The effect of using Time-Driven Activity-Based Costing on Budget Slack and Commitment to Budget

Masterproef voorgedragen tot het bekomen van de graad van
Master in de Toegepaste Economische Wetenschappen

Pieter Coenen
onder leiding van
Prof. dr. Werner Bruggeman
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PERMISSION

Ondergetekende verklaart dat de inhoud van deze masterproef mag geraadpleegd en/of gereproduceerd worden, mits bronvermelding.

Pieter Coenen,
Preface

I have written this essay to conclude my study Applied Economics, main subject Accountancy at the university of Ghent. I would like to express my honest thanks to all individuals who have helped me realising this master thesis directly and indirectly.

Primary I would like to thank my promoter Prof. Dr. Werner Bruggeman for granting me the chance and giving me the confidence to realise this essay and for his helpful support, useful recommendations and feedback. A special word of thanks I would like to direct to Alexandre Grutman and Peter Bruggeman for their energetic, constructive and enthusiastic contribution to the conducted case study research.

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My sincere thanks,

Pieter Coenen

May 19th, 2009
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List of Abbreviations

ABC: Activity-Based Costing

TD-ABC: Time-Driven Activity-Based Costing

ERP: Enterprise Resource Planning

ABM: Activity Based Management

CAM-I: Consortium for Advanced Manufacturing-International

ABB: Activity Based Budgeting

BB: Beyond Budgeting

BU: Business Unit

CEO: Chief Executive Officer

CFO: Chief Financial Officer

SAP: System Analysis and Program Development

HACCP: Hazard Analysis and Critical Control Points

ISO: International Organization for Standardization

BSC: Balance Scorecard

P&L: Profit & Loss

KPI: Key Performance Indicator
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Abstract

This master thesis examines the influence that Time-Driven Activity-Based Costing (TD-ABC) has on the behavior of subordinate managers in a participating budget setting. To examine the effects a case study was performed with three companies who had developed and implemented TD-ABC in (several) department projects. The case study results indicate that when sufficient time and training are provided to subordinate managers in an environment of trust, confidence and support, the TD-ABC methodology reduces the amount of budget slack because of induced visibility and motivation and boosts the manager’s commitment to budget through induced ownership. The effects of TD-ABC on job related tension felt by the manager are rather ambiguous since there is no consent, according to the conducted case study, whether or not TD-ABC has a direct negative impact or an indirect positive impact on job related stress.

Keywords – Time-Driven Activity-Based Costing, Participative Budgeting, Information Asymmetry, Budget Slack, Budget Commitment, Job Related Tension.
Introduction

Almost 97% of the U.S. and E.U. firms retain a formal budgeting process. However, the practitioners are confronted with many inconveniences and difficulties (Hansen et al., 2003). The most cited weakness of participative budgeting consists of the fact that it provides an opportunity to create budget slack and dysfunctional behaviors (i.e. budget games) (Baiman and Evans, 1983; Bonin, 1976; Dunk, 1993; Lawler and Rhode, 1976; Lukka, 1988; Schiff and Lewin, 1968, 1970; Waller, 1988 and Young, 1985). Budget slack resorts from the existence of private information (i.e. secret department budget information) held by subordinate managers (Schiff and Lewin, 1970; Dunk 1993; Young, 1985) and has the potential to undermine the effectiveness of budgeting as an organizational planning and control tool (Nouri and Parker, 1996).

Recently Robert S. Kaplan and Steven R. Anderson (2004) introduced an enhanced Activity-Based Costing approach called Time-Driven Activity-Based Costing. This new management control tool offers lots of advantages including granting an excellent visibility of a company’s activities and consumed production resources, resulting in superior accurate cost data (Anderson and Kaplan, 2007). Although Kaplan and Anderson developed a magnificent methodology, they did not explain the effects this methodology could have on the budgeting cycle. However, the TD-ABC precursor, ABC, was already integrated in the participative budgeting cycle through ABB (i.e. Activity Based Budgeting) (Hansen and Torok, 2003) and research on this topic booked fine results (i.e. budget slack and job tension) (Bruggeman and Waeytens, 1995). Kaplan and Norton (2008) presented a method to integrate TD-ABC in the participative budgeting cycle but no empirical research has been conducted yet as a consequence of its recent development. Furthermore, a description in which circumstances the TD-ABC methodology can realize its full potential is (partially) lacking in the literature.

This master thesis contributes to the literature by integrating two topics (i.e. cost systems and budgeting) who’s integration was suggested by Kaplan and Norton (2008) but which was never investigated. In this master thesis the influence of using TD-ABC in the budgeting cycle on budget slack (Dunk, 1993; Lukka, 1988 and Young, 1985), job related tension (Jaworski and Young, 1992; Dunk, 1993b) and budget commitment (Chong and Chong, 2002; Hofstede, 1968; Merchant, 1981; Kenis, 1979) is examined. The examination whether or not, TD-ABC affects managers’ budget commitment is the most innovative part of this research, since the
former is never been empirically studied before although, it is implicitly suggested by the literature. The results of this research indicate a significant impact of TD-ABC on managers’ commitment. A final contribution of this paper consist of the fact that certain conditions are discovered in which TD-ABC can reach its full potential.

This master thesis commences with a coverage of the two main streams of literature. First an evolution of cost systems from standard cost systems to TD-ABC over ABC is given, followed by an overview of the participative budgeting literature, resulting in the development of a theoretical model and consequently several hypotheses, which are tested through an extensive case study research. Throughout the literature examination a side effect (i.e. the influence of TD-ABC on job related tension) was discovered and taken into account during the hypothesis development.

As empirical research a case study investigation was performed with three companies who had implemented TD-ABC-based projects. The purpose of the research was to explore the general research question consisting of the degree to which the use of TD-ABC leads to a reduction of budget slack by reducing information asymmetry and increasing subordinate managers’ commitment to budget. This particular research choice is at the same time the strength and weakness of this master thesis. The major advantage of case study research consists of the fact that the reality is described as precise as possible, which gives the method a significant internal validity. The most important limitation of conducting a case study comprises of the inability to generalise the results because there is a lack of statistical control of the different variables. This leads to a limited external validity. In this explorative research it is especially internal validity that is important, because the proposition is examined, whether or not, TD-ABC has an influence on the participative budgeting cycle and what moderating variables are affecting these relations. Therefore it is sufficient to provide an accurate description of the different cases to ensure the internal validity of this research. During future research the substantiated hypotheses of this paper can be tested throughout a statistical analysis to enlarge the external validity.
1. Theoretical Context

This first section consists of all the relevant literature concerning the topics of this paper. Initially, a brief overview of the evolutions in the cost systems is given. Afterwards a summary of the relevant participative budgeting literature is given and concluded with a literature section which covers the interaction of these two intriguing fields and it’s current developments.

1.1 Evolution of Cost Systems

1.1.1 Traditional Standard-Cost Systems

Traditional standard-cost systems were developed to meet the accumulating information needs of the increasingly complex environment. These systems subdivided the cost in direct costs and indirect- or overhead costs (Bruggeman and Everaert, 2001, p.39). Direct costs have a unique connection with the activity or product and can be unambiguously appointed to this product (Bruggeman et al., 2001,p.28). The allocation of overhead costs is based on single-volume measures such as direct labor hours, direct-labor costs, machine hours,...(Cooper and Kaplan, 1988). The crucial assumption is that high volume products consume a lot of overhead costs while low volume products use few overhead costs (Bruggeman et al., 2005).

As a Consequence of the abovementioned assumption, these systems were able to calculate the total costs of the miscellaneous services and/or products of a company. By using a single driver to allocate the manufacturing overhead to products, it is implying that this one driver is the unique underlying cause of the factory’s overhead. This statement is correct in an environment of mass production with a small portfolio of products and services.

While the direct labor content of products decreased, through automatisation and industrial engineering-driven efficiencies, the overhead fraction (which are mainly allocated arbitrary) of total costs persistently increased during the twentieth century(Cooper and Kaplan, 1991). In addition, companies were developing a more customer-focused strategy in an attempt to grow business by offering new services such as: producing and stocking a greater variety of products, producing and delivering in smaller sizes,... This caused an increase of overhead cost both relatively and absolutely. The traditional single-volume driver allocation of overhead costs was insufficient to capture the complex corporate reality. As a result of the
latter, the traditional standard-cost systems failed to generate accurate costs of products (Anderson and Kaplan, 2007). These distortions (Cooper and Kaplan, 1988;1991; Bruggeman et al., 2001) of traditional standard-cost systems forced academics and practitioners to develop an improved cost system.

1.1.2 Activity-Based Costing

Seeking to remedy the previous distortions, many companies adopted a different cost-allocation approach called Activity-Based Costing (henceforth referred to as ABC) which was developed and introduced by the Harvard Business School professors Cooper R. and Kaplan R.S. in the late eighties. “The goal of ABC (today referred to as ‘rate-based’ ABC) is not to allocate common costs to products. The goal is to measure all the resources used for activities that support the production and delivery of products and services to customers. ABC attempts to first identify the activities being performed by the organizations’ support resources. Then it traces the resource expenses of the support resources to the activities, ending up with the total cost of performing each of the organizations’ support activities. In the next stage, ABC systems trace activity costs to products by identifying a cost driver for each activity (called an activity cost driver), calculating an activity cost driver rate, and using this rate to drive activity costs down to products.” (Atkinson and Kaplan, 1998, p.97). The ABC-approach is schemed in figure 1 below.

[Insert Figure 1]

In contrast to traditional cost-accounting systems, ABC systems initially accumulate overhead costs for each organizational activity, and then assign the costs of the activities to the products, services, or customers (cost objects) causing that activity. This approach, apparently solved the inaccurate allocation of overhead by standard cost systems (Cooper and Kaplan, 1998). Despite its attractive value proposition ABC was not without its pitfalls. A lot of criticism has risen both from the academic (Anderson and Kaplan, 2004; Argyris and Kaplan, 1994; Cobb et al., 1994; Cooper and Kaplan, 1998; Datar and Gupta, 1994) and professional world. Anderson R. and Kaplan R.S (2007), summarize the shortcomings of ABC as follows:

- The different data of the model were subjective and difficult to validate
- The data were expensive to report, store and process
In order to allocate costs, the workforce had to be interviewed to know the time spend on the different activities. The surveying and interviewing process is time-consuming and costly (Cobb et al., 1994).

Most ABC models were local and did not provide an integrated view of enterprise wide profitability opportunities.

The model could not be easily updated to accommodate the constantly changing circumstances.

The model was theoretically incorrect when it ignored the potential for unused capacity. The assumption in the model is that the company uses full capacity which is fiction (Cooper and Kaplan, 1998).

ABC can be applied in several areas of an organisational environment (Bruggeman and Slagmulder, 2001, p52-69). It can be used in performance measurement of the ‘engineered cost centres’ in a company to maximize performance (e.g. reducing costs and unemployed capacity) and reduce dysfunctional behavior (e.g. biasing production volumes and supply levels). However Dixon et al. (1990) found evidence that the implementation of ABC in performance measurement did not solve the problem of mangers’ dysfunctional behavior. Waeytens and Bruggeman (1994) further discovered that managers were not inclined to switch to ABC because it revealed private information held by subordinate managers and consequently reduced their ability to create budget slack. The latter will be of significant importance for the development of the first two hypotheses in the next section of this paper.

The information ABC provides can be furthermore used in management decisions which is called Activity Based Management in the literature (ABM) (Bruggeman and Slagmulder, 2001, p.65). Finally in Activity Based Budgeting (ABB) (Hansen and Torok, 2003) an ABC model is implemented in the budgeting process (ABB will be covered in subsection 1.3).

### 1.1.3 Time-Driven Activity-Based Costing

Recently Robert S. Kaplan and Steven R. Anderson (2004) introduced an improved approach called Time-Driven Activity-Based Costing (henceforth referred to as TD-ABC). This enhanced form of ABC simplifies the costing process. TD-ABC assigns resource costs directly to the cost objects using an elegant framework requiring only two sets of estimates which can be easily obtained. First, it calculates the costs of supplying resource capacity.
Second, the capacity cost rate will be used to drive resource costs down to cost objects by estimating the demand for resource capacity that each cost object requires. This enhanced ABC approach is shown in figure 2 below.

[Insert Figure 2]

The most important advantage of TD-ABC includes that it does not require an activity to be equivalent which was a requirement in ABC (Anderson and Kaplan, 2007). For example in ABC when an activity ‘orders’ was defined, only orders conform the definition were in this category. When orders from new customers were received a new activity (i.e. ‘new order’) was defined because they consumed more time (and thus costs) than ordinary orders from existing customers. TD-ABC allows the time estimate of the activity to vary on the basis of for example the specific demand by particular orders, international orders, orders from a new customer,... by implementing time equations that directly and automatically assign resource costs to the activities. These time equations are generally represented as follows (Anderson and Kaplan, 2004):

\[ t_{jk} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_p X_p \]

With \( t_{jk} \) = time required for event k of activity j

\( \beta_0 \) = constant amount of time for activity j, independent of the characteristics of event k

\( \beta_i \) = consumption of time for 1 unit of time driver i \((i = 1 \ldots p)\)

\( X_i \) = time driver i \((i = 1 \ldots p)\)

\( p \) = number of time drivers which determine the time required to perform activity j

As a result of applying these time equations to capture the complexity of real-world operations, TD-ABC offers a large number of advantages over traditional ABC (Anderson and Kaplan, 2004,2007; Bruggeman et al, 2007):

- The number of activities decreases which leads to a less extensive model
• Managers can add complexity by simply adding new elements to the time equations, which places less strain on a company’s accounting system than incorporating new activities would.

• Cost estimates are now based on actual order characteristics and direct observations of processing times, not on subjective estimates of where and how people spend their time.

