CORPORATE STRATEGY AND PROJECTS – MIND THE GAP

HERMAN STEYN
University of Pretoria, Graduate School of Technology Management, South Africa
herman.steyn@up.ac.za

ABSTRACT

A model that links the management of individual projects to corporate strategy is used as the basis for identifying typical shortcomings in the processes that synchronize projects with corporate strategy. The processes that link projects to strategy include project screening, project portfolio design and project prioritization, as well as scheduling of key resources and projects. A list of typical shortcomings in practice is presented to guide organizations in improving their internal processes. The list can also serve as a basis for future case study research in industry. A project management office (PMO) as well as a person with the role of project portfolio manager can contribute significantly to managing the processes that link strategy to individual projects.

Key words: Multiple projects, strategic planning, project portfolio management, project screening, project management office.

INTRODUCTION

It is much easier to develop a strategic plan than to implement it; in fact, many strategic plans are never implemented successfully (Okumus, 2003; Allio, 2005; Meskendahl, 2010).

While implementing a new strategy is a project in its own right (Lord, 1993), *all* projects should be linked to corporate strategy. Insufficient links between corporate strategy and projects is a major cause of the above mentioned failures to implement strategic plans as well as of unsatisfactory results obtained through projects.

The objective of this paper is to give an overview of the process from strategic planning to the management of individual projects, identify some typical shortcomings in the process and propose a list of typical shortcomings that can (a) be used by organizations to improve their business processes and (b) serve as framework for case study research on the processes that link strategic planning to the management of individual projects.

THE MISSING LINK

While some people have argued that too rigorous a project portfolio management process stifles innovation, Gutiérrez & Magnusson (2014) found in this context that stakeholders experience formal decision-making processes as more legitimate than informal and non-rational ones. It is also important to note that, in addition to the processes that link strategic planning and projects being formal, involvement of senior management in and support of senior management for the processes is a key success factor (Fricke & Shenhar, 2000).

Elonen and Artto (2003) claim that in some organizations there is no clear link between strategy and project selection. Various models describing the steps or processes between strategic planning and projects have been proposed in the past, for example by Archer and Ghasemzadeh (1999) and by

Nelson et al. (1997). A more recent model that describes the processes that link strategy and individual projects (Steyn et al. 2015) is used in the discussion below. This model is presented in Figure 1. Each rectangle in the figure as well as "Final Delivery" presents a specific process while each oval represents a depository of projects.

Strategic Planning and Proposed Projects

Several books and a multitude of papers on strategic management are available and it is assumed that the reader is familiar with the basics of strategic planning. This paper therefore merely addresses the links between strategic planning and other processes that link it to individual projects.

In Figure 1 note the dotted-line link between "Strategic Planning" and "Proposed Projects". The arrowhead pointing to the right indicates that a strategy often leads to new projects being proposed; the strategy of a company defines the direction of its future projects. An example could be that, if the board of a mining company decides as part of its strategy to diversify into oil and gas projects, it would lead to projects (and probably programs) related to oil and gas being proposed. The arrowhead pointing to the left indicates that potential projects can influence the strategy of a company. For example, if a mining company is aware that there are valuable, undeveloped deposits of a certain mineral in a specific foreign country, this knowledge and the possibility of projects to establish a mine or mines there can influence their strategy.

