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GPK: CRACKS IN THE SILVER BULLET?

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This article examines two management accounting approaches, GPK and RCA, in an effort to determine how they fit-and to what degree-in the current business and management environments.

The current business environment is tough; many companies have weathered some difficult times in the past eighteen months. Most business managers have levelled a critical eye at current operations and cut, cut, cut, costs. While doing so the pain point of not having the necessary and accurate information was evident. The lack of tools, systems, concepts, methodologies, and such has become evident; and many are looking and considering new means of determining decisions. While managers reach to try new approaches to help drive out the management information they need; they should be cautious of quickly jumping from what they currently use to a newer approach. There are many management accounting approaches, such as lean accounting and activity-based costing to name a few, and several critiques for all the approaches already available. ¹

One such approach has seen interest in the US within the last decade Grenzplankostenrechnung (GPK). Could GPK be the silver bullet so many managers are holding out for? If it is, then what does resource consumption accounting (RCA) provide? In an attempt so shed some light on these questions we review changing business and management landscapes, take a critical look at GPK, and then address how RCA differs.

In the beginning: GPK overview

GPK has enjoyed significant exposure over the last number of years in the US management accounting arena. Historically, there has been a lone paper or reference to German management accounting practice, however the last decade has seen the first real attempts at understanding the approach. ²

IMA sponsored research projects in Germany and of a German subsidiary in the US not only elevated the concept but also revealed a robust and sustainable approach to management accounting.

GPK was first established in German-speaking countries in the late 1940s in an economy dominated by manufacturing. The approach's foundational principles are more than fifty years old. The most important of these are:

- An entirely quantity-based approach to cost modeling
- A detailed cost center structure providing a differentiated view of resources
- Emphasizes planning and establishing annual standards

simulation (what if Product A is now produced in Plant Z) has altered the informational needs and corresponding requirements of the MA approach utilized to produce that information.

There are multiple triggers forcing the business environment from control to optimization to simulation. Taking a look at some key triggers that moved businesses away from control towards optimization and simulation provides several examples for a critique of GPK.

The *shrinking of product life cycles* and the rapid succession of technologies forced companies to look at optimization and profitability over the life of discrete marketable entities. Therefore, there is an increasing demand on management accounting to facilitate and effectively support product life cycle management.

The *differentiation of product and services* led to the addition of complementary custom services, which in turn increased indirect costs. Insight into the total cost-to-serve a customer and the profitability of specific customer segments has consequently become important optimization information.

Along with the increase in indirect costs in manufacturing, there has been a *large service sector growth* in developed economies. This calls for the need for business process information. Process reengineering and process improvements have become important optimization activities. Activity-based costing highlighted the value of this analytical view of what resources are doing. Moreover, service sector growth and the propensity to establish shared service centers drove the need to charge business units for the services they consume. Accurate service costing became a prerequisite as did the insight into the resources required for delivering a service. Moreover, services, whether internal or external, have peculiar infrastructure costs. By and large the machines for producing services are computers that exceed even the most automated manufacturing environments in up-time and availability. This level of asset utilization requires a fixed cost denominator approach different from what was acceptable in the 1940's and 50's.

While product complexity and levels of service increased, manufacturing was significantly automated. Higher automation in manufacturing has gone a long way towards reducing fluctuations in operating costs and with this the need for extensive ex post control. ⁵ A large portion of production cost is now 'cast in stone' during the *product design* phase, which adds the requirement to support front end processes like target costing and preliminary cost estimation. This requires greater flexibility to be able to include resources and/or products/subassemblies that a company does not currently have within its cost model.

Moreover, while production costs have become more cast in stone, the typical manufacturing entity's *supply chain* for raw material and even semi-finished goods is now global. Optimization information for the extended supply chain is required. These sourcing and cost tradeoffs decisions must consider shipping piece parts from multiple international locations and have become common place.

These examples demonstrate the shifts on the demand of MA information from production control during the inception of GPK to the current requirements for supporting enterprise optimization. Enterprise optimization demands more succinct information on inputs (target costing, preliminary cost estimations, supply chain trade-offs, etc), conversion (automation, business processes, service costing, etc.), and outputs (product life cycle management, cost-to-serve, etc.)

Critique of GPK

As enterprise optimization was honed over the last number of decades more specialized optimization methods resulted in increased demands for customized information. A management accounting approach has to adapt to support today's business, answer more penetrating questions, allow for flexibility in applying its concepts without compromising principles and enable overall optimization in an ever-changing landscape. When evaluating GPK within the current MA information requirements, a few cracks in the silver bullet become evident.