• This enhanced model is easier to validate.

• Updating and maintaining this model is easier and cheaper.

TD-ABC generates more accurate costs, than the ABC method, which are easier to maintain due to the time-equation incorporation in the model. As a consequence of this more accurate, easier and cheaper design of TD-ABC, the implementations of ABC described in the previous subsection (i.e. performance measurement and ABM) are expected to generate enhanced results. The performance should increase and the dysfunctional behavior (e.g. information asymmetry) should be reduced even more (e.g. Waeytens and Bruggeman, 1994, 1995). There is still little research on the implementation of TD-ABC due to its recent development (November 2004). However the previous consequences are deducted since, TD-ABC is in essence an improved ABC methodology and therefore, the already constructive accomplishments of ABC should be maintained and even improved, when TD-ABC is utilized. Kaplan and Norton (2008) introduced an implementation of TD-ABC in the budgeting process (i.e. the ‘successor’ of ABB) which shall be covered in the final subsection of this paragraph (cfr. 1.3.2).

1.2 Budgeting

1.2.1 Participative Budgeting

This section covers all the relevant budgeting literature generally situated in a participative budgeting context. In the underlying text a model is derived from the literature and is extensively discussed. This literature model will form the cornerstone for the hypothesis development in section 2.

“Budgeting involves short-term financial planning. Budgets are structured to match the organization’s accountability, with as much revenue, expense, asset and liability line item
detail as it appropriate. Budgets seems to be so significant in providing routine, day-to-day
decision-making guidance for managers that in essence the primary principle of other
planning cycles (strategic planning and programming) is merely to develop a credible,
realistic budget.” (Merchant and Van der Stede, 2003, p306). Although there is a long list of
problems and many calls for improvement (cfr. subsection 1.3) almost 97% of the U.S. and
E.U. firms retain a formal budgeting process (Umapathy, 1987) because, it is the only process
that covers all areas of organizational activity (Otley, 1999). When a budget process occurs
there are two possible ways of creating a budget: “top down” or “bottom up” (Anthony and
Govindarajan, 2007, p391). In a top-down budgeting setting, senior management sets the
budget for the lower management levels. When bottom-up budgeting is employed, lower-
level managers participate in setting the budget amounts. Research has shown that the top-
down approach rarely delivers high-quality results and that it induces dysfunctional budget
games(Hope and Fraser, 1997, 2000, 2003) . Forcing budgets down to subordinates leads to a
lack of commitment on the part of budgetees; this endangers the plan’s success (Anthony and
Govindarajan, 2007). The latter is the reason why this study departs from the “bottom up”
approach, which is roughly a synonym for participative budgeting (Merchant and Van der

1.2.2 Relevant Budgeting concepts

In the, for this study, relevant participative budgeting literature five major concepts and their
interactions with each other are examined. Figure 3 shows a model which is derived from the
literature and reveals the interactions implied by these five concepts.

[Insert Figure 3]

*Participative budgeting* is defined as a process whereby subordinate managers are given the
opportunities to get involved and have influence in the budget-setting process (Brownell,
1982a). In conformance with Merchant (1985a), Lukka (1988) and Young (1985), *Budgetary
slack* is defined as the condition where budgeted costs, revenues, or production volumes are
easier to attain than when the budgeted amounts had been based on unbiased estimates of
future operating conditions and results. *Commitment to budget* goals is defined as: “the
determination to try for a budget goal and the persistence in pursuing it over time” (Locke et
al., 1981). *Information asymmetry* occurs when the subordinates’ information exceeds that of
their superiors (Dunk, 1993). The existence of information asymmetry on the part of the
subordinates has gained importance in agency theory, where concern is focused on obtaining true revelations of subordinates’ inside information (Baiman, 1982, Christensen, 1982). The existence of this private information implies situations in which subordinates intentionally build excess requirements for resources into the budget (Schiff and Lewin, 1970). *Job Related Tension* “represents tension arising from psychologically stressful circumstances in the job environment” (Kennis, 1979, p. 712), comprising “negatively toned emotional reactions to job relevant problems” (Vossel and Froehlich, 1979, p. 55).

In the remainder of this subsection the literature model, shown in figure 3, will be examined more closely by explaining the two major relations.

### 1.2.3 Participation - Information Asymmetry - Budget Slack Creation

There is a vast stream of empirical participative budgeting literature starting with Argyris (1952). He was the first to test empirically the organizational and behavioral effects of participative budgeting on subordinate managers. In a participative budgeting setting subordinate managers are invited to contribute to the creation of a budget (Brownell, 1982a). In some cases the subordinate manager has a level of information that succeeds the level of his superior (Young, 1985). The problem is that the existence of this private information coupled with participation may give rise to situations in which subordinates intentionally build excess requirements for resources into their departments’ budget and create the previously defined concept of budget slack. These findings are suggested by Schiff and Lewin (1970), Bonin (1976), Lawler and Rhode (1976), Baiman and Evans (1983), Young (1985) and Dunk (1993) but are not always empirically supported. Budgetary slack has the potential to undermine the effectiveness of budgeting as an organizational planning and control tool (Nouri and Parker, 1996).

Young (1985) tried to empirically test the effects of private information about productive capability, risk preferences, and participation on budgetary slack in a single-period experimental study by using an experiment among forty MBA-students. His findings supported the fact that participation increased the amount of slack. These findings were also discovered by empirical research of Bruggeman and Waeytens (1995). However Young (1985) did not find empirical evidence that subordinates who indeed had private information build more slack into their budgets. Social pressure was found to influence the amount of slack creation negatively. Bhimani and Pigott (1992, p. 129) conducted a case study and
illustrated clearly how in a British company ABC had a significant impact on the information flow between line managers and accountants which suggested that ABC reduces information asymmetry.

Dunk (1993) suggested that subordinate managers, who held private information during the participative budgeting process, attempt to build in excess amounts in their budgets when their compensation package was (partially) attached to attainment of this budget (cfr. Lowe and Shaw, 1968, Shiff and Lewin 1968, 1970, Waller 1988). He found evidence that when the variables participation, information asymmetry and budget emphasis were all high, budget slack amounts would significantly increase. Statistical analysis of several surveys did not support causal relations between two mutual variables but only the relations in which all three variables were imposed.

In the budgetary slack literature is no consensus whether participation does actually increase budgetary slack amounts. Lukka (1988) argued that a high degree of involvement gives subordinate managers the opportunity to contribute directly to the creation of slack. However, the link between participation and slack is ambiguous, since Merchant(1985b), Cammann(1976) and Onsi(1973) provide evidence that participation may lead to a reduction of slack amounts, which can be accredited to the constructive communication between subordinate and superior managers. However Young (1985) founded significant proof to support the hypothesis that participation leads to budgetary slack creation.

This equivocal relationship between participation and budgetary slack creation has received a lot of attention in the literature but consensus hasn’t been reached (yet) because both sides found empirical support for their position and their conclusions are inconsistent with one another. Dunk and Perera (1997) investigated this two-sided effect of participative budgeting on budgetary slack creation and came to the conclusion that although managers were aware that participation provided them with the opportunity to build slack into their budgets, they did not necessarily attempt to do so for reasons that include moral, ethical and career advancement considerations. As described above there seems to be a bilateral effect of participation. In the next section this will be further explored and a position in this extensive discussion is chosen and the reasons supporting this choice are explained.

An interesting concept in the budgeting field which cannot be left uncovered is the idea of job related tension. Jaworski and Young (1992) tested a causal model of dysfunctional behavior
among a large sample of marketing managers. The results indicate that three contextual variables (i.e. goal congruence, perceived peer dysfunctional behavior and information asymmetry between superiors and subordinates) forecast the extent of job tension experienced by the manager. Jaworski and Young (1992) found evidence that job tension increases when information asymmetry decreases, because of reduced job control. Dunk (1993) incorporated two other variables shown in figure 3: performance and budget participation. The findings of his research suggest that the association between job-related tension and performance is significant and negative. There is no evidence to support the proposition that participation moderates the relation between job-related tension and performance. However when Dunk’s findings are integrated in the findings of Jaworski and Young and the authors of the budgeting theory the relation shown in figure 3 is deducted. The former suggests that lower (higher) information asymmetry leads to more(less) job related tension (due to reduced job control) which leads to an increase(decrease) in dysfunctional behavior followed by a reduced (enhanced) job performance. Performance is also influenced by the relation information asymmetry-budget slack. When information asymmetry increases(decreases), budget slack amounts will increase(decrease) and the performance of managers will be worse (better) (cfr. Chong and Chong, 2002; Dunk, 1993; Young; 1985; Lukka, 1988).

In conclusion, the literature suggests that subordinates’ involvement in the budget process seems to increase(decrease) the amount of information asymmetry. When subordinate managers have a significant (insignificant) amount of private information, budget slack amounts will increase (decrease) and job related tensions will decrease (increase). Budget slack amounts and job tension will on their turn influence the manager’s job performance.

1.2.4 Participation-Commitment-Slack Creation

Merchant(1985b), Cammann(1976) and Onsi(1973) argue that a negative relation between participative budgeting and slack creation is expected, which can be attributed to the positive communication between managers. This communication establishment induces a constructive feeling and therefore the budget slack amounts decrease. Merchant(1985b) found empirical evidence of this positive relation. He further proposed that the propensity of subordinate managers to create slack is positively related to the importance placed on meeting budget targets (e.g. budget emphasis), negatively related to the degree of predictability in the production processes, and negatively related to their superiors’ abilities to detect slack. The latter will be of exceptional importance in section 2) of this paper which develops the
different hypotheses\textsuperscript{1}. Wentzel(2002) found further evidence that participation fosters a sense of fairness which led to an increase in commitment and a decrease in information asymmetry. The latter is studied by several authors which I will present below.

Chong and Chong(2002) examined the effect of budget goal commitment and informational effects of budget participation on performance. They empirically tested the model shown in figure 4, on which the lower part of the from literature derived model in figure 3 is based.

\textbf{[Insert Figure 4]}

The model shown in figure 4 suggest that participation of subordinate managers in the budget process induces subordinates to accept and commit to their budget goals\textasciitilde(Argyris,1952, Becker and Green, 1962, Hofstede, 1968, Searfoss and Monczka, 1973, Kenis, 1979 and Merchant, 1981) this is called the motivational effect. Due to this goal commitment and participation an informational effect is established. Subordinates can gather, exchange, and disseminate job-relevant information to facilitate their decision-making process and to communicate their private information to superior managers. In other words the information asymmetry will decrease between principle and agent (Earley and Kanfer,1985, Campell and Gingrich,1986, Murray,1990, Kren,1992, Shields and Young,1993, Magner et al.,1996, Nouri and Parker,1998). The availability and utilization of job-relevant information finally enhances job performance (link 3 in figure 4). In the previous section one of the conclusions was that an increase in information asymmetry increased the level of slack(Dunk, 1993). When information asymmetry diminishes due to the parameter commitment, in the model shown in figure 4 (Chong and Chong, 2002), the prediction that slack creation amounts will decrease and that job tension will rise (Jaworski and Young, 1992) can be easily deducted.

\textbf{1.2.5 Variables of Budget Slack}

Another import aspect which cannot be left unrevealed are the variables that affect the concept of budgetary slack creation. The two major variables affecting slack appear to be Participation (through decreasing/increasing information asymmetry)(Schiff and Lewin, 1970, Bonin, 1976, Lawler and Rhode, 1976, Baiman and Evans, 1983, Young, 1985 and Dunk, 1993) and Budget Emphasis(Dunk, 1993; Baiman and Lewis, 1989). Young (1985) found

\textsuperscript{1} Budgetary controls appear to be negatively related to budgetary slack creation. These findings are empirically supported by Dunk(1993) and Merchant(1983b). These findings are of particular importance in the hypothesis development in section 2 of this paper. TD-ABC can be used as a budgetary control system (Anderson and Kaplan, 2004) because it gives an accurate cost estimation and will therefore reduce the amount of slack created by subordinate managers. This reasoning is further developed in section 2 of the paper.
further evidence of a positive relation of risk aversion with budget slack and a negative relation with social pressure\(^2\). Stevens (2002) added two more variables affecting budgetary slack which were reputation and ethics. Both were negatively related on a significant level with budgetary slack creation in a participative budgeting context.

### 1.3 Activity Based Budgeting & Developments

In the previous chapters an overview of the two large topics on which my paper focuses was given (i.e. TD-ABC and participative budgeting). In the next section I will discuss the interaction between these two main topics called the Activity Based Budgeting Approach (hereafter referred to as ABB) and the recent evolutions in this area of research.

Budgeting is the cornerstone of the management control process in nearly all organisations, but despite its widespread use, it is far from perfect (e.g. Comshare, 2000\(^3\)). Neely et al. (2001), drawn from the practitioner literature, lists the most cited weaknesses of classical budgeting:

- Budgets are *time-consuming* to put together;
- Budgets strengthen vertical *command-and-control*;
- Budgets encourage *gaming* and perverse behaviors;
- Budgets are developed and *updated too infrequently* usually annually;
- Budgets are based on unsupported assumptions and *guesswork*;
- Budgets reinforce departmental *barriers* rather than encourage knowledge sharing;
- Budgets make people feel *undervalued*.

Given such a long list of problems and numerous calls for enhancement, it seems peculiar that the vast majority of U.S. and European firms retain a formal budgeting process (97% in Umapathy, 1987). The primary reason for this maintenance could be that “they remain a centrally coordinated activity (often the only one) within the business”(Neely et al., 2001, 14).

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\(^2\) Because there is no literature supporting a link between TD-ABC and ethics, social pressure, reputation, risk aversion and budget emphasis I’ve chosen not to incorporate these variables in the hypothesis development. Although a link can be expected between these variables. This can be a suggestion for future research.

