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A Critical Analysis of Budgeting Processes from the Pharmaceutical Industry and Beyond

Gianfranco Marotta[1], Phillipe Krahnhof[2] and Cam-Duc Au[3]

Abstract

The pharmaceutical industry is challenged by the Industry 4.0 which facilitates numerous change processes. Innovations such as the Internet of Things (IoT), Internet of Services (IoS), Smart Factory, and Cyber-Physical Systems (CPS) are being employed (Ding, 2018, p. 155). These new circumstances stimulate change, innovations, competition, and partnerships. At the same time, technologies such as Big Data Analytics (BDA), artificial intelligence (AI), or Self-Service BI disrupt and enhance financial processes.

In light of the changing environment, the discourses regarding budgeting effectiveness, managerial control, and organizational performance gain new importance. Organizations are dared to ensure solution-oriented approaches that solve budgeting problems that are detrimental to innovation and motivation whilst reinforcing slack-building behavior and inflexibility. In this context, the given paper focuses on budgeting challenges and opportunities with an emphasis on the pharmaceutical industry. As a result of an extensive review, the authors suggest a checklist on how to sustainably improve budgeting processes.

Research data about financial planning cycles are collected from multiple sources such as practitioner literature and online presentations. The propositions made should be investigated with empirical verification and further comparisons with other organizations.

JEL classification numbers: F30, G30, G31.
Keywords: Budgeting, Better-budgeting, Beyond-budgeting, Change management, Pharmaceutical industry, Big data, Artificial intelligence.

[1]Financial Analyst and Research.
FOM University of Applied Sciences – isf (Institute for Strategic Finance), Germany and
Pôle Paris Alternance (PPA), Business School - École de Commerce et de Management, France.
[2] Department of Finance, Faculty of Economics and Administration, Masaryk University, Czech Republic and FOM University of Applied Science – isf (Institute for Strategic Finance), Germany
[3] Department of Finance, Faculty of Economics and Administration, Masaryk University, Czech Republic and FOM University of Applied Science – isf (Institute for Strategic Finance), Germany

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1. Introduction

The pharmaceutical industry is challenged by the Industry 4.0 which facilitates numerous change processes. Innovations such as the Internet of Things (IoT), Internet of Services (IoS), Smart Factory, and Cyber-Physical Systems (CPS) are being employed in the pharmaceutical industry (Ding, 2018, p. 155). These new circumstances stimulate competition, change, innovations, and partnerships. At the same time, technologies such as Big Data Analytics (BDA), artificial intelligence (AI), or Self-Service BI disrupt and enhance financial processes (see Gandomi & Haider, 2015; Mengen & Tröbs, 2018; Losbichler & Gänßlen, 2015; Weber & Wiegmann, 2018; Marotta & Au, 2021).

In light of the changing environment with its emerging opportunities and new risks, well-known discourses regarding budgeting effectiveness, managerial control, and organizational performance gain increasing importance. Organizations are dared to ensure solution-oriented approaches that solve budgeting problems such as the restriction of innovation and motivation or the reinforcement of slack-building behavior and inflexibility.

In this context, the given paper focuses on budgeting processes from the perspective of pharmaceutical companies and aims to derive opportunities based on the following questions:

I. How can a budget add more value? (with less effort)
II. How can budgets become more agile?
III. How can subjectivity be reduced in budgeting allocations?

In an attempt to answer the above, the paper is divided into the following five sections:

