstones of the T-50s philosophy are satisfied customer and motivated employees.

The Customer perspective
The company's offer to the customer must, in comparison with other companies offers, be considered so good that the customer is willing to

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[8] Pfeffer and Salancik, 1978, Crozier and Friedberg, 1980

pay the price demanded in order to satisfy his demand. A prerequisite and key to this perspective is a thorough understanding of the "business" which the company operates as well as its competitive means and the prevailing competitive market situation in which the company offers its goods and/or services.

The Employee perspective

One of the basic tenets of T-50 is well-motivated and competent employees. To a certain extent they are also possessors of know-how and information. In order to have access to the critical resource which the employees constitute and to guarantee that it is used optimally, it must be important to show the activity from this perspective. One issue is to understand the company's competitiveness in order to attract the competence it needs, its ability to create prerequisites for motivation and indications of how well it has succeeded.

The Financial perspective

Capital is another of the resources necessary for running the business. The business capital comes from different sources. From an isolated viewpoint, in the type of economy which our Western society represents, the owners are the residual interested parties. These parties demands will be met last, since dividends to the owners of profits or in the case of bankruptcy do not take place until the other capital contributors have been reimbursed. If the owners demands for profits are met in the long-term, then other parties, who contributed capital, are also satisfied.

The Process and Supplier perspective

An important feature in the values of T-50 is the collaboration with the suppliers or "Supply Management". This is in order to guarantee the businesses need of the third classic production resource which comes under the term "raw material". At one level the various suppliers perspectives are different and unique. Some cases concern goods which are of crucial importance for the company itself; there is no substitute and the supplier is the sole supplier - strategic goods. In other cases it could be bulk goods freely available on an open market with many suppliers - volume goods. To describe each suppliers perspective would

be an extremely arduous job. A common factor for these companies is that in order to have access to these resources, the company must be able to fulfil a financial undertaking which normally occurs much "earlier" than the owners demands. A long-term accomplishment of owner demands means that suppliers demands for payment are also met. On the other hand, the suppliers activity entails certain demands such as quality, guarantee of delivery, delivery times, performance and qualities, development abilities as well as price. The demands and the importance of them are of course naturally related to the goods or service we are referring to. Are these strategic goods or simple volume goods? It is interesting in this connection to see how smart the organisation is in handling its suppliers - supply management. How well does the organisation itself perform? This question poses a fourth perspective which is also one of the cornerstones in the evaluations of T-50. What is concerned is efficiency within the internal processes of the company in general, not just to handle the supplier but the entire internal process in order to produce the goods or services which the customer is demanding. To be effective, the processes must be carried out in such a way that the article produced can be sold for a certain price so the company's resources can be replenished. The fourth perspective is thus the internal processes and their efficiency within the organisation.

The Innovation/Development perspective
So far the perspectives have been of a relatively short-term type. In the longer term, it is naturally a necessary prerequisite that today's activity generates and attracts resources it needs, although this is not the whole picture. The organisation must also learn from its observations, must be able to grow and must be able to develop its products and services. There is a progressive development and learning perspective which actually has an inward-looking dimension - the development of the organisation and learning, as well as an outward-looking dimension - development of those goods and services which are the conditions for the organisation's future ability, via the marketplace, to gain access to the resources which are necessary for its survival. Even for this perspective, one must show an efficiency concept. This is most clearly seen in the outward-looking dimension. An efficient product/service development process is a key factor for the future.

All in all, this gives us five perspectives which are all of great importance for the activity and give a more balanced image than if only one

perspective were allowed to dominate. The five perspectives and the balance between them was first illustrated in a "balanced" picture close to the one on the front page of this report, with interrelations going in all directions

During the process the relationships have became clearer and are now often been illustrated by the following figure:
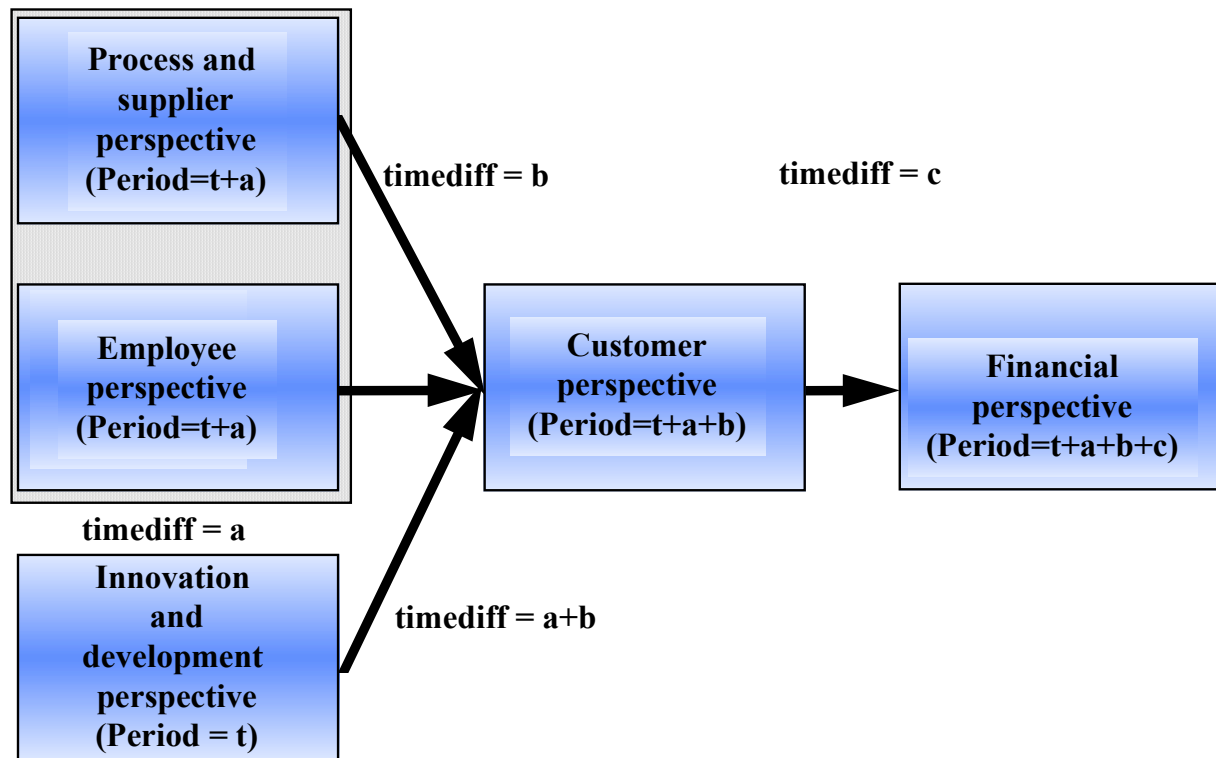
fig 1: The mutual relationship of the EVITA-perspectives

The customers satisfaction is based on good performances in the three perspectives shown to the left in the figure and satisfied customers is an essential condition for a good financial performance, although not necessary enough. But it is not the performances in the same period which have the impact. Activities within "Development" will probably have an impact on the performance in "Customer" in later period and this performance will impact the performance in "Finance" in an even later period. It also probably exists a difference in time-lag between the impact of activities in "Development", "Internal process" and "Employee". All this is more formally described in the figure with the "a+b+c" and so on.

The notion of the time lag between the perspectives leads to two further comments.

First the performances reported in a "balanced scorecard" for one specific period are not necessarily the result of activities carried out during the same period. The financial performances are probably to a large extent the result of activities carried out in earlier periods, specially when it comes to revenues.

Secondly the activities and performances specially in the three perspectives to the left will not explain the financial performance of the present period. They are more indicators on future customer satisfaction and still more future financial performances. Seen as indicators, the performances in the "early" perspectives will have be of interest both in an internal support or control dimension and in an external information and evaluation dimension.

The five perspectives can be compared well with classifications in other works, mainly those by Kaplan & Norton but also for example by Maisel[9]. In Kaplan & Norton, the employees perspective is included in "internal processes". In Maisel´s work "innovation and development perspective" is included in internal processes whilst his employees are considered deserving of their own perspective. In the EVITA project the definitive choice has been to bring forward both the "employees" and "innovation and development" perspectives as their own perspectives. This is a way of giving emphasis and priority according to the values within the company.

From vision to measures

The second part of the basic concept is the method to formulate measures within the perspectives and how these figures become active control instruments in the organisation. Kaplan & Norton have presented one model[10] for a business to take the step from vision to measure. With this model as a starting-point and with adaptations for the different role of the hierarchy, the EVITA project has developed an own method of working. The procedure is composed of a number of questions illustrated in the following manner:

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[9] Maisel, 1992
[10] Kaplan and Norton, 1993 p 139

Definition of critical measurements per perspective based on the vision for the business

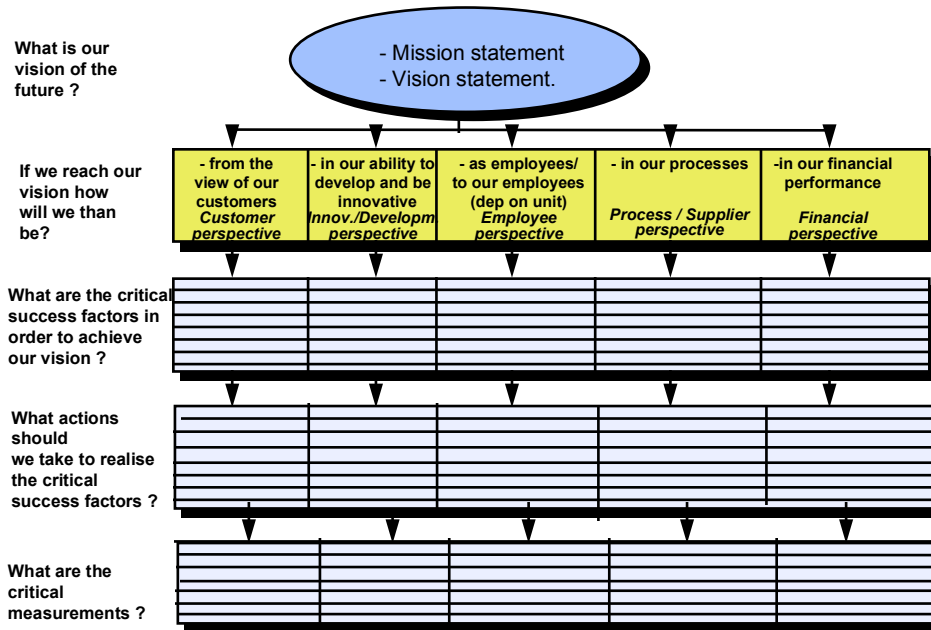|	
What is our vision of the future ?	- Mission statement - Vision statement.
If we reach our vision how will we than be?	- from the view of our customers ***Customer perspective*** | - in our ability to develop and be innovative ***Innov./Developm perspective*** | - as employees/ to our employees (dep on unit) ***Employee perspective*** | - in our processes ***Process / Supplier perspective*** | -in our financial performance ***Financial perspective***
What are the critical success factors in order to achieve our vision ?	
What actions should we take to realise the critical success factors ?	
What are the critical measurements ?	