\(^3\) Comshare(2000) surveyed Financial executives about their current experience with their organization’s budgeting processes. 154 participants (84%) identified 332 frustrations, an average of 2,6 complaints per person.
To meet the previous criticisms of traditional budgeting the Consortium for Advanced Manufacturing-International (CAM-I) has developed two new kinds of budgeting approaches (Hansen et al., 2003): Activity Based Budgeting (ABB) and the Beyond Budget Approach$^4$ (BB).

1.3.1 Activity Based Budgeting

As its name implies, the ABB-approach focuses on generating a budget from an activity-based model of the organization, as opposed to the classical product-market, responsibility centre, or departmental focus (Hansen et al., 2003). The heart of ABB is the Closed Loop Model (Hansen and Torok, 2003) shown in figure 5 below.

[Insert Figure 5]

The model consists of two main stages. Stage 1 consist of the operational loop; activity-based concepts are implemented to convert the estimated demand for products and services into activity requirements using activity consumption rates. Hereafter the requirements are translated into resource requirements using resource consumption rates. In other words, an ABC model (cfr. subsection 1.1.2) is implemented in the budgetary process to achieve accurate budgets and predictable forecasts. In fact this ABB-approach is a precursor of the budget approach proposed by Kaplan and Norton (2008) discussed in the subsection below. Stage 2 is called the financial loop in which a financial plan is developed based upon the operational plan.

This ABB approach holds many advantages over classical budgeting but the most eye-catching advantage relevant for this study is the following: “The resulting transparency of the activity-based budget potentially promotes the allocation of resources to their best uses in line with organizational priorities, decreases the scope for political gaming, enhances decision making and performance evaluation, and improves operational flexibility”. Waetens and Bruggeman (1995) found that once ABC-information is used in budgeting this influences the behavior of costcentre managers. They found evidence that ABB leads to a decrease of dysfunctional behavior (e.g. information asymmetry), a decrease of budget slack and a loss of independence in the perception of subordinate managers inducing job related tension. The

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$^4$ BB will not be covered due to its irrelevance for this study. I recommend to interested readers to read the publication of Hope and Fraser (2003) “Beyond Budgeting: How managers can break free from annual performance trap”.
authors found further proof that even in an ABB setting, risk-averse managers build slack into their budgets.

1.3.2 Strategic budgeting

In their latest publication ‘The Execution Premium’ (2008), Kaplan R. And Norton D. introduce an enhanced framework which allows companies to translate their strategic intent into detailed operating plans through a well-organized, integrated five-step process:

1) Use driver-based revenue planning to obtain sales forecasts for future periods.
2) Translate the high-level sales forecasts into a detailed sales and operating plan.
3) Enter the sales and operating plan, as well as projected process efficiencies, into a TD-ABC model that forecasts demand for resource capacity.
4) Derive dynamic forecasts (budgets) for operational and capital spending.
5) Estimate pro forma financial profitability by product, customer, channel, and region.

The purpose of this theoretical construction is to integrate the strategic planning with resource allocation, financial forecasting, and, ultimately, a dynamic budgeting process. Budgets are derived from the companies’ integrated TD-ABC model which, on his turn, gathers data from the sales and operating plans which are estimated by the managers.

Step three links the strategic plan with the operating plan, using an integrated TD-ABC model. By using TD-ABC in the budget process, managers realize a major additional benefit of this approach: the ability to quickly forecast and budget the needed supply of resource capacity. The TD-ABC model can be modified to reflect process improvements expected to occur in the forecasted period. In this way the company’s continuous improvement activities become embedded in the budgeting process. After the model’s resource consumption estimates have been adjusted for the forecast process improvements, the planners enter the detailed sales and operating plan for the forecasting period into the model. The final output of the process are resource requirements under diverse assumptions of different forecasts.

At the end of step three, the company has estimated the quantity of each type of resource it has agreed to supply in a future period. The estimated quantities are simply and accurately translated in step four into a budgeted operating and capital expense for the upcoming periods. These expenses are, in effect, the content of the budget.
This framework receives some criticism because tying resource capacity authorization tightly to the income forecast, companies might reintroduce the dreadful incentives that existed in traditional budgeting progression for managers to issue biased forecasts. Kaplan and Norton (2008) believe that this should not be a major problem because once this framework is implemented and managers for example submit overly confident forecasts, they will bear costs of that higher capacity in subsequent periods and will realize lower profits when definite sales are worse than their forecast. The authors believe that TD-ABC induces an incentive to generate unbiased forecasts because than the method allows them make high-quality resource decisions for future periods. The latter suggest that the implementation of TD-ABC makes costcentre managers more committed to the developed figures (i.e. budget) because deliberate biasing data will have a rebound effect as described above.

The implementation of TD-ABC in the budgeting process in this framework makes managers more aligned to this budget which decreases the chance that managers will intentionally release biased forecasts. This can be interpreted as a reduction in slack creation and an increase in commitment to costcentre managers'. The latter is derived from the fact that Kaplan and Norton (2008) suggest that “Generating managerial commitment to deliver the budgeted results” is one of the critical properties of budgeting which has become most companies’ central management system.
2. Hypothesis Development

In the previous subsections all the relevant budgeting literature was covered resulting in the derived literature model shown in figure 3. The purpose of this study is to examine the effect(s) of implementing Time-Driven Activity-Based Costing on the budgeting related concepts (cfr. figure three) is examined.

There are two major effects which can be derived from the literature when TD-ABC is implemented in the budgeting process which are shown in figure 6 below.

[Insert Figure 6]

This model is based on the literature model shown in figure 3. However consensus hasn’t been reached in the literature whether or not participation increases (Lukka, 1988, Young 1985, Dunk, 1993) or decreases (Merchant, 1985b, Cammann, 1976, Onsi, 1973) the amount of slack. This departs from the assumption that participation of subordinate managers in the budget setting process implies budgetary slack creation since participants have more acquaintance and information than the senior management, which have to approve the proposed budgets (Anthony and Govindarajan, 2007).

TD-ABC is a management accounting tool (Anderson and Kaplan, 2004) which generates accurate costs of the company’s products and services. When TD-ABC is integrated in the budgeting process Kaplan and Norton (2008) suggest that the incentive of biasing information by subordinate managers will decrease. Merchant (1985b) found evidence that slack creation is negatively related to superiors' abilities to detect slack. In this view TD-ABC can be seen as a budget control system which lowers the information asymmetry and budget slack creation. Waeytens and Bruggeman (1994, 1995) found through experimental research that the implementation of ABC lowers information asymmetry and subsequently slack amounts decrease. However, the results indicate that ABC obtained superior results when it is implemented in an environment of trust. Bhimani and Pigott(1992) illustrated through case study research that ABC reduces information asymmetry. Consequently TD-ABC is expected to lower information asymmetry and, taken into account the findings of Dunk, 1993, consequently reduced budget slack. Hansen et.al (2003) suggest in their paper about developments in the budgeting field that the activity-based budgeting-approach in budgeting leads to more transparency and consequently less information asymmetry.
A side effect of disappearance of information asymmetry consist of the fact that the former induces job related tension felt by subordinate managers as suggested by Jaworski and Young (1992). The findings are confirmed by Waeytens and Bruggeman (1995) who found evidence that implementation of ABC indeed increased the stress felt by the costcentre manager. Since TD-ABC is an enhanced version of ABC (Anderson and Kaplan, 2004) the relations found by Waeytens and Bruggeman (1994,1995) for ABC should be maintained for TD-ABC.

The aforementioned literature gives rise to the first two hypotheses of this master thesis:

**Hypothesis I:** Due to using Time-Driven Activity-Based Costing in the budgeting process, information asymmetry will decrease and as a direct result the budgetary slack amount will be reduced.

**Hypothesis II:** Due to using Time-Driven Activity-Based Costing in the budgeting process, information asymmetry will decrease and as a direct result the job related tension felt by subordinate managers will increase.

These two hypotheses are shown in the upper part of figure 6. TD-ABC is expected to have a negative impact on private information held by subordinate managers, which consequently reduce budget slack amounts and induce job related tension felt by subordinate managers.

Kaplan and Norton suggest in their newest publication: ‘The Execution Premium’ that commitment to budget goals is one of the properties of their dynamic budget approach. They advocate that in a participative context as soon as the five steps, discussed in the last subsection of section one, are deployed, the incentive of miss representing information will lower and therefore the managers’ commitment to budgets will rise. The reasoning for assuming this relation is absent. The former argument is derived from the fact that commitment is a property of this new system.

When TD-ABC implies budget commitment and therefore a driver of budget commitment, the model proposed by Chong and Chong (2002) (discussed in section 1.2 and shown in figure 4), can be extended. Besides participation, TD-ABC seems to be a driver of commitment. When TD-ABC is implemented in this model the following reasoning can be made: TD-ABC implies commitment to budget goals(Kaplan and Norton, 2008), this budget commitment lowers the amount of information asymmetry(Chong and Chong, 2002)which takes away the possibility to create budget slack (Dunk, 1993).
The abovementioned literature reasoning gives rise to the third and final hypothesis:

**Hypothesis III:** Due to using TD-ABC in the budgeting process the commitment to approved budgets will increase, which on his turn decreases the information asymmetry and subsequently the budgetary slack amounts.

The third hypothesis is shown in the lower part of figure 6.

In the underlying research, the model shown in figure 6 is examined in total with special attention for information asymmetry, budget slack, job related tension and budget commitment (i.e. the main hypotheses). Further the other relations (e.g. budget commitment inducing disclosure of private information) are investigated since they could jeopardize the functioning of the model as a whole. Once the expected relations are confirmed by the case study research the underlying variables (i.e. moderating factors) thriving the relations are searched, and if found, disclosed.
3. Research Method

3.1 Research Design

So far, a theoretical model has been developed explaining the contribution of TD-ABC in reducing the amount of budget slack and increasing the commitment to a created budget in a participative budgeting context (cfr. Figure 6). The theoretical model will be tested by performing case study research to provide evidence for the credibility of the model. In this paper, three case studies will establish the foundation for validation and discussion of the developed hypotheses. The case studies therefore take place in Belgian companies which have implemented TD-ABC or a TD-ABC-department-based project(s). A prerequisite for this study consists of the assumption that the budgeting setting processes of the case study companies have a participative nature. Subordinate managers must have a chance to participate in the formation of their own departments’ budget. There is a vast stream of participating budgeting literature and the interactions with TD-ABC are suggested and developed. However, there hasn’t been conducted any empirical research yet that investigates or explores the influence TD-ABC might have on the budgeting process. The influence of the TD-ABC precursor, ABC, has been examined and discovered significant relations with budget slack and job tension.

The purpose of this study is to discover the validity of the developed model and try to discover the moderating variables that drive the expected relations which are drawn from the literature. This will allow me to advance the prior theoretical theory to a richer theory which results in an extended model (Eisenhardt, 1989, p.536). Therefore, the derived theoretical model and hypotheses, shown in Figure 6 and developed in section 2, will be tested by conducting a multivariate explanatory case study (Yin, 1993, p.18-21). “This type of case study analysis can take advantage of pattern-matching techniques. These pattern-matching techniques in case study analysis permits case studies to test multiple-variables, complex causal explanations within a single study and between case studies”. This research is furthermore exploratory in nature, examining a newly suggested relation (i.e. commitment) and examining whether relations concerning ABC (cfr. past research of Waeytens and Bruggeman, 1995) still count for TABC. Exploratory research allows researchers to explore...
the investigated terrain (De Pelsmacker and Van Kenhove, 2006, p.24). This is appropriate for this investigation since two streams of literature, previously not integrated, are integrated.

The advantages of case study research are numerous:

- The major advantage of a case study is that the reality is described as precise as possible, which gives the method a great internal validity (De Pelsmacker and Van Kenhove, 2006, p.25-26; Yin, 2003).

- Multiple case studies provide the extra advantage that it might strengthen the results of the study because it offers the possibility of cross-sectional analysis (Yin, 2003).

- It offers the chance to discover a new theory, relation and the driving variables because of cross case analysis, collection of different data, etc ...(Eisenhardt, 1989, p.546).

- Case studies allows to probe, which is a technique often used when conducting qualitative research. The technique makes it possible to ask follow-up questions, resulting in a more clear and complete understanding of the answers(Yin, 2003).

- Data is collected and observed within their natural habitat(Atkinson and Shaffir, 1998).

An additional reason to decide on a case study resorts from the fact that survey research and statistical analysis simply were impossible to perform because TD-ABC is a methodology developed in 2004 and as a consequence few Belgian organisations have implemented this methodology. TD-ABC is implemented in 16 Belgian companies. This number is far too small to discover significant relations through statistical analysis of survey data. A case study is an excellent test of reality to check whether or not, the model holds in practice. One of the purposes of this research is to discover the moderating variables affecting the relations in the developed model and Yin (2003) suggested that case studies are the preferred strategy when “how” and “why” questions are being posed, in examining contemporary events and when the relevant behaviors cannot be manipulated. Case studies are being increasingly used as a research method for studying management accounting practice. The case study research can be used to provide greater understanding of how management accounting actually functions in organizations (Keating, 1995), because TD-ABC is a management control tool, a case study approach is preferred.
3.2 Case Study Selection

Selecting the case studies forms an important aspect (Eisenhardt, 1989, p.536). The population consists of the companies who have implemented TD-ABC or a department TD-ABC-project. A prerequisite for the population is that the subordinate managers must have the possibility to participate in the budgeting process. With these restrictions in mind three companies were chosen: Wymar International, PB Gelatines and Citco. According to Yin (2003) this can be called a holistic multiple case study. This selection was not chosen at random but suggested by Prof. Dr. W. Bruggeman, supervisor of this master thesis, on basis of his experience with these companies as a partner of the consulting firm ‘B&M Consulting’. He proposed these companies because they had successfully implemented TD-ABC-projects and on the assumption that from these companies interesting visions and perceptions on my model could be derived. Case study selection is usually not chosen at random because of its particular nature (Eisenhardt, 1989). In this paper I used purposive sampling in which a case is chosen for certain characteristics and elements which are of particular importance for the investigator.