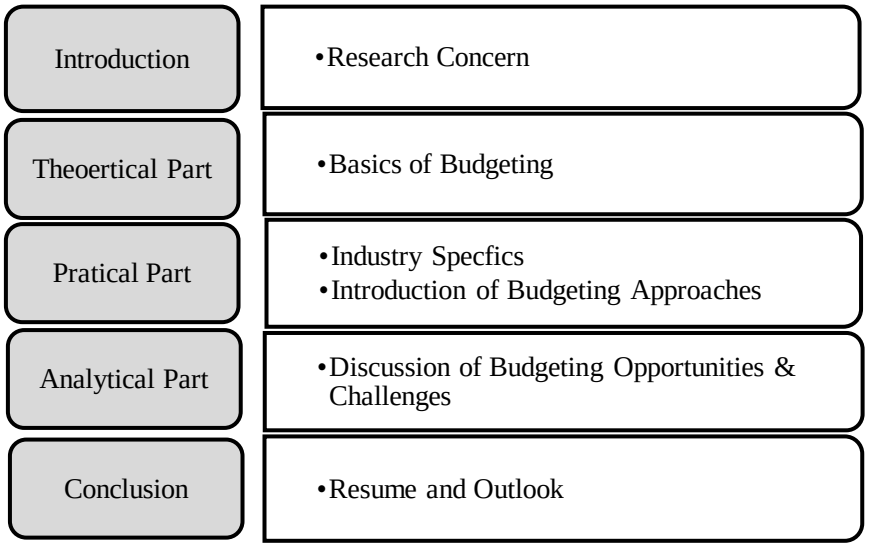

Figure1: Summarized Structure

2. Theoretical Basics of Budgeting

2.1 The Evolution of Budgeting

The origin of budgeting can be traced back to the 1920s when large industrial organizations first used tools and calculations for managing costs and cash flows (Hope & Fraser, 2003, p. 3; Ifijeh Goodluck, 2011, pp. 3-4; Jäger & Altrogge, 2011, p. 1). Over time, the understanding of budgets evolved. In the 1960s, budgets were used as fixed performance contracts to drive and evaluate management performance (Hope & Fraser, 2003, p. 3; Goode & Malik, 2011, p. 208; Jäger & Altrogge, 2011, p. 1). Meanwhile, nowadays, budgeting is universally performed. Budgets are created for private or organizational objectives, for large enterprises, small business units, or projects.

Due to organizational heterogeneity, there are multiple definitions of what a budget represents. For instance: "A budget is the quantitative expression of a plan …" (Jäger & Altrogge, 2011, p. 3), "budgets are formal and written statement of an organization's future orientation, expressed in financial terms" (Horngren et al., 2010, p. 181), or "Budgeting is when the plan is brought down to earth" (Schiff, 2008, p. 26). Most definitions call for a structured plan, indicating the importance of budgets as contributing to coordinating financial resources over a defined period of time. Johansson and Kullven argue that there is no general definition of what a budget means to an organization but that its meaning is specific to each organization (Johansson & Kullven cited in Asogwa & Etim, 2017, p. 1).

Information for budgeting objectives derives from various sources. External criteria are, for example, economic trends, law regulations, or competition. Internal information may include the corporate strategy, historical revenues/ expenses, capacities, or cash flow needs. Thereby, budgets support organizations in many ways. A few examples are given below:

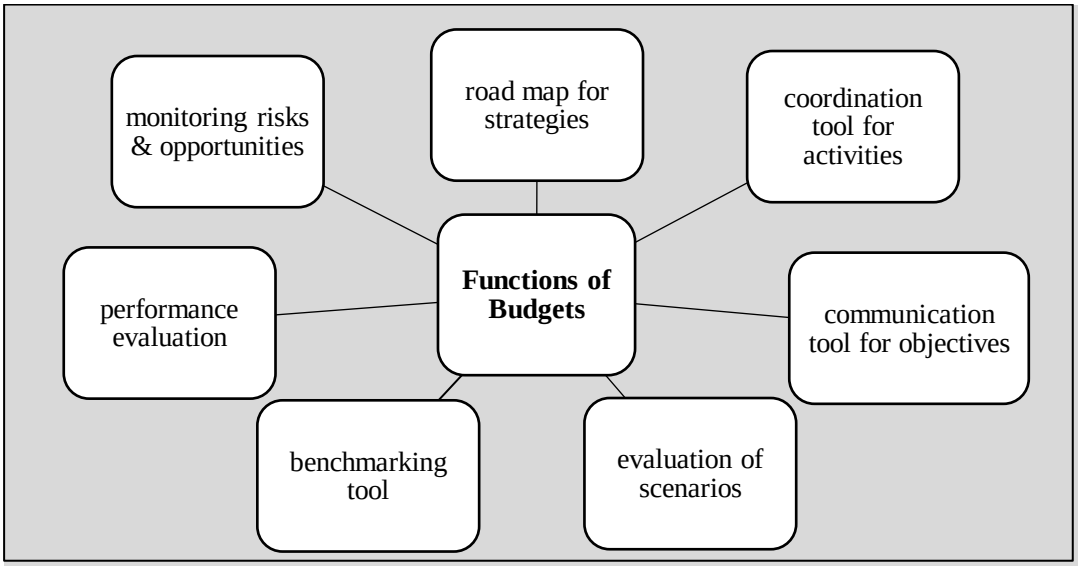

Figure 2: Functions of Budgets

Commonly, budgets are used for planning and control purposes as means to achieve a strategic plan. Various researchers describe the budgeting process as a cornerstone of management control (Parker & Lewis, 1995, pp. 212-213; Eckholm & Wallin, 2000, pp. 520-521; Hansen et al., 2003, p. 95; Libby and Lindsay, 2010, p. 56; Marotta & Duc, 2021).

