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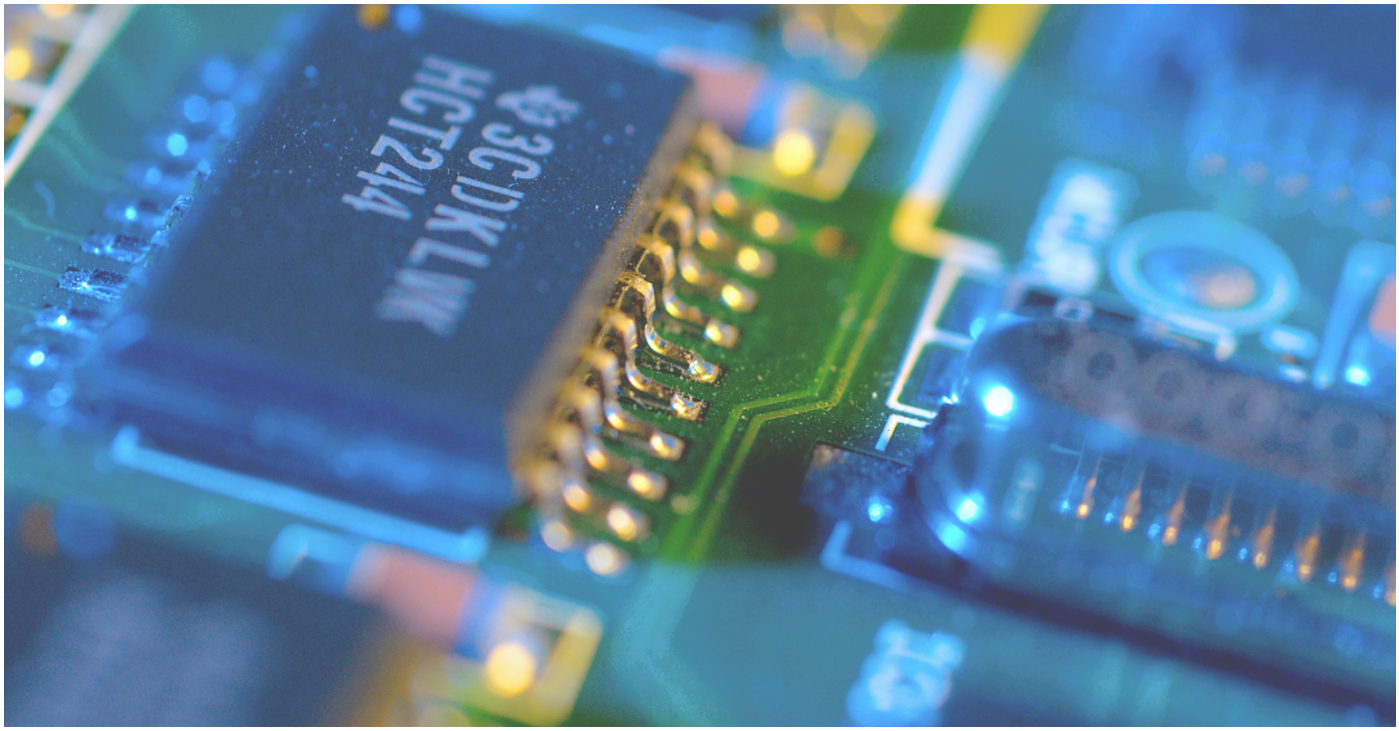

Performance measurement in SMEs

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"***There is nothing so useless as doing efficiently that which should not be done at all.***" - Peter Drucker (1909-2005)

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Content

Tables and figures

1 Introduction

Batenburg Industriële Elektronica (BIE) wants to gain insight into their performances. They want to develop a performance measurement system (PMS) by which they should be able to focus on all their essential performance dimensions (e.g. Bititci, Garengo, Ates & Nudurupati, 2015; Taylor & Taylor, 2014).

A performance measurement system contains a set of critical and balanced performance indicators (Kaplan & Norton, 1996; Taticchi, Tonelli & Cagnazzo, 2010) that provide insight into the level of organisational success in achieving their mission, vision and strategy (Garengo, Biazzo & Bititci, 2005; Kaplan & Norton, 1992, 1996; Neely, Mills, Platts & Richards, 2002; Taticchi, Balachandran & Tonelli, 2012). By deploying a performance measurement system strategic alignment can be achieved (e.g. Bititci et al., 2015; Franco-Santos, Lucianetti & Bourne, 2012; Kaplan & Norton, 1996; Pun & White, 2005). Strategic alignment is linking operational activities to organizational strategy and objectives (Johnston & Pongatichat, 2008; Kaplan & Norton, 1996; Pun & White, 2005). With a PMS the mission, vision and strategy of an organization can be translated into critical success factors (CSFs), (critical) performance measures, goals and targets (e.g. de Waal & Kourtit, 2013; Doeleman, Thomassen & van Winzum, 2013; Gomes, Yasin & Lisboa, 2011; Lohman, Fortuin & Wouters, 2004; Mettänen, 2005; Neely et al., 2002; Wouters & Sportel, 2005).

