Controller as a Strategic Partner for Managers: How the Controller Can Support Project Based Business to Grow Profitably – an Action Research Case Study

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Often, it is thought that increasing demand, wise strategic choices, talented sales, and technically efficient R&D and production will ensure a company's financial success. Sales growth does not in itself however mean the financial success of a company, which is also highly dependent on the cost structure of each product. This is especially true in project-based businesses. This study illustrates how controllers can implement cost awareness projects through action research and become strategic business partners for business management. The results of the study are particularly useful for growth-oriented owner-driven small and medium-sized companies, because in big companies the growth is typically slower, and the implications of growth are already known. On the other hand, uncontrolled growth based on low cost awareness is particularly dangerous for owner-driven small and medium-sized companies with limited equity.

Keywords: Project-Based Business, Fast Growth, Cost-Awareness, Controller as a Strategic Business Partner

INTRODUCTION

Often, it is imagined that increasing demand for a product or a service, wise strategic choices by senior management, talented sales, technologically and technically knowledgeable and efficient R&D and production will ensure a company's financial success (Greiner, 1972). However, this is rarely the case if the customer, the product and the distribution solutions are not based on knowledge of economic facts but on vague ideas. Sales growth does not in itself mean the financial success of a company, which is also highly dependent on the cost structure of each product. This is especially true in fast-growing project-based businesses, where capital is needed for growth and the delivery may include both complicated physical products and services.

The management accounting professionals' work role is often to increase this cost-awareness and to control the costs, even if the roles of these "business controllers" or "controllers" can differ among organizations and countries (Goretzki & Strauss 2008). However, the role of a controller has been seen, especially in Europe, as moving from a passive reporter of results to an active developer of management

accounting and to a business partner of the management (Järvenpää & Lukka 2017). It is not known, however, *what is the role of a controller like in a fast-growing family-owned organization in the European context, and if the controllers feel that they can affect the costs and developments*. Thus, these topics will be studied in this paper.

This action research case study was conducted in a Finnish, family-owned fast-growing organization. The research is based on interviews with the management and questionnaires completed by 13 project managers before and after an accounting development project, and on a qualitative analysis of the data.

This study illustrates how controllers can implement cost awareness projects through action research and become skillful strategic business partners for business management. The results of the study are particularly useful for growth-oriented owner-driven companies in Finland and many other small countries that are heavily dependent on exports. According to the latest information, big companies in Finland don't grow. Indeed, supporting any kind of growth of Finnish business enterprises is one of the most important challenges facing the Finnish economy (Talouselämä 9.6.2017). On the other hand, uncontrolled growth based on low cost awareness is particularly dangerous for owner-driven small and medium-sized companies with limited equity. The results of the study are based on a qualitative action research case study.

According to Shapira (Shapira, Z., 2020) economists in the USA have been more interested in the economics of markets than the economics of a firm, and therefore academic business school professors in the USA have tended to be more interested in studying corporate finance and interactions with capital markets than in studying the management's internal accounting.

This can be seen by anyone studying the topics of the publications by many professors of accounting at leading American business universities. Often, they even name themselves Professor of Business Administration rather than Professor of Accounting or Internal or Management Accounting.

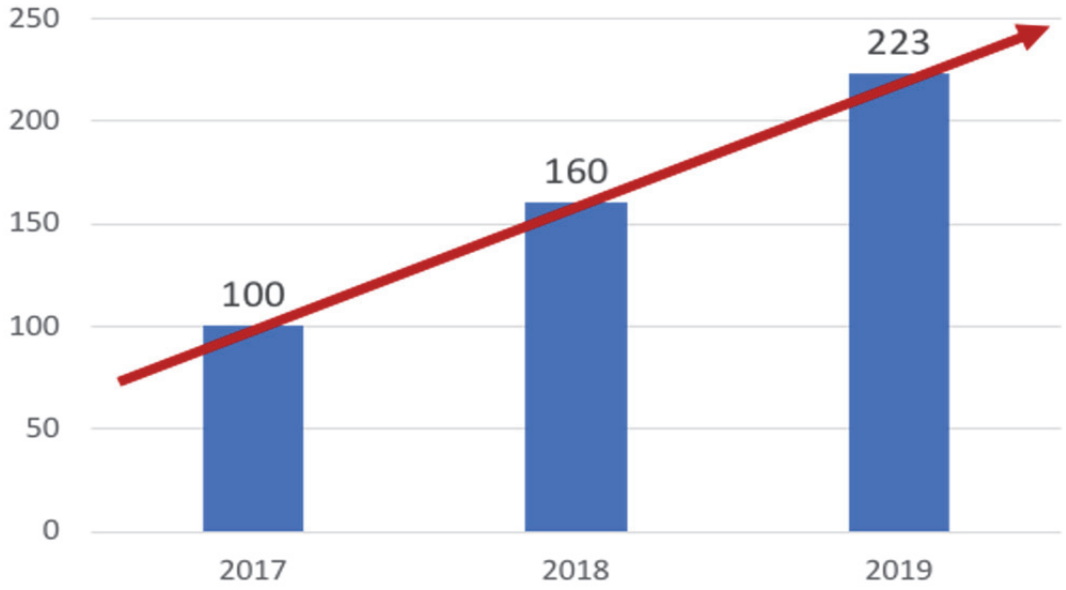
In order to guarantee the internal effectiveness of firms, academic business schools, and in particular management departments, should however focus more on firm-level phenomena and in this respect study internal accounting more. The current study and article respond to this need.

THE CASE COMPANY AND ITS PRODUCTS

The case company of this research is a Finnish family-owned enterprise employing more than 200 people. The company's area of operations is providing automation solutions for industrial companies.

The organization is unique in Finland. Over 90% of its revenue comes from exports of products and services and therefore the business is highly international. Despite the recent difficult worldwide economic situation, the case company has been able to grow rapidly in the last couple of years and has kept its form as a family-owned business having its production completely based in Finland. The metal and machinery industry that once was the cornerstone of the Finnish economy has struggled during the last few decades, but this enterprise has been able to keep on delivering profitable results. The turnover of the case company has increased relatively rapidly during the last three years as can been seen in figure 1.