2.2 Basics of Budgeting Processes

In practice, different budgeting concepts have been conceptualized. Generally, budgets are set within a negotiation process. Anthony and Govindarajan embed the negotiation process in four consecutive steps which can be illustrated as follows (Anthony & Govindarajan, 2007, pp. 388–89):

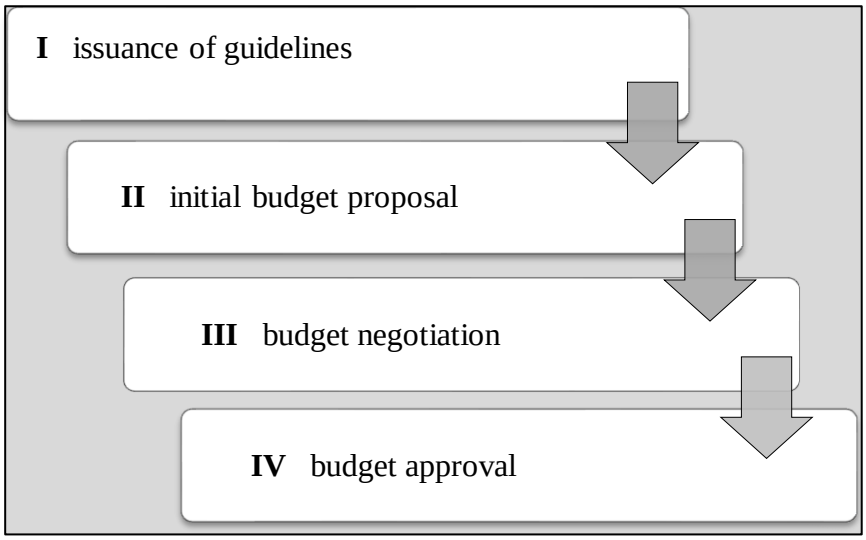

Figure 3: Chronological Process Flow

First, the budgeting process starts with the issuance of the budget guidelines. Within the guidelines, directives and expected target levels are explained. The second stage of the budgeting process covers the development of an initial budget proposal. Thereafter, the budget is negotiated in multiple iterations, and as a result, the budget is approved and resources are allocated.

In terms of directions, the leading role in budgeting processes may go to the senior level or lower-level management. The approaches and planning directions are predominantly discussed in the context of participative budgeting research (Brownell, 1980; Young, 1985; Wagner, 1994; Shields & Shields, 1998; Wentzel, 2002; Brown et al., 2009; Hofstede, 2012; Kramer & Hartmann, 2014). The practitioner and vocational literature refer to the planning direction as “Top-down” (TD), “Bottom-up” (BU), or interactive/ integrated approach (Kono, 1976, p. 63; Rieg, 2015, p. 11 Kramer & Hartmann, 2014, pp. 315-318).

Budgeting Approaches

The three most prominent budgeting approaches are shortly outlined.

First, there is the *Traditional Budgeting* approach. Generally, traditional budgeting is often described as a form of annual fixed budgeting. Hope and Fraser describe the traditional budgeting system as a "command and control model" in which decisions, resources, and rewards flow down, while information flows back up. The model is based on a strict hierarchy, and the lower-level management is obliged to follow the guidelines and targets of the senior-level management (Hope & Fraser, 2003, p. 71).

The second well-known *Better-Budgeting* approach refers to techniques that support preserving budgets for control objectives. However, the focus of budgets lies on value-based and more analytical contents, also considering non-financial key indicators (Horvàth 2009, p. 218; Jäger & Altrogge, 2011, pp. 2-3). Strengthening the TD process is an integral part of this concept (Horvàth 2009, p. 218). Neely et al. describe five different techniques to overcome the flaws of the traditional approach (Neely et al, 2003, pp. 22-28):

I. Rolling Budgets / Rolling Forecasts (RF)
II. Activity-Based Budgeting (ABB)
III. Zero-Based Budgeting (ZBB)
IV. Value-Based Management (VBM)
V. Profit Planning

Lastly, another common budgeting approach is referred to as *Beyond Budgeting*. In 1998, the Beyond Budgeting Roundtable (BBRT) was founded in the UK, with Jeremy Hope and Robin Fraser as its main advocates (Sandalgaard & Bukh, 2014, p. 412; Jäger & Altrogge, 2011, p. 4). According to Hope and Fraser, the main idea of Beyond-Budgeting is to abandon fixed annual budgets together with fixed performance contracts, in favor of a range of new principles and techniques such as rolling forecasts, the balanced scorecard, relative performance evaluations, and the creation of empowered teams. These techniques help to overcome traditional budgeting problems and make organizations more adaptive and flexible (Hope & Fraser, 2003; Sandalgaard & Bukh, 2014; Popseko et al., 2015). After researching organizations that fully or partly abandoned traditional budget systems, the BBRT developed a generic model, which is based on 12 principles (see Hope & Fraser, 2003).

3. Practitioner Budgeting (in the Pharma Environment)

3.1 Pharmaceutical Industry Characteristics

In the following, the pharmaceutical industry is briefly characterized to give an impression of the specifics that may influence how a budgeting process is conceptualized.

The pharmaceutical industry plays a pivot role which tends to cause much

controversy. While the industry is well-recognized for its substantial research and development (R&D) investments and significant medical breakthroughs in developing drugs, it is also criticized for unethical behavior such as monopolistic pricing (Lakdawalla, 2018, p. 397; Schweitzer & Lu, 2018, p. 1).