BIE has to take a number of steps before they will be able to develop a performance measurement system. Obstacles the organisation encounters concerning developing such a system are inherent to the characteristics of small and medium-sized enterprises (SMEs) (Cocca & Alberti, 2010; Garengo et al., 2005; Hudson, Smart & Bourne, 2001; Sousa & Aspinwall, 2010). One of the requirements is using the organizational strategy or conducting a stakeholder analysis as a basis (i.e. Kaplan & Norton, 1996; Neely et al., 2002; Yadav & Sagar, 2013). Other obstacles they might encounter when developing a PMS are: lacking human resources; lacking managerial capacity; lacking financial resources; reactive approach to managing; having tacit knowledge and little need to formalise processes; and having misconceptions about performance measurement (Garengo et al., 2005). Therefore, effective designing and implementing a PMS requires a thoroughly designed approach (Fernandes, Raja & Whalley, 2006; Hudson et al., 2001; Taticchi, Balachandran, Botarelli & Cagnazzo, 2008), in which preconditions are taken into consideration (Brem, Kreusel & Neusser, 2008; Garengo et al., 2005; Taylor & Taylor, 2014).

1.1 Research assignment

In this study the first steps into designing and implementing a PMS are taken. This has been fulfilled by means of identifying preconditions and requirements of a PMS as well as identifying the CSFs of BIE. The mission, vision, and strategy of BIE is developed and adjusted by the management team in agreement with the Batenburg Holding. The CSFs (Bullen & Rockart, 1981; Caralli, Stevens, Willke & Wilson, 2004; Rockart, 1978) of the organization have not been distinguished. Therefore, I am focussing on identifying the CSFs of the organization. This study has to support the development of a PMS and result in an advice on further formalisation of Batenburg Industriële Elektronica.

1.2 Research questions

Following the aforementioned objective the research question is: ‘What are the critical success factors of Batenburg Industriële Elektronica and how can they be collected in order to support the development of a performance measurement system?’

1.3 Research objective

Upon completion the critical success factors of the organization are delivered. Furthermore, an advice will be constructed concerning the development of a PMS by means of providing guidance for the design and implementation process, as well as preconditions and organizational requirements for developing a PMS.

2 Literature

2.1 Definition of a performance measurement system

Throughout this study the following definition of a PMS is used:

> "*A PMS is a system that provides a concise overview of performance through sets of (financial and/or non-financial) metrics that guide and support the decision-making processes of an organisation. This is done by gathering, processing and analysing information about its performance, and communicating it in the form of a succinct overview to enable the review and improvement of strategy deployment and alignment of key business processes*" (Taylor & Taylor, 2014, p. 848).

2.2 Characteristics of performance measurement systems

A PMS can be defined based upon the features, roles, and processes it contains (Franco-Santos et al., 2007). Fundamentally a PMS consists out of two features, namely: performance indicators and the supporting infrastructure. Performance indicators are multidimensional and comprise of financial and non-financial perspectives (e.g. Franco-Santos et al., 2007; Garengo et al., 2005; Kaplan & Norton, 1996). The supporting infrastructure consist of the developed procedures for transforming raw data into useful information and the personnel involvement executing the process (Franco-Santos et al., 2007).

2.2.1.1 Performance indicators

A performance-indicator "can be defined as a metric used to quantify the efficiency and/or effectiveness of an action" (Neely, Gregory & Platts, 2005, p. 1229). Developing a valid, useful and understandable indicator can be done by employing the 'performance measurement record sheet' (Neely et al., 2002; Neely, Richards, Mills, Platts & Bourne, 1997).

As a whole, the set of performance indicators need to be balanced and give a comprehensive representation of the organization. This can be accomplished by successively answering the following question "Are the objectives that have been identified balanced?; Do they relate tot the internal and external dimensions of performance?; Do they cover both the financial and non-financial dimensions?" Do they challenges for both the short and long term?" (Neely et al., 2002, p. 59)

2.2.1.2 Supporting infrastructure

The supporting infrastructure (Franco-Santos et al., 2007) consists out of procedures for data acquisition, data collection, data sorting, data interpretation, and data presentation (Kennerley & Neely, 2003). The infrastructure must to efficient and effective (Kennerley & Neely, 2003).

2.2.2 Roles of performance measurement systems

Appliance of a PMS can be summed up according to five categories: performance measurement; strategic management; communication; influencing behaviour; and learning & improving (Franco-Santos et al., 2007).

2.2.3 Processes of performance measurement systems

A PMS involves five quintessential processes, namely: selecting and designing measures; collecting and manipulating data; managing information; performance evaluation and rewarding; system review (Franco-Santos et al., 2007).

2.3 Performance measurement models

Development of performance measurement systems can be traced back to dissatisfaction of accounting systems during the late '80. These systems weren't capable of presenting a comprehensive view of organizational performances (Nudurupati, Bititci, Kumar & Chan, 2011). This criticism during the '90 has led to the development of models and techniques by which a PMS can be constructed.

PMS-models that gained popularity during the nineties (Taticchi et al., 2008; Yadav & Sagar, 2013) are, among others: the Balanced Scorecard (BSC); Strategic Measurement and Reporting Technique (SMART); The Performance Measurement Matrix; The Performance Prism; The EFQM Business Excellence Model (Nudurupati et al., 2011). By applying a model one can develop an effective PMS (Taticchi et al., 2012). These models seek balance between financial and non-financial performance

indicators, short and long term focus, leading and lagging indicators (Kaplan & Norton, 1992; Taticchi et al., 2010), and lead to strategic alignment (e.g. de Leeuw & van den Berg, 2011; Melnyk, Bititci, Platts, Tobias & Andersen, 2014; Pun & White, 2005). “All these models and frameworks were concerned with what to measure and how to structure the PMS, i.e. they try to answer the question ‘‘how to design the PMS?”.” (Nudurupati et al., 2011, p. 281).

