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THE IMPLEMENTATION OF THE BALANCED CRITICAL FACTOR INDEX METHODOLOGY IN THE STRATEGY REDEVELOPMENT PROCESS

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ABSTRACT

Strategic planning and development is a critical yet often overlooked issue in company's operations. The planning of development as well as addressing the distribution of available resources should be done systematically rather than instinctively however, many companies still do not have any reliable method that would facilitate the decision making processes at their disposal.

This article aims at presenting the innovative analytical method- Balanced Critical Factor Index (BCFI) for addressing the need for change in company's operational strategy according to changes in available technology and knowledge. By examining a wide array of indexes, the presented method is expected to suggest the directions of development. The presented method also addresses the challenges of the complex process of decision-making. Moreover, the empirical evidence gathered in the studied case company serves as a source of important feedback regarding the further improvement of the BCFI method.

KEYWORDS

Balanced Critical Factor Index, decision-making, strategy.

Introduction

The careful crafting, development, implementation and ultimately redevelopment of a strategy are crucial elements of company's survival. Although such statement might seem trivial, many companies begin the process of strategy redevelopment only after they find themselves outstripped by competitors, facing no opportunities to grow. Moreover, according to [1] nearly 70 per cent of strategic plans and strategies are never successfully implemented. Companies might perceive the process of examining the existing strategy unnecessary and mundane, failing to see the connection between its elements and day-to-day operations. Nevertheless, nowadays turbulent environment and rapid information flow imposes the requirement of flexibility and high responsiveness. In

order to be able to accomplish the aforementioned, companies should be aware of their critical attributes, technologies as well as the resources that can be assigned to their development. According to [2] strategy is an ongoing process and a certain way of thinking of the whole business based on identification of strengths and weaknesses and the evaluation of opportunities. Therefore, strategy should be seen as an evolution rather than ad hoc activity.

According to [3] strategic decision making is a highly complex process that involves many different variables. The author outlines several characteristics that determine whether a decision is strategic or not. The criteria are as follows:

- Decisions regarding organization's relationships to its environment;
- The whole organization as a unit of analysis;

- Decisions encompassing all the major functions performed by the organization;
- Decisions providing constrained guidance for all of the administrative and operational activities of the organization;
- Critical importance for the long-term success of the organization.

The concept of strategic gap is also mentioned by [3]. The gap is bound with the fact that strategic decisions affect the organization's relationship with external environment. The concept illustrates the discrepancies between organization's current situation and external environment. In other words, it is the difference between where the organization is and where it wants to be. According to [3] the strategic gap can be determined by comparing organization's capabilities with the opportunities and threats of the external environment. The author also emphasizes that the situation where there is no strategic gap is almost impossible. Therefore, the organizations should focus on minimizing the strategic gap by exploiting the opportunities while utilizing the internal capabilities as effectively as possible.

The decision-making process and its importance should be perceived through the wide array of its functions. The following were outlined by [3]:

- Determining strategic objectives;
- Exploring, comparing and evaluating alternatives;
- The final act of choosing from the variety of alternatives;
- The implementation of a chosen alternative;
- Controlling and monitoring the results of the decision made.

The functions of the decision-making highlight the complexity of the process. Moreover, in the context of limited time and information available combined with ever changing external business conditions, the importance of making the right decisions in the right time.

Turbulent environment requires quick decision-making processes and therefore this paper suggests the implementation of the Balanced Critical Factor (BCFI) analysis developed by [4]. The paper addresses the question whether the BCFI methodology fulfills the requirement imposed by the dynamic nature of strategy- the frequent monitoring of current situation as well as the awareness of those attributes that are crucial to organization's development. Moreover, by conducting the market-based validation (weak market test) developed by [5] the method is tested in terms of the suggested directions of development and therefore the formulas used for their calculation. The paper aims to contribute to the sci-

entific knowledge within the area of methodologies supporting the strategic decision-making process.

Balanced Critical Factor Index (BCFI) analysis

BCFI analysis was developed by Professor Josu Takala as an improvement to the previously proposed Critical Factor Index analysis. According to [4] both methods can be perceived as measurement tools that are intended to indicate which of the analyzed attributes are critical and which are not and therefore the model can be concerned a useful tool for strategic decision-making. The BCFI analysis has been successfully implemented in e.g. automotive industry [6, 7] or fine gold jewelry export [8].

The stimuli for developing a framework for facilitating the decision-making process and strategic development developed during the earlier empirical research in various companies. Identified was the need for a tool that would fulfill the following criteria:

- Understandable and relatively easy to use in practice;
- Providing valuable insight into company's situation in terms of a various dimensions;
- Providing directions regarding the strategic development in the future;
- Based on quantitative rather than qualitative data and quantified assessment.