Many pharmaceutical topics are frequently discussed in policy and academic circles. Key topics concern R&D priorities, pricing, access to drugs, protection of intellectual property (IP), generic competition (Lakdawalla, 2018, p. 397; Schweitzer & Lu, 2018, p. 1), or drug advertising. Latter deals with the way physicians and consumers receive information (Schweitzer & Lu, 2018, pp. 1-8).

Typically, the industry is characterized as highly globalized due to an increasingly interconnected world (Lakdawalla, 2018, p. 398). A further feature of the industry is strong governmental interventions. To ensure the wellbeing of society, the industry is surrounded by regulations and controls. New drugs must prove safety and efficacy, which implies a long and formalized testing process. Federal regulations examine product quality and quantity, safety protocols, packaging and labeling, communication standards, and price competition (Martin et al., 2018, p. 87). Additional regulatory agencies use surveillance programs to identify potential risks of drugs (Schweitzer & Lu, 2018 p. 3). Therefore, the cost of compliance can make up 25% of a pharmaceutical firm's annual budget (Martin et al., 2018, p. 87).

Innovation and intensive R&D are the foundation for the success of pharmaceutical companies. Hence, IP is of main importance for the industry (Schweitzer & Lu, 2018 pp. 1-15; Marques, 2018, p. 171). Usually, high development costs are opposing relatively low imitation costs (Lakdawalla, 2018, p. 400).

A further characteristic of the marketplace is a close interaction of different stakeholders such as pharmacists, physicians, and patients. There are also strong third-party intermediaries (insurer/payer) (Schweitzer & Lu, 2018, pp. 3-10).

In the future, new technologies prospect optimized value chains and cost reduction (Stegemann, 2016; Hofmann & Rüsch, 2017). However, at the same time, the pharmaceutical industry must deal with more complex healthcare systems and new barriers in the form of pricing and reimbursement regulations (Schweitzer & Lu, 2018, p. 8). Governmental authorities continue to emphasize evaluating the value of drugs to promote more beneficial health outcomes. There is also a strong pressure to perform in the interest of the society: "The Pharmaceutical industry should adapt to a new model that brings innovation in R&D, addresses unmet needs and demonstrates the value of a new drug by gathering real-world evidence" (Lakdawalla, 2018, p. 397). Finally, there are challenging market dynamics and strong competitors (EY, 2013; Gutam & Pan, 2016, p. 379. Even tech giants such as Google, Facebook, and Amazon engage in the pharmaceutical industry (CBInsights, 2017).

Budget Implications

Within the pharmaceutical industry, there is less volatility than in other markets e.g. the retail, or entertainment and information industry. Many common resources, manufactured or sold, are characterized by short product life cycles and low market

entrance barriers. Meanwhile, the pharmaceutical industry has higher entrance barriers through the high investment requirements needed for innovations. Once a drug is approved for the market launch the patent holder enjoys an oligopolistic or even monopolistic market positioning. This indicates that the need for adaptiveness and responsiveness is limited. In turn, there is high planning reliability, thus the risk assessment can be conducted with less effort and information can be derived from historical performances. Nevertheless, the great uncertainty regarding future investments and market approvals complicates the allocation process. Failed market approvals represent substantial sunk costs. Consequently, preventive restricting measures in the allocation process may be required. Additionally, pharmaceutical companies face growing market dynamics through new technologies, competitors e.g. biosimilars, generic competition, and governmental interaction. These characteristics influence the market structure and business performance with substantial consequences for the allocation process.

3.2 Budgeting Approaches from a Practitioner Perspective

In practice, a planning process covers multidimensional initiatives that usually cover a long, middle, and short-term perspective. As such, in the pharmaceutical industry, there is, for instance, a:

10-Years Plan (10YP)

Every year, strategic discussions and priorities of the company are translated into a 10YP. The 10YP thereby analyzes the internal and external environment and outlines different scenarios. The aim is to identify key strategies and events that will influence the objectives in the long run. Therefore, the company establishes a long-term view on financial indicators such as sales, operational expenditure (Opex), capital expenditure (Capex), recurring earnings, etc. Key assumptions include inter alia, sale volumes, prices, parallel trade, and cost items. Furthermore, the results are used for benchmarking purposes and analyzed at different profit and loss (P&L) levels such as per product family, market, ownership, or tax level.

Annual Budget

The annual budget translates key initiatives and strategic objectives defined in the 10YP into a tactical and operational plan. Budgets also serve as a basis for performance measurement and incentives determination by defining clear accountabilities within the organization. In terms of directions, the budget needs are likely captured in a first submission and then compared with the profitability target from the 10YP. After the first submission, the senior management reviews the budget and eventually challenges the business to identify savings opportunities and/or to change the sales assumptions. After several iterations and discussions, the new budget is developed and adapted to the budgeting system.