Fig. 2 From vision to numerical values

The framing of the questions is evident from the diagram. They are used at all the different organisational levels for which EVITA structures are developed.

As support and a starting point for the work at a particular organisational level, the next higher level should be dealt with thoroughly, at least concerning "future visions" as well as "what will we look like then" and "critical successful factors to reach there" for the different perspectives. The vision, strategies etc. of the higher level forms the strategical framework for unit for which a measure-structure should be developed. The measure-structure of unit on the organisational level above is **not** the starting point for the work. The measure-structure should build on the units own task and ways to deal with it. Contrary to some traditional control systems, it is not the measures in themselves in EVITA which are broken down, but the visions, tasks and strategies. Inversely this means that a higher organisational level is not measured in the EVITA connection through aggregation of lower levels to a wholeness, but the numerical values for every level are developed independently and have the starting points which have already been mentioned several times. Another conscious effect of this viewpoint is that all levels and units do not need to apply EVITA at the same time.

This can take place, for example, at a number of target-oriented groups and at the "Business Unit" level.

Secondly, the demand of local use and understanding means that the numerical values must be formulated in such a way so that the users can interpret the content of them and know how to act and also have the possibility of acting in order to influence the outcome. This does not mean that, through their own steps, the users must be able to control the outcome, but they must experience that the steps they take have a decisive impact on the outcome of the measures. This is a subjective experience which is influenced among other things by the construction of the measures, the speed of the impact and the feedback, as well as the way in which the measures are used. These points are in accordance with experiences reported from other applications.[11]

Both the basic demands of EVITA´s reporting model discussed have led to two conclusions:

1. within the EVITA project a common model should be developed or collection of information, working and reporting. Furthermore together an IT support should be developed for the model to be used in those units which wish to do so.

2. when the EVITA concept and model is to be used by a unit, whatever its level, then the compilation of the specific numerical values via the method previously reported is a responsibility for that particular unit.

At a first stage when there exists already prepared strategies, plans etc. it is easy to use these as a starting point and work through the question schedule. In the long-term, the method of working could be integrated with the ordinary planning processes. Researchers[12] who have reported applications of similar models mention that the greatest effect seems to be reached when they are used actively in strategic change processes where it is essential that the visions and all-embracing strategies are communicated out into the organisation and are independently put into concrete plans and actions at all levels within the company.

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[11] Meyer, 1994

[12] Kaplan and Norton, 1993, Hoffecker and Goldenberg, 1994

EVITA´s reporting model

An important part of the control system is the data itself and its reporting. A metaphor used is the aeroplane's instruments.

The basis for reporting is the five perspectives - customer, innovation and development, employees, process and supplier, as well as financial. These perspectives give a balanced picture of the activities with the objection of the different time dimensions.

One performance in one perspective in its turn should be reflected by a set of different measures, in EVITA a maximum of five. The reporting model is aimed at people with different backgrounds and not purely business controllers and accountants. One of the values behind T-50 is that the individual employees at all levels should be able to follow their own activity, especially in the target-oriented teams. The method of presenting the information and the measures by which it is presented are adapted accordingly.

The first picture and introduction to the reporting model is a layout giving an overall view of the performances in all five perspectives.
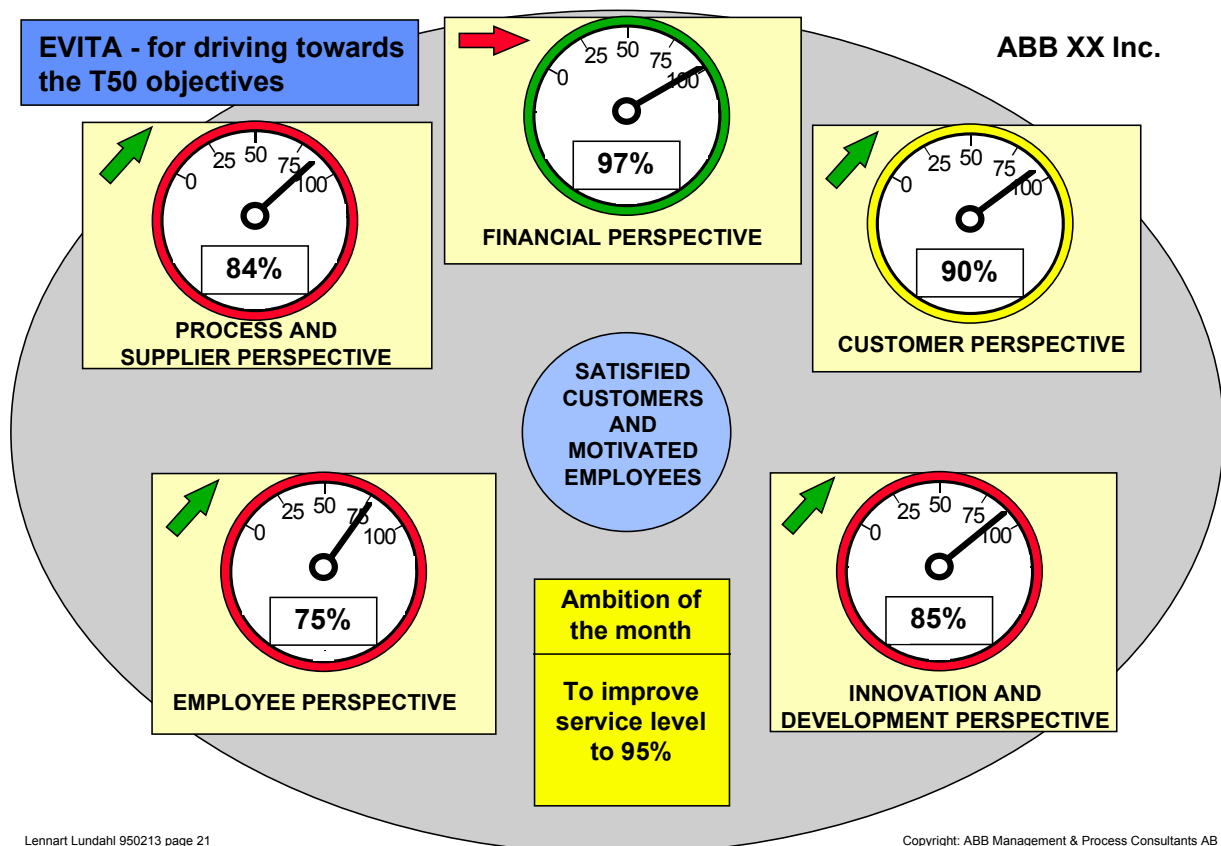

Copyright: ABB Management & Process Consultants AB

Fig.3: EVITA overall view, all perspectives

The diagram shows the combined degree of target achievement for the measures that are a part of each perspective.

The EVITA model allows each unit to choose whether the measures included should be differentiated. The basic recommendation is that all measures should be equally important. It is also each company's responsibility to make its own decision regarding the target levels for a unit which is reported according to the EVITA model; either by the unit, group, an individual person or by someone else in the hierarchy. The recommendation is that the units applying the EVITA model should determine the target levels themselves. The initial picture also gives an indication of the trends in each respective perspective as well as, in written form, the unit's vision on a slightly more long-term view and the focus of the period.

At the next level, the model shows the outcome of the individual measures. An outcome is presented as the present level of target achievement in percentage form. The measures in the figure are of course only examples.

EVITA - balanced follow-up

ABB XX Inc.