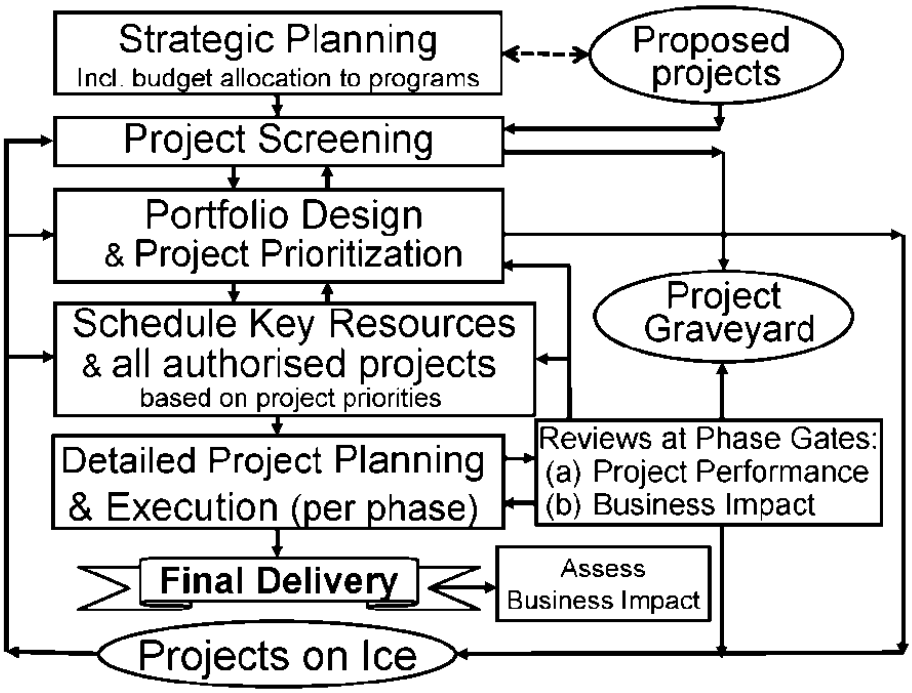

Figure 1: Model illustrating the link between strategic planning and projects, Source: Steyn, H. (Ed.), 2015. Reproduced with permission of publisher

Screening of Projects

There is probably no organization that has sufficient resources to pursue all possible projects. Resources that are in short supply often include funds but *people* who play key roles on several of the company's main projects are typically also limited and often constrain the number of projects

that can be pursued. Resource constraints, including key personnel, therefore need to be taken into account when decisions are taken about which projects are to be pursued and when they would be pursued. This implies that projects need to be screened and prioritised.

The strategy of an organization typically excludes certain types of business. For example, employees of a construction company developed software for managing construction projects. The company subsequently decided that the development and marketing of software does not form part of their core business and the rights to the software were sold to a new venture in which the developers of the software play a key role.

Before major expenses are incurred on a proposed project, a feasibility study should be done to assess the viability and merits of the project. In the case of a large project, the cost of such a feasibility study is normally quite high and it is customary in such cases to first do a less costly pre-feasibility study to assess whether it would be advisable to release funds for the feasibility study. The results of a feasibility study are reported in a document called a business case. In order to justify the project, this document indicates the value that the project is expected to deliver as well as an estimate of the resources that are anticipated to be required.

In some instances the first phase of a project is referred to as FEL-1 (Front End Loading-One) (Merrow, 2011) while in the PRINCE-2 methodology (Office of Government Commerce, UK, 2009) it is referred to as the “Pre-project stage”. This phase coincides with the Project Screening process in Figure 1; it delivers a business case for a project that confirms that the project is compatible with the organizational strategy, is worthwhile and viable. Once the initial phases of a project have been completed, costs rise exponentially and, the later in the lifecycle of the project, the more costly and difficult it therefore becomes to terminate the project or even to suspend it (to put it “on ice” as projects suspended for later re-consideration are referred to in Figure 1). It is thus essential that the initial phases of the project lay a solid foundation for the work that is to follow. These initial phases of a project should never be rushed, nor should budgets be cut in order to save money on the short term (Merrow, 2011). Executives, owners, customers and other stakeholders should pay special attention to all work related to the feasibility of the project and should be very strict not to allow a project to proceed through a phase gate if they are not hundred percent satisfied with the work done during any one of the early phases.

Many potential projects are simply not justifiable and should not be pursued because they are foreseen to contribute insufficient value and/or that risk of failing in some or other way is simply too high. The arrow from Strategic Planning to Project Screening in Figure 1 indicates that the corporate strategy should provide guidelines regarding the types of business that should be pursued and types that should not be pursued. These guidelines are then used to exclude some proposed projects that do not fit the strategy well.

Only projects with a good prospect of positive business impact and that can be funded sufficiently should be allowed into the system. Proposed projects that should not be pursued should be sent to the “Project Graveyard” (Figure 1). The proposals and the reasons for not considering them any further should be documented and filed with all other relevant project information in the Project Graveyard depository.

If the feasibility phase of a project has been concluded and the business case and the overall, high-level business plan have been accepted, the project has passed the screening test and it proceeds

into the next project phase, but not before (a) its priority has been assessed relative to those of other proposed and existing projects in the portfolio and also not before (b) decisions have been made about a schedule for allocating key resources to it.

There should be a formal list of projects that have passed the Project Screening process. (There should also be a second list of proposed projects that have not yet been assessed, a third list of projects that have been put on ice and a fourth list of projects that have been sent to the Project Graveyard). In practice it is however difficult to compile and maintain a comprehensive list of all active project work in an organization; functional and other managers typically initiate work that they do not officially register as projects (Blichfeldt & Eskerod, 2008). As such practices oppose the processes that link strategy and projects, executives should ensure that any such practice is eliminated.