3.3 Data Collection

In each of the three selected companies one interview was conducted. The advantage of conducting interviews lies within the possibility to ask open questions which provide richer information and probing as described above. There are several forms of interviews possible: Open-ended, Focused, and Structured or survey(Stake, 1995; Yin, 1994). I have chosen to conduct semi-structured interviews in which key respondents are asked to comment about certain events (De Pelsmacker and Van Kenhove, 2006, p.121). They may propose solutions or provide insight into these events. They may also corroborate evidence obtained from other sources. I have tried to avoid becoming dependent on a single informant, and seek the same data from other sources to verify its authenticity. This is the main disadvantage of this type of data collecting. Other weaknesses of data collection through interviews are response bias, reflectivity and incomplete recollection(Yin, 2003). The strengths of conducting semi-structured interviews are that they make it possible to capture the key respondents perception on the matter to gain further insights and to develop an extended model by using cross-sectional analysis and comparison with the literature and that a clear focus can be maintained(Yin, 2003). A questionnaire was used as a guideline during the interview in order
to ensure explanations that grasp the full scope of the theoretical model (the questionnaire can be found in the appendix).

All interviews were conducted with key respondents in three different companies: Citco, PB Gelatines and Wymar International. The Respondents were professionals with a wide-ranging knowledge in the field of management accounting and consulting and particular expertise of Time-Driven Activity-Based Costing and its area of appliance. For Wymar and PB Gelatines Cost Controller Peter Bruggeman was interviewed at April 2nd 2009 for 1 hour and 39 minutes. For Citco Budget Controller and B&M consulting director Alexander Grutman was interviewed on March 24th 2009 for 2 hours and 9 minutes. The interviews were recorded on tape to ensure no data was lost and afterwards written down in full to facilitate the processing. Tape recording has the advantage that the researcher can listen to the original data as much as he or she desires, enhancing the validity of drawn conclusions (Silverman, 2000).

3.4 Data Analysis

The analysis of the collected data is probably the hardest and less standardized part of case study research. Primary a within-case analysis is included in this paper, where each case is discussed separately in detail, and comments, relations and moderating variables are distillated. Subsequently a cross-case analysis is performed over the different cases where the discovery of similarities and differences between the cases are the goal. By means of this analysis interviewers bias is reduced (Yin, 2003). Starting with this cross-case analysis a discussion is set off between the cases mutual and the literature which will result in an extended model and a final conclusion.

3.5 Case Study Research Weaknesses

A first disadvantages of case study research is the lack of formal procedures and consequently the limited reliability. It is thus possible that another researcher could draw (partially) other conclusions on an identical case. This is a direct consequence of different starting points, analysis and conclusions. This is called research bias (De Pelsmacker and Van Kenhove, 2006, p.25-26). Research bias is reduced in this paper by conducting cross-case analysis (Eisenhardt, 1989) which oblige the researcher to investigate the relations and variables more carefully and with more attention.
A second shortcoming of conducting a case study comprises of the inability to generalise the results because there is a lack of statistical control of the different variables (Ferreira and Merchant, 1992; Yin, 2003). This leads to a limited external validity (Silverman, 2000, p.91). In this research, especially internal validity is important because I want to examine if TD-ABC has an influence on the participative budgeting cycle (cfr. Figure 6) and what moderating variables are affecting these relations. Therefore it is sufficient to provide an accurate description of the different cases to ensure the internal validity of this research. In future research the substantiated hypotheses of this paper can be tested throughout a statistical analysis to enlarge the external validity. The objective of this paper is to explore and find evidence for the proposed relations and to find moderating variables that drive these relations and not to generalise the findings.

A final concern is that case studies take too long and might result in massive, unreadable documents from which no conclusions can be distilled. By applying the method of Robert K. Yin in this paper this disadvantage is kept to a minimum and only essential documents to understand the cases were submitted.
4. Case Study and Results

As discussed and argued in the previous section, a case study will form the foundation for empirical research in this master thesis. The main purpose of the conducted case study is to explore the general research question consisting of the degree to which the use of TD-ABC leads to a reduction of budget slack by reducing information asymmetry and increasing subordinate managers’ commitment to budget. This general research question was extended with the influence of TD-ABC on the concept of job related tension after review of the literature.

This section is structured as follows. First a within case subject analysis is performed, consisting of the interviews with the key respondents, the TD-ABC case studies performed in those companies and the respondents’ perceptions of the developed model. Subsequently a between subjects analysis is performed through a cross-sectional analysis of the cases and concluded with an extensive discussion between theory and practice. In the final subsection an extended model is developed and used in the concluding section (cfr. part 5) of this paper.

The subsequent case studies are structured per company, starting with an introduction of the specific company followed by a description of the TD-ABC project within the specific company. The relevant perceptions and comments of the interviewees on my model are arranged per relation and per important concept resulting in a conclusion of the developed hypotheses. After this within subjects analysis, a cross-sectional analysis of the conclusions is performed between the three cases resulting in an extensive discussion between cases and literature.

4.1 Wymar International

4.1.1 Company Introduction

Wymar International is operational within the plastics division of Tessenderlo Chemie (which it acquired in 1995) and is at present already more than 30 years active in the development and commercialization of pvc-frameworks for windows and doors. In France and the Benelux, due to her sales branch called Profex, Wymar belongs to both countries’ national market leaders. The last few years Wymar also implemented sales points in Poland and Hungary.

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5 Wymar International did not gave permission to use production data and corporate confidential information in this paper. Therefore relative concepts are used in this case study and the use of data is kept to a insignificant minimum.
Starting from Wymar, the Tessenderlo Group is trying to target new Eastern European markets approximating Romania, Russia, Ukraine and the Czech-Republic. Since the acquisition in 1995, Wymar has grown vast according to the general market growth. Due to focussed automatisation and continuously improving efficiency (Kaisen), Wymar succeeded to maintain the turnover per FTE\(^6\), (nevertheless the complexity and geographical dispersion of the corporation increased).

### 4.1.2 TD-ABC-project

The logistic department of Wymar International applied a traditional standard cost system like the ones discussed in the first subsection of section one in this paper. The standard cost system used by this department suffered, as expected, from the same key distortions of these types of cost systems as discussed in the first section of the paper, namely the inability to allocate overhead or indirect costs to, in this case, customers, lack of understanding the capacity utilization and overall over- or under capacity as a consequence. To solve these crucial problems a TD-ABC project (i.e. ’Added Value Costing: Implementing Time-Driven Activity-Based Costing’, 2006) was implemented in this division next to the traditional standard cost system in the logistic department of the company. The main goal of this implementation was not to set up an extensive control in function of ambitious objectives but was defined as: “maximizing added value by achieving insights in the extensive overhead costs.” There were two crucial points of origin:

- **Department level:** generating *maximum added* value with a limited controlling division: focus, scope, realisation and replicable resources.
- **Business level:** Accurate allocation of logistic overhead costs to cost centres to increase the follow up of *customer profitability*.

After running this department project in 2006, it became obvious that TD-ABC fully accomplished the expectations: clarity on customer profitability, insights in customers’ purchase behavior and optimizing capacity utilization and internal processes. Early 2007 a TD-ABC system project was developed for the entire organisation as a consequence of the excellent case results. Unfortunately the project was recently cancelled due to the global financial crisis which emerged in September 2008 and succession of the executive management and CEO.

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\(^6\) Full-time equivalent (FTE) is a way to measure a worker's involvement in a project, or a student's enrolment at an educational institution. An FTE of 1.0 means that the person is equivalent to a full-time worker, while an FTE of 0.5 signals that the worker is only half-time.
The implementation of this TD-ABC system in the logistic division was led by former Cost Controller Peter Bruggeman who I had the pleasure to interview and who’s perception and experience will form the foundation to discover validation of the assumed relations (cfr. figure 6) and moderating variables having impact on these relations. The previous described successful project showed that TD-ABC truthfully accomplishes all the benefits described in the literature (cfr. part 1.1.3 of this paper). The most important issue on behalf of this paper is off course the effect(s) TD-ABC has on the budgeting process in Wymar. Wymar International gave the line and department managers the possibility to take part in the budget process thus the participative budgeting prerequisite is satisfied. I have asked Peter Bruggeman several main and follow-up questions to become acquainted with his attitude towards my model.

4.1.3 Budget Slack

What are the key circumstances in which TD-ABC flourishes?

According to Mr. Bruggeman, when a TD-ABC project is successfully executed and, in the last stage, correctly implemented in a company it can be used for approximately everything; from taking management decisions (cfr. activity based management), predicting future bottlenecks, detection of over and under capacity and creating better budgets (cfr. activity-based budgeting). A critical success factor of TD-ABC consists of the attitude of the central management. TD-ABC can be a true blessing for a company and every single one of the described advantages by academics will emerge but only under the condition that the TD-ABC methodology is supported actively or at least passively by the central management. “The TD-ABC methodology will work best when it is supported by the entire organisation and especially by the top management because of their absolute decision power and influence.” The top manager of Wymar at the time was exceptionally progressive and keen on management control tools and gave his full support which was certainly one of the decisive explanations why the TD-ABC-project was so successful. It was supported from above and perceived as a support tool from below.

It is best that subordinate managers are involved in the TD-ABC implementation and development process because it induces a constructive mood towards the methodology and in general it will be easier accepted by these managers because they are owner of the model. When they are invited to participate in the TD-ABC development process and the
maintenance process, Peter Bruggeman described the same positive effects (i.e. positive communication, less pressure and motivation) as Merchant (1985b), Cammann (1976) and Onsi (1973) did for budget participation by managers (cfr. section 1.2).

Does Budget Participation leads to Budget Slack?

When the current cost system was employed the central management had almost no clue of how many hours a department needed to produce a certain quantity of products and had absolutely no insight in the capacity utilization rate of a specific department. The department managers in Wymar International therefore, possessed “tons of private production information” and when the budget amounts were set in the budgeting process (which occurred every quarter) the average amount of slack obtained by them was around 17%. “Budget Slack occurred in our logistic department and was on average 15% because the department manager his salary was partially attached to attainment of his departments’ budget.” Budget slack also occurred due to misunderstanding of the productive capacity of the departments machines and/or employees. It could be that a new department manager underestimates the productivity of his available resources. TD-ABC gives a manager clear insights in the productivity and capacity of his workforce and the current utilization rate and the possibility to improve them. Hence, budget participation induces the creation of slack since department managers know more than executive managers, who have to approve their budgets.

What is the effect on this relation when TD-ABC in implemented and used?

When the TD-ABC model was implemented next to the traditional system every employee and manager who had access to the company’s network and consequently its data, knew exactly how many hours, and in consequence costs, a specific service/activity performed by the logistic department required as a result of the prepared time equations. When TD-ABC would be implemented in the entire company, the total hours needed per department to produce a specific amount of products and the full and practical capacity should be considered to become common knowledge. Because the inputs of production would become universal information, the subordinate manager loses his advantage of having various additional information than the general manager in the participative budgeting process. This reasoning is illustrated by means of the following quote: “I can imagine that Mr X (i.e. the logistic department manager) simply hasn’t got any means left to create slack in his departments’ budget because the time-driven model makes sure that everyone has the same information.”
Consequently the whole idea of slack in budgets is vanishing because of this ‘common knowledge’ (i.e. decrease of information asymmetry). A manager will not risk inserting slack into his budget anymore because there is almost a 100% chance that this bias will be discovered resulting in penalties and punishments. Aside from this ‘controlling context’, as mentioned above, when the managers are involved in the implementation process they develop a positive perception concerning TD-ABC. This positive perception will reduce the incentive to conduct fraud (e.g. creation of slack).

The conclusion for the Wymar International case seems to be that as a result of using Time-Driven Activity-Based Costing in the budgeting process, information asymmetry will decrease due to a loss of possibility to retain private information from superiors. Consequently all data becomes common knowledge preventing managers to create slack into their budgets because they have no secret information and won’t risk receiving penalties. Further involvement of managers in the TD-ABC development process induces motivation which results in a lack of encouragement to create slack. Therefore, H1: “Due to using Time-Driven Activity-Based Costing in the budgeting process, information asymmetry will decrease and as a direct result the budgetary slack amount will be reduced.” Is fully supported in this case study.

4.1.4 Job Related Tension

Does TD-ABC affect Job Related Tension?

Whilst the private information becomes common knowledge in the organisation, it could be that not only slack amounts will disappear but that the stress felt by subordinate managers could increase. They feel more pressure to attain the budgets which are based on accurate TD-ABC data. This increase in pressure can inflict stress felt by the manager but this is entirely dependent on the personality of the manager. A risk averse manager will be far less pleased with the unavailability of creating budget slack due to TD-ABC and this can resort in more stress. I recorded the following statement: “Particularly when bonuses and compensations are connected to attainment of the budget, pressure felt by managers will be significantly higher.” When bonuses are connected to the achievement of the budget figures (i.e. budget emphasis in the literature) and the possibility to create slack vanishes, the tension will almost certainly increase. The increased job tension is not directly attributable to the loss of information asymmetry variable but is attributable to the inability to create budget slack, which is a
consequence of the former. Accordingly the relation from the variable ‘information asymmetry’ to ‘job related tension’ in figure 6 is incorrect. “Job tension can result from the incapability to incorporate budget slack into your budget when your salary is fully or partially attached to attainment of that budget.”