FINANCIAL PERSPECTIVE

METRIC	ACTUAL
Orders received	110%
Sales invoiced	105%
Grossmargin orders received	90%
Net income	88%
Profitability	94%
Total:	97%

PROCESS AND SUPPLIER PERSPECTIVE

METRIC	ACTUAL
Throughput time	71%
Inventory cap./sales invoiced	90%
First time yield	80%
Productivity	97%
Delivery reliability	80%
Total:	84%

CUSTOMER PERSPECTIVE

METRIC	ACTUAL
Service level	90%
Complaints and claims	87%
Market share	95%
Customer satisfaction	90%
Total:	90%

SATISFIED CUSTOMERS AND MOTIVATED EMPLOYEES

EMPLOYEE PERSPECTIVE

METRIC	ACTUAL
Competence development	60%
Sick absence rate	98%
Employee satisfaction	70%
Flexibility	73%
Total:	75%

Ambition of the month

To improve service level to 95%

INNOVATION AND DEVELOPMENT PERSPECTIVE

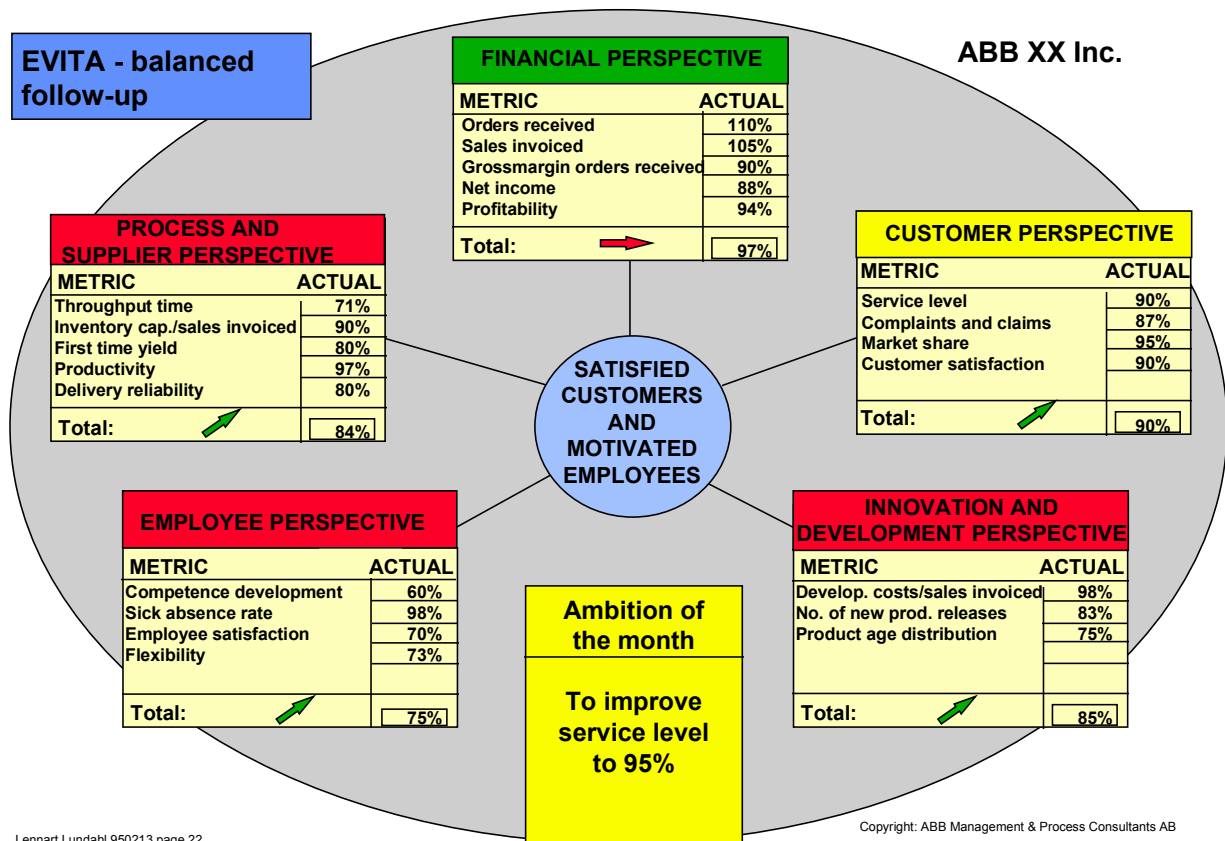| METRIC	ACTUAL
Develop. costs/sales invoiced	98%
No. of new prod. releases	83%
Product age distribution	75%
Total:	85%

Fig. 4: The EVITA diagram, all perspectives included measures

This picture is actually an elucidation of the first picture and gives more precise information of the different numerical values.

In EVITA the number of numerical values per perspective has been maximised to five or a total of 25 for a measure structure (or in this case an individual unit). There is nothing to prevent one using a smaller number.

Apart from these diagrams, there is the opportunity to see trends within a diagram of respective underlying ambitions and action plans accumulated for all the perspectives at once according to the following diagrams. There is also the opportunity to get an overall picture of one individual perspective. All these possibilities are illustrated with this figure showing the different ways to illustrate the organisation's activities from one perspective, in this case the employee perspective
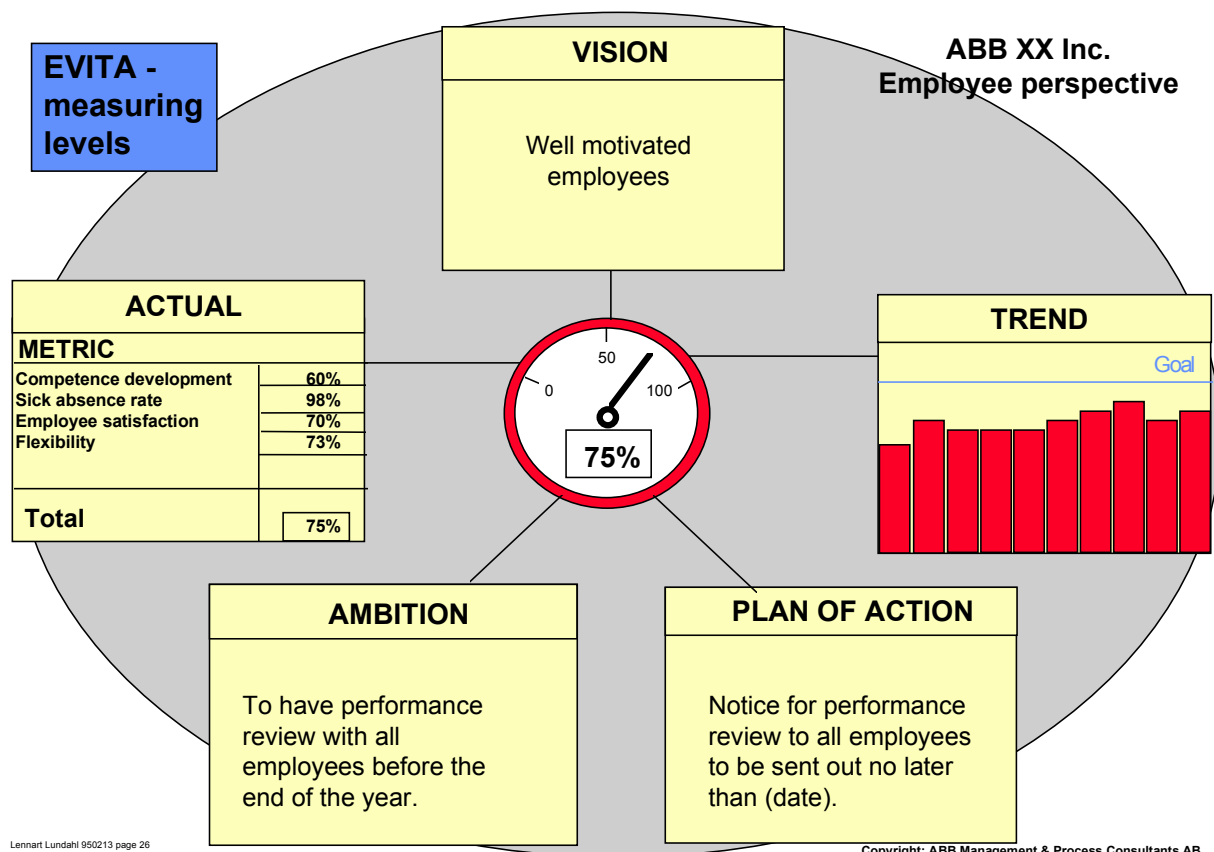

Fig. 5: EVITA - picture, collective picture for one perspective

The examples of pictures that have been shown here form EVITA´s model for reporting the performance of one unit in an EVITA-structure .

The EVITA model can be applied at whatever level in the company - total, product area, target-oriented team etc. EVITA is not summarised between the levels and the figures of the levels are independent of each other. Instead the connection between the levels comes about through visions, signs of success and successful factors where these for one level create conditions for the next level in the organisation. Instead of breaking down financial targets or other targets within the organisation, the visions etc. are broken down[13]. There is no demand within EVITA for numerical targets to be linked, but the chain of visions etc. must build on one another and be connected[14].

The development of concept and model formed the first part of the EVITA - project. The next phase consisted of applying the concept and model to a number of pilot units and at the same time develop and implement an IT-based Presentation Support System.

The Pilot projects

Two companies, here called A and B, volunteered to become pilots. For each pilot company an internal project manager was appointed. To his support resources were given from the main project. It was decided that in company A balanced scorecards should be developed for four independent units - two target-oriented groups in different product-divisions, the unit for export-sales and the unit for accounting. For reasons not related to the project, the work in one of the two target-oriented teams had to be put on ice.

In the same way in company B balanced scorecards should be developed for the company as a whole, for one management-level within the production department and for one of the three target-oriented group within this management-level.

Company A and B are different in many ways. Company A produces electrical components. It has approximately 500 employees, a turnover of 500 MSEK and is located in a middle-sized Swedish town with a lot of other production plants and ABB-companies. Also the headquarters of ABB Sweden is located here. Company A was formed a few years back. It moved to its present location about a year after it was formed and the facilities are modern. Company A has its roots in the core business of

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[13] cf. Meyer, 1994, p 101

[14] This viewpoint is very similar to the concept of "The Strategic Dialogue", Borgbrant, 1990

ABB Sweden and shows now a good financial development from a poor performance short after it had been formed.

Company B is a little less than half the size of company A and is located in a rather small and old community where the company is one of very few companies with a production plant. It is also one of the biggest employers in the community. The company has its roots in a line of business which until some years ago was a listed company of its own with ABB as the dominant owner. Today it is integrated into ABB. The production process of company B is different from company A and contains among other things metalworking and welding, which makes the environment in the production-site more dirty. The company has been located at the same place for a long time but its facilities have been renovated and are in a good shape. Company B´s record is excellent. It has shown very good financial results in the past. The culture of company B differs from that of A. Company A has a culture which is closer to the official ABB Sweden mainstream. Company B has a tendency to wish to be on its own and to show the rest of the organisation that it is very good.