Projects that have passed the initial screening do not all have the same priority. Before a new project is allowed to progress into the next phase, it should be considered together with all other new and existing projects and the project prioritised relative to the other projects; a formal ranking list of projects (discussed later) should rank all projects that have passed the screening process according to priority.

When a project has passed the screening process, it proceeds into the Portfolio Design and Prioritization process (see Figure 1) that takes place interactively with the process of allocating key resources to and scheduling of the next phase of the project. A subsequent project phase should be scheduled according to (a) the relative priority allocated to the project and (b) the availability of key resources.

Upon execution of each project phase, the work performed during the phase as well as the deliverable(s) of the phase are assessed before the next phase is authorized. The Review at Phase Gate process is described later on in this paper. The Portfolio Design and Prioritization process is discussed next.

Portfolio Design and Prioritization of Projects

Projects and programmes are investments and the objective of Portfolio Design is to maximise the value of the projects pursued.

The idea of *portfolios of investments in general* has been around a long time and, as in the case of other investments, structuring of portfolios applies to projects and programmes as well. An important part of the idea of a portfolio is “not putting all your eggs in one basket”. This implies a portfolio with several “baskets” that should be balanced in one way or another.

Balanced portfolios

Businesses typically diversify to balance their portfolios and allocate resources to dissimilar objectives. Examples include the following:

- Projects to develop high-risk, breakthrough technologies (that will hopefully yield high return on the investment) versus more maintenance-like projects to improve efficiency of the current business;

- Larger projects with longer-term cash inflows and/or other benefits versus smaller ones with shorter-term benefits;
- Projects with benefits to an individual business unit versus others with benefits to the whole business (and even to the business environment).

It is normally also good for a portfolio to include projects that are in different phases of the project lifecycle.

Above all, the strategic vision needs to be balanced with what is affordable and achievable with the available resources.

A prudent portfolio – whether of projects, programmes or other investments – has the purpose of maximising return on the total investment of the shareholders (now and in the future) without taking undue risk.

While an organization should not "put all their eggs in one basket", this approach of diversification can also be taken too far; there is also a good case to "stick to the knitting". First, with a too diversified portfolio a company can lose focus. When projects are similar, there can be more synergy between projects; what is learned on one project can easily be transferred to other projects – not so with a portfolio that is too diversified. Second, a too diversified portfolio does not allow the owners the maximum return on their investment. If all investments are made in the one area with the highest return on investment, the profits will obviously be higher – but *only if* everything goes well.

The problem is obviously that we cannot predict with certainty where exactly the highest returns will be and which risk events will materialise. If we put too much money in an area where we expect high returns and projects in that area do not succeed, it can be catastrophic. It is to counter this risk that a portfolio should be somewhat diversified. There should therefore be a balance between "sticking to the knitting" and "not having all your eggs in one basket".

It is essential to keep in mind that *only* projects that passed the screening tests of being in line with the strategic plan and meeting other minimum criteria are considered for a portfolio (as implied by Figure 1). It is also essential that new projects to be added into a portfolio must be considered *with existing projects* so that the resulting portfolio of existing plus new projects provides the desired balance.

Categorizing projects and developing strategies for each category

To analyse a project, the potential value of the project as well as the likelihood or probability of success needs to be taken into account. Small, low-risk projects are normally required to remain competitive in the current business, e.g. to support current operations. Such projects are sometimes referred to as stay-in-business (SIB) projects or bread-and-butter projects. On the other hand ambitious, large projects are normally essential to unlock big value opportunities that can propel the business to new heights. The application of novel technologies is often involved in such ambitious projects and these projects are unfortunately normally also quite risky. Only in rare occasions do organizations find low-risk opportunities that would yield high value. Such projects are indicated as "Pearls" in Figure 2 and, if such a project is identified, it should obviously enjoy a very high priority.

In nature pearls develop in oysters, but very few oysters contain pearls. Likewise highly lucrative projects (pearls) often start off from uncertain beginnings – oysters in Figure 2. As most

breakthroughs develop from such high-potential endeavours, it is sometimes worthwhile pursuing at least the first phases of such high-risk projects that still seem to have a relatively low likelihood of success. A balanced portfolio would however not contain too many such "oysters".