The abovementioned allows me to say that H2: Due to using Time-Driven Activity-Based Costing in the budgeting process, information asymmetry will decrease and as a direct result the job related tension felt by subordinate managers will increase.” has to be reformulated to: “Due to using Time-Driven Activity-Based Costing in the budgeting process, slack amounts will disappear(H1) and as a direct result job related tension can occur with risk-averse managers when their salary is (partially) connected with the attainment of their departments’ budget(s).”

Another interesting remark consists of the fact that managers who are confronted with stress situations as described above might jeopardize the TD-ABC project by biasing the time equations via, for instance, forcing the departments’ employees to formulate a non-existing additional activity during the TD-ABC interviews used for generating the time equations (cfr. section 1.3). Consequently the department manager can include slack into his budget because of these false allegations. When this biasing merely occurs a single time, the TD-ABC model will perceive this deviation from the normal capacity utilization because TD-ABC is an iterative process. The specific department can be questioned and the budget slack amounts will disappear once again. When the department manager forces his employees to lie consistently so the error occurs every checked period, the TD-ABC model will notice that this department runs permanently at over capacity, for example 120%. The TD-ABC will restrain the capacity back to 100% so the department managers possibility to create slack will disappear once more. Slack creation in a TD-ABC context is almost excluded as described in the example above because it is an iterative process which discovers errors and deceit. TD-ABC ensures that dysfunctional behavior among managers is simply excluded from the company environment. This is the reason why TD-ABC can still induce (indirectly) job tension, but not consequential dysfunctional behaviors like deceit and slander as shown in the model in figure 6.
4.1.5 Budget Commitment

Does budget participation lead to budget commitment?

“I can imagine that when a manager is asked to contribute to a process that is so important for his department that he will be strongly committed to this task and the outcomes (the budget).”

When a manager is committed to his budget will he still use private information?

In a non-TD-ABC environment the possibility to use private information will probably still exist but because of the cooperative context in which the manager is active, there is a chance that he will disclose his private information as a sign of goodwill and because of the constructive mood (i.e. motivation) the participation induces. When TD-ABC is employed the private information basically becomes available and the exposure isn’t dependent anymore on the goodwill of the department manager.

What is the effect of TD-ABC on commitment?

According to Mr. Bruggeman TD-ABC can be implemented with two main underlying intentions and goals:

1. First TD-ABC can be truly introduced as a helping, serving tool for the different departments to make their life more easier and convenient. Department managers and employees are invited to help designing the system and are asked to provide data while they can offer some comments and additional suggestions which are taken into account by the designers team of the TD-ABC-project, as was the case in Wymar International. Each and every one of the logistic department employees were invited to assist in the design and implementation of the model and were consequently involved. Applied to the budget process, like previously said, when a department manager is involved in the development process of a TD-ABC implementation project, it will be easier accepted and there will be a confident mood towards the system. Mr. Bruggeman summarized the preceding by this excellent quote which captures the whole picture: “The manager himself has participated in the process and therefore he feels like he is owner of the model. It are his facts, his data on which the model runs and hence, he will be committed to these numbers.” In Wymar TD-ABC was merely implemented as a helping tool for the logistic department to gain understanding of the departments overhead costs, customer profitability and production process. Unfortunately TD-ABC wasn’t used in
the budgeting process but it can be anticipated that an increase of commitment towards
the budget would occur since the case showed an increase in the overall commitment of
the logistic manager.”

His own data is used in the budget setting process and consequently he will be
committed to this budget. The prerequisite of this statement is that the manager has to be
involved (or at least has the perception of being involved) in the process so he gains
ownership of the model and TD-ABC is introduced as a facilitating tool to maximize
effectiveness and efficiency of the company’s BU (i.e. business unit). This supports H3:
“Due to using TD-ABC in the budgeting process the commitment to approved budgets
will increase, which on his turn decreases the information asymmetry and subsequently
the budgetary slack amounts.”

2. The second type of implementation objective is to control the departments. TD-ABC is
in that case implemented as a control tool. “Even though I can imagine that this is not
directly communicated to the managers, but after a certain amount of time the manager
will certainly feel the control intention of the system.” The ownership variable is
completely lost because of this control setting of TD-ABC and the manager will even
resent the system. But even when there is no ownership and TD-ABC is used as a
control tool, the commitment to the proposed budget will increase because the manager
basically hasn’t got any other alternative than to pursue his budget. He is obliged to be
committed or the department manager will risk severe penalties for insubordination.
“You can even speak of a forced commitment to the budget because TD-ABC is always
watching every step the manager takes”. Biasing the time equations isn’t a solution like
formerly described.

Off course TD-ABC will perform better in an environment of trust, confidence and
cooperation which is usually the case when central management is enthusiastic and
proactive towards the project as was the case in Wymar International. The advantages of
TD-ABC will be fully exploited in such an environment and consequently budget slack
will disappear, tension felt by managers will be minimal and managers commitment to
budget will be large. But even when these conditions are not satisfied and TD-ABC is
more implemented as control tool, TD-ABC will still deliver average results. Slack will
still not occur but there will be tension among managers who desperately want to receive
budget attached bonuses and a forced commitment will be common.
4.2 PB Gelatines

4.2.1 Company Introduction

PB Gelatines and PB leiner are well established and renowned gelatine producers whose origins date back to more than a century ago. In 1972 PB Gelatines became a subsidiary of Tessenderlo Chemie. As the world’s third largest gelatine producer PB Gelatins and PB Leiner are securing a total capacity of 43000 tons gelatine split between 6 production units across the globe. PB provides a complete range of high quality acid and alkaline type gelatines and hydrolysates used in major food, pharmaceutical, photographic and technical applications. Operating from ISO (International Organization for Standardization) and HACCP certified factories, PB produces gelatines according to the specific requirements of its customers while complying with the national and international regulations.

4.2.2 TD-ABC-project

PB Gelatines, like Wymar, used a traditional standard cost system and suffered from the same weaknesses as previously discussed. Supplementary an increasing competition in the food market resulted in a more complex order behavior of customers and decreasing margins. Therefore In January 2009, a TD-ABC pilot, led by plant controller Peter Bruggeman was implemented. This pilot was running during the course of this case study in the blending and internal sales departments of PB-Gelatines but there were already intermediate conclusions. This project is scheduled to run till the end of 2009 hopefully resulting into a daily implementation in the blending and sales departments and further expansion into the commercial office and lab divisions of PB Gelatines during 2010.

There were several goals for this project:

- Gaining insight in customer profitability through supplementing the existing SAP system.
- More accurate budgeting

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7 PB Gelatines did not gave permission to use production data and corporate confidential information in this paper. Therefore relative concepts are used in this case study and the use of data is kept to a insignificant minimum.

8 HACCP (Hazard Analysis and Critical Control Points), is an obliged regulated analysis of critical points which must be given extra attention when companies storing foods.
• Getting hold of the logistic processes through indentifying the main drivers of the department and to achieve flexibility to react to the rapidly changing market demands.
• Adding to the KPI within the financial perspective of the departments’ BSC.

This pilot implementation of TD-ABC was still running when this case study was conducted in March and April 2009, and therefore there were no concluding results. However, Mr. Bruggeman already released some intermediate results which showed that every goal will be fully or at least partially attained. A detailed P&L, including all overhead costs (e.g. blending), for the particular client was obtained increasing the insights in profitability and consequently efficiency. Furthermore this pilot testing showed that the departments’ budgets were more efficient because of their increased accuracy and significance in the departments.

4.2.3 Budget Slack

What are the key circumstances in which TD-ABC flourishes?

There is no doubt that the TD-ABC-methodology works. When it is implemented accurately and rightly it offers numerous advantages over every other type of cost system. Like described above, it offers clarity, visibility, efficiency, effectiveness and convenience but only when it is implemented in a correct way. According to the company’s current plant controller, this correct implementation stands or falls with the perception of TD-ABC by the management. This system can be actively supported or neglected by the central management.

Mr. Bruggeman told me the following: “In PB Gelatines my superiors were not very keen on the whole idea of TD-ABC because it gives clarity, it reveals all data and therefore makes it impossible to cover up bad results. As a consequence my superiors, unlike in Wymar International, didn’t support the project, although it offered excellent results.” When there is no support from the senior management TD-ABC-projects will never get authorization and consequently active- or even passive support is utterly indispensable.

Another important aspect consists of the fact that it is preeminent that lower managers are involved in the TD-ABC execution and design process because this will encourage a positive perception of TD-ABC which results in an easier acceptance of the methodology.

Does Budget Participation lead to Budget Slack?
In the blending and sales department of PB Gelatines there was respectively 12% and 15% slack in the assigned budgets of the financial year 2008. In almost every department PB saw repeatedly returning amounts of budget slack. The problem of budget slack is a big issue in PB Gelatines and in numerous other companies.

I noted this particular quote from the company’s plant controller: “A reason for budget slack certainly consists of the fact that my superior gets a chance to attain budget setting meetings. He certainly has more figure knowledge of the department then our CEO or even CFO and therefore he can easily obtain extra budget and why shouldn’t he obtain it?”

This creation of budget slack will occur when managers have the possibility to create slack. They do so because it offers them a cushion of convenience for when businesses are doing bad and for instance cost cut-backs are demanded (i.e. risk aversion inducing budget slack). When a managers’ salary is attached to the attainment of his budget he will certainly attempt to gain excess amounts for his divisions’ budget by using his superior knowledge.

*What is the effect on this relation when TD-ABC in implemented and used?*

To answer this question the following remarkable statement was recorded: “My intermediate TD-ABC pilot study results showed me that a detailed P&L per client could be developed due to detailed information about the direct and overhead costs, including data on hours worked, materials consumed,... and therefore TD-ABC gives total visibility on the consummation of all production resources for everyone in our company.” Mr. Bruggeman showed me the developed time equations of the pilot study and executed a TD-ABC fictive exercise on a TD-ABC software program through inserting output data into this program. The results were astonishing, the total costs of the output were immediately calculated and shown including all consumed resources and costs. TD-ABC really makes all costs visible and therefore managers simply don’t have any opportunity to gain additional resources into their budget.

Applied to the budgeting cycle, the department manager is aware of the fact that due to TD-ABC his private knowledge has become common data and therefore the attempt to generate slack will diminish.

I can conclude for PB Gelatines that as a result of using Time-Driven Activity-Based Costing in the budgeting process, information asymmetry will decrease due to a loss of possibility to retain private information from superiors. Subsequently all data become available and are
preventing managers to create slack into their departments budgets. Therefore, \textbf{H1}: “Due to using Time-Driven Activity-Based Costing in the budgeting process, information asymmetry will decrease and as a direct result the budgetary slack amount will be reduced.” is fully supported in the PB Gelatines Case.

\subsection*{4.2.4 Job Related Tension}

The job-related questions were only asked and answered one time for both cases because part of the sector, Wymar International and PB Gelatines are similar companies under the same Tessenderlo Group and the perception of the interviewees were the same, therefore the same answers and conclusions are submitted for this subsection of the case study.

\textit{Does TD-ABC affect Job Related Tension?}

Whilst the private information becomes common knowledge in the organisation, it could be that not only slack amounts will disappear but that the stress felt by subordinate managers could increase. They feel more pressure to attain the budgets which are based on accurate TD-ABC data. This increase in pressure can inflict stress felt by the manager but this is entirely dependent on the \textit{personality} of the manager. A risk averse manager will be far less pleased with the unavailability of creating budget slack due to TD-ABC and this can resort in more stress. I recorded the following statement: “Particularly when bonuses and compensations are connected to \textit{attainment of the budget}, pressure felt by managers will be significantly higher.” When bonuses are connected to the achievement of the budget figures (i.e. budget emphasis in the literature) and the possibility to create slack vanishes, the tension will almost certainly increase. The increased job tension is not directly attributable to the loss of information asymmetry variable but is attributable to the inability to create budget slack, which is a consequence of the former. Accordingly the relation from ‘information asymmetry’ to ‘job related tension’ in figure 6 is incorrect. “Job tension can result from the incapability to incorporate budget slack into your budget when your salary is fully or partially attached to attainment of that budget.”

So this allows me to say that \textbf{H2}: ” Due to using Time-Driven Activity-Based Costing in the budgeting process, information asymmetry will decrease and as a direct result the job related tension felt by subordinate managers will increase.” has to be reformulated to: “Due to using Time-Driven Activity-Based Costing in the budgeting process, slack amounts will
disappear (H1) and as a direct result job related tension can occur with risk-averse managers when their salary is (partially) connected with the attainment of their departments’ budget(s).”

The same remark about biasing the time equations (cfr. 4.1.4) applies to this case

**4.2.5 Budget Commitment**

*Does budget participation lead to budget commitment?*

“I’ll answer this question using my experience with several TD-ABC projects I have performed and using my professional judgment.” When employees are invited to participate in a TD-ABC-project it often induces positive reactions resulting in active support and positive perceptions about the model and therefore a stronger commitment to this method. This commitment can also be observed in other projects and therefore a manager will generally be more committed to budgets which he has constructed, even though he might incorporate slack.

“Personally I believe that commitment to something you have created yourself is always bigger than something that is passed on from above.”

*When a manager is committed to his budget will he still use private information?*

“Why not?” People always try to exploit resources they posses, thus why not information no one is familiar with. A manager can be more committed to a budget where he intentionally incorporated more budget than necessary to provide a cushion, as described above, for his department. Of course there has to be a possibility to perform this and when TD-ABC is employed in the company, the plant controller believes that this private information becomes available and consequently vanishes.

