Strategic management tools in projects case construction project

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Abstract

The important role of using mission, vision and strategy has been acknowledged in most organizations today. Mission is the reason why the organization exists. Vision is the ideal state of the organization in the future. Strategy defines the way of how to get towards the ideal state introduced in the vision. These tools are considered to be very useful in guiding the whole organization into the same direction. Different ways of producing mission, vision and strategy have been developed. In projects, using these tools are still quite rare even though it is acknowledged that projects in an organization should support the overall strategy of the organization. In addition, every project should have a clear direction where to go and this direction should be stated to every stakeholder of the project. In this paper we will discuss the possibilities of using strategic management tools in project environment.

A case study is used to illustrate the use of strategic management tools in a construction project. The construction project is still going on, but already now it can be seen that vision building really helped getting the end user organization committed, and they have been very active in all steps of the design process, e.g. given their opinions in different matters. The vision has also been used when prioritizing different choices.

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1. Introduction

The research on projects has expanded during the last decades. The focus of the project research and also the focus of the strategic perspective of projects is either on a single or multi-project level, or on the whole organization level (verify [29]). Projects and strategies have been approached e.g. with the following views:

- Project business strategies. The project portfolio strategy (e.g. [3–5]) is one of the most important views. The front end of the projects is one approach to the project business strategies. The challenge lies on what kind of projects to select and how to manage all the different kinds of projects.

- Project strategy refers to a high level plan for achieving the given project’s objectives (e.g. [1]). There are strategic decisions in every stage of the project.

- Project management strategy refers to a strategy for the management of a project like teaming strategy; flexibility of projects; risk management avoidance strategy like piloting; contract strategy and alliances.

Many researchers have pointed out the importance of defining and managing the final project product (e.g. [3,23,12]). Combination of project and program or project plans and other management plans are used to manage programs and projects, parts of which describe how the project is to be undertaken – in other words, its strategy [23]. Value management combined with risk management supports the achievement of strategic objectives.

Projects have typically at least four phases: (1) proposal and initiation; (2) definition and appraisal; (3) implementa-
tion and control; and (4) finalization and close up. According to Turner [31] each phase is a miniproject that needs to be managed. He defined that there are three levels in the whole project and also in each of the phases phase: integrative, strategic and detail levels. The main result of the integrative level is the project definition plan. In the strategic level the objectives are defined and the means of how these objectives are achieved. The milestones for the project are set. In detail level the project tasks are performed. Turner [31] has defined that the strategy needs to be studied first in the larger context and the lower context strategies are then linked to the larger ones.

Anttila et al. [2] argue that only the final end result matters. Time, cost and resources are constrained objectives of the project – more important is to focus on defining and managing the final project product [3].

2. Project business strategies

According to Morris and Jamieson [23] it is important that the organizations understand their business management model and the position of project, or program, management within it; and hence for project management to see how they are sit alongside – and are perceived by – the business management functions. The project portfolio management research line addresses the strategic management of multiple projects in business [5]. Lycett et al. [20] criticized the management of projects to be too rigid and to emphasize the original-work, coordination-oriented project management view rather than a strategic-change business perspective. According to them current management approaches may not give enough recognition to the business context of projects, such as the strategic, business cycle, or R&D. Researchers have approached strategy, for example, by focusing on how strategy is managed: how it is formulated and implemented (e.g. [21,7,6]). Strategy researchers have included projects and projectification in their fields of interest as part of strategy formulation and implementation [25], but also complex product systems and their characteristics have been extensively researched [5]. This approach gives guidelines on how to select which projects idea is worth of being realized and which can be forgotten.

Organization’s ability to align resources and activities with strategic objectives can result in success or just survival in the business. Projects are often seen as part of the design and execution of future strategies of the organization. It is more important to do right things than do things right. This means that it is more important to select the right project than do the project effectively. Therefore, the managerial focus of organizations has shifted towards the multi-project management and towards the effective linking of this set of projects to the ultimate business purpose [4,14].

The selection of project can also be seen as front end activities of the organization – this means the strategy selection stage when the decision makers need to select which way to go.

3. Project strategy and scope management

The vision of the project gives the overall direction for the project. Vision not only has an important role in leadership and management of the project team, but also gives means to manage the project product. Vision creation needs management though it needs to remain creative process [22]. Today’s high environmental complexity requires faster decisions, better allocation of scarce resources and a clearer focus [13,8]. Christenson and Walker [11] identified four characteristics that a vision should possess: it must be understood; it must be motivational; it must be credible; and it must be both demanding and challenging. They also claimed that though a charismatic leader may provide much energy and useful motivational impulse to the development of an effective vision, a stakeholder reference group may form a more enduring framework for vision development and planned deployment.