A strength of GPK lays within the production control information it provides. However, for many organizations the indirect cost areas have increased as a percentage of costs over time. In this regard, some criticism has been leveled at GPK for its treatment of indirect cost areas. Historically, these areas were not financially material and were addressed in typical GPK models in a cursory manner. To correct this, GPK principles could be applied to these indirect/support areas versus treating them in such a cursory manner. Also an expansion in scope is required to address the lack of supply chain optimization in GPK. Global and extended supply chains are common today but were rare when GPK first saw the light. Supply chain optimization and related sourcing decisions require insight into various aspects of the overall supply chain and in particular optimization that takes into account batching from the initial raw material acquisition through to final delivery to the customer in industries where this is prevalent.

The problem for GPK however goes beyond mere application of scope. Its preference for direct resource output assignment faces both practical and cost-benefit challenges. Its emphasis on the correct direct assignment of outputs to the exclusion of the analytical/process view breaks down in white-collar areas where people and machine times can only be accurately recorded at significant cost.⁶ The process view, popularized by activity-based costing (ABC), provides an elegant solution in this regard by focusing on the processes the resources perform. GPK does not provide a process view of costs.⁷

In addition to a process/activity as a cost objective, we would add to the improvements required in GPK two more points. The first relates to the treatment of fixed costs. GPK would typically calculate standards based on planned output or practical capacity for the fiscal period. This leads to the spreading of fixed costs—similar to full absorption—and related pitfalls as well as unnecessary complexity in variance analysis. From a purist perspective GPK would pre-assign actual fixed costs based on planned volume and planned product mix at the beginning of the fiscal period and then function as a direct costing system for the rest of the year. Shorter product life cycles have put pay to this pre-assignment of fixed costs; consider the high tech industry where as much as eighty percent of products that will be sold at the end of the fiscal period do not yet exist at the time budgeting/planning and the pre-assignment of fixed costs occur. GPK users that still follow this path in practice are few and far between.

The second point concerns the lack of throughput margins in GPK. GPK is difficult to fault on the multiple margins that it traditionally provides. This might explain why TOC's "totally variable" cost concept was greeted with much less fanfare in Germany than in the US, where traditional standard costing information is clearly deficient when it comes to causality and accuracy. Although TOC has not enjoyed the success in Germany that it did in the US throughput information is clearly high up on the totem pole when it comes to optimization related to short-term decisions involving constrained resources. In GPK's multiple margins the first is typically a contribution margin that takes into account direct material and other product related direct costs that result in cash outflows (e.g., external services). GPK does not provide a margin that reflects all incremental costs for throughput within the relevant range, i.e., that also includes all incremental cash flows in secondary/support areas.

These shortfalls naturally effect GPK's ability as an effective decision support tool in today's demanding optimization environment.

How is RCA different?

RCA's biggest differentiator that sets it apart from other management accounting approaches that have their roots in the US is that it is a principle-based approach to MA.⁸ Other US approaches are method centric, i.e., they each promulgate a particular method to parsing the general ledger (G/L). RCA is not prescriptive as to the obligatory use of certain methods, only of the principles that underlie good decision support information (e.g., causality as the basis for cost association with an output.) This means that RCA does not force every single dollar through a resource pool (GPK), an activity (ABC), or a value stream (TOC), i.e., a method centric approach. Instead RCA approaches cost modeling from the manager's enterprise optimization needs. The clearest example of this is in RCA's conditional application of the process/activity view (see below). Another example is the flexibility RCA allows in defining traditional GPK resource pools. For example, in lean environments where a single resource pool can be defined for an entire value stream if that meets optimization needs. Lean thinking and its emphasis on a systems view is changing the way manufacturers—and increasingly service entities—look at their value chain and the information they need to manage it. Lean in its ideal application elevates optimization to the mega-machine level (e.g., the plant) negating the need in many cases for the detailed individual resource insight GPK was founded on. This also means that the ex post control of functions—a traditional GPK strength—within the optimized value chain no longer adds value.

The discussion as to GPK's weaknesses also sets the scene for highlighting how RCA is different in specific aspects. In regards to the application of scope, GPK and RCA both utilize the principle of causality and quantitative modeling. RCA's application to indirect cost areas and inbound logistics of raw materials has more to do with the era of inception of each approach and the materiality of these indirect areas at that time. However, at the method and modeling levels in MA, RCA includes at least two features worth noting. First, RCA integrates a process/activity view of costs into GPK's quantitative modeling practices and subjects these cost objects to the same causal and cost behavior rigor. This addresses the issues with GPK discussed above with regard to indirect cost areas, the ability to support process improvement information needs and supply chain optimization. It should be noted that contrary to ABC the process/activity view is only used in RCA when beneficial.