*What is the effect of TD-ABC on commitment?*

Like in the case with Wyamar, TD-ABC can be implemented with two main underlying intentions and goals:

1) First TD-ABC can be truly introduced as a helping, *serving tool* for the different departments to make their life more easy and convenient. Department managers and employees are invited to assist in designing the system and are asked to provide data, plus can offer remarks and suggestions which are taken into account by the designers
panel of the TD-ABC-project. The manager feels like he is owner of the TD-ABC model. Since TD-ABC is used in the budget setting process, this *ownership variable* will consequently induce commitment to the budget that results from the TD-ABC model the manager co developed. Therefore **H3**: “Due to using TD-ABC in the budgeting process the commitment to approved budgets will increase, which on his turn decreases the information asymmetry and subsequently the budgetary slack amounts.” is supported taken into account the ownership variable.

2) TD-ABC can also be used to control the departments in general. The goal of TD-ABC then is to penalize departments who perform badly. Fear and even malcontent will start to live in the heads of the subordinate managers and their workforce. The feeling of ownership will disappear as a consequence that TD-ABC is used against the manager as a control tool even though he might have co developed it. You could then state, that the commitment will be lost but that is in not entirely accurate according to the following statement: “You can now even speak of an *obliged dedication* to the budget because TD-ABC controls every action the department takes.” The central management can force you to be committed to a budget as a consequence of the control purpose of TD-ABC. This consequently supports **H3**. However, the circumstances which should be expected (i.e. support) change (i.e. control). TD-ABC is presented as an absolute control tool which induces fear (e.g. dismissal, penalties) among the managers resulting in a ‘forced commitment’ to the budget.

### 4.3 Citco

#### 4.3.1 Company Introduction

The Citco Group of companies is a worldwide group of independent financial service providers, serving the world’s elite hedge funds, private equity and real estate firms, institutional banks, Global 1,000 companies and high net worth individuals. Citco companies service these sectors around the world by offering hedge fund administration, custody and fund trading, financial products and corporate and trust planning solutions.

Citco is an independent group of companies which have focused on abovementioned specialized niche services. It is this ‘benefit of focus’ that has helped Citco to reach the position as global industry leader in their targeted segments. With more than 4,000 staff in
over 37 countries, and with clients as their partners, Citco demonstrates this dynamic focus which has allowed them to excel in what they do best.

Citco consists of four main business divisions. Fund services: the Citco fund services offer a full range of fund administration services throughout 16 strategic centres globally. Banking & custody: the Citco group's banks provide access to best of breed process and technology that have set industry standards. Financial products: built on the Citco group's current services, clients can use Citco financial products to leverage, hedge and structure their portfolios.

4.3.2 TD-ABC-project

A Time-Driven Activity-Based Costing proof of concepts was performed in July 2008 by B&M Consulting director and Citco budget controller Alexandre Grutman, who implemented TD-ABC in the administrative department of the fund services business division of the Citco Group. This project delivered excellent results and plans were made to implement a consistent and permanent TD-ABC system in other departments and even business divisions of Citco later in 2008 and early 2009.

Unfortunately these projects were set on hold due to the global economical crisis which emerged in September 2008 and struck hardest in the financial sector. The TD-ABC proof of concepts was performed for the administrative department of the fund service business of Citco which main task was to administrate and manage hedge funds for Citco customers. The administrative and accounting process of a hedge fund is extremely complex. Behind one hedge fund there are operating economists, analysts and traders which constantly buy and sell equity, derivates and stocks. There can be hundreds of transactions per fund per day and some clients demand full P&L and balance sheets of their fund on a weekly, monthly or quarterly basis. The administrative process to accurately generate these client income statements and balance sheet overviews is extremely complex and demands many labour hours. Next to the complex administrative processing of the department there was the massive growth of the Citco Group. In 2002 Citco employed 900 people. This number increased to approximately 4,500 in 2008.

To manage the optimal workforce in this department with it’s complicated tasks and increasing market demand, resulting in more customers, TD-ABC was implemented as a capacity management tool to discover the optimal amount of employees needed to provide the required professional service(e.g. weekly P&L and balance sheet) to the departments’
customers. It was essential to understand the capacity needed to serve the customers’ demands because diminishing quality of the provided services as a consequence of understaffing the department, would result in unsatisfied clients. Consequently profitability of Citco would suffer from the damaged reputations and would almost certainly diminish.

TD-ABC truthfully accomplished to deliver insights in the capacity utilization and was used to manage the administrative departments workforce capacity. As a consequence, clients demands could be satisfied effectively and efficiently by an optimal workforce with perfect qualitative standards. The CFO of Citco described the advantages of the TD-ABC-project as follows: “I found that the driver based approach facilitated a move to a rolling plan/forecast and has significantly enhanced the analysis of business performance leading to increased business agility.”

4.3.3 Budget Slack

*What are the key circumstances in which TD-ABC flourishes?*

“When people are confronted with TD-ABC for the first time, you should not give them the impression that ‘Big Brother’ is watching you. It also isn’t the purpose of TD-ABC to endorse a single person, this would work counterproductive and cannot be the sole purpose of TD-ABC.”

When the TD-ABC methodology is introduced in a company according to budget controller Mr. Grutman, three conditions have to be cumulative fulfilled to obtain positive results:

- **Time:** A manager must be given enough time to accept the TD-ABC methodology and its use. He must receive sufficient time to challenge his own historical data. The time equations, developed at the start of the implementing process, can discover some remarkable notabilities. The manager must be given enough time to explain these notabilities of his department(e.g. many exceptional orders in a month) and then be encouraged to challenge this historical data. It is adequate that a department manager does not receive immediate penalties during the implementation when he exceeds his budget according to TD-ABC, because then the ‘Big Brother’ situation rises again and TD-ABC will be resented and subsequently fail. In a company there are occasionally peak production
moments and there must be enough patience towards TD-ABC to see the big company picture and give the manager a chance to get familiar with the system. In Citco, the proof of concepts departments’ workforce were given 3 months to become acquainted with the TD-ABC methodology since “TD-ABC is a process of trial and error”. Everybody has to support the quality of the data, whatever it takes, otherwise the methodology falls.

- **Training:** Employees must be given a tutoring into the TD-ABC methodology. The methodology should not be expected to be adopted immediately without any significant training of the cornerstones. The advantages and helpfulness of TD-ABC has to be explained and guidance has to be provided to the employees to become familiar with the technical aspects and the practical convenience the TD-ABC methodology provides.

- **Supporting Context:** This is the most important condition for a high-quality implementation of TD-ABC. The context in which this process takes place has a significant impact on the success of TD-ABC. TD-ABC gives visibility and therefore it has to be implemented in an environment of trust, confidence and communication. In this positive environment, the real business arguments are disclosed in the data which are put into the model resulting in authentic realizable figures. The manager uses his own figures and arguments and therefore he feels like he owns this model (cfr. 4.3.4 budget commitment). When TD-ABC is implemented as a political gaming tool, the workforce will perceive it negatively and the model will fall because it is rejected by the company. Another example could be that a department works at significant (intended) under capacity. The employees will probably not support the implementation of TD-ABC because the under capacity will be revealed and they will be instructed to perform better. This significant intended under capacity is an indicator that something is fundamentally wrong with the company as a whole and this has to be resolved before a TD-ABC model can be effectively implemented.

When these three conditions are cumulative met, TD-ABC offers all the advantages so extensively discussed in this paper. The most important accomplishment in the purpose of this paper, is that when the conditions are simultaneously fulfilled it induces *positive involvement*
of the middle managers which are the main subjects in this paper. This positive involvement will result in a motivated workforce.

**Does Budget Participation lead to Budget Slack?**

Participation will almost certainly lead to budget slack when only *nominal figures* (i.e. the participating parties don’t truly understand the data and its drivers) are used. The drivers of the negotiated numbers are unknown and therefore no one in the budget allocation process fully understands the budget figures and numbers which can result in the creation of slack in the budgets. Managers sometimes basically just want to obtain some additional budget for proper department convenience. As a result of this ignorance the department managers can use their private information (i.e. secret production information) to obtain slack. “You can put it this way,” Mr. Grutman said, “it is merely the human nature of the manager to create slack when has a possibility to do it, which is the case when budgets are decided without any understanding of the figures”.

However, when financial KPI’s\(^9\) are defined and the underlying drivers of the costs, subject of the budget development, are known, it will be far less probable that budget slack will occur. Unfortunately few companies truly understand their key indicators and therefore budget slack is a common problem of companies including the Citco Group.

**What is the effect on this relation when TD-ABC is implemented and used?**

When there is no understanding of the costs in the budgeting process, slack will almost certainly occur. When TD-ABC is implemented and the previous described conditions of giving enough time, granting training and TD-ABC operated in the correct context of trust and communication, budget slack will almost certainly disappear.

The following interesting quotes were recorded: “When the three conditions are satisfied, the manager will have a positive perception of this TD-ABC model. The manager consequently will be motivated because it are his figures. I have witnessed during the proof of concepts in Citco that the employees truly become optimistic towards the model because it runs on their

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\(^9\) I.e. Key Performance Indicators, also known as Key Success Indicators (KSI), help an organization define and measure progress toward organizational goals. Once an organization has analyzed its mission, identified all its stakeholders, and defined its goals, it needs a way to measure progress toward those goals. Key Performance Indicators are those measurements. (Kaplan and Norton, 2008)
own data. These people are experts in their field. We only offer a methodology, but they have to fill in the gaps with proper data and details which thrive the model and therefore they won’t have any profit in biasing data and slack amounts will disappear”.

An additional condition that has to be satisfied, consists of the fact that TD-ABC data has to be helpful and should not provoke *information overload*. In other words, the outcomes of TD-ABC budget analysis must be functional. Mr Grutman told me the following to explain this additional condition: “I was responsible for the budget process of the entire Citco group which, in 2008, contained more than 250 companies. The budgeting process of this organisation contained so many detailed information that we were almost literary drowning in figures and consequently we lost the big picture.” TD-ABC has the ability to create visibility in the organisations’ facts and figures but when this visibility is too detailed, the big picture will be lost and consequently also the induced visibility. Inducing visibility by giving clear insights in the figures to better understand a department and a company as a whole should be the purpose of a TD-ABC project, rather than inducing information overload.

The before mentioned implies that **H1**: “Due to using Time-Driven Activity-Based Costing in the budgeting process, information asymmetry will decrease and as a direct result the budgetary slack amount will be reduced” is fully supported in the Citco case. However H1 is only supported when 4 conditions (i.e. time, training, support context and absence of information overload) are simultaneously satisfied.

### 4.3.4 Job Related Tension

Mr. Grutman told me that everything depends on the context in which TD-ABC is employed. The existence of tension depends on whether or not the three previous described conditions are met:

1) There is the company background where the three previous described variables are fulfilled. In this company environment, the workforce is involved immediately in the development of the systems and is well educated about the functionalities and convinced about the usefulness and use of the methodology. In this context there cannot be job tension. The private information will reduce as a consequence of the positive perception of the model and that loss of private information will not result in more stress. “I would even dare to say that a motivated manager would feel less tension because his department runs more smoothly as a result of the general accepted
TD-ABC”. Therefore H2 ” Due to using Time-Driven Activity-Based Costing in the budgeting process, information asymmetry will decrease and as a direct result the job related tension felt by subordinate managers will increase.” is not supported. The case suggests that the former relation is not a positive but a negative one, when the 3 prerequisites are met. However, when the three conditions are satisfied but a manager still experiences increased job tension this can only be “because you have the wrong men on the wrong place” and the manager has to hide something. “I have performed another proof of concepts in Citco in a department with huge under capacity utilization and the people in that department were not very keen on the methodology because they know they would have to work harder and that caused tension.” But generally when the three conditions are present and thus TD-ABC methodology is explained and implemented in a normal environment (i.e. there are no signs of significant under capacity or a general displeased workforce) there will be no increase of job tension.

2) When one of the three conditions and especially the time and training conditions are not fulfilled, the manager will not perceive TD-ABC as beneficial and he will resent it resulting in more tension. He feels like he is controlled by the TD-ABC model and that can indeed result in an increase in job Tension. When TD-ABC is used for political gaming, the whole methodology will certainly fall and induces frustrations among managers which ‘supports’ H2.

Thus, this variable is affected anyhow by TD-ABC but it all depends on the context in which TD-ABC operates in and whether or not the three conditions are met. So far I can conclude that when the three conditions are fulfilled(i.e. enough time and training are provided in a trustworthy context) TD-ABC will decrease budget slack creation but does not induce more tension, on the contrary it might even lower the tension felt since it induces motivation.

**4.3.5 Budget Commitment**

*Does budget participation lead to budget commitment?*

“When a manager is invited to the budgeting process and he or she is given the chance to settle his or her own budget, he or she will be motivated and therefore more committed.” the budget controller argued.

*When a manager is committed to his budget will he still use private information?*
This commitment results from the fact that a manager is motivated and “I believe that when a manager is motivated that in his excitement he will almost certainly release any private information he possesses”. Therefore budget participation increases commitment to budget and might lower information asymmetry through disclosure.

*What is the effect of TD-ABC on commitment?*

TD-ABC is a methodology to acquire accurate figures and number. Again, everything has to do whether the previous discussed conditions are fulfilled. When one of these conditions is not met, the methodology will fall and there will certainly be a lack of commitment to budget.

When the conditions are met, the manager uses his personal TD-ABC data in the budgeting process and feels like he is owner of this model. It are his own data on which the model runs and therefore he truly supports his own numbers and data. The previous was described in the case as ‘ownership’. TD-ABC seems to create this ownership variable and therefore induces commitment to TD-ABC output (e.g. a budget). This supports the third hypothesis: “Due to using TD-ABC in the budgeting process the commitment to approved budgets will increase, which on his turn decreases the information asymmetry and subsequently the budgetary slack amounts.” under the circumstance that the three conditions are cumulative met.

I’ve confronted Mr. Grutman with the reasoning of Mr. Bruggeman which stated that ‘Even when TD-ABC is used or perceived as a control tool it will lead to commitment (i.e. forced commitment) because TD-ABC simply doesn’t allow to deviate from the output data.”