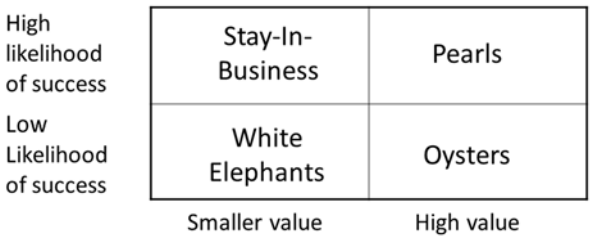

Figure 2: Example of grid commonly-used for analysing projects

When a proposed project is compared to other projects and is expected to yield relatively low value, and also to have a relatively low probability of success, it is classified as a "white elephant". Classification as a white elephant can take place as part of the Project Screening and Portfolio Design processes or at any phase gate where the project is reviewed. In either case the project should be moved to the Project Graveyard. As discussed later in this paper, managers are unfortunately often reluctant to terminate such projects and starve white elephants rather than cull them. Starving a white elephant regrettably often has a negative effect on several other projects as well and negatively influences the overall rate of finishing projects (Wheelwright & Clark, 1992). One reason is that a white elephant that is starving to death still consumes resources that could have been put to good use on higher-potential projects.

Another common pitfall in portfolio management is a tendency to select mainly cheap, short-term and easy projects. This restricts an organization's ability to exploit opportunities to obtain a longer-term competitive edge (Elonen & Artto, 2003; Kester et. al., 2011).

Requirements to achieve a balanced portfolio may influence the screening criteria; new criteria for screening of projects may result from portfolio design, hence the arrow from Portfolio Design back to Project Screening in Figure 1.

Several techniques for screening and evaluation of projects exist (Nicholas & Steyn, 2012) and at least two standards for portfolio management exist: One by the Project Management Institute (2013) and another by the United Kingdom Office of Government Commerce (2011).

In practice projects within a portfolio compete for scarce resources and conflicts about resources between projects are common. The reality of available resources should always be taken into account and higher-priority projects should obviously get preference when scarce resources need to be allocated. Projects should therefore be ranked according to priority.

Rank Ordering of Projects

Because projects compete for resources, there should be clear-cut priorities so that the higher-priority projects enjoy precedence when a scarce resource is required by more than one of the projects. If the decisions regarding priorities are not formally taken at a high enough organizational level, lower-level managers (and sometimes executives) tend to move resources to and fro between projects in a "fire-fighting" mode, especially when one project falls behind schedule. This has a very negative effect on productivity and on the project throughput rate (Yaghootkar, K. and Gil, 2012).

Therefore, all projects that have passed the screening process should ideally be ranked from the highest-priority (No. 1) project to the lowest-priority one on a formally approved list. Prioritization of projects is however time consuming and, while at least the highest-priority projects should be ranked from No. 1 to say No. 10, it is sometimes more practical to allocate the same ranking (let's call it the Z-ranking) to all projects that have a ranking lower than say No. 10.

It is unlikely that the organization would have sufficient of the key resources (funds and especially key people) to execute all projects simultaneously; it is therefore prudent to send the lowest-priority projects either to the Project Graveyard or to put them on the Projects-on-Ice list.

It is however just human not to want to terminate a project, and the more effort and money that have been spent, the more reluctant people are to terminate the project. This phenomenon is referred to as escalation of commitment (Meyer, 2014). Therefore, if a project needs to be terminated, it should be done sooner rather than later. People are also reluctant to report to their seniors and to other stakeholders that a project is not successful and should be terminated. On top of this, reputable project managers are often optimists and are orientated to overcome obstacles in order to make a success of a challenged project. Accepting the principle that costs that have already been spent are sunk costs that should not be taken into account when decisions are made about future investments, is a much better approach. The remainder of a project that is considered to be continued should be assessed objectively as a new project and any assets (including intellectual property) that have been developed by spending the money should be taken into account. Senior management should be involved in the termination of projects but Unger et al. (2012) indicated that there is an optimum level of involvement, beyond which additional involvement of senior managers results in negative effects.

Portfolio design is an on-going process. The arrows from lower-level blocks in Figure 1 that feed back into Portfolio Design and Project Prioritization are discussed later. One implication is that all documents related to the portfolio of projects of a company should be updated regularly.

The processes of project selection and portfolio design should be formal and as rational as possible. In practice it is however not always a rational decision process; it involves negotiation, bargaining and structural reconfiguration (Martinsuo, 2013; Kester et. al. 2011).

Rank ordering of projects according to priority implies that higher-ranking projects should get preference when scarce resources are allocated to projects. A brief introduction to an approach to resource allocation is presented next.