Second is RCA's treatment of fixed costs and in particular its use of a supply-based (capacity) denominator for fixed costs that addresses the issues identified with fixed cost treatment in GPK.

It is on the decision support front however that RCA clearly distinguishes itself from other management accounting approaches. In this regard, two aspects of RCA are relevant in addressing GPK's weaknesses. The first is RCA's ability to provide throughput margins that include all avoidable cash outflows for a throughput decision whether product -related direct costs or secondary/support service costs.

The second relates to the assignments of common fixed costs. RCA incorporates a uniquely US concept to enhance the decision support information it provides namely, the principle of attributability.⁹ This principle governs the assignment of non-causal fixed costs (e.g., excess/idle capacity costs) to levels in RCA's multiple margin P&L where they are decision relevant. The principle of attributability and the resultant attributable cost solves the thorny issue in MA of treating fixed costs in a manner consistent with enterprise optimization objectives.

Conclusion

As concluded in Chapter Zero the basic concepts underlying GPK remain valid but there are clearly a number of areas of improvement that needs to be addressed.¹⁰ While it is accepted that GPK has not kept up with such structural changes in its application it is also acknowledged that its foundational principles are unassailable in their relevance to the changed environment. RCA expands upon the solid benefits of GPK and addresses many of the weaknesses. As such it is an excellent approach for MA informational needs.

There is potentially one other crack in the GPK silver bullet—complexity. Given that RCA utilizes many of the same principles this is directed towards, the issue of complexity is addressed in relation to both approaches. Much has been written in Germany on the complexity versus simplicity debate.¹¹ Simplicity proponents point to the fact that GPK is too complex and too rigid. A valid argument is detailed ex-post variance reports generated by GPK is only valuable if actually used for decision support by management. The complexity-simplicity debate rages on, on both sides of the Atlantic, and it is unclear what will transpire once the dust settles.¹²

It is unrealistic to think that a globally competitive business today is simpler in many respects than the run of the mill manufacturing concern of the late 1940's. Moreover, complexity is not a function of modeling per se but of the *intricacy of the entity* being modeled and, in the case of management accounting, the optimization needs of managers. Complexity in business is a reality and must be dealt with to understand what is ultimately required for enterprise optimization and simulations. The complexity-simplicity debate has more to do with the triggers causing the shift from optimization to simulation. When simulating, the parameter sets becomes wider (beyond MA informational needs) and the level of accuracy required to support a decision is often less than needed for control/optimization decisions. The fact that business needs now have to take into consideration simulation decisions does not negate the need for control or optimization. It does however focus the attention on the types of management accounting information needed, when, for what decisions, and the level of accuracy required. A wide topic well suited for its own article.

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US company results from Garg, Ashish; Ghosh, Debashis; Hudick, James; Nowacki, Chuen. "Roles and Practices in Management Accounting Today," *Strategic Finance*. (85): 1, July, 2003, pp. 30-35. German company information from Friedl, Gunther. 2006. "Lessons from German Cost Accounting," Presentation at the CAM-I Quarterly Meeting, Phoenix. December 12.

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The term 'ex post' refers to the traditional evaluation and variance analysis practice after the business activity has occurred.

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Kaplan, R. and Cooper, R. 1998. *Cost and Effect*. Harvard Business School Press: Boston, MA. p. 41. Also pointed to the lack of such analytical insight in the information GPK provides.

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German Prozesskostenrechnung (PKR)-process/activity costing-saw the light in the early to mid 1980's and attempted to address this shortfall in GPK. GPK's modeling principles were however not consistently applied e.g., it is common in PKR to consider all process costs as fixed.

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IMA 2004. "Introduction: Marginal Costing as a Management Accounting Tool," *Management Accounting Quarterly*, Winter 2004. Vol. 5 Number 2. IMA: Montvale, NJ. See <http://www.imanet.org/pdf/2227.pdf>. Chapter Zero was added to the preeminent GPK textbook in its 11th edition (i.e., 2002 edition) reflecting recent research into the adoption rate of GPK and assessing GPK's validity given developments over the last two decades in management accounting.

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Weber, J. 1996. "Selektives Rechnungswesen-Schlankes Controlling durch selektive Führungsinformation, krp" S.197; Weber, J. 2001. "Re-Design Kostenrechnung-Neue Einsichten durch empirische Forschung, krp," Sonderheft: Entwicklungsperspektiven des Controllings (Wolfgang Männel (Hrsg.); Weber, J. 2001. "Cost Accounting Systems Design and SAP-Learning from German History," *The Journal of Cost Management*. July/August 2001.

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