Intra-Year Planning e.g. Rolling Forecast (RF)

In addition, there is commonly an intra-year planning exercise. The RF anticipates the year-end landing of the current year and the budget for the next fiscal year. The aim is to give insights on past performance supporting management decisions for the future and to identify up- and downsides showing opportunities for agile resource re-allocation. Thereby, measures to achieve the objectives shared with the capital market can be identified at an early stage within the year. In short, a planning cycle from the pharmaceutical perspective can be illustrated as follows:

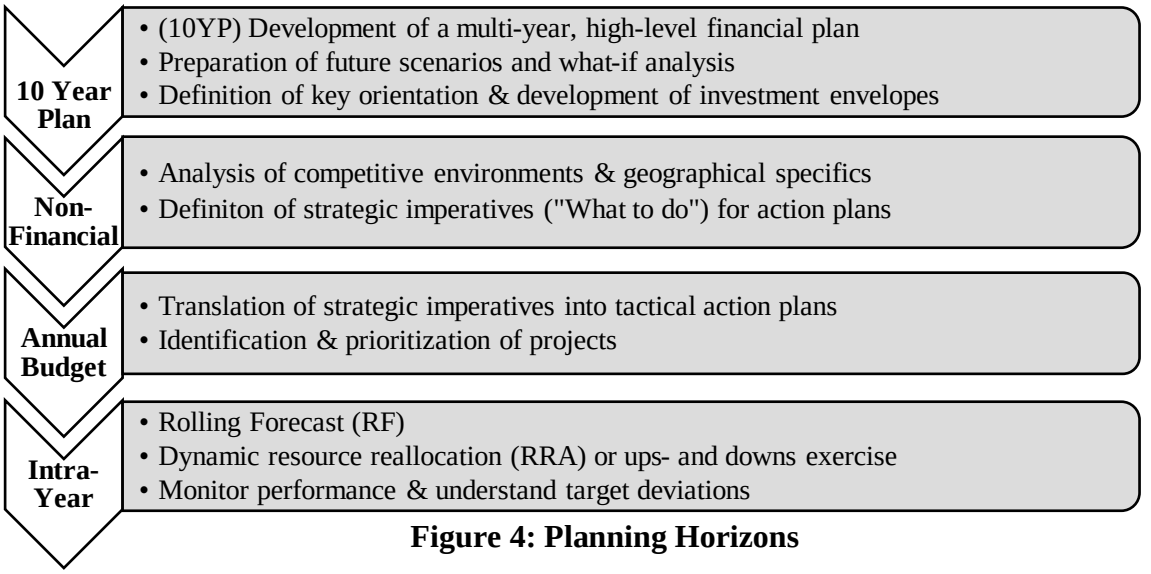

Figure 4: Planning Horizons

3.3 Budgeting Processes in other Organizations

In the following, budgeting processes in other organizations are briefly presented to gain additional knowledge about different approaches and their advantages.

Rheinisch-Westfälische Elektrizitätswerke (RWE)

In 2016, RWE triggered discussions on how to increase the efficiency and effectiveness of financial planning and forecasting processes. The CFO of RWE Supply & Trading described in an interview with Prof. Dr. Utz Schäffer, director of the Institute of Management and Controlling (IMC) of WHU – Otto Beisheim School of Management a new "lean planning" style which can be achieved with a solid focus on the main value-driver in the planning and reporting structure (Schäffer, 2016, pp. 52-57).

Schäffer explains that the planning process has often been equated with target-setting agreements. Therefore, the old process was characterized by too many participants at too many levels of the hierarchy. The data collection was driven by a time-consuming BU exercise, which resulted in having too many details that were irrelevant for the strategic and operational control (ibid., p. 1).

By challenging the controlling departments to reduce planning costs by at least 30

percent, the priorities of the planning exercise had to be re-defined. As a result, benchmarks have been conducted to identify best practices and the most important cost-drivers. The objective of the model is to derive targets from the capital market perspective and not the historical budget perspective. The organizational segments determine the target and break it down in the hierarchy (ibid., pp. 3-4).

Telekom

In an interview, Michael Wilkens, Senior Vice President Group Controlling of Deutsche Telekom AG, describes the implementation of a new budgeting concept at Telekom AG, called "Campus-Planungsansatz", or "campus planning approach" (Schäffer & Weber, 2015, pp. 54-59). Wilkens describes that the previous budgeting process tied up many resources and much time.

The new process shall create budgets in less time, with fewer individuals involved. The process begins with a strategic plan setting milestones. The business segments then have two-and-a-half months to break down the TD plan. From mid-October, the budgeting discussions will be held in a closed area for two weeks, during which the budgets will be finalized. The essential benefits are said to be the simplification of the planning design and a better IT infrastructure (ibid., p. 59).

The main advantage of the campus approach is that all decision-makers are together to decide directly and in a transparent manner. The approach shows the positive effects of communication and interaction, which can be achieved if people are brought together to align on targets (Rösler et al., 2015, pp. 60-65; Ehlken, & Neumann, 2015, pp. 50-51).