FIGURE 1
TURNOVER-INDEX OF THE CASE COMPANY



The case company is dedicated to bringing the best results for its customers. Their philosophy is to always consider each customer's real needs as in this field every customer is unique with different requirements. The mission of the company is to make its clients more productive, more competitive and to give them more return on their investment.

Projects are very important for the company financially. In the fiscal year 2019, over 94% of the revenue was generated by projects. Even though at the beginning of its operations the company was more focused on regular stock products, the projects have contributed to the revenue since the beginning of the company's existence. The projects have increased in size and in their requirements as the company has grown. The vast amount of tailoring required by the projects has given the company a competitive advantage as well as growth. Due to the increased size of the projects, their share of the generated revenue has also increased since the early days of the company.

Once the initialization phase of the project is done, the implementation starts, and it consists of the following sub-phases in a chronological order:

1. Layout engineering
2. Machine design engineering
3. Release to production
4. Commissioning
5. Delivery to customer
6. Site acceptance testing

In the layout engineering and machine design engineering phases, the full scope of the project machinery is designed and digitally built in a computer software. The machines are designed bottom-up, listing all components needed in order to build and assemble them. After this is done, the designs are released to production and the actual assembly of the machinery starts. Production planning phases the production and creates the production orders to the ERP accordingly. Commissioning of the machines is done in the case company's premises when the factory acceptance test is carried out. This test is usually supervised by the customer so that the proper functioning of the machinery can be verified. After a successful factory acceptance test, the machinery is delivered to the customer. Once delivered, final acceptance tests are done to the full delivered machinery at the customer's site to ensure the functionality also at the final destination of the products.

THE ROLE OF CONTROLLERS IN THE CASE COMPANY

The role of a controller can be very different in different organizations and countries (Goretzki & Strauss 2008). In Finland, the role of a controller has changed from a passive reporter of results to an active developer of management accounting and to a business partner of management (Järvenpää & Lukka 2017). The role of a controller in the case company is vast and diverse. From the sales point of view, the controller is responsible for handling the pricing and budgeting of new delivery projects, if the products to be sold are not completely regular stock products sold in volumes. The controller participates in sales audit meetings to evaluate the financial feasibility of potential sales cases and is responsible for organizing and documenting these meetings. Controllers are in charge of updating and maintaining the price lists of stock products and reporting sales figures in monthly sales meetings.

From a cost perspective, the controllers are tasked with monitoring projects' costs and reviewing them against the budget. Profitability analysis is done based on the actual cost calculations made by the controllers. Controllers constantly monitor the cost data provided by the ERP to ensure its correctness and they are responsible for gathering and reporting the value of work-in-progress for closing activities. Cost targets and working hours targets are handled and communicated by the controller to different parties based on their needs. Controllers' duties also include the updating of the activity-based costing system when needed. As key users of the ERP, the controllers are updating the average stock values of items in the ERP, handling the calculations of cost overheads in the system and creating new reports and tools for other departments when needed. As the company employs several controllers, their functions are obviously not identical. However, a controller is an active participant in the project delivery process right from the audit phase to the final acceptance of the project and participates in many key activities outside the project process.

ACTION RESEARCH AS A RESEARCH METHOD IN GENERAL AND IN THE DEVELOPMENT PROCESS OF THE CASE

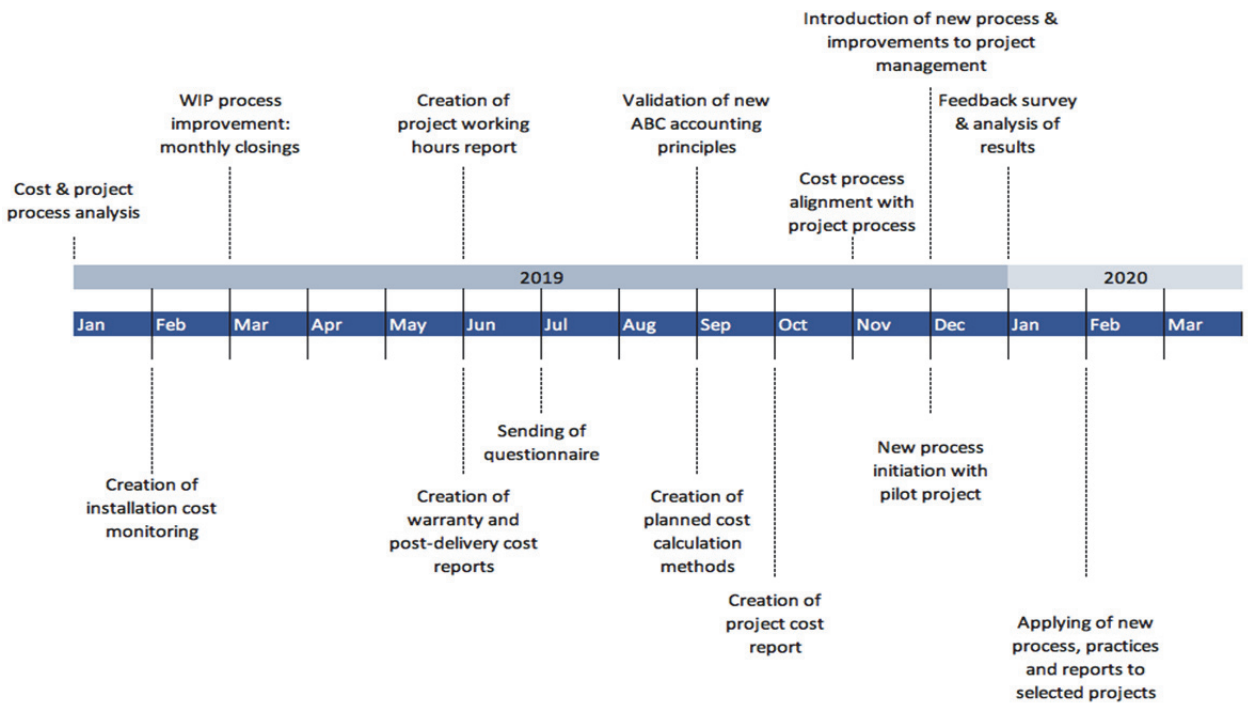
Action research is a research method which often does not follow a linear process, as it is much more cyclic and focused on the researcher him/herself (Atweh et al. 2002). In action research the learning and development is carried out through action (Coghlan et al., 2005), reflection and contemplation (Athayde et al. 2013).