The process in company A
As already has been hinted there were differences in the approaches used by the pilot companies. The units in company A were on the same level while the units of company B had a more hierarchical relationship. The first thing to be done in the pilot units was to develop their own set of measures. In company A this was done through a series of meetings with members of the pilot units, in two of the groups with all the members, up till some 15 persons, and in the other groups with some 4 - 5 representative persons. In the pilot unit with the biggest number of persons involved there existed some sub groups and preparatory discussions were held in those sub- groups.

The work was carried out in weekly meetings of approximately two hours length. The meetings were led by a person from outside the pilot unit, Lennart Lundahl the co-author of this paper, who asked the questions according to the model, tried to recapitulate the discussion and took notes of the meetings opinion, a sort of neutral chairman responsible for the process to move along but not for the content. All opinions were based on consensus and never there was a need for some sort of majority decision-making.

From time to time a second outsider was present, the researcher, who had a double role according to the action-research approach. One of the roles was to observe the process, how people reacted and the progress of the work. Were the questions asked relevant ? Was it difficult or even impossible to answer those types of questions ? Did people at all understand the ideas and formulations or was it only "mumbo-jumbo" by some theorists ?

The other role was to take part in the discussion, to ask questions and make suggestions regarding the content of discussion, to act as a catalyst and a person who says things which are "taboo" for an insider in the company. He could sometimes also relate general used views and models on different problems.

The starting point for the work in the groups was the existing vision for the company and its strategic plans. The idea was that the content of these should be reformulated in EVITA - terms. All groups very soon experienced that the existing strategic plans did not in various degrees cover all perspectives in the EVITA - structure so the discussions came also to some extent to be a real strategic process. This was true in both companies. The groups in company A had to meet 6 - 8 times to work through the questions and to formulate the set of measures to be used in the next stage.

The last stage in this part of the work was to formulate critical events into measures and to define them exactly. It then became evident that some events were of either or type and was better placed in a plan of action. This resulted in adding a level to the original model with things to be done in the near future - action-plan. The model then goes from the overall mission and strategies of the unit all the way down to a short term action plan.

The process in company B
In company B the whole work of developing three different sets of measures was carried out by one special committee consisting of managers from production and finance with the support of a person from the main EVITA -project. She acted as a chairman in the same way as was described earlier and was also the "liaison-officer" with other parts of the project. The researcher was also present from time to time. In company B, the work focused on the two units at the bottom. The work started with reformulating in EVITA- terms the overall mission, strategies, critical events etc. for the company as a whole and the

organisational layers down to the actual pilot units. No set of measures were formulated for the units between the level of the whole company and the target oriented units. Instead of breaking down measures to the bottom of the organisation, mission, strategies and overall activities of the unit above became the starting point for the next unit in the hierarchical chain all the way down.

Half way through the process, the project manager left his position in company B and also the project. His successor was appointed new project manager for the pilot project in company B. Otherwise the work was carried forward in approximately the same way in company B as in company A.

The work with developing sets of measures for the company as a whole and the pilot units was mainly finished in spring 1995.

The persons involved in the different pilot projects in the two companies met twice during the spring of 95, once at each company, in order to exchange experiences, to get information about the development of the IT -system and give them opportunities to express their views and demands on the system.

Experiences from the measurement development processes

Different experiences can be noted from the measurement development process. Some of them are directly related to the business and its management, others are related to the individual and his/hers motivation etc. Such factors of course also have an important impact on the business but in a more indirect way. There are also observations which are made for the first time during the measure development process but which have to do with the overall role and design of EVITA . On the other hand there are also observations which are of primary interest for the design of the future measure development processes.

How to design and run the process - some experiences
The experiences directly related to the measure development processes in both pilot A and B can be divided in two categories;

- experiences regarding the design and execution of the process as such

- effects of the process on the participants

Two of the processes were run with groups made up of representatives from the units and two of the processes with the whole units. The involvement in the process and the opinions about EVITA were strongest, both positive and negative, in the last two groups. "Opinion" is in this case defined as the employees answers on a questionnaire, more of that later. In the groups made up of representatives the degree of involvement from the whole group at this stage was non existing. In one of these groups they had to do a restart of the process after it was found that the first measures proposed were not accepted. In the other pilot where the "measure development group" was made up of representatives no such problems were noted. The manager of that unit said he knew his team members so well and that he could present the measures and their background to them step-by-step when the system is put to use. This is also the way it has been done.

When the measure development involved something like 15 persons or more it became evident that some preparations or first discussions should be held in smaller groups. In the following meeting the whole group then tried to reach consensus. This way of working requires more resources but the result seems to be more accepted.

The "EVITA-coach" and the "EVITA-resource"
The approach with outside resources for process management and support (catalyst) was much appreciated and made it possible for the normally responsible manager to act more freely. The term "EVITA-coach" has been suggested afterwards. This way of working was recommended for the future.
In the interviews with the managers of the pilot units they also expressed the importance of having somebody who sometimes was called an "EVITA-resource". When the measurement structure has been developed and should be applied in the presentation support system, there is a need for support from a person who knows how the system works and can design the individual EVITA-structure in the system. When this is done there is also a need for some sort of on-going support of the system, data-input, changes of definitions and data -output. All pilot units developed and used such a resource
A synthesis of the opinions of the requirements for the "jobs", as they were expressed at the interviews, can be formulated like this. The

"EVITA-coach" is a person outside the unit developing the EVITA-structure. He or she should be a process consultant with high competence in business development in general and in the EVITA-concept. Of course he or she also must share the values behind the T-50 project. The "EVITA-resource" should be a person inside the unit. He or she should be used to Personnel Computers, the EVITA-system and the activities of the unit. It is not a full time job. After the initial stage, the job of being the "EVITA-resource" could be rotated within each of the teams.

Effects on individuals of the pilot units
The effects of the development process on the participants have been studied in two pilot units in company A, the two processes involving all members. The results of this study are available in a separate report in Swedish[15] . The results of the study are mainly based on interviews with the participants. In summary it was reported that already the development process as such had positive effects regarding the participants motivation, creativity and effectiveness. The participants express a deeper understanding of the long term orientation of the business and the key issues for achieving this. They also experienced a greater solidarity with the colleagues, less conflicts and more creativity in the group. The effects were reported to be stronger in one group than the other. This may be due to the following;

" Unit X's better knowledge and understanding of EVITA as well as its experiences of better effects and more improved factors may depend on the different organisational design of the units. Its organisational structure agrees more with the criteria for effective and learning organisations than unit Y´s."[16]

Unit X is part of a business process while unit Y is an administrative staff unit.
One concluding remark made by Bo Alvsäter is that there might be a positive correlation between positive effects for the participants of the measure development process and their experiences of changes and educational background. EVITA is largely based on logical and structured thinking. Experiences and training in this way of thinking

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[15] Alvsäter Bo, 1995
[16] Ibid. p 68

and working increase the possibility for positive effects of EVITA. If a unit consisting of people with less experiences in this area is going to use EVITA and a measurement structure is going to be developed, the process for doing so should be adjusted for accordingly.

Effects related to the business and its management
A different set of experiences from the measure development process is related to the business and its management as such. The effects reported here are to a large extent not only results of this first part of EVITA, development of measures, but also related to the whole EVITA project although they got visible already at this stage of the project.

EVITA reveals inconsistencies and holes in strategies and plans
There are two observations which are of interest here. First, in all of the pilots the work started from the existing strategic plans for each unit. It soon became evident that the plans did not cover all perspectives in EVITA. It also became evident that the plans on different levels in a company were not always consistent.

The result of this was that in some cases the visions, strategies, missions and success criteria for different perspectives had to be formulated for the upper organisational level before the work could be started for next unit. The highest level for which this was done in the pilot project was the individual company level, company A and B. For those units between highest company level and the actual pilot unit, the analysis stopped at the parts described above. No complete plan for key-activities and measure structure was formed for them. Visions, strategies, missions and so on were made more detailed and communicated downward in the organisation, not figures and quantitative objectives.

EVITA facilitates the internal dialogue
The second observation in this area was that in some cases when key-activities were discussed in order to define success criteria in specially the customer and internal processes perspectives, it was found that the power and means to do this was not inside the unit. In several cases the unit had to rely heavily on other units, not just for some co-ordination, but for a deeper change in other units basic way of thinking and acting or in other words to change from a traditional functional way of operating to a true flow and customer orientation. The need of change in this case and in others was sent upwards in the organisation as a sort of answer on the signals sent through the vision and strategic plans of the overlaying units - a dialogue about strategic questions. Some frustration occurred in one case when the people from the pilot unit became aware of that changes requested would not easily happen.

An observation close to this was that the pilot groups often had intensive discussions about "who is the customer ?". Often this did not end up in a

single straight answer but more in an insight that there could be both internal and external customers, direct internal customers to the unit and more indirect external customers to the whole process and that both groups of customers could be important.

Conclusions from the observations made during the development process
Some conclusions can be drawn from these observations. The EVITA-system is explicitly based on the values behind T-50. It is also based on the logical structure of overall vision -strategies -mission, success-criteria and so on. Already in the stage of measurement formulation it became clear if the existing plans met the requirements of the values behind EVITA or not. In some cases they did not.
 The perspectives choosen in the EVITA-project, customer, internal process and so on is base on a flow-oriented view of the business. The model for development of a measure - structure strongly support this view and reveals inconcistences and holes in existing strategies and plans in this respect.

 Reflections on the potential of EVITA
The groups sometimes experienced lack of power and means to do what they thought important. The EVITA-system made visible differences in what things should be according to the values behind T-50 and what they actually were. The differences experienced were transferred upwards in the organisation. Through making facts visible and communicable in this respect, EVITA creates a possibility for a two-way dialogue in the organisation about things thought to be important according to the value-system behind T-50.
It became already at this stage clear that the EVITA-system is just not a simple measurement / feed-back system. It has the potential as a comprehensive planning/ decision /feed-back /learning model similar to the model for first loop-learning[17]. The system can be used as the link between overall objectives and strategies down to performance measurements and activities.