Johnson & Johnson (J&J)

Libby and Lindsay describe that J&J makes extensive use of budgets in an extremely unpredictable business environment. The control system includes different characteristics that seem to mitigate the concerns of utilizing a high budget emphasis style in an unpredictable environment (Libby & Lindsay, 2010, pp. 67-68).

The budgeting characteristics have been summarized as follows (ibid.):

- a contingency fund to help to deal with uncertainty
- highly detailed budgets across responsibility centers and the involvement of lower to senior levels of management
- a long-term planning system that is strategically oriented
- operational budgets that are linked to the long-term plans
- a strong culture for managing the long-term
- multiple revisions (mainly of tactics)
- a budget system that is managed interactively, not diagnostically
- a culture of information sharing
- a strongly decentralized management structure

4. Enhancing Budgeting Processes

4.1 What needs to be changed?

As discussed earlier, a changing environment offers new opportunities and risks to further overcome budgeting flaws such as the killing of innovation and motivation or the reinforcement of slack-building behavior.
In this context, the relevant research concerns are discussed to sustainably improve all planning cycles:

I. How can a budget add more value?
II. How can budgets become more agile?
III. How can subjectivity be reduced in budgeting allocations?

To wisely address the above and identify further opportunities it is recommended to first of all learn about the managers' perceptions towards the current budgeting approach. Additionally, it is important to learn about systems and technologies that can help to complement or improve the existing budgeting process.

For this purpose, in the following, the 12 most described budgeting criticisms by Neeley et al. (2003) are further addressed. These well-known criticisms are hereafter linked to our research concerns (I.-III.) and analyzed to derive managerial implications for future improvements:

Table 1: Flaws of Traditional Budgeting and Respective Taxonomy

BUDGET FLAWS	*RESEARCH CONCERN*
1. budgets constrain responsiveness and flexibility	*II. increase agility*
2. budgets are developed and updated too infrequently, usually annually	*II. increase agility* *IV.become smarter*
3. budgets are time-consuming and costly	*I. add value* *IV. become smarter*
4. budgets add little value with regard to the time consumption	*I. add value*
5. budgets focus on cost reduction and not value creation	*I. add value*
6. budgets are rarely strategically focused and often contradictory	*I. add value* *(with less effort)* *III. reduce subjectivity*
7. budgets are based on unsupported assumptions and guess-work	*I. add value* *III. reduce subjectivity*
8. budgets strengthen vertical command and control	*III. reduce subjectivity*
9. budgets make people feel under-valued	*III. reduce subjectivity*
10. budgets cause gaming and budgetary slack	*I. add value* *III. reduce subjectivity*
11. budgets reinforce barriers rather than encourage knowledge sharing	*II. increase agility* *III. reduce subjectivity*
12. budgets limit changing network structures that organizations are adopting	*II. increase agility* *III. reduce subjectivity*

4.2 Managerial Implications

Based on the budgeting problems presented and the respective classification, further improvements are suggested. These ideas are derived from the literature review and the presented case studies.

I. How can a budget add more value (with less effort)?

There are many potential opportunities of how budgets can add further value. The following section addresses a few of those:

As argued within the various case studies, the granularity of the budget allocation and the number of managers involved appear to be relevant variables that may influence the success of an allocation process. In that sense, one way to improve a potential budgeting flaw is to challenge and change the process management in general. This may include adapting the timelines, questioning the hierarchies, or the granularity of the current budget.

Thereby, executives can already identify opportunities how to reduce time consumption and process costs. Similar observations were shared in the case studies of RWE, Telekom, and J&J.

For example, if, in the past, there was a detailed breakdown of the budget, in the future, the objective of a new process is to eventually step away from those details, notably, if the current process cannot justify sufficient value creation for the current overhead. In turn, executives can, for instance, share a determined budget envelope for each business unit but the business can spend the money with fewer restrictions on the details, as long as the budget is not exceeded and the strategic imperatives are well-aligned. The detailed breakdown occurs either way with the actual spending during the year but then depending on the most urgent needs.

Also, as highlighted in the table concerning the budgeting flaws, budgets must focus on value creation and an improved strategic focus. Those aspects can be directly addressed by, for instance, ensuring a multidimensional planning process where planning cycles build on each other. As an example, ideally, a well-defined strategic plan must be translated into an operative budget. Meanwhile, all subsequent budgets should then be built upon those relevant value drivers that have been identified in the strategic plan. As opposed to the above, budgets are oftentimes created newly within each exercise and thereby miss connectivity that ensures strategic efficiencies.

Additionally, budgets should be used to create relationships and efficiencies within and across departments. This can for instance be achieved by sharing activity plans. Those plans can help organizations to identify cross-national synergies for the implementation of global strategies. Action plans can be developed coherently for different countries and learning success can be shared to improve processes, e.g., regarding the expertise of suppliers, time, or cost management.