Scheduling Key Resources and All Authorized Projects

Without resources (funds, people, facilities and equipment) allocated realistically, a plan is nothing more than an intent – a dream that could well turn into a nightmare. Yet, far too many projects are initiated without due consideration to the availability of resources (Elonen & Artto, 2003; Blichfeldt & Eskerod, 2008; Wheelwright & Clark, 1992; Patanakul & Milosevic, 2009; Payne 1995). This shortcoming and unsystematic ways of allocating resources to projects are some of the main causes of a low rate of delivery in multiple-project environments.

In Figure 1 the arrows pointing up and down between Portfolio Design & Project Prioritization and Schedule Key Resources indicate the intimate interaction between these two processes. Once a project, has been allocated a relatively high priority, key resources are allocated to it and (taking into

account the resource requirements of other, higher-priority projects), the project is scheduled around the availability of the key resource or resources. Note that the project is scheduled around the availability of the key resource, not the other way around (Steyn, 2002).

Ensuring Stability

Unless contingency reserves (buffers) are built into schedules of individual projects, the schedules are not stable (Goldratt, 1997). In multiple-project situations, because of the lack of appropriately managed buffers, problems sometimes result from project schedules being "too strict" (Elonen & Artto, 2003). The Theory of Constraints way of scheduling projects in a multiple-project environment provides a systematic and logical way to schedule projects that share common key resources. The fundamental approach is that schedules that take project priorities into account are developed for key resources. Project schedules are then developed around these schedules for key resources. Capacity buffers are used to stagger the projects in such a way that a delay in one project does not cause a domino-effect impact on other projects and haphazard moving of resources between projects is prevented (Nicholas & Steyn, 2012).

To ensure that execution takes place in an orderly fashion and schedules remain stable, (a) projects must be formally ranked by executives according to project priorities, (b) project schedules must be based on realistic schedules of key resources, (c) capacity buffers must be provided and (d) additional work should, where possible, be handled as separate projects, not as scope changes to existing projects.

Detailed Project Planning, Execution and Review at Phase Gates

While the approach discussed in this paper is essential in multi-project environments, the sound management of each individual project (discussed in several project management textbooks and standards) remains vital. Problems in multi-project environments are often caused by inadequate definition, planning and control of individual projects (Elonen & Artto, 2003; Martinsuo & Lehtonen, 2006).

The concept of project phases and review points (or gates) at the end of each project phase is well known and commonly practiced (Office of Government Commerce, UK, 2009; Merrow 2011). In some companies these review points however serve merely to report good news and to obtain a rubber stamp to proceed with the project. What, then should happen at end-of-phase milestones? The work performed during the phase that has been completed, and the resulting deliverables, should be assessed and, if approved, formally accepted. Where applicable, milestone payments are made. Formal closeout of a phase should also involve documenting of lessons learnt during the phase. While it is essential to evaluate the performance of the preceding project phase, the emphasis should be on the future of the project: Detailed plans for the next phase as well as the updated overall plan for the project should be thoroughly evaluated before the next phase is authorised (in other words, before the gate leading to the next phase is opened).

It is not a foregone conclusion that, at the end of a phase, the project will move on into the next phase; in Figure 1 note the arrows from the Reviews at Phase Gates block back to previous steps.

It is not uncommon that, at an end-of-phase review, it becomes evident that the potential of a project to impact significantly on the business is not satisfactory. This may be as a result of worse

than expected technical performance (as is often the case in R & D projects), or because of changes in the business environment. In such a case the project must be sent either to the Project Graveyard or put onto the Projects-on-Ice list. As mentioned earlier, it is much better to cull a white elephant than to let it starve to death by depriving it of sufficient resources (Wheelwright & Clark, 1992).

At each phase gate there are three possibilities:

(a) Green Light: All relevant stakeholders are satisfied with the work performed during the previous phase and that the objectives of the phase have been achieved. They also accept the plans for the rest of the project (detailed plans for the next phase and the updated, overall plan) and accept all the risks identified. They are also convinced that the business impact of the project still justifies continuing the project. The next phase is then authorised to proceed;

(b) Yellow Light: The stakeholders are convinced that the business impact of the project would still justify continuing with the project but they are not satisfied that all objectives of the previous phase have been achieved and/or they are not satisfied with some aspect of the plans for the rest of the project. The project team is sent back to re-do part of the phase (or even the whole phase) and/or to improve aspects of the planning;

(c) Red Light: As a result of changes in the business environment or as a result of disappointing results obtained during the project phase preceding the gate, the prospects of the business impact of the project are not promising any more or the project is considered too risky. The project is cancelled; sent to the Project Graveyard (Figure 1). Unless the project is still an early phase, such a verdict of terminating the project is costly. If the possibility exists that conditions for the project to be successful might be better at a later stage, it can be sent to Projects on Ice to be reconsidered later.