As the name suggests, action research contains two key aspects:

1. 'Action' in action research means the activities and choices you as the researcher make to change the situation
2. 'Research' in action research means the methods and tools you as the researcher use to obtain the information needed to decide and carry out the actions. (McNiff 2013)

The nature of the research presented in this article is very much in line with the principles of qualitative action research. The research was based on interviews with the management and questionnaires completed by 13 project managers before and after the accounting development project and a qualitative analysis of all of them. In this research the action research development process was executed according to the process depicted in the following figure 2.

FIGURE 2
ACTION RESEARCH PROCESS IN THIS RESEARCH



LITERATURE REVIEW

Projects and Their Cost Management

The management of a project means the implementation of techniques, methodologies, tools and competences to a project for the project to meet its requirements (Project Management Institute 2019). As projects seek to obtain a change, many projects are undertaken with minimum reference of similar projects carried out in the past and thus this makes project management challenging. Project management refers to the tools and processes needed to create value for the organization which initiates the project (Köster 2009).

As organizations seek to expand and be more successful, the efficiency of execution of projects plays an ever-increasing part in achieving good business results. Thus, project management needs to be aligned with the strategy of both the business and the project to achieve the best results (Milosevic & Martinelli 2016).

Competences needed in project management are often similar to the ones required for typical common process management. Process management deals with monitoring, planning and discussion with other people, just like project management. The main difference between these two is the fact that while a process is ongoing and stable, a project is a one-time unique endeavor which only happens once (Chartered Management Institute 2004). This type of work is often structured to a hierarchical organization having traditional linear power authorities (Richman 2011).

Many organizations mistakenly assign their leading engineers or technically most talented employees as project managers thinking that their technical superiority will make them the best people to lead projects (Heldman 2011). As project management requires exceptional multi-tasking skills and a way to see the big picture, this way of thinking can be disastrous for the project.

Project management differs from functional management in various ways. Projects are often managed in a horizontal fashion, where the project manager does not possess formal authority over the other people

assigned to the project organization (Richman 2011). Therefore, the project manager is directly responsible for the outcome of the project but not for the employees working for the project. Functional managers retain their responsibility as supervisors of their subordinates even if they are assigned to different projects with different project managers.

Project Budgeting and Estimating of Costs

A budget aims to forecast the expenses of a certain activity before it is begun. In a project environment, it is a monitoring tool to evaluate if a project is completed within its given financial boundaries. A budget is made for most of the projects when the decision to initiate them is taken (Bielefeld & Schneider 2014). This document is used during the full lifecycle of the project as the estimates are compared to the actual costs cumulated for the forecasted activities (Heldman 2011). Accurate cost estimates and costing principles are essential to an organization, as if a company continuously underestimates the costs of its projects, its existence is threatened (Taylor 2007).

According to Heldman (2011), most of the project costs can be divided in the following three categories: human resource costs, administrative costs and resource costs. In this classification, human resource costs would include e.g. salaries and fringe benefits of employees, administrative costs for example telephone and computer costs and resource costs for example equipment acquisitions, travel expenses etc. Categorization as such can be used to help in estimating all the possible costs that the project can gather. Heldman (2011) also emphasizes the importance of understanding the difference between direct costs and indirect costs and how they are allocated to the project: working hours spent directly for the project are direct costs whereas for office leases, they are usually indirect costs as they are not specifically related to the project in question.

Taylor (2007) takes the cost categorization much further, proposing the following categories as the most used cost categories:

1. Direct costs
2. Indirect costs
3. Fixed costs
4. Variable costs
5. Semi-variable costs
6. Other direct costs
7. Life-cycle costs
8. Operating and maintenance costs

According to Taylor (2007), direct costs contain all costs that can be linked to a project, including labor and materials, for example. In this definition it is crucial that the costs are traceable so that the direct link to the project in question can be verified. Indirect costs are the ones not directly linked to a certain objective, or in this case, a project. These costs would include fringe benefits and overheads (Taylor 2007).

Fixed costs are expenses which remain the same no matter the volumes of production. They also stay at the same level even if the production is completely stalled for some reason. Deprecations on assets and insurances are these types of costs. Variable costs are the opposite of fixed costs, being completely dependent on the volumes of production and nature of the work performed. For example, raw materials and sales commissions are considered variable costs. Semi-variable costs are in between the fixed and variable costs as they may vary directly but not proportionally depending on volume of production (Taylor 2007). Software licenses can be considered semi-variable costs, if for example a package of 25 licenses costs 10 000 euros. The cost is the same between 0–25 users but once the number of users exceeds 25, the cost is significantly higher.

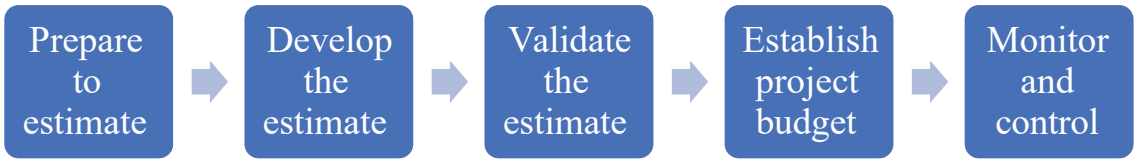
Other direct costs are often confused with indirect costs. A typical indirect cost, such as a computer expense should be considered as other direct cost in case it can be clearly identified and measured to be dedicated to a certain project activity and if the applicable accounting standards accept it as such a cost. The difficulty with these costs is to remain consistent in the reporting and to avoid double-counting where the cost would be first counted as an indirect cost and later again as other direct cost (Taylor 2007).