A performance measurement system should (Neely et al., 2002): “contain balanced a mix of financial and non-financial indicators”(p. 11); stimulate employees to ‘do the right things’; help predict the future and make understandable what is occurring in the organization; contain a review process by which performance measures can be adapted and remain its relevance.

2.3.1 Balanced Scorecard

The model that most likely gained most attention from both academics and businesses (Biazzo & Garengo, 2012c; Hudson et al., 2001; Taticchi et al., 2010) is the Balanced Scorecard (Kaplan & Norton, 1992) (figure 1). This model is composed out of four perspectives that determine short and long term objectives, contains financial and non-financial perspectives, and includes leading and lagging indicators (Kaplan & Norton, 1996). The Balanced Scorecard links mission, vision en strategy to operational activities (Kaplan & Norton, 1996). The goal of the Balanced Scorecard is to support an organization in strategy implementing (van Veen-Dirks & Wijn, 2004).

Central to each of the four perspectives is a guiding question that can aid the development of the model (Biazzo & Garengo, 2012a). The guiding questions can be found in the figure 1.

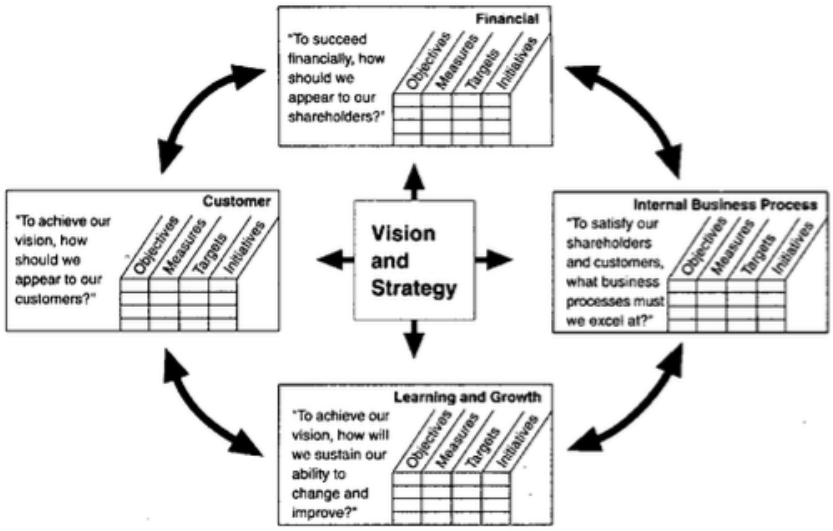

Figure 1. The Balanced Scorecard (Kaplan & Norton, 1996)

2.4 Developing performance measurement systems

The development of a PMS can be conceptually (Lohman et al., 2004) divided into three stages (Bourne, Mills, Wilcox, Neely & Platts, 2000): 1. Designing the system and indicators; 2. Implementing the system and procedures for data collection, 3. Using and updating the PMS.

During the design stage key objectives are identified and performance measurement are designed (Bourne et al., 2000; Lohman et al., 2004; Wouters & Sportel, 2005). This can be achieved by employing a PMS-Model (Taticchi et al., 2012) such as the Balanced Scorecard (Kaplan & Norton, 1996). In the implementation stage systems and procedures are put into action (cf. Nudurupati & Bititci, 2005; Nudurupati et al., 2011) in order to ensure execution of measurement (Lohman et al., 2004). During the use stage results are judged based on efficiency and effectiveness of activities. In addition, the success of strategy implementation is examined (Lohman et al., 2004). In order to remain relevant, the system have to be updated when the external or internal environment (Kennerley & Neely, 2003) changes (Wouters & Sportel, 2005).

2.4.1 Designing & implementing performance measurement systems

During the design stage 'how to design the PMS?' (Nudurupati et al., 2011) is dealt with. As aforementioned, a PMS must be developed by utilizing a model or framework (Taticchi et al., 2012), such as: the Balanced Scorecard (BSC); Strategic Measurement and Reporting Technique (SMART); The Performance Measurement Matrix; The Performance Prism; The EFQM Business Excellence Model (Garengo et al., 2005). An effective design depends upon applying a PMS-model and strategy map, "choosing the measures and targets that would help the company to implement its intended strategy" (Franco-Santos & Bourne, 2005, p. 116), aligning organizational mission, vision and strategy, aligning additional management systems, and the "process of identifying, selecting and developing an appropriate information infrastructure" (Franco-Santos & Bourne, 2005, p. 117).

2.4.2 Design- & implementation methodologies

Designing and implementing a PMS-model like the Balanced Scorecard can been executed by appliance of a process methodology (Ahn, 2001; Bourne, Neely, Mills & Platts, 2003; Kaplan & Norton, 1996; Papalexandris, Ioannou, Prastacos & Eric Soderquist, 2005). Process methods ensure systematic development of a PMS and thereby its success during implementation (Franco-Santos & Bourne, 2005).

How a PMS is developed is dependent upon the objective of such a system (Simons, 1995; Wouters & Wilderom, 2008). A PMS is a way of formalisation (a way of standardizing behaviour via rules, procedures, formal training and related activities). The way it is developed determines how the system is perceived by managers and employees. A distinction between two types of formalisation has been acknowledged, namely: coercive and enabling formalisation (Adler & Borys in Wouters & Wilderom, 2008). Coercive formalisation is a method of imposed top-down formalisation, a PMS is used as a control mechanism and it forces employees to comply with the system (Wouters & Wilderom, 2008). On the other hand, enabling formalisation employs a bottom-up logic. Enabling formalisation serves end-users needs, stimulates 'dialogue with employees' (Gravesteijn, Evers, Wilderom & Molenveld, 2011), and can lead to more positive employee attitude towards the use of a PMS (Groen, 2012)

The coercive approach is regarded as a 'typical' developmental method (Lohman et al., 2004; Wouters & Sportel, 2005). It employs a structured top-down approach (Lohman et al., 2004) and is executed by the management of an organization (i.e. Ahn, 2001; Fernandes et al., 2006; Kaplan & Norton, 1996; Neely et al., 2002; Papalexandris et al., 2005). This method sees a PMS as a control mechanism for top management. A typical coercive method is portrayed below: the Balanced Scorecard methodology.