Consequently, the business can take advantage of synergies and resources might be saved globally by avoiding duplication of work. These synergies would come along with more interconnected and networked teams and could improve the cultural awareness of all individuals. As a result, organizations can also move towards a more globalized organizational culture.

II. How can budgets become more agile

As argued above, the objective to increase agility is linked to the experience of constrained responsiveness and inflexibility. Also, it is said that budgets limit changing network structures. In this sense, Reinke explains that planned circumstances may differ from reality due to the time difference between the preparation of the budget and the onset of the reality. As a result, budgets are often

outdated and inadequate at the time of the realization (Reinke, 2016, p. 48).
Again, few improvements concerning agility were already addressed in the before-mentioned case studies. To achieve further improvements concerning organizational agility the intra-year planning should be challenged and eventually revised. This can for instance be achieved by a regular upside- and downside exercise that takes place to continuously monitor the performance and understand target deviations for more dynamic resource re-allocations.
In this context, Waal suggests the implementation of rolling budgets and forecasts. These techniques counteract to the reported weaknesses, such as inflexibility or constraint responsiveness. Thereby, companies can react earlier to changing market conditions by integrating constantly new information into the budget (Waal, 2005, p. 65). Concludingly, the forecast serves as an act and react tool by continuously managing new insights. According to Zeller and Metzger, thereby superior results over the traditional annual budgeting process can be achieved (Zeller & Metzger, 2013, pp. 300-303). However, such exercises stays time-consuming and costly.

III. How can subjectivity be reduced in budgeting allocations?
There are also further ideas of how budgets can become less subjective. The following section addresses a few of those:
As shown in the case study of J&J, organizations can counteract the arguments that budgets are rarely strategic and lack objectivity through activities such as ZBB or ABB.
ZBB takes a bottom-up perspective to understand the most efficient return on spending. This can help organizations to align investments with strategic imperatives. Furthermore, those new techniques aid in the creation of awareness of costs. At the same time, ABB also aims to steer the focus on core activities (Pietrzak, 2013, p. 27, p. 36).
Overall, Better-Budgeting techniques are based on more accurate assumptions and encourage knowledge-sharing. However, some guesswork is inevitable.
Meanwhile, a major problem of all Better-Budgeting techniques is, as mentioned before, that they can consume even more management time due to more frequent discussions. This, however, is anticipated to likely cause greater dissatisfaction (Goode & Malik, 2011, p. 208; Reinke 2016, p. 53). Furthermore, a persistent problem of these budgeting techniques is the strengthening of a vertical command and control structure (Neeley et al., 2003, p. 23). A TD orientation may reduce the market responsiveness as argued by Hope and Fraser (2003, pp. 108-110). In this context, Better-Budgeting techniques are still exposed to some types of dysfunctional behavior (Goode & Malik, 2011, p. 208).

4.3 Final Reflection & Framework Checklist

Contemporary literature provides extensive discussions on the restrictions of traditional budgeting systems (Bunce et al., 1995; Neeley et al., 2003; Hansen et al., 2003; Hope & Fraser 2003; Player, 2003; Waal, 2005). However, much of the criticism was published by proponents behind new budgeting movements (Goode & Malik, 2011 p. 209). Various field studies document the usefulness and practicality of traditional annual budgeting. Also, our research results show that practitioners do not plan to move away from this traditional budgeting system (see Ekholm & Wallin, 2000; Libby & Lindsay, 2010; Dugdale & Lyne, 2010; Popseko et al., 2015; Low & Tan, 2016; Laitinen et al., 2016).

According to an online survey of the Institute of Singapore Chartered Accountants (ISCA), most companies in Singapore (365 responses) argue that the advantages of budgets outweigh their disadvantages (Low & Tan, 2016, p. 2).

In line with the introduced literature, Goode and Malik explain that the management will find it hard to completely abandon budgeting as it is embedded in today's business culture. Organizations instead prefer modifying and adapting the budgeting approach to the needs of the management (Goode & Malik, 2011, p. 212). Ekholm and Wallin argue that properly used budgets form a strong framework to plan and measure a company's operations. Their results indicate that the annual budget is not dead, but a hybrid approach is emerging where budgets are used alongside rolling forecasts and balanced scorecards (Ekholm & Wallin, 2000, pp. 528, p. 537). Similar results have been observed with the case study examples of Deutsche Telekom, Deutsche Bahn, J&J, and RWE.