Life-cycle costs and operating and maintenance costs reflect the project's long-term costs that may occur significantly after the project is considered completed. Operating and maintenance costs could refer to maintenance done to project equipment due to wear and tear over time (Taylor 2007).

Thus, different categorizations can be used, depending on the company in question, its projects and its business needs. Several methods exist and no single categorization method could be considered as the absolute correct one to be followed. Risks of double-counting costs should be avoided, consistency in the reporting kept at the maximum and the applicable legislation followed. Upon considering all these aspects and the limits of manpower and system resources available for these follow-ups of costs, the company should decide the appropriate scope of categories to follow independently.

The techniques to estimate costs are various. The best estimating system, according to Taylor (2007), is the historical data available of similar activities performed in the past and argues that the basis for resource allocations and cost estimates should always be the WBS of the project. Athayde et al. (2013) also promote the use of the WBS as the budgeting basis and note that the most efficient and accurate method available should be used. Therefore, estimating is the easiest when the project has the least uncertainty and trickiest when the project is far from anything ever done before. Historical data can also be used in parametric estimating, where previously occurred costs are divided into certain unit prices that can be applied to the new project to be budgeted in an appropriate way (Westney 1997).

FIGURE 3
THE COST ESTIMATING PROCESS (Athayde et al. 2013)



Activity-based Cost Accounting

One refined costing method providing greater costing accuracy is called activity-based costing, also referred as ABC. The fundamentality of this method deals with splitting the individual activities of a company as cost objects. An activity can be for example an event, task, unit or department within the organization, depending on how the company is structured. The activity-based costing system aims to define unit rates for each of these activities which are needed to ultimately produce the product or service for the market (Bhimani et al. 2012). Setting-up an activity-based costing method in a company therefore first requires a careful examination of the company's activities and processes to define the activities that are to be assigned as cost objects.

After the activities are identified, the direct costs relating to these activities should be investigated (Bhimani et al. 2012). For example, if the ABC is based on the department structure of the organization, the direct salaries of one such department is often the key cost driver of this activity. Other direct costs could be for example the direct materials needed.

Once the activities and their direct costs are obtained, the principles of how the indirect costs shall be allocated to the activities are decided (Bhimani et al. 2012). Indirect costs such as electricity costs and office rents can be allocated to the activities, for example based on the number of square meters that a certain activity requires of the office space. If such a way of allocating the indirect costs is chosen, the office rents and other indirect costs can then be allocated to each activity in the same method, promoting consistency and linearity. There can however be many methods depending on the nature of the indirect cost and different principles can be used, as it is not relevant to allocate electricity costs with the same principles as IT administration costs for example, as certain activities might consume much more of IT

administration resources than the other whereas electricity consumption for each activity could be rather even.

Principles being decided, the allocation of the said direct costs follows next (Bhimani et al. 2012). Indirect costs are allocated to the activities separately in methods chosen the best by the organization and they are kept separate from direct costs in cost databases in order to study the effects of direct and indirect costs individually. Once both direct and indirect costs are properly allocated to the activities, the unit rates for each activity can be calculated. These unit rates then form the end information of the ABC, allowing the user to calculate the full cost of a product or service to be provided, taking into account how many units of each activity is needed. The unit rates can then be used in internal cost controlling and profitability analysis, product pricing and work in progress valuation.

Keeping the ABC updated is crucial especially if the company is using it for key activities of the business, such as product pricing and profitability analysis. As direct and indirect costs may vary significantly from year to year, depending on the activity itself and the external environment of the company, up-to-date costs of activities can play a vital role in the survival of the business.

If an ABC is decided to be implemented in a company, important decisions must be made related to the amount of detail it shall contain. The more detailed it is, the more accurate it might be but also the chances for errors are increased and the system gets more and more difficult to comprehend especially for someone who is not familiar with how the system was built initially. In addition to this, many times implementing an ABC requires some amount of estimating and presumptions as it is in many cases impossible to know and define exactly how much a certain activity consumes a certain indirect cost (Bhimani et al. 2012). Naturally the more these estimates are needed, the less reliable the costing system is. If a significant number of estimates is needed, the implementation and advantages of ABC costing should be critically questioned and evaluated.

Monitoring and Controlling of a Project's Costs

Once the project budget is established, the actual costs can be compared to the budgeted ones and the variances analyzed. This process is called cost management and it aims to take appropriate actions during the project based on the information collected. Cost planning and actual costs must be compared in a sufficient level of detail in order to make conclusions of the reports received (Richman 2011).

Different tools can be used for this analysis and nowadays the data of the actual costs is usually retrieved from the ERP of the company. Richman (2011) suggests that the systematic collection of this data (such as working hours and actuals spent per activity) is important in the comparison between forecasted and actual costs.

Taylor (2007) and Athayde et al. (2013) both consider Earned Value Management (EVM) as an effective way of monitoring the costs of the project against its initial budget as well as the schedule and actual progress of the project. EVM plans to compare all of these in monetary values instead of individual measuring values. EVM deals with the following three aspects used in the comparison.