In an environment where multiple projects are involved, project reviews and assessments at the end of project phases should not be done for a project in isolation; other projects, their priorities and resource requirements as well as the (sometimes changing) business environment should be taken into account. The project should only continue if it still compares favourably to alternative projects.

In Figure 1 the arrows from Reviews at Phase Gates feeding back to Portfolio Design and Prioritization imply that the relative priority of a project can also be reconsidered at the end of a project phase.

Portfolio management is an on-going process and, during the review at a phase gate, the priority of a project relative to the priorities of the other projects should be re-assessed. If the priority rating is decreased, key resources may be rescheduled to first serve higher-priority projects and the total amount of resources (e.g. the budget) allocated to the project may even be decreased. The opposite is obviously true if the priority rating of a project is increased relative to those of the other projects.

In Figure 1, Detailed Project Planning & Execution is followed by Final Delivery. The delivery process includes project hand-over and close-out that should form part of all project management methodologies.

THE ROLE OF THE PROJECT MANAGEMENT OFFICE (PMO) AND THE PROJECT PORTFOLIO MANAGER

Executives have limited time available and often receive too much data and too little meaningful information distilled from the data. Overloading of executives sometimes leads to project managers complaining that executives are not involved enough in the projects. A portfolio office or a project management office can play a significant role in assisting executives and in optimizing the use of their time.

A project management office (PMO) is often seen as a formal layer of control between top management and project management (Pemsel & Wiewiora, 2013) but there are several types of project management offices that fulfil different functions in different organizations. Since the 1950's project offices (POs) and PMOs have been used to support single large projects or programmes and in some cases they are responsible for the direct management of projects. The modern trend however is towards PMOs that are involved in the management of multiple projects and in the processes discussed in this paper, as well as developing methodologies for individual projects and to facilitate knowledge management.

While as many as 27 different functions of PMOs have been identified (Hobbs, B. Aubry, 2007), three primary roles (Unger et al., 2012) of PMOs are:

- Coordination: This includes strategic steering of projects, resource allocation or re-allocation and cross-project coordination.
- Control: The focus here is on establishing, updating and providing the information base for decision making as well as project supervision and controlling at gate reviews.
- Support: This typically includes mentoring and providing of services to projects in the form of the development of project management methodologies and templates, software tools, training, planning, and reporting as well as knowledge transfer.

A PMO that primarily has a support role is sometimes referred to as a project support office (PSO). The term PMO can also refer to programme management office or portfolio management office. Sometimes the terms PPO (project portfolio office), PPMO (project portfolio management office), PRB (projects review board), EPMO (enterprise project management office) or projects steering committee is used for an office that is primarily involved in portfolio management.

A PPO or steering committee can be a virtual or a real office. If it is a real office, it is often part of a PMO.

A PPO can contribute significantly to assist the executives in much of the work described in this paper, including development of high-level project plans as well as with gate reviews. This can lead to better utilization of the limited time that executives have available and allow them to be involved in projects in a more meaningful way.

Project portfolio managers can also play a pivotal role in managing the processes described in this paper but it has implications for the complex power balance between senior managers, line managers, and project managers (Jonas, 2010).

PITFALLS AND GUIDELINES FOR CASE STUDY RESEARCH

A number of pitfalls mentioned in literature have been identified earlier in this paper. These pitfalls are listed in Table 1 below.