2.4.2.1 Balanced Scorecard methodology

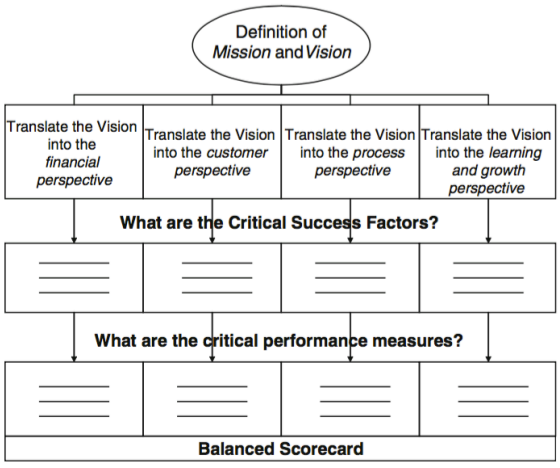

Figure 2. Top-down approach of Kaplan & Norton (Biazzo & Garengo, 2012a)

The process methodology accompanying the implementation of a BSC developed by Kaplan and Norton (1996) (figure 2) is based on two principles: a top-down approach and management involvement in group sessions (Biazzo & Garengo, 2012a). By employing a couple of group sessions

the BSC is developed. The process starts with identifying and formalising the organizational mission, vision and strategy. During the first group sessions consensus have to be reached about the mission and future vision the organization strives for, as well as determining accompanying strategic objectives for each BSC-perspective (Biazzo & Garengo, 2012a). Afterwards the objectives per perspective are translated into critical success factors and performance indicators. Lastly, two group sessions are held for discussing the results of each perspective and for the development of an implementation plan (Biazzo & Garengo, 2012a). Periodically, the BSC has to be reviewed as part of the strategic planning process (Kaplan & Norton, 1996).

2.4.2.2 Wisner & Fawcett's nine PMS process steps

An alternative 'typical' (Wouters & Sportel, 2005; Wouters & Wilderom, 2008) coercive methodology is developed by Wisner & Fawcett in Neely et al. (2005).

1.	Clearly define the firm's mission statement
2.	Identify the firm's strategic objectives using the mission statement as a guide (profitability, market share, quality, cost, flexibility, dependability, and innovation)
3.	Develop an understanding of each functional area's role in achieving the various strategic objectives
4.	For each functional area, develop global performance measures capable of defining the firm's overall competitive position to top-management
5.	Communicate strategic objectives and performance goals to lower levels in the organization. Establish more specific performance criteria at each level.
6.	Assure consistency with strategic objectives among the performance criteria used at each level
7.	Assure the compatibility of performance measures used in all functional areas
8.	Use the performance measurement system
9.	Periodically re-evaluate the appropriateness of the established performance measurement system in view of the current competitive environment

Table 1. Develop steps of a performance measurement system (Wisner & Fawcett in Neely et al., 2005)

At the start the mission and strategic objectives of an organization are defined. Thereafter the role of every functional area in achieving the objectives is clarified (Wouters & Sportel, 2005). By analysing the role of every functional area, performance indicators can be developed. Of utmost importance during the developmental process is accomplishing strategic alignment between strategic objectives and performance perspectives (Wouters & Sportel, 2005).

2.4.2.3 Enabling developmental method

Groen, van de Belt and Wilderom (2012) outline a process approach for developing an enabling performance measurement system. They took as basis the Balanced scorecard and the strategy map. Together with employees of an organizational department they developed a PMS for said organization. A bottom-up approach (Groen, 2012) was utilised. As part of developing and explicating strategy the strategy map was applied (Groen et al., 2012). This was a necessary step since the organization had no formalized strategy. Therefore, employees were not knowledgeable about the organizational strategy or direction (Groen et al., 2012). An external facilitator guided the project and handed it over to an employee who acted as a project champion from thereon (Groen et al., 2012).

This approach consists broadly of the following steps (Groen et al., 2012):

1. Identify strategy and focus of the organization;
2. Identify the current work processes;
3. Identify currently applied control mechanisms;
4. Identify the organization's characteristics;
5. Sort out which areas need improvement;
6. Identify operational activities' priorities;
7. Develop aspects of the strategy map;
8. Develop performance indicators;
9. Share idea's and futuristic actions;
10. Experiment with the developed method.