FIGURE 4
EVM CATEGORIES

Budgeted Cost of Work Scheduled (BCWS)	•Schedule translated in monetary values
Actual Cost of Work Performed (ACWP)	•Total cost cumulated up to a certain point
Budgeted Cost of Work Performed (BCWP)	•The value of actually performed work, "earned" value

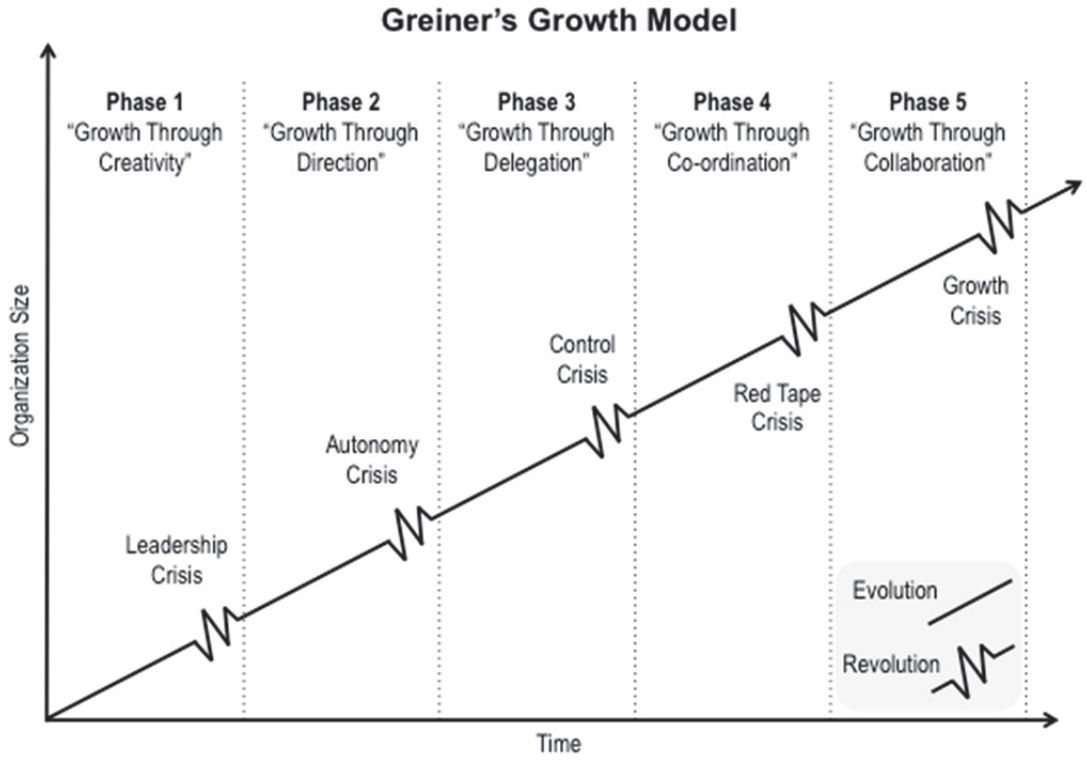
A project's BCWS (in euros) simply means splitting the project budget to the project's schedule in a relevant manner. This can be a percentage-based split (in case the work to be performed is considered to

be completely linear in terms of schedule) or a milestone-based split, for example. The main idea is that the project's BCWS at the beginning of the project is 0€, and at the end of the project it is the final total of the project's budget.

The Growth Phase of a Company and the Need for Cost Accounting

As companies grow, they face different needs and challenges, both in terms of management and cost accounting. Greiner explains the growth of a company in a following model which progresses through continuous evolution with occasional revolutions:

FIGURE 5
GREINER´S GROWTH MODEL



In the first phase, the creativity of the founders or the establishers of the company fuels the new products and services that create the added value for customers. Innovation in this phase in natural, driven by few people who are willing to do almost whatever is needed to make the innovations work. The first revolution in the form of a leadership crisis comes when the leadership of the company is not able to cope with the increasing demands coming from different directions. The leadership has more and more tasks to take care of as the company expands and at this point, they are not able to perform the full task themselves (Greiner 1972).

The response and solution for this revolution is to get more professionals to the management by for example hiring new managers with previous experience of similar situations. These kinds of professionals usually provide strategic thinking to the company and provide a more long-term mentality to the firm, challenging the views of the founders. Thus, this second phase is called the direction phase where also activities such as budgeting and marketing are often made separate, even though they may still be done within the same department (Greiner 1972).

At the end of the direction phase, the autonomy crisis challenges the company with a new revolution. The increased amount of management leads to the fact that some managers, usually the ones hired from outside, tend to have more personal interests in the company and they might not be so focused on the

success of the company itself, favoring their own personal gain. Therefore, resources and rewards are fought over, causing conflicts in the organization. The key question in this revolution is how to give managers the freedom to choose in such a way that it helps not only themselves but also the whole company (Greiner 1972).

The autonomy crisis is solved in the third phase by dividing the organizational structure, forming a middle management level and individuals are given clear responsibilities and a hierarchy to follow. Once the company grows enough during this phase, it faces the control crisis. In this crisis the organization gets more complex, communication requirements might not always be understood and managers might make individual decisions which are optimal for their level of organization but might damage the other levels. It is all about communication and understanding what is going on in the other levels, and at this point the managers are starting to lose control over common daily operations (Greiner 1972).

Phase four deals with this issue by creating reporting and communication standards to ease these matters. Separate teams and product organizations are joined in business units and other organizations to help effective communication. As more units and parties are formed inside the organization, the financial reporting needs also grow and start to become sophisticated as business units need to be analyzed separately and compared to each other (Greiner 1972).

The increasing reporting duties prove to be a double-edged sword as the increase of bureaucracy leads to ever-increasing report details and reporting, which in the end does not provide added value to the organization. Increased reporting creates increased audits and the circle of these two goes on and on without providing real help to the business operations (Greiner 1972).

In the collaboration phase, the harder values such as reporting and audits are balanced with human connection and interaction with collaborative, supportive approaches. The red tape is significantly simplified to serve the purpose of the business and excessive reporting is abandoned. The organizational growth focuses on people and their interaction, possibly resulting in a matrix organization. Reward systems are reworked to promote teamwork and success instead of individual performances (Greiner 1972).

A collaborative organization is thus a pinnacle of the previous development, but it also has its own challenges, mainly relating with how to grow even further without overloading current systems and processes (Greiner 1972).

When contemplating this model from the point of view of management accounting, it seems clear that management account processes are not given much significance in phases one to three. Only in phase four, when increased reporting is needed to control the company's growth and expanded operations, more detailed reporting is needed from management accounting as well.