Table 1: Pitfalls mentioned earlier in this paper

Possible reason for failure	Relevant references
The link between strategy and projects is poor, non-existent or too informal.	Elonen & Artto, 2003; Gutiérrez & Magnusson, 2014.
Inadequate project-level work e.g. definition, planning and control of individual projects (i.e. low project management maturity).	Elonen & Artto, 2003; Martinsuo & Lehtonen, 2007
Executives, owners, customers and other stakeholders do not pay sufficient attention to all work related to the feasibility of the project. The project scope is not developed sufficiently at the stage when the bulk of the project budget is approved. This leads to inter alia to undue scope changes.	Merrow, 2011
Organizations fail to maintain a comprehensive list of all project work in the organization; functional and other managers initiate work that they do not officially register as projects.	Blichfeldt & Eskerod, 2008
"White elephant" projects are kept alive and consume resources that would have been valuable on projects with more potential.	Wheelwright & Clark, 1992; Meyer, 2014
Involvement of senior management in the processes that link strategic planning and individual projects is insufficient and/or senior management support for these processes is insufficient,	Fricke & Shenhar, 2000
Involvement of senior management in terminating projects is not optimal.	Unger et al., 2012 (b).
There is a tendency to select mainly cheap, short-term and easy projects. This restricts the organization's ability to exploit opportunities to obtain a longer-term competitive edge.	Elonen & Artto, 2003; Kester et. al., 2011
Projects (and programmes) are not formally ranked by executives according to priorities. This results in lower-level managers (and sometimes executives) tending to move resources to and fro between projects in a "fire-fighting" mode, especially when one project falls behind schedule.	Yaghootkar & Gil, 2012
Projects are not being scheduled around (a) formal priorities and (b) the schedules of key resources.	Steyn, 2002
Because of the lack of appropriately managed buffers, problems result from project schedules being unrealistically optimistic. Especially, capacity buffers are not utilized and this results in delays on one project having a knock-on effect on other projects.	Elonen & Artto, 2003; Nicholas & Steyn, 2012

Possible reason for failure	Relevant references
Too many projects are initiated and executed simultaneously without due consideration to the availability of resources (projects are authorized without due consideration to the availability of funds *and* other key resources). This results *inter alia* in resources having to work on too many projects simultaneously.	Yaghootkar & Gil, 2012; Elonen & Artto, 2003; Blichfeldt & Eskerod, 2008; Wheelwright & Clark, 1992; Patanakul & Milosevic, 2009; Payne 1995

Some further pitfalls can be derived from the discussion above and these are listed in Table 2.

Table 2: Further proposed pitfalls

Senior managers are swamped with too much data and get too little meaningfully distilled information form the data.
Review points serve merely to report good news and to obtain a rubber stamp to proceed with the project.
The portfolio management process is not managed as an on-going exercise where all relevant documents are revisited and updated regularly.
The gating process between project phases is insufficient (e.g. project performance and especially the business environment are not sufficiently assessed at each project gate and decisions are not made to re-prioritize projects).
Instead of a rational process to authorize, prioritize, schedule and terminate projects, people's egos and power politics play too big a role.
Not all projects allowed into the system are suitably linked to the strategy.
Roles are not well defined and leads to role conflict.

Before empirical case study work is commenced, a further in-depth literature survey should be undertaken to uncover any omissions from Table 2 and to identify any possible references to the pitfalls listed in Table 2. Empirical work, based on the lists, can then be performed to determine (for a specific organization) the possible existence of each pitfall, the relative severity of each of the pitfalls identified and the consequences thereof. Case studies may also lead to the identification of additional pitfalls not yet identified in literature. Such case study research would serve as a valuable further guide to improve the future business processes of organizations.

CONCLUSION

The following principles are important in any organization that manages multiple projects:

- All projects should be linked to organizational strategy through the processes of screening, portfolio design and project prioritization;
- Portfolios should be structured to deliver maximum return on investment on the short and longer term;

- A portfolio should be balanced to do justice to both short-term and longer-term business objectives. It should include small and larger projects; short-term stay-in-business as well as longer-term strategic projects; and similar as well as dissimilar projects;
- The output of the portfolio design and prioritization process should be a list, approved by the Executive, that ranks at least the top ten or so – if not all – of the approved projects according to priority;
- Portfolio design is an on-going process; all relevant documents should be updated regularly. This is facilitated by project gate reviews;
- A project schedule should be based on the relative priority of the project and the schedule of key resources.
- Appropriate buffers should ensure the stability of the schedules.
- Roles of units and individuals, including that of a PMO and a project portfolio manager should be clarified to facilitate the processes.

Project portfolio managers as well as project management offices can contribute significantly to the management of the processes that link projects to corporate strategy.

The lists of potential pitfalls proposed in Table 1 and Table 2 can guide organizations involved in multiple projects towards more effective and efficient management and, can serve as a basis for case study research on processes that link projects to strategy.

REFERENCES

Allio, M. K., 2005. A short, practical guide to implementing strategy. *Journal of Business Strategy.* 26(4), pp. 12 – 21.

Archer, N. and Ghasemzadeh, F., 1999. An integrated Framework for Project Portfolio Selection, *International Journal of Project Management,* 17 (4), 207-216.

Blichfeldt, B. S. & Eskerod, P., 2008. Project portfolio management – There's more to it than what management enacts. *International Journal of Project Management*. Vol. 26. pp. 357–365.

Elonen, S. & Artto, K. A., 2003.Problems managing internal development projects in multi-project environments*. International Journal of Project Management*. Vol. 21(6), pp. 359-402.