The following table offers a checklist based on Neeley et al.'s collection concerning the flaws of traditional budgeting. This list aims to support executives to better assess whether Better-, Beyond-Budgeting, Advanced-Analytic methods or new systems and tools can help managers to design a new/ hybrid budgeting approach. In short, this checklist is our attempt to identify from a single company/ idiosyncratic perspective further enhancement opportunities for the budgeting process:

Table 2: Checklist to drive enhancements

Weaknesses	Better-budgeting	Beyond-budgeting	Advanced-analytics	(new) system/ infrastructure
budgets constrain responsiveness and flexibility				
budgets focus on cost reduction and not value creation				
budgets reinforce barriers rather than encourage knowledge sharing				
budgets cause gaming and budgetary slack				
budgets strengthen vertical command and control				
budgets make people feel under-valued				
budgets are time-consuming and costly				
budgets add little value with regard to their time consumption				
budgets are rarely strategically focused and often contradictory				
budgets limit changing network structures that organizations are adopting				
budgets are developed and updated too infrequently, usually annually				
budgets are based on unsupported assumptions and guess-work				
new barriers such e.g. increased complexity, mindset change, implementation issues				

5. Conclusion

To sum up, this paper provided an overview of some specifics from the pharmaceutical industry that influence the shaping of a budgeting process. Furthermore, several budgeting approaches have been introduced. Based on the above, further recommendations have been given including a checklist that can help organizations to improve their planning cycles.

In conclusion, to maximize the benefits of budgeting systems, the annual budgeting process should be constantly improved. A combination of various techniques may help to motivate the management, increase accountability in decision making,

improve responsiveness in changing market dynamics, reduce budgetary slack-building behavior, and finally help to align strategic objectives with the business operations. However, since budgeting systems will never fit all employees, it is up to the management to further support and motivate employees.

Waal explains that a favorable implementation of new techniques needs to start with the identification of drawbacks and evidence collection, followed by the awakening of the desire to change existing processes (Waal, 2005, p. 56).

Following this discourse, it can be recommended to all organizations to put a special focus on change management. Change is an ever-present phenomenon in today's organizations, and it is important to keep in mind that the process itself may be unrewarding for those who initiate and those who experience the change (Cameron & Green, 2015, p. 221). Lastly, these individuals ultimately cause the change to be successful or not.

Looking ahead, without any doubt, advanced technology can truly revolutionize allocation processes. However real gains in competitive advantage are only achieved by the successful interaction of technologies and people to support the smart use of information. Analogically to many circumstances in life, the statement that the output depends on the input is also valid for the budgeting process. When a budget is well designed and implemented, good results will be achieved in the form of good performance and vice versa.

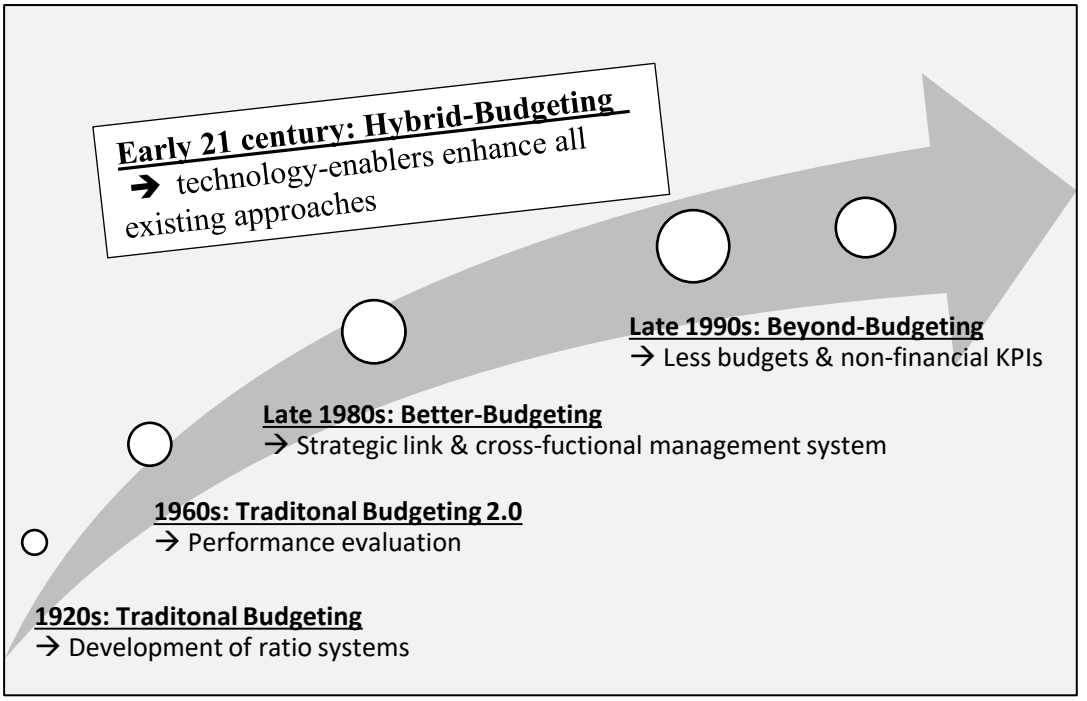

Figure 5: Evolution of Budgeting Approaches

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