2.5 Performance measurement systems for SMEs

Differences between large enterprises and small and medium-sized enterprises (SMEs) are evident (Baba, Deros, Yusof, Azhari & Salleh, 2006; Brem et al., 2008) in general organizational

characteristics and in relation to performance measurement systems (e.g. Garengo et al., 2005; Taticchi et al., 2008). Utilisation of performance measurement systems can be problematic for SMEs since models and frameworks are, implicitly (Brem et al., 2008; Chalmeta, Palomero & Matilla, 2012), developed for large, mature manufacturing and service organisations (i.e. Bititci, Garengo, Dörfler & Nudurupati, 2012; Groen et al., 2012; Mettänen, 2005; Pun & White, 2005; Yadav & Sagar, 2013). These models and frameworks don't take into account the characteristics of SMEs (Brem et al., 2008; Garengo et al., 2005; Taticchi et al., 2008; Taticchi et al., 2010). Implementing such a model or framework is hindered because a SME (Garengo et al., 2005): lacks human resources; has little managerial and financial capacity; adopts a reactive approach to strategic planning; has primarily "tacit knowledge and little attention given to the formalization of processes (…) [and] misconception of performance measurement" (Garengo et al., 2005, p. 30).

Little research has been conducted on performance measurement in SMEs (Brem et al., 2008; Garengo et al., 2005; Taticchi et al., 2008). Models that are explicitly developed for SMEs are not widely supported (Brem et al., 2008). Research that focuses on designing, implementing, and using (Bourne et al., 2000) a PMS for SMEs (Brem et al., 2008) mainly contain guidelines and methods that were developed by said authors and are predominantly based on single case studies (e.g. Biazzo & Garengo, 2012a; Chalmeta et al., 2012; Fernandes et al., 2006). These methods are context specific and whether they can be successfully applied to other SMEs is unclear. Therefore the organizational context and characteristics has to be taken into consideration.

Garengo et al. (2005) recommends that a PMS should be: simple and efficient implementable (Sousa & Aspinwall, 2010); employees involved in the developmental process must remain committed throughout the process (Hudson-Smith & Smith, 2007); strategy and operational activities have to be taken into consideration (Taticchi et al., 2008); existing IT-infrastructure must be utilised (Brem et al., 2008; Taylor & Taylor, 2014); a structured approach for a dynamic system must be used (Hudson et al., 2001; Taticchi et al., 2008). Next to, SMEs are in need of simple (Fernandes et al., 2006) indicators who provide useful and meaningful information (Bititci, Firat & Garengo, 2013). SMEs should focus on a limited number of indicators (Garengo et al., 2005) that encompass the entire organization (Bititci et al., 2013; Taticchi et al., 2008).

2.5.1 Designing and implementing a performance measurement system for SMEs

Developing a PMS follows the same conceptual phases for SMEs and large enterprises (Bourne et al., 2000). Though, the prescriptive design and implementation methods may not be suitable for SMEs per se (Garengo et al., 2005; Taylor & Taylor, 2014) due to the characteristics of SMEs. This is reflected the recommendations and requirements for a suitable SME PMS developmental process (Chalmeta et al., 2012; Cocca & Alberti, 2010; Hudson et al., 2001; Hudson-Smith & Smith, 2007).

The characteristics of the developmental process for SMEs have to comply with are extensive and context dependent (Brem et al., 2008; Sousa & Aspinwall, 2010; Taylor & Taylor, 2014). Requirements of a effective developmental process according to Hudson et al. (2001) consists out of: "need evaluation/existing PM audit; key user involvement; strategic objective identification; performance measure development; periodic maintenance structure; top management support; full employee support; clear and explicit objectives; set timescales" (p. 1102). Effectively managing the developmental process is dependent upon top management support; having clearly formulated objectives; full employee-participation; having a project timeframe (Hudson et al., 2001). Cocca and Alberti (2010) complements that the developmental process must aim at "periodically evaluation existing PMS; strategy development; (…) long and short-term planning; information sharing and communication; (…) facilitator; (…); linking performance to compensation process; procedures clearly defined; IT infrastructure support"; systematically developing goals and targets; role assignment and responsibilities sharing" (p. 194); and performance adjusting procedures.

Hudson et al. (2001) concludes that the developmental process must be resource effective, lead to short and long term benefits, be dynamical and flexible in order to adapt to strategic changes, as well as it must be iterative. The system should be easy to use; implementable in a short time period; robust, valid and easy to maintain (Sousa & Aspinwall, 2010).

2.5.2 Design and implementation methodologies for SMEs

Derived from the demands a PMS (Garengo et al., 2005) and the developmental process for SMEs (Chalmeta et al., 2012; Cocca & Alberti, 2010; Hudson et al., 2001; Hudson-Smith & Smith, 2007; Sousa & Aspinwall, 2010) must comply with, several process methodology were developed. These methods seek to be relevant for SMEs. Following the models and process methodologies specific developed for SMEs it can be concluded that most of them are an adoption of the Balanced Scorecard (Chalmeta et al., 2012; Taticchi et al., 2008): Balanced Scorecard in non-profit SMEs; The Balanced Scorecard for SMEs: A Circular Approach (Biazzo & Garengo, 2012a); Adaptation of Balanced Scorecard to SMEs; Application of Balanced Scorecard to Small Companies; Quality Models in an SME Context (cf. Chalmeta et al., 2012; Taticchi et al., 2008). Since no model meets the demands posed by academics (cf. Brem et al., 2008; Chalmeta et al., 2012; Taticchi et al., 2008), it is recommended (Chalmeta et al., 2012; Sousa & Aspinwall, 2010) to use the Balanced Scorecard as basis since: the BSC is easy to understand (Biazzo & Garengo, 2012c; Edberg, 1997; Sousa & Aspinwall, 2010); is recognizable (Sousa & Aspinwall, 2010) and stands synonymous for PMS (Wouters, 2009); is used widely and is perhaps the most applied model (Taticchi et al., 2010); is the most well-known PMS-model (Biazzo & Garengo, 2012c), and there is plenty of evidence of successful implementation in SMEs (Basuony, 2014; Biazzo & Garengo, 2012a; Fernandes et al., 2006; Groen et al., 2012).