Fricke, S.E. & Shenhar, A.J., 2000. Managing multiple engineering projects in a manufacturing support environment. *IEEE Transactions on Engineering Management*, Vol. 47, Pages 258–68.

Goldratt, E. M., 1997. *Critical Chain.* North River Press.

Gutiérrez, E. & Magnusson, M., 2014. Dealing with legitimacy: A key challenge for Project Portfolio Management decision makers. *International Journal of Project Management*. Vol. 32(1), pp. 30 - 39.

Hobbs, B. Aubry, M., 2007. A multi-phase research program investigating project management offices: The results of phase 1. *Project Management Journal*. Vol. 38. pp. 74-86.

Jonas, D., 2010. Empowering project portfolio managers: How management involvement impacts project portfolio management performance. *International Journal of Project Management*. Vol. 28, Pages 818-831.

Kester, L., Griffin, A., Hultink, E.J. & Lauche, K., 2011. Exploring Portfolio Decision-Making Processes. The *Journal of Product Innovation Management,* Vol. 1(28), Pages 641–661.

Lord, M. A., 1993. Implementing strategy through project management. *Long Range Planning.* Vol. 26(1).

Martinsuo, M. & Lehtonen, P., 2007. Role of single-project management in achieving portfolio management efficiency. *International Journal of Project Management*, Vol. 25 (1), Pages 56–65

Martinsuo, M., 2013. Project portfolio management in practice and in context. *International Journal of Project Management,* Vol. 31, Pages 794-803.

Merrow, E. W., 2011. *Industrial Megaprojects – Concepts, Strategies, and Practices for Success.* John Wiley & Sons, Inc., Hoboken, New Jersey.

Meskendahl, S., 2010. The influence of business strategy on project portfolio management and its success – a conceptual framework. *International Journal of Project Management*. 28, pp. 807 – 817.

Meyer, M. G. 2014. The Effect of Optimism Bias on the Decision to Terminate Failing Projects. *Project Management Journal.* Vol. 45(4), pp. 4-7.

Nelson, B., Gill, B. and Spring, S., 1997. Building on the Stage/Gate: An Enterprise-wide Architecture for New Product Development, *Proceedings of the Annual Project Management Institute Seminars & Symposiums.* PMI.

Nicholas, J. M. & Steyn, H., 2012. *Project Management for Engineering, Business and Technology.* 4th Ed. Routledge, London & New York.

Office of Government Commerce (United Kingdom), 2009. *PRINCE2,* 5th Ed.*,* Norwich, UK.

Office of Government Commerce (United Kingdom), 2011. *Management of Portfolios.* The Stationary Office, London.

Okumus, F., 2003. A framework to implement strategies for organizations. *Management Decision.* 41(9), pp. 871-882.

Patanakul, P. & Milosevic, D., 2009.The effectiveness in managing a group of multiple projects: Factors of influence and measurement criteria. *International Journal of Project Management*. Vol. 27. pp. 216-233.

Payne, J.H., 1995. Management of multiple simultaneous projects: a state-of-the-art review. *International Journal of Project Management.* Vol. 13(3), pp. 163-168.

Pemsel, S. & Wiewiora, A., 2013.Project management office a broker in project-based organizations. *International Journal of Project Management.* Vol. 31(3), pp. 31-42.

Project Management Institute, 2013. *The Standard for Portfolio Management,* 3rd Ed.

Steyn, H. Project management applications of the theory of constraints beyond critical chain scheduling. *International Journal of Project Management.* 20 (1), 75 –80. 2002.

Steyn, H. (Ed.), 2015. *Project Management – a Multi-disciplinary Approach.* FPM Publishing, Pretoria.

Unger, B. N. Gemünden, H. G. Aubry, M., 2012 (a).The three roles of a project portfolio management office: Their impact on portfolio management execution and success. *International Journal of Project Management*. Vol. 30. pp. 608-620.

Unger, B. N., Kock, A., Gemünden, H. G.& Jonas, D., 2012 (b). Enforcing strategic fit of project portfolios by project termination: An empirical study on senior management involvement. *International Journal of Project Management*. Vol. 30, Pages 675-685.

Wheelwright, S.C. & Clark, K.B., 1992.*Revolutionizing Product Development – Quantum Leaps in Speed, Efficiency, and Quality*. New York: The Free Press.

Yaghootkar, K. and Gil, N., 2012. The effects of schedule-driven project management in multi-project environments. *International Journal of Project Management.* Vol. 30. pp. 127 – 140.