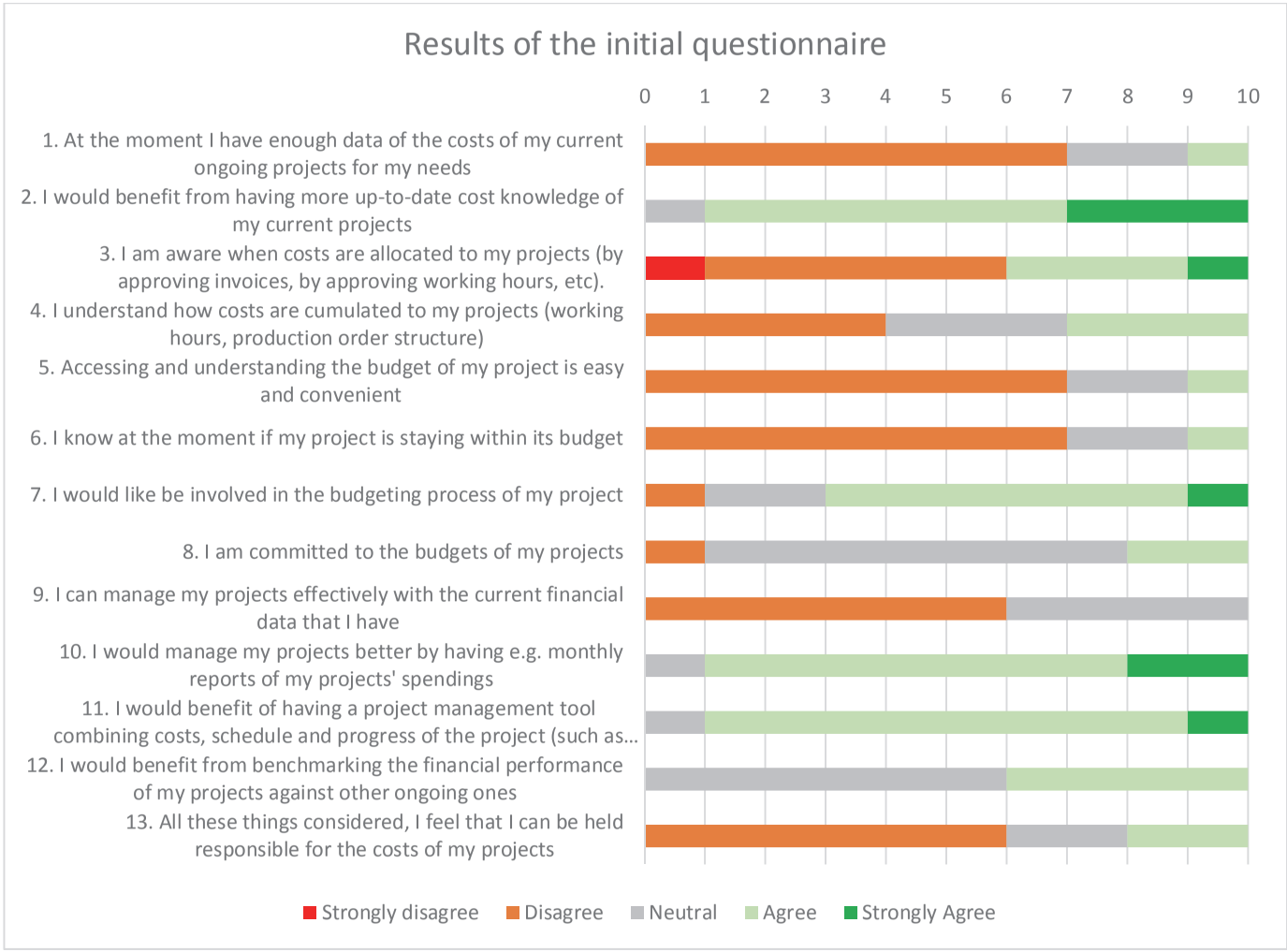
Once companies grow, continuing the growth instead of building complex and detailed reporting structures seems like an obvious choice. After all, detailed reporting would be of little use in case there is nothing to report. Therefore, it seems only natural that growth comes first and the other processes (including cost accounting processes) are dealt with later, only when needed. These processes might be put in order once the growth stops momentarily or once it is clear that the previous processes cannot support the business activities adequately anymore. In the latter case, the transition and implementation of such reporting tools is likely to be much more painful as the company might run into a wall, having inadequate processes needing rapid reforms to support the continuing growth (Turner 2016, 11).

RESEARCH RESULTS

Cost-Awareness Development Needs of the Case Company before the Development Project

Data was collected in two steps, first by interviews with selected people and then by a questionnaire targeted to a larger group. The questionnaire with 13 multiple-choice questions and one open question was released on 19 July 2019 to a total of 13 recipients. The full responses to the multiple-choice questions of the questionnaire are detailed below in Figure 6.

FIGURE 6
RESULTS OF THE INITIAL QUESTIONNAIRE



The first four questions dealing with the cost-related topics provided interesting results. A clear majority of the project managers seemed to think that they do not possess enough data of their projects' costs for their needs, and similarly most of them agree that more up-to-date cost data would benefit them in their project work. Also, it seems clear that the project managers were not sufficiently aware of how costs were allocated to their projects and even the production order structure of the projects seems unclear for many of them. This is an important factor as the production order structure acts as a WBS for a project, being an essential part of a project.

Consequently, also the budgets of the projects seemed to be difficult to understand for the project managers. The budgets consist of tens, sometimes of hundreds of lines per one machine to be manufactured and interpreting these files can indeed be daunting for a project manager, especially when the content of the budget is not explained to them beforehand. Question six also provides some alarming information, as most of the project managers were not aware if their projects were staying within their budgets during the lifecycle of the project. Project managers were not a part of the budgeting process and according to the questionnaire, most of them would like to be involved in it. Based on these results it was thus easy to understand why only one of the respondents claims to be committed to the budget of their projects (question eight).