This sub-chapter will continue with developmental methodologies for SMEs based on the Balanced Scorecard.

2.5.2.1 The circular Balanced Scorecard

Biazzo and Garengo (2012b) developed a method for SMEs who haven't formalized their strategy, and thus cannot apply a top-down methodology. Biazzo and Garengo (2012b) assume that a SME will develop their strategy both emergently as well as planned. Their methodology is based on the strategy map (Kaplan & Norton, 2004) and Balanced Scorecard (Kaplan & Norton, 1996). Suggested is to base the development of a PMS on executing a gap-analysis for the measures currently under control, to identify the desired future state and strategy of the organization (Biazzo & Garengo, 2012b; Garengo & Biazzo, 2012). The methodology is called the 'Circular Balanced Scorecard' and consists out of 4 stages, who altogether represent a cycle: 1. Identify existing performance indicators, 2. Develop implicit strategy map based on identified indicators, 3. Develop desired strategy map based on implicit strategy map; determine discrepancy between strategy and identified critical success factors; and determine comprehensiveness of performance measures in line with critical success factors, 4. Develop Balanced Scorecard based on the desired strategy map; develop key performance measures, targets, goals and initiatives. Their methodology is graphically portrayed below (figure 3).

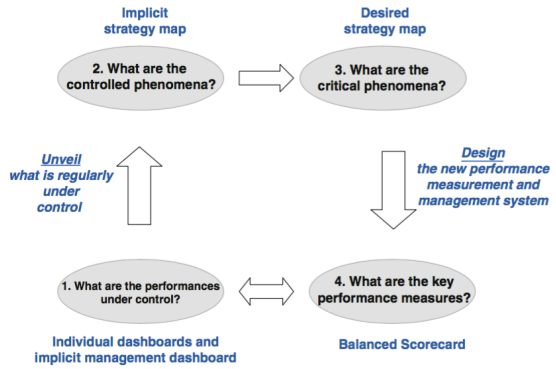

Figure 3. A circular approach to the implementation of the BSC (Biazzo & Garengo, 2012a)

2.5.2.2 The PMS-IRIS process methodology

The PMS-IRIS process methodology (Chalmeta et al., 2012) can be regarded as a 'typical' (Lohman et al., 2004; Wouters & Sportel, 2005; Wouters & Wilderom, 2008) process methodology and utilises a top-down approach. The fundaments of their method are the strategy map (Kaplan & Norton, 2004) and the Balanced Scorecard (Kaplan & Norton, 1996). The method is developed for SMEs and takes into consideration: decentralized decision making; limited resources; limited IT-infrastructure; limit knowledge about performance measurement and data-analysis; limited strategic alignment and

little organizational formalisation; poor communication; and low commitment to a PMS development project (Chalmeta et al., 2012).

See for the stages of the PMS-IRIS process methodology Chalmeta et al. (2012).

2.5.2.3 Enabling Balanced Scorecard

An alternative developmental method is defined by Groen et al. (2012). This method can be found in Enabling developmental method.

The circular Balanced Scorecard methodology (Biazzo & Garengo, 2012a) and the PMS-IRIS methodology (Chalmeta et al., 2012) uses a top-down logic. A project team, mainly consisting out of managers, is appointed to execute the project and develop the PMS. However, in the enabling methodology end-users execute the project, thus develop the PMS (Groen, 2012; Groen et al., 2012). It has been empirically found that the enabling approach leads to employee empowerment, employee commitment to performance improvement, organisational learning and higher department performances (Gravesteijn et al., 2011; Groen, 2012; Groen et al., 2015).

2.5.3 Preconditions for effective developmental process for SMEs

SMEs are recommended (Taticchi et al., 2012; Taticchi et al., 2008) to examine their 'readiness' (Brem et al., 2008) *a priori* designing, implementing and using the PMS (Bourne et al., 2000). Examining readiness is crucial due to inherent resource limitations of SMEs (Garengo et al., 2005; Hudson et al., 2001; Hudson-Smith & Smith, 2007). As a result, the development of a PMS must be effective (Garengo et al., 2005). Effective implementation of a PMS is dependent on: strategy implementation process; strategy formulation process; leadership; supporting IT-infrastructure; quality management culture; organizational learning orientation (Taylor & Taylor, 2014); existence of a cost accounting system; Enterprise Resource Planning (ERP) system; formal process structure; and execution of customer focused market research (Brem et al., 2008).

A SMEs has to undertake actions when it does not comply with preconditions, i.e. by means of gaining knowledge, developing expertise or developing procedures (Taylor & Taylor, 2014). The existence of preconditions is, among other things, dependent on the organizational maturity (Chalmeta et al., 2012; Sousa & Aspinwall, 2010; Taylor & Taylor, 2014).

2.5.4 Strategic alignment

A PMS is part of the management process (Kaplan & Norton, 2004). Where defining the mission, vision, core values, and strategy precedes the development of a PMS (de Waal & Kourtit, 2013; Doeleman et al., 2013; Kaplan & Norton, 2004). The PMS must be aligned with the organizational mission, vision, and strategy (e.g. Franco-Santos et al., 2007; Kaplan & Norton, 2004, 2008; McAdam, 2000; Taylor & Taylor, 2014) in order to link the system to organisational objectives (Garengo et al., 2005). By means of achieving strategic alignment managers, employees and, external stakeholders will be able to understand the direction of the organization (Doeleman et al., 2013). The cascading of strategic alignment is portrayed below in figure 4.