The project aims to produce products or services. The sum of services and products is called project scope. The scope includes aspects of (1) quality of the project product and (2) performance, functionality and technical properties of the project product [3]. The scope of the project is driven by the purpose, or expected benefit ([31] p. 8). The scope management of a project includes the processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully [27].

Innovation process or project can be understood, which comprises of three different phases: front-end phase, offering development phase and commercialization phase (see e.g. [10,18]).

According to Koen et al. [18] the front-end phase consist of five different elements:

1. Opportunity identification: identification of opportunities driven by the business goals that the organization wants to pursue.
2. Opportunity analysis: translation of identified opportunities into specific business and technology opportunities and execution of technology and market assessment.
3. Idea genesis: creation of description of idea or product concept.
4. Idea selection: selection of the most valuable business ideas.
5. Concept and technology development: development of a business case.

Strategic process includes measurement, estimation, calculation, comparing and assessing probabilities [30]. The objectives of a project are set for the content, quality, time, cost and some resources of the project. The strategy of the project defines the objectives, the criteria to assess the project success and the risk management plan. For example, the purpose of a project can be unclear and ill defined outset if a key objective of the project is to create something
new, to learn, to explore and to add substance and meaning to the broad outline of the organization strategy [17].

3.1. Project management strategies

The project manager can choose among many different processes to manage the project. PMI [27] introduces many accepted processes. For example, project risk management and teaming practises can be done only roughly or the project manager can use a more thorough way of analyzing risks and/or forming the team.

One way of choosing the project management way is to analyze the type of project. The project vary on many ways on what kind of knowledge is used and what kind of change is going to occur.

The companies use early warning signal system to control the projects. Somebody observes the signals and then one reacts to the signal if it is appropriate to react. According to Sachez and Perez [28] the Spanish companies most often used the following early warning signals: project cost and time deviations and achievement of technological goals. The companies often created their own checklists to follow the signals.

Norrie and Walker [24] used a balanced scorecard framework as a strategy to communicate the strategic measures and connections to the business. They found that it aided the communication and the decision-making in the project.

4. Strategic tools in a public construction project

4.1. Method

The case study looks into the use of the strategic management tools in a construction project. The empirical material is gathered in the PROLAB-project. The objective of the PROLAB-project is to find practices, which prevent project knowledge management failures. In the current case we used an action research approach. The researchers and the community members formulated the research question together. The community selected the persons who should be involved in the study (verify [15,9,16]). The research question was stated to be “how can we improve the knowledge management in the selected construction project especially in the beginning of the project”.

The chosen project is a school project in a Finnish town. The pupils of the school are 6–13 years old. The total area of the renovation and partly new construction of the school is 3200 m² and the budget is 2.9 million euros. The project started in 2003 and is at a moment being constructed. There are in total 270 pupils at the school.

At least one of the researchers participated in all the construction project meetings of the school during 2004–2005 and at the same time new methods were developed with the project team. One can claim that the researchers effected very strongly on the decision to test the new methods. The action research focus is often criticized about this but we believe that the objective benefits and disadvantages of the test can be, however, shown by presenting how the organization is planning to utilise the methods.

4.2. The town vision, strategies and the renovation project

In the beginning of the third millennium the town was at the edge of a crisis. The total amount of population was not growing. At the same time the amount of the elderly was increasing. The demand for the services was growing bigger and at the same time the amount of tax-payers and the tax revenue was decreasing.

The town problem was that even though there was endogenous growth, the town was loosing inhabitants – families especially – to the neighbouring municipalities and to the other towns in Finland. The solution to the problems described was to increase the quality of the services and thus compete with the other towns for the best tax-payers. The town vision was “A good life in the town”.

One of the town’s strategies was to attract the families by offering high quality educational services. This strategy includes having a dense school network and a wide variety of services. There were schools, which were specialized in art, music or sports. The school renovated was specialized in music. This was why its renovation was important to the town decision makers.

During 2004 the political decision makers made the decision to invest in the school project next year. In the town during 2004 there was only two that size investment decisions. The next phase started with planning the alternative financing possibilities based on very rough estimates and

![Fig. 1. The levels of objectives and strategy formulation (slightly modified [31]).](image)

![Fig. 2. Four knowledge related project management environments [19].](image)
description of the project. The management of the stakeholders is described in Figs. 1–4.

4.3. Idea generation and selection of the project

The project begun with an idea generation – the principal of the school proposed the school for the facility department. The facility department and the school office helped the principal to write down the proposal so that it was accepted. The general goal was to renovate the old school and construct new additional part. The facility department made preliminary studies of the state of the old building and made the first sketches of the renovations in order to study the cost estimates.

The political decision makers assessed the proposed projects without any formal method. The decision makers had to assess very different kind of projects at the same time, but the specification need was so clear that they believed the school needed renovation.