One critical item here is the choice of perspectives to be used in the system. Evidently the choice of perspectives is a choice of focuses for the organisation. That choice must be in accordance with the values the system is thought to promote. This is necessary if the system will have

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[17] Agyris and Schön, 1978

the intended effects, but it is not enough. No important perspectives may be left out. For instance, if the customers perspective would have been left out, that does not mean the other perspectives are wrong according to the T-50 values, but the organisation will miss an important focus for executing T-50. The analysis behind the perspectives used in EVITA was reported earlier in this paper. So far the analysis made seems to have been adequate, but it would be desirable to keep an open mind in this respect.

The development of the Presentation Support System

The objectives for the Presentation Support System was to develop a feeling of a cockpit or a control room in a power plant, where a set of instrument continuously were observed to ensure that the flight or the process was going according to expectation. The ideal would be to monitor the process in a target oriented team/department/company in the same way.

However neither the number of instruments in the cockpit nor in the control room was the objective, instead the number of instruments on the summary level should be limited to a few and we have set the number to be 5, equal to the number of perspectives.

We wanted to have a fast and easy way to see how the group developed using measurement instruments, the same way as in control panels. The analogue instrument has its advantages in showing a picture compared to digital instruments which only show digits.

Other important demands were the requirement to be able to follow the trends for each of the perspectives. The trend will show the long term development for a perspective and should be an alert if it is negative. If the trend on the other hand is positive, it will show that the change program in place is making long term progress.

The instrument was to show the development within each one of the perspectives. Each perspective should be made up of 1-5 criteria per perspective. The measure for a perspective is calculated as the average target fulfilment (in percentage) for the criteria which make up the perspective. The criteria within a perspective can be weighted for the average calculation.

For each perspective it is possible to view the target fulfilment in percentage for each one of the criteria. By expanding the view, both the fulfilment relative a short term target and long term target is presented. There is also "mini" graph presented in the expanded mode for each one of the criteria.

An important part of the Presentation Support System is the capability to handle text information per perspective. Up to 9 different types of text for each one of the 5 perspectives can be handled in the system. This capability can be used for:

- vision per perspective
- ambition
- plan of action
- ....

This means that the Presentation Support System is not only for follow-up of what actually has happened, it is also a system to be used to document visions, ambitions and plan of action, and therefore a driving instrument in the change process.

The development of the Presentation Support System was done in stages. The first objective was to give a feeling how the output, the cockpit, would look like and if we were on the right track in developing the output like an instrument panel. We therefore developed a model during the fall of 1994. This was done in such a way that it demonstrated and visually showed how the output would be presented. The philosophy visualised by the model was accepted and resulted in the decision to develop the Presentation Support System. The actual system was then developed in the following stages:

- Requirement specification 11/94-1/95
- Phase 1 - Visible output 2/95-4/95
- Phase 2 - Data entry 4/95 - 6/95
- Phase 3 - System administrative functions for easy installation 8/95-10/95
- Phase 4 - Beta testing and added functionality 11/95-5/96

The requirement specification specified the required functionality but was not a specification in all details. The detailed system design for each one of the main phases was designated in a detailed system specification described in user terms, which was formally approved by the EVITA main project prior to programming. However, we think that an even closer interaction and co-operation using a "prototyping approach" during system design for each one of the phases probably would have given an even better system from the users point of view. If the users had been involved in this process, we are sure that this would have resulted in an even better and more user friendly system.

Some believe that if we had split the development in a number of smaller tasks in each phase, it would have been easier to test and would have given faster implementation of new functionality. However on the other hand such an approach had resulted in many more integrated tests. The total cost would anyhow probably been lower with such an approach.

The Presentation Support System has the potential to be a good support for the total EVITA concept. The experience from the pilots use of the system is limited at this point (04/96). One of the pilot companies experiences the performance to be too slow, even if it is run on a 486/66 MHz PC. Therefore a part of the software will be redesigned. Now the system is using a standard Executive Information System software for the presentation part. It might be better to reprogram it for example in Visual Basic.

EVITA is thought to be a driving tool in an units change process. So far the users have created printed OH:s from the Presentation Support System for follow up purpose. However, the Presentation Support System is thought to be used as an IT tool in the group. Possible alternatives for this are:

- Use the PC "as is" in the group without enlarging the picture
- Connecting the PC to a TV to get a larger picture which all in the group easily can view together
- Overhead viewer connected to the PC for the same reason as above

It will be very interesting to continue to follow the pilots how they in practice will work with EVITA and how they will make use of the Presentation Support System.

How EVITA has been used in the pilots

As already mentioned, the system has till today been used for reporting the effects of the activities in three of the pilot units. The reporting system has been used since late 1995. The results of the activities have been measured and reported according to each units own measurement structure. All pilot units follow a routine with periodical ,often weekly, meetings with the whole group. Once a month such a meeting has been set a side for the EVITA reports which have been presented and discussed. Together with the outcome for the period of the measurements also some sort of verbal report of what has been done during the period has been presented and checked against plans. When this has been done, action plans for the coming period are discussed and decided on. The manager of the unit tries to reach consensus but of course if that is not possible, it is he or she that will decide.

Realised effects and the managers views.

The managers of the pilot units and other managers or resource persons in close contact with the pilot units have been asked to give their opinions about EVITA after approximately two months of use of the system. This is a summary of the main views expressed:

EVITA is valuable and more than an information system !
The interviewed persons expressed basically a very positive opinion about EVITA. A view which was strongly expressed by several of the managers was that EVITA is a valuable addition to the set of management tools and has become something more than an information system based on the T-50 ideas. Through the process of developing a measure structure, with the starting point in the units overall vision and mission, which are derived from the organisational level above in a continuous chain from the overall vision of the company, the manager has got a major tool for creating understanding and commitment among the employees. The employees get a feeling they "own" their work. EVITA has become a tool for business or activity development. In one interview this was expressed as strong as;

"the main thing with EVITA is this aspect of a management tool. The presentation support system is good but not necessary. It can be solved in other ways, for instance with a spread - sheet model."

On the other hand several other managers expressed a big satisfaction with the design of the presentation support system, helping them to process, store and present information in a more effective way than before. In some units there already existed a set of performance measures which had been reported to the group-members and formed a platform for discussions of plans and activities. In those units EVITA facilitated the already existing way of working, but EVITA was also said to have the above mentioned dimension of a "development" tool.

EVITA and the hierarchy
When the managers were asked about the role and importance of EVITA in the future in their company, many made comments regarding the importance of support for EVITA from top management in the company and in ABB Sweden.

The role of the top management in ABB Sweden is more like providers of the value system and vision - setting the frame work including financial objectives. They also have a role as "mentors" giving advise and support when needed but also prepared to reformulate the framework if necessary. They leave business operations to be handled at the lowest possible level. This is the general way they function and it has also been their role in the EVITA project.

At the next level, it became evident that there existed a difference in approach to EVITA between the executive management in the two pilot companies. This conclusion is founded on statements made at interviews and other observations. One of the company executives supported the project wholeheartedly but did so in a rather unobtrusive way. The reason for this was the notion that the EVITA structures should be developed and owned by the individual units and nothing pushed on from above. The top executive managers in this pilot company has on the other hand followed the progress of the project with interest and has been giving support and encouragement when needed. In this company several managers have the view of EVITA of something more than just a measurement system, more of that further on.

In the other pilot company, EVITA has not got the same support from the top. Some statements are made that the work with EVITA has been done more despite than supported by top management. Here it also has been observed how top management have refused to act on signals from EVITA. Although some of the managers see the potential of EVITA as a strategic instrument, in their own company they, at least in the short perspective, limit the use of EVITA more to a measurement system.

All managers stressed the fact that EVITA is not primarily intended to be a management or information tool for the hierarchy. Nor has EVITA been used in that way in the pilot units. One basic quality of EVITA is that the measures are not consolidated upwards in the organisation. Every unit regardless of level should have its own measurement structure developed from the units vision, mission etc. As the vision and strategies of one unit are the starting point for units on next lower level, often several individual measures are the same, even defined in exactly the same way. But even so the actual value on one level is not made up by consolidating the "EVITA - values" of the units below. This quality of EVITA is declared to be important by the interviewed and other parties interested in EVITA. To consolidate the EVITA - values is thought to be

complicated and lessen the experienced degree of freedom for the individual units e.g. the target oriented teams. The need for consolidated, mainly financial information, in the ABB group world wide is satisfied through another system, ABACUS. Another way of putting this is that EVITA is not intended and has not been used as an information production system for the use of the hierarchy. Instead the information produced through the system is mainly also consumed at the same place, so in this respect EVITA is not a system for the hierarchy.

In another sense EVITA definitely is a system which could and should be used by the hierarchy. As described, the process of developing a measurement structure for an individual unit is not about breaking down measures from above. Instead it is about creating an understanding of the mission of ″our″ unit as part of the whole organisation. What are the important tasks for us when the whole organisation has the vision and follows the strategies they do? EVITA gives the hierarchy the possibility to communicate or even impose their ideas on the units below. In this respect EVITA is definitely a system for control but the messages sent are about the overall objectives, the general direction to get there and to some extent why. The specific ″what″ and ″how″ is a matter for each unit. As described earlier, observations indicate that EVITA also can be used as one ingredient if management wishes to create something which sometimes is called a strategic dialogue[18].