Figure 4. Strategic alignment (Bauer, 2004)

2.5.4.1 Mission

The mission is the *raison d'être* of the organisation. It is "a concise, internally focused statement of the reason for the organization's existence, the basic purpose towards which its activities are directed and the values that guide employees' activities" (Kaplan & Norton, 2004, p. 34).

2.5.4.2 Vision

The vision is the desired future state of the organization (Johnson, Scholes & Whittington, 2008). It is "a concise statement that defines the mid- to long-term (three- to ten-years) goals of the organization. The vision should be external and market-oriented and should express (…) how the organization wants to be perceived by the world" (Kaplan & Norton, 2004, pp. 34-35).

2.5.4.3 Strategy

Strategy is the direction and long-term organizational goal of an organization (Johnson et al., 2008). It operationalizes the organizational mission and vision. Strategy "is about selecting the set of activities in which an organization will excel to create a sustainable difference in the market place" (Kaplan & Norton, 2004, p. 35). The strategy must be adapted in need of the external environment and the organizational competences (Kaplan & Norton, 2004).

2.5.4.4 Goals

Organizational goals are targets by which the mission and strategy of an organization must be achieved (Caralli et al., 2004). Goals are said to be specific, measurable, acceptable, realistic, and timely (S.M.A.R.T.) defined (Caralli et al., 2004; de Waal & Kourtit, 2013). They should be quantitative in order to be able to measure goal achievement (Caralli et al., 2004).

2.5.4.5 Critical success factors

Critical success factors are those factors that determine the success of an organization (Bullen & Rockart, 1981; Caralli et al., 2004; Rockart, 1978). They must be monitored at all time and the link between the mission, vision, and strategy of an organization and the critical performance indicators (e.g. Biazzo & Garengo, 2012c; Kaplan & Norton, 1996, 2004; Mettänen, 2005).

2.5.4.6 (Key) performance indicators

A performance-indicator "can be defined as a metric used to quantify the efficiency and/or effectiveness of an action" (Neely et al., 2005, p. 1229). Key performance indicators are financial and non-financial metrics that can be applied at all organizational levels. They are used for measuring the organizational ability of achieving goals, strategies, and plans (Ferreira & Otley, 2009). Key performance indicators provide insight into those factors that determine organizational success (Parmenter, 2007).

2.5.4.7 Critical activities & initiatives

Linked to (key) performance indicators are tactical and operational targets. They must be S.M.A.R.T defined (de Waal & Kourtit, 2013; Shahin & Mahbod, 2007) and provide guidance for activities and actions an organization must execute in order to fulfil the targets (Kaplan & Norton, 1996). Targets must be challenging but feasible (Ferreira & Otley, 2009).

2.5.5 Critical success factors

In the sub chapter 'strategic alignment' the position of CSFs in the 'management continuum' (Kaplan & Norton, 2004) has been stated. In the assignment description the identification of CSFs is mentioned. Belonging to this identification is the sub question 6: 'What are critical success factors and how can they be identified?'

Critical success factors are those factor that define the organization's success. Rockart's (1978) definition is:

> "CSFs are the limited number of areas in which satisfactory results will ensure successful competitive performance for the individual, department or organization. CSFs are the few key areas where "things must go right" for the business to flourish and for the manager's goals to be attained" (Bullen & Rockart, 1981, p. 7).

According to Caralli et al. (2004) “CSFs are an explicit representation of the key performance areas of an organization” (p. 11). They are addition to organizational goals and targets by which an organization’s strategy can be achieved (Caralli et al., 2004). An alternative conception is that CSFs are derived from strategy and are applied for strategy implementation (Anthony & Govindarajan in van Veen-Dirks & Wijn, 2004). A similar stand is provided by Ferreira and Otley (2009) whom postulate CSFs as the goals for achieving organizational vision and mission. Therefore, identifying and monitoring CSFs is necessary in order to achieve strategic objectives (Ferreira & Otley, 2009).

Determining CSFs can be executed via several data collection methods (Amberg, Fischl & Wiener, 2005), among others: group interviewing, literature review, structured interviews, multi-variate analyse or Delphi study.

The CSF-method of Bullen and Rockart (1981) is based on semistructed interviewing and can be applied in order to 1. Establish manager’s information needs, 2. Supporting the strategic planning process, 3. Supporting the information system planning process (Bullen & Rockart, 1981; Rockart, 1978), 4. Evaluating the reliability of information systems, 5. Identifying business treats and opportunities, and 6. Measuring productivity (Caralli et al., 2004).

3 Method

For determining the information needs of managers and identification of CSFs, the CSF-method has been applied. This method is developed by Bullen and Rockart (1981). Caralli et al. (2004) has further developed the method by constructing guidelines for the method. Goal of the CSF-method is to structure the data collection and analysis technique for identifying CSFs (Bullen & Rockart, 1981; Caralli et al., 2004). This method is employed because it is a structured and detailed method (Caralli et al., 2004); it guides researcher by means of providing steps to take (Caralli et al., 2004); it is a systemic procedure for identifying managers’ information needs (Bullen & Rockart, 1981; Caralli et al., 2004); and it can make tacit knowledge explicit (Caralli et al., 2004).

Data collection has been executed by means of semi-structured interviews and a document review (Patton, 2002). Interview participants were managers and key personnel of BIE.