Mr. Grutman replied “From my own experience I can say that this forced commitment will not be present in a company when TD-ABC is used for political gaming (e.g. control tool).” “I have been setting budgets for many years and one time a CEO of a company resented the figures of his departments’ managers and he imposed figures on them without any clear business reason. He basically took away their ownership, although they were still allowed to participate. I’ve witnessed that the managers were certainly not committed to these imposed budgets as my TD-ABC analysis indicated”. So this forced commitment will simply not exist.

To gain commitment to budget the three conditions have to be cumulative met, otherwise Mr. Grutman replied : “this loss of ownership and absence of clear business reasons to justify this action will destroy the TD-ABC methodology and even a negative commitment would be induced!”
To conclude this section, the case study allows me to say that commitment will be positively affected by both TD-ABC and the possibility to participate into the budget cycle which results in a disclosure of informational asymmetry and reduction of slack but only under the 3 previously discussed circumstances (i.e. time, training, supporting context). When these prerequisites are not met and TD-ABC numbers are forced on the participative budgeting managers without any severe business explanations, the commitment of these managers towards the assigned budget will diminish and a negative relation between TD-ABC and commitment can be expected.

4.4 Cross-Case Analysis & Discussion

In this subsection the results of the previous performed case studies are compared cross case and measured up to the literature resulting in a discussion and ultimately in an extended model (i.e. richer theory). The analysis starts with the derived environmental prerequisites suggested by the case studies followed by a discussion of the main relations of the developed model in figure 6 and results in the final extended model shown in figure 7.

4.4.1 Prerequisites

Before cross case comparison of the proposed relations and effects developed in section 2, all three cases described similar perfect circumstances in which the TD-ABC methodology flourished and consequently fully accomplished its objectives.

In the Wymar and PB Gelatines case the attitude of the central management and the involvement (i.e. engagement of middle management in the TD-ABC implementation process) are the underlying drivers of a successful TD-ABC implementation. TD-ABC will perform best when it is actively supported by the central management as an assisting tool for the departments to increase efficiency and effectiveness and subordinate managers are at the same time involved in the implementation process.

The Citco case advocate three main objectives which has to be met simultaneously, to achieve a successful implementation:

- A manager must be given enough time to adopt the methodology.
- Sufficient training has to be provided to ensure the proper functioning and acceptance by the subordinate manager.
- The company’s environment has to be one of trust, confidence and support.
The aforementioned allows to state that TD-ABC will perform best when:

- **Sufficient time is given**
- **Training is provided**
- **Atmosphere of trust, confidence and support is present** (i.e. no political gaming, no significant under capacity and department frustration)

And these 3 basics are fulfilled at the same time in an organisation’s environment.

Waeytens and Bruggeman (1995) also suggest in their study concerning the influence of ABC on the budgeting cycle that: “implementation of ABC should be carried out in an atmosphere of trust.”

The Citco case explained that these three conditions have to be simultaneously fulfilled otherwise the subordinate managers will get a feeling of “big brother is watching you” and TD-ABC will be perceived as a control tool and will be rejected for that reason. The case study does not authorize me to draw conclusions when TD-ABC is perceived as a control tool, since there was absolutely no consensus according to the cross case analysis. The Citco case advocates that when TD-ABC is implemented and perceived as a control tool all the subsequently explained relations will simply reverse and the entire TD-ABC methodology will collapse for the reason that the workforce will resent TD-ABC and riot against it. The Wymar and PB Gelatines case did not support this reasoning and interpretation. They state that when TD-ABC is perceived as a control tool, the explained effects (cfr. below) will temper but will still be maintained and will not be reversed like the Citco case advocates. TD-ABC will induce fear (e.g. dismissal, penalties) in the control context, according to the Wymar and PB Gelatines case, and therefore the further discussed relations are ‘forced’ but will nevertheless emerge.

Hence, the following discussion is divided by context. Primary there is the context where the exceeding 3 prerequisites are satisfied. Second there is the context in which one or more of the prerequisites are not fulfilled and consequently, TD-ABC is perceived as a control tool.

### 4.4.2 Budget Slack

In all three cases the existence of slack has been confirmed when the department managers were invited to participate in the budgeting process which supports findings of Shiff and Lewin (1970); Dunk (1993) and Baiman and Evans (1983) (cfr. higher part of figure 6). In
Wymar this slack was attributable to the salary attachment of the managers’ salary to obtain the assigned budgets which supports the literature assumption that salary attachment induces slack creation (Dunk, 1993; Baiman and Lewis, 1989). In PB Gelatines, subordinates created slack in their budgets because it offered them a “cushion of convenience” which indicated signs of risk aversion amongst PB Gelatines’ managers. Young (1985), found empirical evidence that risk-averse managers definitely build in slack when invited to the budget process. In the Citco case slack existed because subordinates had the chance to obtain excess amounts of budget because they held more information than the central management and “simply because it is human nature”. Remarkably the reputation and ethics (Stevens, 2002) variables of slack were never mentioned in the interviews and therefore this gives rise to the impression that these variables are indeed negligible and insignificant.

Baiman and Lewis (1989), found evidence that budget emphasis in performance (i.e. managerial compensation attached to attainment of the budget) merely induced managers to build slack into their budgets. However, the Wymar International and PB Gelatines cases showed clearly that the budget emphasis variable induced the job related tension when the possibility to create slack disappeared as a result of implementation of TD-ABC (cfr. 4.4.3). Unfortunately these findings were not discovered in the Citco case.

When TD-ABC is employed in the budgeting process all three case studies advocate a reduction of information asymmetry when nominal figures (i.e. no understanding of the figures, ignorance) (cfr. 4.3 Citco) are used in the budgeting process, since TD-ABC offers clear insights into costs and consequentially hidden production information is converted into regular knowledge. These results are also discovered on behalf of ABC by Waeytens and Bruggeman (1995), who argued that “using ABC-information in budgeting reduces the amount of information asymmetry and leads to a reduction of excess costs in the cost budgets” and by case study research of Bhimani and Pigott (1992).

-When the time, training and supporting context prerequisites are fulfilled, reduction of information asymmetry as a consequence of TD-ABC, reduces the amount of budget slack according to all three case studies (supporting findings of: Dunk, 1993; Lukka, 1988 and Young, 1985). The explanation for this decrease in the PB Gelatines and Wymar case was that employment of TD-ABC revealed private information and consequently induced company visibility which prevented and excluded managers to create slack. Further involvement of managers in the TD-ABC development induces motivation and consequently a disincentive to
bias budget data (i.e. slack). The Citco case confirmed that TD-ABC induces involvement resulting in reduced budget slack and added an *additional prerequisite* that has to be fulfilled next to the three other conditions. The case illustrated that TD-ABC should not provoke *information overload* for the reason that central management in that case would be drowned in TD-ABC output data and oversight and consequentially the visibility would be lost. This would result in recurrent dysfunctional behavior (e.g. budget slack). The aforementioned is consistent with assertions of Ittner & Larcker(1998) who claimed that once a point of saturation is reached, increasing the number of actions even more will lead to diminishing levels of motivation and ultimately performance.

Merchant(1985b), Cammann(1976) and Onsi(1973) argue that a negative relation between participative budgeting and slack creation is expected, which can be attributed to the positive communication and awareness between managers. The TD-ABC induced involvement (and consequently motivation) variable, which are found in the case studies as a variable affecting and explaining the reduction of slack, can be roughly seen as a synonym of the variable proposed by the abovementioned authors.

Like discussed in the literature there is no consensus whether participation increases (cfr. Dunk, 1993; Lukka, 1988 and Young, 1985) budget slack or decreases budget slack (cfr. Merchant, 1985b; Cammann, 1976; Onsi, 1973). This study departs from the assumption that participation leads to budget slack. The case study results give an explanation to settle this extensive discussion which lasted for already more than 20 years; Participation indeed induces use of private information which results in budget slack (supporting Dunk, Lukka and Young). However when TD-ABC is employed these relations seems to reverse (indirectly supporting Merchant, Cammann and Onsi). The case study shows that the same variable Merchant, Cammann and Onsi previously found is discovered (i.e. involvement, motivation). However this variable is *caused* by TD-ABC. Therefore an important conclusion can be drawn. Participation induces the creation of budget slack unless TD-ABC is implemented(under the previously discussed conditions) inducing motivation and visibility which decreases the amount of budget slack. In other words, TD-ABC gives a solution for this academic discussion.

As a consequence of the abovementioned reasoning and results **H1**: “Due to using Time-Driven Activity-Based Costing in the budgeting process, information asymmetry will
decrease and as a direct result the budgetary slack amount will be reduced.” is fully supported, under the discussed conditions.

-When one of the three prerequisites is not satisfied, the discussion is unrevealed as a consequence of the different case perceptions. The Wyman and PB gelatines cases advocate that TD-ABC will still reduce information asymmetry and consequently budget slack for the same reasons as mentioned above, excluding the involvement and motivation variable. The idea of slack creation will simply be exiled from the company environment. The aforementioned TD-ABC induced visibility variable transforms into a TD-ABC ‘gatekeeper’ variable preventing managers to create slack.

The Citco case has a different point of view on this matter. They advocate that introducing TD-ABC as a control tool would lead to a general rejection of the methodology and consequently no slack reduction is obtained at all.

Under these circumstances the case study does not allow me to draw conclusions about H1 due to inconsistency between the cases. Furthermore there is no supporting literature to give theoretical insights in this matter since this distinction of circumstances is a new revelation.

**4.4.3 Job Related Tension**

The Wyman and PB Gelatines cases showed that when TD-ABC is employed, budget slack amounts disappear since TD-ABC reduces information asymmetry(cfr. 4.4.2). As a consequence of the inability to create budget slack, stress can arise in the midst of some subordinate managers because they lose the possibility to create a cushion against uncertain events (e.g. crisis followed by cut backs of budget). In other words, risk averse managers will feel tension when they are unable to create excess budget amounts which are perceived as an enjoyable convenience.

These cases further illustrate that, next to the managers’ risk preference, the incapability to create slack reduces the chance of receiving budget attainment compensations (i.e. called budget emphasis in the literature; Dunk, 1993). Therefore not the loss of information asymmetry, but inability to create budget slack is the direct reason of job related tension. The fact that managers should not create budget slack anymore inflicts a sort of stress which complies with the definition of ‘job related stress proposed by Kennis (1979): “psychologically stressful circumstances in the job environment”
This a peculiar result since Jaworski and Young (1992) directly linked loss of information asymmetry to an increase of job related tension with reduced job control (i.e. limited discretion what to negotiate in the budget meeting) as a moderating variable. These two case studies showed that not the loss of private information but its direct consequence (i.e. the inability to create slack) is the driver of this relation. This could be for the reason that Jaworski and Young see ABC as a control tool, rather than a supporting tool. Hence, incapacity to create budget slack induces job related tension through two moderating variables: risk aversion and compensation attachment (i.e. budget emphasis).

The Citco case has opposite results. This case showed that when the three conditions of 4.4.1 are satisfied and therefore subordinate managers receive enough time and training to become acquainted with the methodology and thus, the systems operates on their data in an environment where there is no anxiety (e.g. severe under capacity,...), TD-ABC will be perceived positively and not as a political tool (which is perhaps the supposition of Jaworski and Young). The former induces positive feelings (e.g. “the departments runs more smoothly.”) instead of job related tension even though, the information asymmetry and ability to create slack disappear. This contrasts the empirical research of Waeytens and Bruggeman(1995) who expected a positive relation between ABC and the job related tension variable. One reason might be the different context in which this research was conducted and the fact that TD-ABC is an enhanced and therefore a less stressful cost system than ABC.

In other words, the cases contain ambiguous results concerning job related tension. The Wymar and PB Gelatines case advocate a positive relation between TD-ABC and job related tension as a consequence of risk aversion and budget emphasis, while the Citco case proposed a negative relation between TD-ABC and job related tension due to induced motivation and fairness.

Hence, H2: “Due to using Time-Driven Activity-Based Costing in the budgeting process, information asymmetry will decrease and as a direct result the job related tension felt by subordinate managers will increase.” is not supported as a consequence of these ambiguous case study results.

4.4.4 Budget Commitment

The left part of the developed model (i.e. participation-commitment-information asymmetry) is derived from the model proposed by Chong and Chong (2002)(cfr. figure 3). Analysis of
the three cases allows me to say that this model, which advocates that participation leads to budget commitment which reduces information is supported in all three cases when the three requisites of 4.4.1 are simultaneously respected. The participation induces a sense of fairness which results in commitment to a budget that a manager has generated himself and induces the manager to disclose private information during the budget process even though TD-ABC is still not implemented in this relation. As a consequence the model of Chong and Chong is supported throughout the three cases.

The next step, introducing TD-ABC, is derived from Kaplan and Norton (2008) who suggested that this incorporation should induce commitment to budget in a participative budget context. The suggestion that incorporation of TD-ABC in the budgeting process induces budget commitment (Kaplan and Norton, 2008) is supported in all three cases without any doubt. The underlying cause of this positive relationship was three times cited as ‘ownership’. The manager feels like he is owner of the model because it runs on his data and consequently he feels committed to it.

As a result H3: “Due to using TD-ABC in the budgeting process the commitment to approved budgets will increase, which on his turn decreases the information asymmetry and subsequently the budgetary slack amounts” is fully supported when the three conditions of 4.4.1 (time, training, support context) are simultaneously fulfilled and ‘ownership’ is taken into account as a moderating factor.