Nevertheless it is expressed from the pilots that it is important that the managers in the hierarchy above are interested, follow the outcome of the measurements and ask questions and discuss the activities - plans and outcome in EVITA terms. This could be interpreted as a wish and need from the ″ pilot managers ″to attract attention from above, which is basic if involvement is one of the purposes[19].
As reported earlier, EVITA sometimes also make problems visible - structures or processes - which can not only be handled inside one unit. A true interrelationship exists. When the solution of such a problem is sought for outside the unit it is important that it is handled according to the values behind the EVITA system, the T-50 spirit. If not, the accredibility of EVITA is hurt. The signal from above can be interpreted

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[18] Borgbrant, 1990
[19] see for instance Nord 1971

as ″ you as a manager and the EVITA system does not focus on the right questions″. A situation close to this has been observed.

Some managers interviewed expressed their concern that there existed something like neutral or slightly negative attitudes towards the system which had a negative impact on the success with the system. Similar experiences were also reported in one of the students´ studies[20].
 Other persons interviewed reported an whole-hearted support from the company-management and expressed the importance of this for the success of EVITA. The ″whole-hearted support″ for the system did not mean that top-management always actively promoted the system and pushed it downwards in the organisation. On the contrary, it was more a matter of an expressed positive attitude to the basic approach in combination with a freedom and responsibility for the pilots to develop a structure and a way to use it which was best for them and their activities.

The conclusion of this is that for the success of EVITA it is important that the hierarchy above really shares and expresses the same basic values as those behind the system, the T-50 values. It is also important that the hierarchy to some extent is open for feed-back and prepared to act on it and when they act, they do so in accordance with the same value system.
Also it is of utmost importance that the levels above show an interest in what the group has arrived at and then follow the groups development to reach their targets.

EVITA should be used as a searchlight, but with care.
Another view on EVITA brought forward in the interviews is that the information produced and reported in EVITA is very broad, up till five measures within each perspective or a maximum 25 measures. No pilot unit use an EVITA structure that is that big . The total number of measures in the structures varies between 12 - 20. But even so, it is thought to be necessary to limit the numbers which are focused at the same time to may be three to five. In this way the manager can put a torch-light on special areas or problems. One example mentioned was the ″delivery reliability″. This was a problem for the moment and by highlighting it , the manager thought he could focus the organisation on

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[20] Bergmann-Stumpp and Sterner, 1995

this and create a real concentration of force to solve the problems behind. When this was done, the idea was to high-light other measures and change the focus in another direction.

This way of high-lighting different measures concerned mainly the periodical presentation of information from the system. The basic data should be gathered and processed all the time. It was only the focus in the reports which should be limited and sometimes changed. There were different views on the time period for which a focus should be used. Some interviewed talked about some months others about longer periods, up till a year or two. They were then more thinking of some sort of reviewing the whole measurement structure in connection with a periodical (annual) review of the mission and strategies for the unit. These points of view about concentration of the information used, concerned the number of measures used. Nobody questioned the numbers of perspectives and their contents. Other approaches limit the number of perspectives on the operational level of a company and exclude the financial perspective[21] . There is nothing in the experiences from EVITA so far which goes in that direction. On the contrary, some managers mentioned the drive you can get out of a unit, when some sort of financial result of their own activities is reported to them.

What do the employees think of EVITA?

Another important aspect when it comes to evaluate EVITA is how the employees perceive the system. In order to get some idea of this the members of the three pilot units were asked to answer a written questionnaire regarding different aspects of EVITA. As the working language of the units is Swedish the questionnaire was also formulated in this language. The actual formulation and the answers returned are available through the researcher. The respondents were asked to give their view on different statements on EVITA on a five - degree scale where three meant that the respondent neither agreed or disagreed, five wholly agreed and one totally disagreed. The mean values of the answers were computed and tested with the "T-test" if they significantly differed from three. If they did this was interpreted as some sort of opinion regarding the statement made, significantly above three as support and significantly below three as disagreement. The total number of people asked to answer the questionnaire was 41. The

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[21] Lynch and Cross, 1991

numbers of answers returned were 28 or 68 %. For the different units the figures were unit 1; 13 answers out of 20 possible or 65 %, unit 2; 6 out of 15 or 40 % and unit 3; 6 out of 6 or 100%. There were also two answers which did not state organisational belonging but as all members of unit 3 already were accounted for, the unknown answers must come from members of either unit 1 or 2.

The results
When the first analysis was made on the whole material it became evident that the opinions of respondents were very divergent. Actually there were only two opinions which could be statistically verified. First of all the opinion was that it was rather important to be able to follow the operations with some sort of measurement system, regardless if this was EVITA or not. The other opinion possible to verify was that the respondents trusted the figures produced by the system.
A comment could be made here. The input data to EVITA were in the pilots fed to the system by the persons in the units themselves. As the level of refinement of the data is rather low it is easy to see that the information from EVITA is correct because people recognise what they have put in the system. The relatively high transparency of the system might be an explanation to the opinion noted.
In order to be able to go further the material was then stratified according to organisational belonging, units 1 and 2 formed one strata and unit 3 another. When analysed this way, it became possible to observe several statistically significant opinions.

What the members of unit 1 and 2 thought.
The opinion of the people in these two units can be summarised as follows;

- They think EVITA is good and that on the whole the efforts put into the EVITA project is justified by the result. They don't think it is a smashing success, but they definitely think it is something positive. Some of the respondents have added comments of their own. They range from: *"The project should be shut down as soon as possible"* to *" this is the best which has ever happened. EVITA is the system of the future".*
- The opinion was also that they had a relatively clear picture of EVITA and did understand the system. On average they also thought the system was available to them.

- When it came to the qualities of the system they definitely thought the perspectives used to be the correct ones. They also thought the individual measures to be the right ones although this opinion was not that strong. As already mentioned, they trusted the information from the system to be correct.
- When it came to specific effects of the system the only statistical significant opinion was that EVITA led to a somewhat better knowledge about future plans of their unit.. There were no significant opinions that EVITA led to any better understanding of the business, more involvement or a higher degree of motivation.

If an attempt should be made to summarise the general attitude of this group towards the system based on the analysis it would be as cautious but positive. One possible reason for this would be the relatively early stage of the pilot projects. The participants have only two months experience of actual use of EVITA.

The opinion of the people in unit 3.
The responses from the members of this group differed significantly from those of the first group in nearly all respects. There opinions could be summarised in the following way;

- the basic attitude towards EVITA was strongly negative. They thought the work with developing an EVITA measure structure had had a negative time impact on their work with other important tasks. They also thought this work had heightened the level of frustration. Those who had been asked about their opinion to EVITA back in mid 95 was more negative now.
- They also thought that EVITA as a whole was to complicated, that the same result could be achieved in a more simple way and that the effort put into EVITA was not justified by the result.

It is very evident that the respondents of unit 3 express a totally different opinion than those of the other two groups. It was tried through multiple regression analysis to find if any of the traditional background variables could explain the differences in general attitude towards EVITA. For this analysis the dependent variable was defined as the degree of agreement to a statement in the questionnaire " I think the overall effects of EVITA has justified the efforts put into it". The background variables were age,

sex, educational background and organisational belonging. Only one variable was significant, if the respondent belonged to unit 3 or not. All other variables regardless if they were tested alone or in different combinations could significantly explain differences in the attitude towards EVITA. When the answers for the two strata were analysed separately the variable age had a small but significant impact in unit 3. The older the respondent in unit 3 was, the more negative the attitude towards EVITA. It is interesting to note that for the other groups the attitude towards EVITA is not dependent on sex, age or educational background. When it comes to the different attitudes between respondents from unit 1 and 2 versus unit 3 it is only possible to speculate about the reasons. One reason would be that the difference has something to do with the nature of the units, where units 1 and 2 are natural parts of a value - chain while unit 3 is a staff for administrative service. Another idea would be to look for significant differences in personality, for instance in the Adhizes sense, between members of unit 3 and the others. There are indications from another unit of similar attitudes as in unit 3. This unit has not come as far in the implementation process as the initial pilot units. This last unit is also a staff for administrative service but there is no data available to describe or analyse the different personalities of the units. This could however be an interesting line of ideas to study further.

One interesting observation is that the opinion of the manager of unit 3 is totally different from the opinion of the respondents of unit 3. The manager of unit 3 declares that EVITA is an important tool for developing the unit and that the unit has shown a significant improvement in the change process towards the values and attitudes according to the ideas behind T-50.

Explanation to this can only be highly speculative. One possibility is that the unit actually has made improvements but the employees are not aware of this but the activities to achieve this have created frustration. Another possibility is that the employees don't understand why they have to change. They think they best serve the organisation by working in the same way they have done the last 10 - 20 years.

One conclusion is becoming quite obvious, the members of the unit have not understood why they need to work differently and the vision for the future defined through the EVITA methodology is apparently not their

vision, more likely the vision of their unit manager or influenced by the process facilitator.

If this is true, it shows that first of all the employees have to understand why they have to change and secondly the vision should be the unit members real vision.

Evaluation of the EVITA - project so far - method for evaluation.

When it comes to methods for evaluating control systems there is to start with a question of perspective. The two basic alternatives are either to look at the system from a pure measurement viewpoint, are the objects measured with the best measures and are individual measure-values registered and reported correctly? Or should the system be evaluated in relation to the purpose of the project's initiators, the effect-view? Does the system produce the behaviour the principal wishes, do the actors in the system make the desired decisions, are they focused on areas thought to be important, do they "concern themselves" with the "right" things and so on ? As EVITA is a specific project with an articulated and clear objective, to form a control-system supporting the T-50 spirit in ABB Sweden, it is natural to choose the latter, effect-view, to evaluate the system. This does not mean that the reliability of the system in a more measure-oriented view is uninteresting. But this view is only one area among others as can be seen further on.