3.1 Data collection

Data collection has been executed by means of semi-structured interviews and a document review. During interviews one can gain profound knowledge about a subject (Kvale, 1996) and influence the interview direction, and therefore it is recommended by Caralli et al. (2004). During interviews managers have the chance to discuss their management challenges and can present their contribution in achieving the organization’s success (Caralli et al., 2004). Applied interview questions are derived from Bullen and Rockart (1981); Caralli et al. (2004). Before interviews were executed participant were informed about the method and what critical success factors are. During interviews notes were taken. After completing interview analysis the data was presented to and verified by participants.

Additionally a document analysis (Bowen, 2009; Saunders et al., 2009) has been performed. Documents are written texts, they are nonreactive and no researcher inference is possible (Bowen, 2009). Documents were analysed for the identification of manager’s goals, objectives, roles, responsibilities, functions, targets (Caralli et al., 2004). This data represent what managers though to be important or critical for an organization (Caralli et al., 2004). Reviewed document consisted, among others, of: organizational presentations; a quality plan; quality objective; and employee meeting presentations.

3.2 Data analysis

Data analysis consist out of data reduction, data presentation, concluding and data validation (Miles & Huberman, 1994). Data analysis starts when interviews are conducted (Kvale in Saunders et al., 2009) and document are collected. Data reduction and presentations is executed by means of content analysis in the following procedures: developing activity statements, placing activity statements in affinity groups, developing supporting themes, developing and analysing critical

success factors (Caralli et al., 2004). Reporting and validating data (Miles & Huberman, 1994) happens by recalling data.

3.2.1 Developing activity statements

Activity statements should reflect "something that the organization is already doing, paying attention to, or monitoring (as established in goals, objectives, or operational activities), or reflect something that the organization should be doing (such as barriers and challenges to effectiveness)" (Caralli et al., 2004, p. 65). With developing activity statements initial data extraction has been performed.

3.2.2 Developing affinity groups and supporting theme's

After developing activity statements they were clustered (Miles, Huberman & Saldaña, 2013) based upon affinity (Caralli et al., 2004). "The affinity grouping of activity statements is a way to summarize the core thoughts and concepts from managers regarding those activities they most need to pay attention to" (Caralli et al., 2004, p. 74). By means of affinity grouping supporting themes were constructed. Supporting themes represent groups of activity statements that explain the intention and essence of said statements based upon common ideas or conceptions (Caralli et al., 2004).

3.2.3 Developing critical success factors

From supporting themes CSFS can be deducted. "CSFs seem to have more clarity, usability, and impact when they can be reduced to a brief, concise statement that captures the CSF's essential intent and description" (Caralli et al., 2004, p. 79). Critical success factors are "the limited number of areas in which satisfactory results will ensure successful competitive performance for the individual, department or organization. CSFs are the few key areas where "things must go right" (Bullen & Rockart, 1981, p. 7).

3.3 Validity & generalizability

Validity of qualitative research can be achieved by employ multiple strategies (Creswell, 2009). I have employed the following strategies:

Strategy (Creswell, 2009)	Appliance
Data triangulation	Not applied.
Member checking	Participants gained insight into data analysis and had to validate said data.
Rich descriptions	Not applied.
Explain researcher bias	I am inexperienced and therefore documented every step I took.
Present negated results	Not applied
Spend time in the field	I have been present in the organization for more than half a year.
Peer debriefing	Peer debriefing has been executed with internal and external supervisors.
Project review	External supervisors have reviewed this study.

Table 2. Appliance of validation strategies (Creswell, 2009) in this study

Precision and accuracy is strived for in qualitative research. Instead of generalizability (Creswell, 2009). Merits of qualitative research is the elaborative descriptions of the research context.

3.4 Ethics

It was necessary to explicate research ethics since I have dealt with managers' confidential information. In order to protect research participants and reduce response bias several strategies posed by Creswell (2009) are applied.

3.5 Data analysis process

Confidential

4 Results

In this chapter the results of the interviews and document analysis are presented.

The presented results are the identified CSFs of BIE. "CSFs are the limited number of areas in which satisfactory results will ensure successful competitive performance for the (…) organization. CSFs are the few key areas where "things must go right" for the business to flourish" (Bullen & Rockart, 1981, p. 7). The identified CSFs are developed at the organizational level (Caralli et al., 2004). They

are derived from the mission, vision and strategy as well as what managers see as essential for success of BIE.

4.1 Overview of critical success factors

The following table (table 11) present an overview of the critical success factors of BIE and their core ideas. This overview provides insight into factors the organization must pay attention to in order to be successful according to their managers.

The remainder of chapter 4 is confidential.

5 Advice

My advice for Batenburg Industriële Elektronica is based on theoretical and empirical findings presented in previous chapters.

In the research objective the goal is stated: to determine the critical success factors of the organization. Furthermore, an advice will be constructed concerning the development of a PMS by means of providing guidance for the design and implementation process, as well as preconditions and organizational requirements for developing a PMS. Therefore, in this chapter attention is addressed to providing an advice.

First, the preconditions found in the literature are presented and applied to BIE. By analysing the organizational conformance to these preconditions a detailed advice can be drawn up and actions the organization has to undertake can be called upon.

Secondly, the design and developmental process and their requirements is discussed. This is based upon literature and my own findings. By taking into consideration the characteristics of BIE a suitable model and process methodology can be selected.

Thirdly, I describe the desired execution of the suitable PMS-model and developmental method for BIE.

Lastly, I present recommendations aimed at organisational development that are detached from PMS development. This part of my advice is founded in observations made during conducting this study.

The remainder of chapter 5 is confidential.

6 Limitations

Confidential

6.1 Future research

Confidential

7 References

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