When it comes to project management-related questions, none of the respondents said that they were able to efficiently manage their projects with the current financial information provided to them. Monthly reports and a combined tool for schedule, cost and progress management (such as EVM, which was given as an example) were considered good ideas by the project managers. Most of them were neutral about the benefit of benchmarking their projects to other ones, but however none seemed to disagree with the idea of this.

As a conclusive summary, question 13 provides a good and simple overview of the questionnaire. Most of the project managers felt they should not be held responsible for the costs of their projects, underlining and confirming the main research problem of this research. By addressing the issues pointed out by this questionnaire, the situation should be drastically improved.

Key Development Actions and Results

During this action research project, especially the following items were developed:

- Communication of the project budget: Controller started participating in project start-up meetings and interpreted project budget content to project teams
- Project delivery process and cost accounting process were improved: project delivery milestone sections were made key points in the project cost accounting
- Pre-production costing of equipment was improved: the cost of the design structure was based on the average stock price of the items
- Improvement in after-sales and warranty reporting: previously this was completely unreported
- Cost control tool for on-site installation and deployment were developed: monthly cost tracking and cost forecasting developed: previously there were no tools for continuous monitoring of these costs
- Daily tracking of project hours was introduced: budgeted hours vs. hours completed by type of work are now available for project manager to view in real time
- Weekly tracking of project work hours was developed: project managers can now track weekly workloads for each type of work and departmental managers can similarly track how much of their resources are spent on different projects at different times
- ABC calculations were updated: now unit costs are the basis for a new project calculation
- Development of work-in-progress calculation: monthly accounting and inventory value tracking were developed (previously this kind of calculation was done twice in the financial year)
- New kind of project cost reporting was developed: a dashboard style overview of the actual cost of the project

- Communication in project deliverables was developed: closer cooperation between the project department and the controller. A joint meeting was introduced with a detailed budget review and Controller presenting the Production Order Structure (a kind of WBS) to project managers

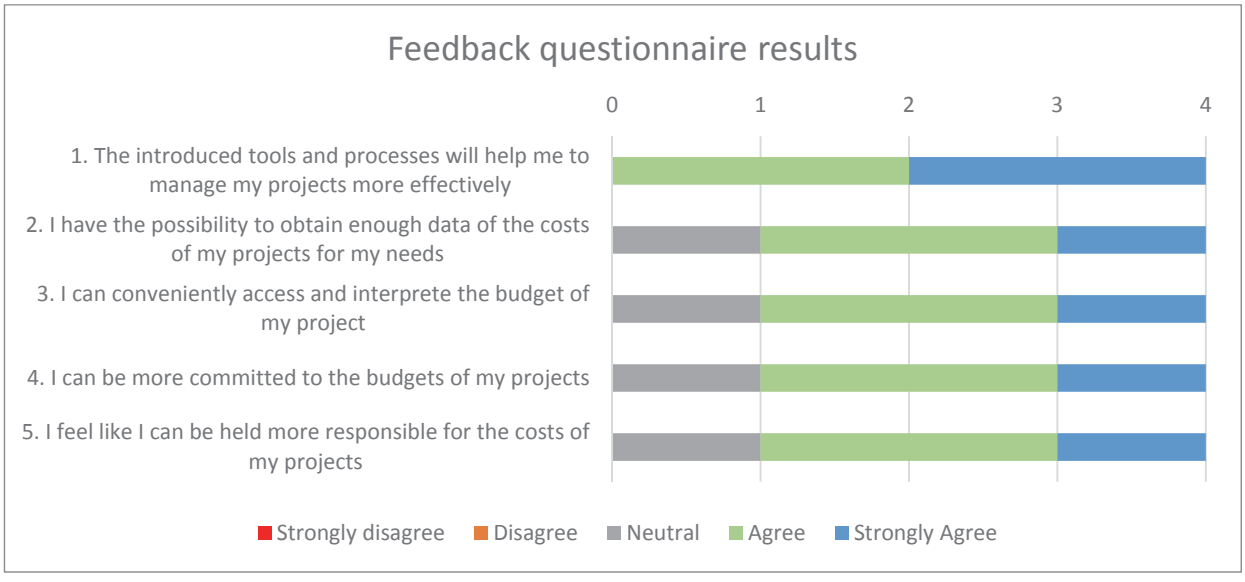
Due to the developed tools the case company can now monitor the costs of their projects clearly during the full lifecycle of a project. The planned cost calculation gives an accurate cost estimation of the manufacturing costs of a design before it is released to production. During the manufacturing phase, the new reports to monitor project working hours make it possible for project managers to monitor the daily workload caused by the project per department. Once the machinery of a project is delivered to the customer, the new on-site installation cost monitoring report provides monthly data of the installation costs and thus the project manager can have a view of the costs and works performed without physically being present on site. Furthermore, the project managers can now also review the warranty and post-delivery costs of their projects to fully evaluate the financial success of their projects. Additionally, at any point of the project lifecycle, the comprehensive project cost report can be made to evaluate the full costs borne by a project. The accuracy of these costs is made sure by the updated activity-based costing database and improved work-in-progress reporting. In addition to some minor fees from the ERP supplier due to changes done in the ERP reporting, the development tools created no additional cost to the case company on top the employment-related costs of the controller.

Validation of the Development Results

All the tools and the proposed process changes were presented first to the CFO of the case company on the 14th of November 2019. The feedback was largely positive and especially the machinery planned cost review was considered an important improvement that should be made especially for machine designs for which previous references do not exist. The presentation to the executive board, this time represented by the Vice President of the board of directors, CEO, Project Director, Operations Director, and CFO of the case company, was made on 26 November 2019. The new reports and process changes were welcomed by everyone attending the presentation. The new tools and processes were then presented to the project managers on the 19th of December 2019.

Answers to the project quality evaluation questionnaire were anonymous like in the initial questionnaire conducted at the beginning of this research. They are presented in figure 7.