In a more general sense one can talk of a number of aspects for evaluating control systems[22] where the basic question is if the overall objectives are met or not. The expressed objective in this case is to promote the T-50 values. But is not T-50 a mean for another end, the ultimate end of the organisation - long term survival of the organisation and the satisfaction of the ultimate stakeholders, the owners? In that case, the natural yardstick for evaluating the system would be whether it will lead to a more efficient use of resources and better financial results. More specific, is it possible to observe any impact on financial results - revenues, cost, profits etc. - for units using EVITA, and if so are those changes traceable to the use of EVITA or are they effects of other things like changes in general business activities ? To start with, such effects are probably observable in a somewhat longer perspective at least a year or two. One way of then getting some idea of the effects could be to

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[22] Johansson and Östman, 1995

compile the performance of units using EVITA into some index, for instance change in one or two of the most fundamental financial measures for each unit. Such an index could then be compared with those for units not using EVITA but otherwise as similar as possible to the "EVITA"-units. Another way would be to ask managers of units in the two groups to make some sort own estimate on the performances of their unit in different aspects, a balanced scorecard for EVITA, and then form some index.

 For evaluating the use of EVITA during the first months the suggested methods are probably not workable. The natural way to evaluate the system and its effects so far is to ask people involved, managers and employees of their experiences, what changes in their own and others behaviour they have noted and their estimate of the effects of EVITA.

At this stage, to form an idea if the system is having the intended overall effect, it is suggested that, apart from information on direct effects, information is searched for and analysed with respect to the systems relevance, validity, reliability and acceptance[23]. It could also be discussed if the use of resources needed to develop and operate the system is compensated by the benefits.

The five aspects are interrelated. For example the reliability of the system has an impact on the degree of acceptance by people using the system. If the figures are inaccurate, nobody will trust the reports from the system and no decisions will be made based on the information from the system and the overall objective of supporting the T-50 ideas will probably not be met. The relationship between the aspects can be illustrated by the following figure;
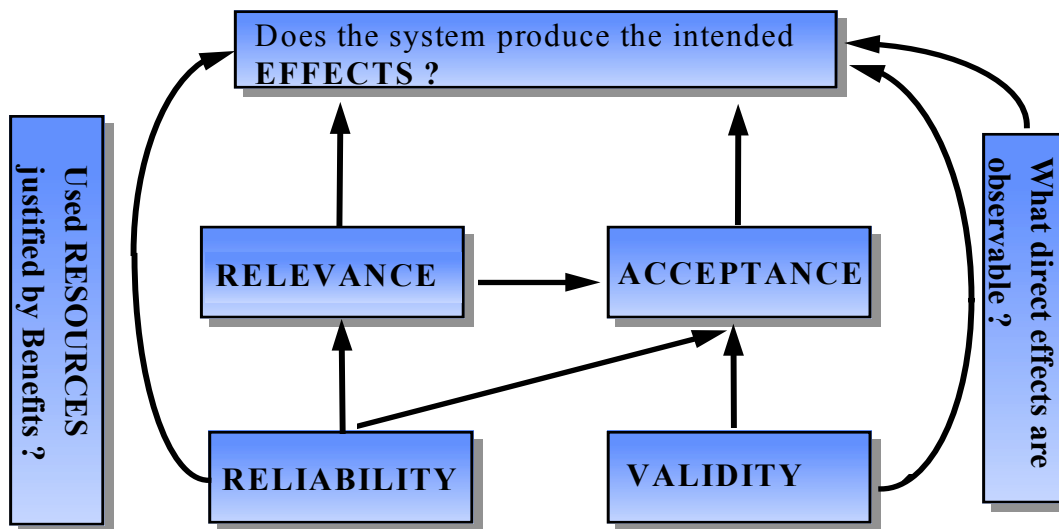
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[23] Ibid

fig 6: The suggested model for evaluation

This figure could be seen as a model for evaluating the overall effect of a control system. The suggested model is far from the only model. The question is if the model is good enough to be used here ? As it contains aspects normally used to evaluate models and scientific studies on a general level the judgement is that it can.

Does EVITA support T-50 ? Will it help ABB Sweden to become a "Leaner" Enterprise? - analysis of the effects.

The intentions with EVITA was to form a control system based on the values behind T-50, the customer focus program in ABB-Sweden. The T-50 program has a lot of common with developments and ideas put together under the more well known label "the Lean Enterprise". In the analysis which follows this label will be used instead although ABB-Sweden never uses it and the two concepts could here been seen as synonyms but used in a broad sense. So the analytic question could be put as ; *Does EVITA help ABB- Sweden to become a "Leaner" enterprise ?*
 As already mentioned, to answer that question, the intention of this study is to analyse the findings against four groups of criteria[24]: relevance, acceptance, validity and reliability.

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[24] Johansson and Östman, 1995

Analysis of EVITA´s effects

Acceptance

One starting point when it comes to evaluating EVITA is to ask if the users have accepted the system, do they think it is a good system. This question has been answered by both managers and employees involved. All the managers thought with a varying degree of enthusiasm that EVITA was something positive, but they didn't see it as the same tool. For some it was primary a reporting tool creating some sort of structure among the measures used to evaluate the activities of the unit. Many of those measures were already in use before EVITA, but the system brought order to a relatively wild set of measures. It also made the actual job of producing and reporting the numbers easier.

Other managers saw EVITA as a strategic instrument for their unit to develop and specially realise strategies of their own through specific actions. The progress of these actions will be measured with the EVITA Presentation Support System.

In one case the manager thought that the development of a measure structure also worked as a tool for teambuilding. One of the pilot units was a rather fresh unit and the initial work with EVITA had according to the manager a positive effect on the group as such. They got a deeper understanding of their own and their colleagues tasks. They also got to know each other better, specially those who were not in a direct professional contact.

What about the employees then? One of the managers interviewed mentioned a comment he had heard from an elderly operator;

"now for the first time, I start to understand the key numbers we are using."

The result of the inquiry both confirms and contradicts this statement. For two of the three pilot units, there seems to be no problem. The employees are positive although on average not overwhelmingly enthusiastic. One reason for this might be the relatively early stage of the evaluation. As pointed out earlier the pilot units only have two months of use of EVITA to refer to. This means that in practice they have only had two monthly meetings where the plans and outcome of the period have been presented and discussed with the help of EVITA. It would be of greatest interest to follow up the attitudes after a year or something like that.

For the third pilot units the situation is a little bit different. The degree of acceptance of the system according to the answers of the questionnaire, 100% of the employees answered, is very low.

This should have a major impact on the possibility for EVITA to fulfil its task to support T-50, if nothing is done. It is not the purpose of this paper to give recommendation in this matter, but a general comment is that either do the members of the unit think that EVITA is no good in supporting T-50 or they don't for one reason or another like T-50 as such. Which or if both alternatives are the case is not possible to tell from the observation of this study, but would be interesting to investigate deeper. Anyhow the lack of acceptance in this group leads to the conclusion that for the third of the pilot units it is at present difficult for EVITA to have any bigger positive impact, while in the two other units , the potential when it comes to acceptance is high.

Validity

The question of analysis here is if EVITA is valid according to its purpose. It is valid if it focuses the organisation on the type of questions which it should.

Traditional control-systems are valid to companies run according to "mass-production" values. Problems arise with the validity if the organisation tries to develop or change towards the Lean Enterprise. The items measured in the traditional system may then not be in conformity with those which are thought to be important. In such a situation the criteria for relevance and validity will not be met and as a result not the overall effectiveness either. Something more is needed. This is by the way one of the main reasons why the EVITA-project started.

The purpose of EVITA is to support the T-50 process. The basic ingredients in T-50 are often summarised as *"satisfied customers and motivated employees"* and the way to achieve this is through *"process orientation, time compression, target oriented teams and empowerment"* .

The choice of perspectives in the Balanced Scorecards or the EVITA-structures are important . Through this the frame is set for the areas in which the individual units shall formulate strategies and plans. It is sort of defining the agenda. In EVITA three of the perspectives - customer, employee and internal process - can be directly related to key issues in the T-50 values. The forth - innovation and development - comes also very natural with T-50 through focusing on a key area to keep and develop satisfied customers in the future. Lastly the financial perspective

is not specially a part of T-50 as such but ultimately necessary for the long run survival of the organisation.

The question does not seem to be how well the chosen perspectives fit with T-50 values. It seems more to be, are there any important aspects of T-50 forgotten or deliberately left aside? The managers and employees were asked this question and so have other people who have been in contact with EVITA. Two potential additional perspectives have been discussed more broadly - a separate supplier perspective and an environmental perspective. One individual has also suggested a salary or reward perspective.

Supply management is an important part of T-50. However the object for evaluation in that is not the own company or unit but the supplying company. As the EVITA -structure is focused on the unit itself it is not fit to use it for evaluating a supplying company at the same time. Whether or not the EVITA- concept could be used for this purpose is another matter outside this part of the project. On the other hand the own units working with its supplier can be evaluated within EVITA and then most suitably within the internal process perspective.

It has also been discussed if there should be an environmental perspective. The advantages mentioned have been the visibility for environmental questions both internally and externally and through that a signal of priority. Another approach is to see environmental aspects as an integrated part of each one of the perspective. If so all strategies, actions and sets of measures should include the environmental aspect if this is thought to be important. If it should be desirable then the environmental aspects of a whole EVITA - structure could be displayed, showing the width of the entire environmental activities in the unit. The choice was made not to have a separate environmental perspective.

The suggestion to have a salary or reward perspective brings forward the question of the relation between EVITA and some sort of reward/sanction system. This question was put to the managers. The general opinion, expressed by several was approximately this; *"today this is no big problem for EVITA. The system itself creates enough drivers. But in some years time, when the system no longer is something new, then it might be important to strengthen the impact of the system with some sort of reward scheme. But on the other hand we have from time to time some problems in the group with the growth in remuneration for top management as seen in the newspapers compared with the growth the ordinary employee experiences although he/she thinks he/she is doing a much more qualified job today"*.

How this will develop is another area interesting to study in the future.

To summarise the analysis of the EVITA´s validity it is noted that the system brings forward information about areas important according to the T-50 ideas. It does not seem to be any important areas omitted. In doing so the system supports the units to act according to T-50. Whether they actually do so is largely a matter of will of decision makers and operators. EVITA supports but the acting is done by real persons. Of course a system can make it more or less easy for people to act. At this stage it is difficult to evaluate if EVITA really has had any impact on peoples actual actions. According to what people say, there are strong indications for this but it is really to early to evaluate this aspect.