4.4. Feasibility study

The town officers are planning to change the decision-making to be more accurate by requiring a more precise feasibility study report in the future. During this project we constructed an example of the report. The feasibility report shall be in the future required in every project and the users of the building are responsible to formulate the report but the facility managers shall help them. In the future the cost estimate of this stage shall also be rough but the need shall be explained in more details. Earlier they studied only the condition of the current situation but from now on there shall be estimates of future actions; like the amount of pupil in the region and the needs for special requirements.

4.5. Project planning

In the earlier project the project was not officially planned before construction stage. The plan has been to organize as many meetings as required to get a mutual understanding of what is needed and how that is going to be achieved. The only official report was earlier a short project definition report that was mainly directed for decision makers like the political decision makers or the government financing bodies, the designers looked from that report only the square meters of rooms and the overall quality description – they had to be reminded if it was more accu-

<table>
<thead>
<tr>
<th>Change</th>
<th>Magnitude</th>
<th>Pace</th>
<th>Degree of Uncertainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature of change</td>
<td>Scope</td>
<td>Amplitude</td>
<td>Tempo</td>
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<tr>
<td>Radical/Strategic</td>
<td>Broad</td>
<td>High</td>
<td>Rapid/Urgent</td>
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<td>Radical/Concrete</td>
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<td>Rapid/Urgent</td>
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<td>Incremental/Strategic</td>
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<td>Steady</td>
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<tr>
<td>Incremental Concrete</td>
<td>Low</td>
<td>Low</td>
<td>Steady</td>
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</table>

Fig. 3. Estimating the uncertainty associated with change [17].

<table>
<thead>
<tr>
<th></th>
<th>Political decision makers</th>
<th>Users of the building</th>
<th>Project management in the town</th>
<th>Architect</th>
<th>Other professional designers</th>
<th>Contractors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idea generation</td>
<td>✕</td>
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<td>Investment decision</td>
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<td>Feasibility study</td>
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<tr>
<td>Project definition stage (Includes the vision of the project)</td>
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<td>✕</td>
<td>✕</td>
<td>✕ in the vision generation</td>
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<td>The project approval based on the project definition report</td>
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<td>Design</td>
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<tr>
<td>Building permit</td>
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<tr>
<td>Tendering</td>
<td>✕</td>
<td>✕</td>
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<tr>
<td>Construction</td>
<td>✕</td>
<td>✕</td>
<td>✕</td>
<td>✕</td>
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</tr>
<tr>
<td>Finalisation and close up (not yet done)</td>
<td>✕</td>
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</tbody>
</table>

Fig. 4. Project phases and the roles of the participants. ✕ in the future this stage is required before the investment decision. ✕ ✕ several bodies: the school board, political board of the school administration and town board approve the plans and investment during the stages, and the town planning board gives the building permit.
rate than that. There was normally neither a clear vision nor a timetable for planning or designing. In this project we defined vision, project plan and project definition report.

4.6. Vision

Without a clear vision every party has different opinion of the project. The vision was created together with all the parties: the staff from the school (including kitchen and cleaning), parents of the students, public administrators (from school office as well as maintenance department) and the chosen designers. However, all the designers were not yet chosen.

We gave two objectives for the vision building of the construction project:

1. to motivate participants to take part in the design process (specially school personnel) and
2. to use the vision later in the process as a tool for guiding the prioritizing the different needs and wishes.

A half-day session was organized by researchers and city personnel to build the common vision for the renovation project. In the beginning of the session all different parties presented their own view to the project. This was a good idea because it helped people realize that wishes and needs from different parties are numerous and it will probably not be possible to make them all come true. After this participants (all together 69 persons) were divided into smaller groups to discuss what kind of school would be wanted. Three different scenarios were given to the groups: small village school, lots of other activities than teaching, scenario of poorness (lots of students, little money) and specialized school (schools competing of students by specializing).

Ideas developed in the groups where next presented to other groups. Words like ‘safety’, ‘cosines’, ‘practical’ and ‘good acoustics’ came up. After this all participants cast their votes, each for the three most important things. Eight things that got the majority of the votes were

- ‘practical’ (21 votes);
- ‘safety’ (19 votes);
- ‘facilities that are versatile and can be changed according to the needs and thus support specializing’ (13 votes);
- ‘the construction process is safe and of good quality’ (12 votes);
- ‘versatility’ (9 votes);
- ‘a school that emphasize culture and presentation’ (8 votes);
- ‘economical in the whole life cycle’ (7 votes); and
- ‘student must come first’ (7 votes).

The common vision was created in discussion, based on the voting of the participants, and it is as follows: ‘Practical and safe school that supports specializing by multipurpose rooms and that is economical in the whole life cycle as well as good quality’.

All participants committed to making the vision come true and the project manager took the major responsibility of the matter. Afterwards participants were asked to give some feedback and that feedback appeared to be very positive. Many people in the meeting said that this kind of way to work should be used in every project.