FIGURE 7
FEEDBACK QUESTIONNAIRE RESULTS



Only four responses were recorded for this survey. The questionnaire was sent to the same 13 individuals who received the initial survey sent at the beginning of this case study. Those four responses to the questionnaire show largely positive results. Detailed analysis of the questionnaire results shows that the tools and new processes were given the most positive feedback, with 50% of the answerers strongly agreeing that the developed tools will help them to manage their projects more effectively. Furthermore, *the project managers see the interpretation of the project budget easier now with clear communication and explanation from the responsible controller. Committing to the given budget is also at a higher level according to the results and overall 75% of the project managers who answered this questionnaire now feel that they can be more responsible for the costs of their projects.*

DISCUSSION AND CONCLUSIONS

Rapid growth both in sales revenue and number of employees proves to be challenging to the case organization in terms of support activities and administration. When the activity is booming, the company tends to direct most of its resources to enable the growth to be continuous and as certain as possible. In such cases, it is likely that management accounting and cost reporting are left with substantially less resources than the activities that have the most direct link to the growth, such as sales and marketing. As long as the cost controlling and reporting provides enough data to somehow cope with the growing business needs, they tend to be left with little attention. It is easy for such organizations to continue in this manner until they hit a wall, reaching a point where it is certain that the current cost reporting tools and processes are inadequate to effectively support the business activities. If resources are not allocated also to the support functions and measurement of the cost-efficiency of the company, the growth will end as the rest of the organization does not comply with the increasing demands of the business.

As this article points out, the project management of the case company was weakened due to the lack of proper cost accounting processes during one of the fastest growth phases in the company history. Had the cost reporting been developed alongside the growth, these multi-million projects could have been managed better, resulting in increased financial success of the company. Recruiting or allocating new resources to financial controlling tasks before or during the targeted growth would have been an insignificant investment next to the gains that could have been achieved with it.

In the case company of this article, significant development of project cost management was achieved. The analysis of the feedback questionnaire points out that the project managers also feel that they are now able to manage their projects more efficiently, further emphasizing the close relationship between general project management and project cost management.

Action research allowed the data to be gathered both formally and informally and actions to be taken step-by-step, slowly changing the processes in place instead of suddenly implementing a vast number of simultaneous changes. By providing changes in sequences, no resistance to change from the stakeholders inside the case company was observed at any point during the research. *Action research, when performed in a lengthened timeframe, can thus also be effective in change management if strong resistance to change is expected*.

When developing new tools in cost management it is important to keep in mind the big picture instead of focusing too much on the details. The developer, in this case one of the controllers, has constantly kept in mind what kind of improvement is required to really create added value for the organization instead of creating only additional workload. Even though costs of every single screw and bolt can be obtained from the case company's ERP, this level of detail would not provide any added value for the project managers or management accounting. Thus, the developer/the action researcher has to constantly maintain a balance between details and the big picture.

In action research the developer/researcher must also quickly accept that he or she needs help and input from the others rather than trying to solve every problem himself. Even though the developer/researcher might possess enough technical skills to solve these matters, the point of views and opinions from other people inside the organization are crucial for the success of the actions to be taken. Moreover, *discussion with the others and considering their opinions and suggestions will make them*

more committed to the actions taken as they have been involved in implementing them or providing ideas to them. The developer/researcher must understand that he or she is not alone in solving the problems and that as the study goes on, further and more complex problems arise waiting to be solved as well.

This action research proves to be successful in its initial target to improve project management through increased cost awareness in the case company. Furthermore, it *provides insight and tools for other companies in similar situations and points out areas where further study should be conducted. By itself, this document acts as a reference of a successful action research and gives future action researchers a set of tools and processes to use in their own research.*

When contemplating the new processes and the necessary steps to make them work in a project environment, *the importance of efficient communication between a controller and project managers plays a key role*. The communication starts right from the beginning of the project when the project budget is explained to the project manager in a meeting. From this moment on *a controller should be an integrated part of the project team, knowing the general status of the project and being informed of possible changes in its scope or schedule*. Thus, *the controller needs to take an active part and try to participate in project meetings also after the kick-off meeting. Especially when the project's physical progress is evaluated, a controller should be present* in order to update the actual costs of projects with the completed machinery sections. *Once the controller shows activity and interest in the project, the project manager is more likely to support the controller as well in case of questions or issues with the cost reviews.* The project cost report could for example be reviewed in these project status meetings to also give the financial view of where the project is heading, further assisting the project manager in his or her task to manage the project within budget. *Having the updated financial status of the project available decreases the likelihood of surprises with costs at the end of the project*.

The study has two major *practical contributions*. First*, the study proves the importance of developing a company's accounting as the company grows*. It is not enough that a company's strategy is in good condition and that the company´s products have increasing demand and capable engineers can design and produce them if there is no cost-awareness. Second, *the study has demonstrated how a controller can develop the management accounting and reporting of a growing project business in practice, and in that way support and balance the growth of a business enterprise.*

Our research has also a theoretical contribution. According to Manski (Manski, C. F., 2000) in economics there is a compelling need to enrich data of decision makers and to replace speculations with knowledge based on sound empirical analysis of experimental and subjective data. To enhance the progress in this, rich empirical case data is needed. Manski claims that experimental and subjective data and its analysis will play important roles in efforts to learn about economical social interactions. Our analysis supports the thinking that the controller should be a skillful business partner of the management and participate in the selection of the strategy and in the monitoring of its implementation (e.g. Järvenpää and Lukka, 2017). In this context, however, we highlight the role of "local business partner" by which we mean more a business controller type in the business areas than the CFO of the parent company, who is often more involved in external accounting than in business management calculations.

Methodologically, our research demonstrates how controllers can execute in practice their role as a strategic business partner of the management and develop their organizations' cost-awareness and support profitable growth by using action research as a development method, validate skillfully the development results of this kind of projects and that way verify their high usefulness and value.

The case company of this article operates in a very specific area of business and the development needs of other companies might differ from the ones presented in this document. Therefore, the results of this study cannot be generalized to all companies in the project business at different stages of growth. Thus, further research is needed to implicate further the skills needed in supporting, reporting and balancing high growth through accounting.

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