The matter becomes complicated once the prerequisites drop and TD-ABC is consequently perceived as a control tool. The Wymar case demonstrates that when TD-ABC is used as a control tool the ownership variable fades, but is replaced by another variable called ‘forced commitment’ in this case. The subordinate manager is forced to be committed to the budget because TD-ABC can observe/control every action he takes and prevents him from not being committed. Therefore in this context the ‘positive’ relation between TD-ABC and commitment is enforced but will still stand according to the Wymar case. The Citco case offers a different perspective: when TD-ABC is perceived as a control tool the ownership variable will disappear and the methodology will certainly fall and as a result there cannot be a positive relation between commitment and TD-ABC. In fact, the relation could even reverse according to this case. The managers will resent the budgets controlled by TD-ABC and their commitment might disappear. The latter supports the vision of Anthony and Govindarajan.
(2007) who state that: “forcing budgets down to subordinates leads to a lack of commitment on the part of budgetees”.

This cross sectional analysis indicates that the Wymar International and PB Gelatines Cases clearly have a different perspective than the Citco Case on TD-ABC in the control context.

Although Wymar advocates a *forced commitment* to budget when TD-ABC is implemented as a control tool. Nevertheless this does not comply with the definition of commitment used in this paper: “Commitment to budget goals is defined as the determination to try for a budget goal and the persistence in pursuing it over time (Locke et al., 1981)” and therefore this reasoning in these two cases is invalid and irrelevant.

When the three conditions (cfr. 4.4.1) are not satisfied and TD-ABC is probably perceived as a control tool by the subordinate managers, H3 is not supported due to uncertain case study results.

### 4.4.5 Extended Model

When the previous cross sectional analysis is projected on the original model (i.e. prior theory) a new richer model arises. This extended model is shown in figure 7.

[Insert Figure 7]

The cross sectional analysis indicates that the Wymar International and PB Gelatines Cases undoubtedly have a different perspective than the Citco case on TD-ABC when it is implemented in a control context. The Wymar and PB Gelatines cases advocate that even though TD-ABC is perceived as a control tool the positive effects will still be (partially) maintained. Moreover, in the Wymar and PB Gelatines cases there is not a large amount of variation between the two environments in which TD-ABC can be implemented. The Citco case on the other hand proclaims that TD-ABC is a methodology that cannot work under any circumstance when it is perceived as a control tool (e.g. insufficient time is given to adopt the methodology resulting in a ‘big brother is watching you’ feeling). TD-ABC can only deliver proper results when the three conditions are simultaneously satisfied.

Because of the different perspectives and lack of consensus in the situation when TD-ABC is perceived as a control tool, the extended model is build based on the assumption that TD-ABC is implemented in an environment of confidence, trust and support.
Figure 7 contains the enriched model which resulted from the case study research. As you can witness the main relations suggested and derived from the literature (cfr. figure 6) are maintained and confirmed by the case study. Participation induces utilization of information asymmetry by subordinates due to ignorance (i.e. no understanding of the budgeted figures). Participative budgeting further appears to increases managers’ commitment to their budgets because of induced motivation. When a manager is committed as a consequence of induced motivation, this leads to a disclosure of private department knowledge and therefore a reduction of information asymmetry held by the subordinate manager.

The case study research shows that under the discussed conditions, TD-ABC reduces information asymmetry for the reason that secret information becomes common knowledge. Consequently budget slack is reduced due to improved visibility in the costs which takes away the ability to create slack and increased involvement which leads to a motivated subordinate manager. Finally an extra condition next to the 3 prerequisites has to be fulfilled. TD-ABC should not provoke information overload, otherwise the central management will lose oversight in the figures and the possibility to create slack will still exist.

The job tension variable is affected negatively according to the Citco case as a consequence of induced positive feelings (i.e. motivation) and is affected positively according to the PB Gelatines and Wymar cases since the inability to create budget slack induces stress through salary attachment to attainment of the budget (i.e. budget emphasis) and risk aversion (cfr 4.4.3). Although their hasn’t been reached agreement in the cases whether or not TD-ABC induced tension, these findings are nevertheless included since they offer some interesting insights and different reasoning’s which can be further explored in future research.

Finally subordinate managers’ commitment to budget is higher when TD-ABC is employed in this environment because it induces ownership. Ownership rises because the manager is invited to participate in the TD-ABC development process. Hence, the TD-ABC model runs on the managers’ figures and he feels like he is the ‘owner’ of the model. For that reason the manager in question will be strongly committed to the generated output (i.e. the departments’ budget).
5. General Conclusion

The goal of this master thesis was to integrate two streams of literature (i.e. cost systems and participative budgeting) who’s integration was implicitly suggested by Kaplan and Norton in their newest publication ‘The Execution Premium’ (2008). Research on ABC integrations in the budgeting cycle was already performed (cfr. Waeytens and Bruggeman, 1994, 1995) but the integration of the enhanced ABC approach wasn’t explored until now. Therefore this master thesis explored whether or not the results of the ABC integration also applied for the TD-ABC integration in the budgeting cycle.

This master thesis examined the influence of TD-ABC on budget slack, job related tension and commitment to budget in a participating budget setting on behalf of participating subordinate managers and tried to find evidence for the confirmation or rejection of the developed literature model (cfr. section 1) and the moderating variables thriving these confirmed or rejected relations, resulting into conclusions for the developed hypotheses.

When Robert S. Kaplan and Steven R. Anderson introduced their improved ABC approach called TD-ABC in 2004 they did not mention the ideal circumstances in which this excellent methodology flourishes. The conducted case study research allows to state that TD-ABC performs best when the following conditions are present at the same time:

- **Sufficient time is given**
- **Training is provided**
- **Atmosphere of trust, confidence and support is present** (i.e. no political gaming, no significant under capacity and department frustration)

To test the developed hypotheses (cfr. section 2) a case study research was performed consisting of three companies: Wymar International, PB Gelatines and Citco. Data collection was carried out by conducting interviews with key respondents in three different companies. The respondents were professionals with a wide-ranging knowledge in the field of management accounting and consulting and particular expertise of Time-Driven Activity-Based Costing and its area of appliance.

The case study results (cfr. section 4.4; 4.5) indicate that implementation of TD-ABC reduces information asymmetry between participative parties, since all cost data become common
company knowledge and subsequently reduces budget slack amounts. This reduction of budget slack is determined by means of 2 moderating factors: visibility which makes managers unable to create slack and motivation which induces a disincentive to create slack.

To obtain slack reduction as a consequence of TD-ABC, there should not be information overload, which forms an additional prerequisite next to the initial three. This supports the first developed hypothesis (cfr. section 2) which stated that TD-ABC reduces information asymmetry and consequently budget slack amounts disappear. The former was also discovered by Waeytens and Bruggeman (1995) in an ABC setting and is therefore assumed to be valid.

The effects of TD-ABC on job related tension are ambiguous. Research in one company indicated that TD-ABC inflicts motivation on behalf of the subordinate manager which reduces the tension felt by the subordinate manager. While other case study research indicates that managers’ inability to create budget slack can provoke job related tension because of risk aversion and budget emphasis. Since there is no clear insight whether TD-ABC increases or decreases job related tension the second hypothesis: “Due to using Time-Driven Activity-Based Costing in the budgeting process, information asymmetry will decrease and as a direct result the job related tension felt by subordinate managers will increase.” is not supported. This contrasts the empirical research of Waeytens and Bruggeman (1995) who expected a positive relation between ABC and the job related tension variable. One reason is the different context in which this research was conducted and the fact that TD-ABC is an enhanced and therefore less stress inducing cost system than ABC.

The effect of TD-ABC on budget commitment has never been examined yet, although a positive relation between TD-ABC and commitment was implicitly suggested by Kaplan and Norton (2008). The conducted case study concluded that TD-ABC has a positive effect on the commitment subordinates feel towards their developed budget. The case study indicates that ownership was the underlying driver of this relation. As a consequence the final hypothesis of this master thesis was supported.

When TD-ABC is implemented in an environment where these three conditions are not met, the results indicate that the subordinate managers perceive TD-ABC as a control tool and the implications of this different perspective are extremely ambiguous and no conclusions can be drawn (cfr. section 4.4).
6. Limitations & Suggestions for future research

A difficulty of conducting case study research consist of the fact that throughout the data collecting, this data also has to be analysed by the interviewer which demands a certain degree of experience(Yin, 2003; Eisenhardt 1989). Unfortunately this requested interviewers’ experience is absent in this master thesis which leads to an initial limitation since the interviewer’s bias increases.

Further limitations of this master thesis result from the fact that case study research has low external validity and limited reliability due to its lack of formal procedures. Because of this low external validity case study results are difficult to generalise since, there is a lack of statistical control of the dissimilar variables(Ferreira and Merchant, 1992; Yin, 2003). A recommendation could be to conduct survey examination in future research to enlarge the sample size of companies who have implemented TD-ABC and maintained a participative budgeting process. This type of research will allow future researchers to determine what are the real effects of TD-ABC on job related tension since they are ambiguous in this paper but still occur.

A final limitation of this research consists of the lack of ‘triangulation’ (i.e. different types of data collection are used: documents, archival records, interviews, direct observation, participant-observation and physical artefacts) (Stake, 1995; Silverman, 2000; Yin, 1994, 2003). Since interviews were the sole subject of data collection in this research the internal validity could not be as sufficient as anticipated and researcher bias might be larger.

The effects on job related tension have proven to be ambiguous in this paper, therefore this relation should be investigated more closely through survey research since Waeytens and Bruggeman(1995) did found an empirically supported relation with ABC. The substantiated results of this paper (i.e. budget slack and commitment) should be tested empirically with larger sample sizes of companies since this option becomes possible in the near future because of the increasing implementation of TD-ABC.
Figures
Activity-based cost systems trace resource expenses to activities and use activity cost drivers for tracing activity costs to objects.

Figure 1: Activity-Based Costing

Source: Based on Kaplan and Cooper (1998)
**Figure 2: Time-Driven Activity-Based Costing**

Time-driven activity-based cost systems trace costs of resource pools to objects, based on the outcomes of the time equations per activity.

### Resources expenses
- Salary
- Depreciation
- ICT
- ...

### Resource driver
- Administration
- Warehouse
- ...

### Unit cost per resource pool
\[
C_n = \frac{\text{total cost of resource pool}}{\text{practical capacity}}
\]

### Activities
- Order entry
- Ordering material
- Sales invoicing
- ...

### Time equations with time drivers
- Time per sales order:
  \[
t_{\text{per sales order}} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_p X_p
\]
- Time per purchase order:
  \[
t_{\text{per purchase order}} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_p X_p
\]
- Time per invoice:
  \[
t_{\text{per invoice}} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_p X_p
\]

### Time spent multiplied by unit cost per resource
- \( t_{j,k} \) - time spent on the activity \( j \) in a specific situation \( k \), e.g. time spent entering a sales order XYZ with 3 order lines.
- \( C_n \) - total cost of the resource pool \( n \)
- \( X_1, \ldots, X_p \) - \( p \) time drivers for each activity \( j \); e.g. 1 time driver (number of order lines) for the activity of sales order entry

### Source:
Based on Anderson and Kaplan (2004)
Figure 3: Literature Model

Source: Model derived from the literature discussed in section 1.

--- Merchant (1985b), Cammann (1976), and Onsi (1973)
--- Jaworski and Young (1992)
--- Dunk (1993b)
**Figure 4:** Budget Goal Commitment Theoretical Model

**Source:** Chong and Chong (2002)
Figure 5: the ABB-Approach: The Closed Loop Model

Figure 1
Overview of the ABB-Approach: The Closed Loop Model

Figure 6: Prior Theory Model

Figure 7: Extended Model

Prerequisite for this model\textsuperscript{10}:

- **Sufficient time** is given

- **Training** is provided

- Atmosphere of trust, confidence and support (i.e. no political gaming, no significant under capacity and department frustration)

Source: richer theory on basis of case study research

\textsuperscript{10} These conditions have to be fulfilled simultaneously.
References

Books


Papers


Appendix

Case study – Interview

The questionnaire has been divided into 4 sections which are deducted from the 3 underlying studies and frameworks which are used to form the extended framework and one concerning the TD-ABC and company background. Each section consists of a main question/topic which requires some further elaboration during the case study (interview). Next to the main topic there are some underlying questions which need answering in order to test the framework for reality. However, these underlying questions will not be asked directly in order not to compromise the objectivity of the research. An answer to these questions will be derived from the interview in an implicit manner.

Can you tell me something about the TD-ABC project in general?

- In which department(s) was TD-ABC implemented?
- What are the expected goals?
  - Are these goals accomplished?
  - Can you explain how these goals are accomplished?
  - Did TD-ABCC fulfil the expectations?
  - Are there any other goals which can be accomplished by TD-ABC apart from the defined goals?
- How did the employees and especially the departments manager perceived this implementation?
- In which circumstances does the TD-ABC methodology flourishes?

What is the effect when TD-ABC is implemented on budget slack?

- What sort of budgeting system does the company apply?
- Can you define budget slack?
  - Does budget slack occur in this company?
  - Can you give some concrete data?
Does TD-ABC have an effect on private information held by subordinate managers?

Does TD-ABC have an effect on budget slack?

What moderating factors are affecting this relation?

Have you experience with this phenomenon?

What is the Effect of TD-ABC on Job Related Tension?

Can you define job related tension?

Is there stress present in this company?

Is there a relation between JRT and information asymmetry?

Does participation induces JRT?

Does TD-ABC have an effect on stress felt by department managers?

If so what, factors are influencing this relation?

Is there a relation with budget slack?

Is there a relation with budget slack?

What is the effect of TD-ABC on Budget Commitment?

Can you define commitment?

Is this present at your company

Did you saw anything relating to this concept in the TD-ABC project?

Does budget participation leads to commitment among subordinate managers?

When commitment is increased, does this affects private information held by the manager?

Does TD-ABC affects commitment?

What moderating factors are the reason for your answer?

Does commitment influence any other previously discussed concept?