4.7. Project plan

Naturally, it is not enough to build a vision in order to accomplish the renovation project. Also a strategy on how to concretize the vision is needed. The project plan contained e.g. the risk analysis of the process. The plan was written for the whole project and it was planned to be updated during the stages. The financing bodies also wanted the description of how the project shall be organized and some things were written in two places in the project plan and definition report.

4.8. Project definition report

The vision was written in the project definition report. The project definition report was written according to the guidelines given by the Finnish government since the town applied financial aid from the government. This stage was very demanding since the school needed to learn what is possible. The report contained the need specification, content and quality of the spaces, maintenance plan, the cost estimate, the organization plan of the project and some drafts of the designed school. During this stage they checked the need in details.

4.9. Design stage

The vision guided the design by giving the overall selection criteria. Also the definition report was used as a constraint and goal. The project plan gave guidelines of the organization of the design. The design started with activity cards of each space. These cards were filled by the teachers, kitchen personnel and other users of the building like cleaners. The pupils or parents were not able to participate in the design. These activity cards were also made so that the vision could be supported e.g. in every card there was a question of the multiuse possibilities. In practice most of the classrooms were also designed to be working rooms for the teachers and if this was not possible and the teacher would not have a working room the space for working was designed connected to the teachers room. The objectives were talked in details in the design meetings.

We aimed to improve the understanding of every party. In order to support the understanding of design decision of the classrooms we built a real size mock up. It was built simply with paperboards and old furniture, etc. with the teachers, facility department people and the architect.
The idea to test the design decisions was good and it also helped the designer talk about the alternatives with the users; e.g. the location of sockets were tested. The architect told that it was possible to talk more details in advance than they normally do. It was clear that the users had not understood the drawings though there were some 3D drafts.

4.10. Construction stage

This study does not cover the construction stage.

5. Discussion

Project business strategy or in the town the strategy of the town did not guide the selection of the project. The projects may in communal work rival with each other and the strategies are sometimes not aligned [26]. The political decision makers are unpredictable and this makes the public projects challenging. However, we believe that the town officers would benefit in analyzing formally the project proposals. The development manager of the town has already made a proposal on how the projects shall be analyzed before the political decision makers make the decisions.

Project strategy is defined in a construction project in the document that is called ‘project definition report’. Often it is said that the construction projects are not radical change projects. When analyzing with the framework of Kenny [17] we find that the school project in practice needed very fast reactions from the school and probably it changed the culture of the working method. People started to work in the classrooms instead at home or in the joined teacher room. However, the change will occur in the future but the decision was made without thinking too much. Also there was a lot of tacit knowledge on how the teaching needs to be organized, or how the facility can support the teaching or meeting the student in the nurse room when the student has e.g. mental problems. The design situations are complex and need a strategy on what kind of things are important.

In this case the vision of the project is clearly stated in the project definition report. The vision was made with a large group of people. The vision building was expensive. For a vision to have 69 people working for four hours costs a lot. Therefore it has to be carefully considered in which projects the vision can give so much value that it is worth all the costs. How to measure the value of vision and the scale of the project has to be decided within the organizations. In the future the project group writes the vision first in the feasibility study report. Later in the project definition report it is clarified. Again during the design stage the vision is updated.

If the political bodies want to arrange vision building meetings they are encouraged to do that. This can aid the design but the constraining factors cost, time and resources are seldom understood in this type of vision building meet-

ings. The political decision makers need to be conscious of their responsibility in accepting the limitations.

The project management strategy needs to be written also. In the case project we wrote the project plan. In the town it was difficult to know what is the difference of project planning and project definition plan. It is very understandable since they normally had never planned their own work in a written format and then when we started to do that we aimed to plan the whole project from the beginning to the end but that was impossible. We found that it is better to plan the project in sequences and write separate plans for each stage: project planning, design and construction; even the finalization and close up needs planning. Maybe there could even be separate guidelines for the school, since it looked like a lot depended on the ability of the principal to take care of everything: organize the moving out and moving in to the building; and even the purchase of the furniture.

In the test case the project planning did not work properly but the test showed the need for such a plan and the project manager started to write a short plan for each stage in the town. The test case also improved the ability to make risk assessments in the projects. According to the project manager only the non-typical risks need to be written down.

6. Conclusions

It is not enough to have a clear vision, and there also needs to be concrete and measurable objectives and strategies for every stage of the project and also before it, so that the right projects are easy to be selected. If the vision is built with all the stakeholders it is often too expensive an endeavor but, however, it is important that the vision is consciously generated in the project group. The strategic thinking in projects needs to be approached with project portfolio strategy (e.g. selection of the projects); project strategy (the project scope management); and project management strategy. The practitioners found these levels confusing. The practitioners liked to manage only the constraints: time, money and resources. However, the scope management and selection of the project are most important for the project success.

References