Reliability

The reliability of the systems is closely related to the design and performance of the IT- based presentation support system and the application of the individual measurement structures. The design and development of such a support system is still a complicated task. The result of the development process is however much appreciated by the managers of the pilot units according to the interviews. There still exists some minor problems but on the whole the managers are satisfied. They all thought the figures delivered by the system to be correct. One important reason for this what that they themselves controlled the data input and that the data processing was transparent so they knew it was correct.

Also the employees were asked the same question and here employees at all the pilot units were of the same opinion. They agreed to some extent that the information from EVITA could be trusted. When asked some employees also made reservations for trouble they had experienced during the development period of the Presentation Support System. There are actually some indications that the development process here should be run in close contact with the pilot units and that in the EVITA process, this could have been done better. There is a potential for a still higher reliability.

Relevance

The relevance of EVITA is to some extent a question of the relevance of T-50 for achieving the long range objectives of the company. This question is to some extent outside the scoop of this study, but is of course of highest importance to the company itself. The top management

of ABB Sweden has strongly promoted and supported the ideas of T-50. As long as they continue to do this, EVITA is believed to be a relevant system for the organisation. The financial performance during the last five years for ABB Sweden has increased yearly by 100 MUSD from 1991: 100 MUSD - 1995: 500 MUSD. This development can be related to;

1. the low value of the Swedish currency and therefor opportunities for large export volumes at good prices.
2. the impact of the T-50 process

Overall effectiveness
It has been said earlier, and it should be said again, the ultimate indication on the overall effectiveness of EVITA is if it has helped, and if so to what extent, the company to survive in the long run. The operational measure of this is often the impact on the bottom line in the profit and loss account. As already pointed out it is to early for that. However there are some observable effects. They have already been mentioned but they will be summarised here again. As a complement to this an evaluation of EVITA´s overall effectiveness can be done on basis of the analysis already presented. The main observed effects of *the process of developing the measurement structure for a unit are*;

- EVITA helps an individual unit to develop a set of connected strategies, plans and measures within the framework of the strategies of the company,
- EVITA reveals inconsistencies in existing strategies, plans etc. in relation to the above.
- The development process can also be used as a team building instrument as such.

The main observed effects of *the use of EVITA are;*

- EVITA gives the individual unit a tool of its own to measure, report, evaluate and reformulate its own strategies and actions.
- EVITA makes it possible to present a concise picture of the critical perspectives for developing and keeping the competitive edge in the long run both for an individual unit as well as for the hierarchy.
- EVITA makes it possible for a unit to focus different aspect or areas within the framework of their strategies and plans.

How well the criterion of overall effectiveness is met for EVITA or Balanced Scorecard type systems depends to a large extent on how well the acceptance criterion is met. How well it is met is affected directly by the value system of the sub group and indirectly by the quality of the IT-support system. In this case all of the managers closest involved and all employees but the ones in one of the pilot units are on average positive to EVITA, but of course there are individual variations. For these units there is nothing which speaks against EVITA adding to the overall effectiveness of the units. For the third unit it is evident that some extraordinary actions must be taken if EVITA should be successful. How well the reliability criterion is met will also have an impact on the overall effectiveness of the system. Again the quality of the IT-support system and the information put into it is of importance. Garbage in - garbage out is valid as usual. For EVITA the reliability is thought to be enough but there are still place for improvement. The development process of the Presentation Support System could have been run in closer contact with the "users".

When it comes to validity and relevance the critical issues are two. First are the values behind "T-50" or in a more general "the Lean Enterprise" in a broad sense relevant for the long run survival of the company ? If so then secondly, according to the analysis, EVITA is a valid system for ABB Sweden in that respect that it can support the values behind T-50. This does not mean that EVITA is the best system to support T-50. It all depends on how the system is used. No system gets better than the way it is used. The executive management of ABB Sweden have the opinion that T-50 is important to the company. If this view continues, if EVITA is used as it should and the information acted on, then EVITA should be a positive tool for the company.

Top management has a decisive influence over the aims and design of control systems[25]. They decide in the short run if they for example should favour top down control, bottom up empowerment or something else. Such decisions are based on the top management's beliefs, hopefully on what is good for the survival of the company. In the long run the market and competition will tell if their values were appropriate.

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[25] Johansson and Östman, 1995

All in all, Balanced Scorecard type systems are designed to work in settings where a Lean Enterprise value system is dominating. There they can be an important tool for support of the ideas. But it is doubtful if a Balanced Scorecard-type system can create or be used to create a shift in the dominating value-system from the traditional "mass-production" ideas to those behind "the Lean Enterprise". If the dominating value in management in a local company is "mass-production", then probably EVITA will not even get the chance. According to the findings in this study, probably such a shift has to be accomplished in some other way. The probability for EVITA to be successful is higher if the change in value system is done before the introduction of the Balanced-Scorecard or EVITA ideas. There are indications, statements from some managers, that EVITA is not an effective instrument for creating a change in the dominating value system in a local company. The overall effectiveness of a local EVITA-application then becomes a question of the existing dominating value system in the individual unit or company, to what extent it is in accordance with the T-50 ideas or not.
On the other hand, if EVITA is used in a setting with a dominating value system according to T-50, then there are clear indications, based on the answers from the managers and employees, that EVITA can change the value system of other members of the organisation.

A short comparison with some other findings

To start with, the sentiments of several key persons in ABB Sweden when it comes to management control systems were very close to those expressed by for instance Johnson, Kaplan and Deming.[26] There existed a considerable dissatisfaction with the conventional control system and its heavy reliance on the financial accounting system. With the success of T-50 there existed the need of a control system which was not so much focused on **control** but more so on **support** to the local management and employees to do their best for the customer. It has already been described how the project in the early stages was inspired by the first two articles of Kaplan and Norton. It should however be noticed that ABB - Sweden choose to do things slightly otherwise. To start with they added a fifth perspective, human or employee, which also has been suggested by others.[27]

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[26] Johnson and Kaplan, 1987, Johnson 1992, Deming 1986
[27] Maisel, 1992

ABB Sweden's approach is different in its relation to the hierarchy compared with the two initial articles by Kaplan & Norton and also the approach presented by Lynch & Cross. These two other approaches is based on a very clear top - down view. The objective of the balanced scorecards by Kaplan and Norton is to give the top management a quick, simple and balanced view of the company.[28] Also Lynch & Cross has a hierarchical view. Their model is even named the Performance Pyramid.[29]

In ABB - Sweden it was nailed down from the very start that the system created in the EVITA project should be a tool for the local units or target oriented teams. It should not be a system where it was possible to directly break down quantitative targets or target levels or to accumulate the outcome from the levels below to get the outcome on next level. Each unit should stand alone when it came to quantitative targets or outcomes. The influence from the hierarchy comes through the visions and strategies articulated in EVITA terms. The vision and strategy of the unit above forms the framework for the mission, vision and so on for the units on the level below. The information produced in EVITA is primarily produced and consumed at the local level. In the other approaches mentioned the information might be produced at the local level, but it is primarily meant for consumption at the top. This does not mean, as pointed out earlier, that the hierarchy is unimportant or uninteresting in EVITA. On the contrary, but the ABB approach is more in line with the ideas of empowerment advocated by for instance Johnson[30] or the ideas on how Kaplan and Norton could be applied to target oriented teams presented by Meyer[31]. In several interviews and from other observations it becomes very clear that if a more hierarchical strategy had been chosen for the EVITA project it had never received the acceptance it has now and it would also had been strongly against its own basic values, T-50.

Another difference with the EVITA model compared with Lynch and Cross is that in EVITA the financial perspective is present also in target oriented teams on lowest level. The financial perspective may here not always be as important as on higher levels, but it exists. In some target oriented teams, specially within product divisions, there exist ideas to

[28] Kaplan and Norton, 1992
[29] Lynch and Cross, 1991
[30] Johnson, 1992
[31] Meyer, 1994

create the "small company" within the "big one", with the help of EVITA. In such an approach the financial perspective should play an important role. However these ideas have not yet been realised and it remains to be seen which degree of freedom will be allowed.

Euske, Lebas and McNair[32] has made a study of 24 US and European "World Class" firms on their of performance measurements. The EVITA approach in the respect to the use of financial information has close resemblance with the their findings. They describe it with a model called the "hinge". According to that model, financial information is the most important at the top level of an organisation and physical and operational information the most important at the bottom, but financial information is used at the bottom and physical and operational at the top. Somewhere between the top and the bottom there is a management level, the "hinge" where the focus of financial information is translated and transferred to physical and operational information and vice versa. In ABB Sweden with the EVITA concept this "hinge" could be seen at the individual company level between the financial information system ABACUS and EVITA .

Something similar to the idea of shifting focus of interest or control within the measure structure of EVITA, which has been described above is also reported by Euske, Lebas and McNair. It seems as mangers wants to have the possibility to always have something to challenge the organisation with. At the same time, at least the managers in contact with EVITA found it difficult to put the same attention to all measures, maximum 25, at the same time. The risk they saw was a split of efforts on too many things.

Euske, Lebas and McNair also report diversity of measurements and customer focus as important qualities in the use of performance measures in the companies studied. It is also here easy to note the similarities with EVITA, so it seems reasonable to conclude that EVITA in these respects seems to be much in accordance with the practises of other successful companies.

The view expressed by some managers, that EVITA has a second level and a potential as a strategic system, is something in complete line with the third article by Kaplan and Norton[33]. This article has not had any impact on the EVITA project but the similarities in experiences are

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[32] Euske, Lebas and McNair, 1993
[33] Kaplan and Norton 1996

striking. In this article the view on the hierarchy's role is much closer to the view in EVITA.

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