The development of the BCFI was initiated in response to the aforementioned requirements. The method will be assessed in terms of being capable of addressing the requirements further in this paper.

The BCFI analysis utilizes the survey structure which, according to [4], is an efficient approach to reaching the desired response. The main challenge of the questionnaire creation is the selection of the attributes that would best represent company's operations.

Based on the simple statistical measures and more complex calculations developed by [6] and [4] the BCFI analysis allows for the identification of critical attributes which, in turn, supports managers in the decision-making process.

The research presented in this paper utilized two types of questionnaires in order to gain a more complex understanding of company's operations. The first Balanced Scorecard Questionnaire (BSC) refers to the attributes such as:

- External structure;
- Internal processes;
- Learning and growth;
- Trust;
- Business performance.

The second type of questionnaire- Operational Performance (OP) refers to the operational attributes such as:

- Knowledge and technology management;
- Processes and work flows;
- Organizational systems;
- Information systems.

Respondents were asked to evaluate the present situation within their organizations as well as to refer to their future expectations regarding the same attributes. Respondents were also asked to evaluate the same set of attributes in comparison with competitors. The scale for evaluation stretches from 1 (worst) to 10 (best) and respondents were given certain freedom in interpreting the meaning of values they were assigning to the attributes. Questionnaires also refer to the classification of the attributes in terms of their importance for the development of a company. A division into three groups was implemented and the respondents were asked to divide 100 per cent into the following:

- Basic;
- Core;
- Spearhead.

Attributes classified as spearheads are those that determine the future development of an organization while basic and core capabilities are those typically well-developed that drive the current operations.

The final value of BCFI analysis was calculated by based on the Eq. (1) developed by [6].

$$\frac{SD_{\text{expc I}} * SD_{\text{expr I}} * PI}{II * GI * DDI}, \quad (1)$$

where $SD_{\text{expc I}}$ – standard deviation expectation index, $SD_{\text{expr I}}$ – standard deviation experience index, PI – performance index, II – importance index, GI – gap index, DDI – direction of development index.

The development of the BCFI model has its roots in the need for addressing the complexity of decision making process as well as the multi-dimensional nature of strategies. Moreover, the Balanced Scorecard has been identified as one the most inspiring concepts in the process of BCFI development.

Balanced Scorecard

According to [7] the Balanced Scorecard framework was created based on a need for a multidimensional performance measurement system. The framework provides a holistic perspective on performance measurement that encompasses the following four perspectives:

- Customer;
- Financial;

- Internal business process;
- Learning and growth.

The perspectives are viewed as a set of interlinked relations and the company’s strategy should underline the overall concept of the scorecard. According to [7] the significant benefit of the method is the possibility to simultaneously control key performance areas with the help of the key performance indicators characterized by cause and effect relationships. The author emphasizes that the Balanced Scorecard contributed to the way companies are being managed by promoting a holistic approach and simultaneous consideration of dissimilar perspectives. Furthermore, the author claims that the method facilitates the process of reaching consensus in terms of outlining the strategic objectives as well as communication of the chosen strategy. Wu et al. [7] also mention the concept of strategy maps which provide graphical presentation of the results achieved while implementing the Balanced Scorecard. Strategy map represents the process of value creation by connecting the different strategic objectives and assigning them into the aforementioned BSC perspectives. Moreover, strategy maps aim at presenting a macro view of an organization’s strategy.

According to [7] the main strengths of the BSC tools comprise of the following:

- Simplicity;
- Interdisciplinary;
- Potential to enhance understanding of the business as well as the cause-effect relationships;
- Aligning intangible assets with company’s strategy;
- Supporting corporate restructuring, goal setting, compensation, resource allocation and performance improvement.

According to [7] the major drawbacks of the method are as follows:

The major drawbacks of the BSC framework as mentioned by [7] refer to the weaknesses in design and the implementation failures. Other identified drawbacks concern the insufficient explanation of causality as well as unclear relationships between measures. The framework is also being criticized for its failure to address system dynamics and inability to refer to the time lapse between cause and effect. Another important limitation refers to the small number of indicators. The aim of maintaining the simplicity of the framework should not be compromised however, the key to success is the focus on measuring the “right things”.

Despite aforementioned drawbacks the BSC framework can still be described as a beneficial method based on correct and rational assumptions.

The development of the BCFI method aims at adopting the similar logic and creating a tool that would provide an all-encompassing view of organization's situation as well as direct the future development.

The case company

The company chosen for this study develops, manufactures, markets and services low voltage AC drives in the power range of 0.2–5,000 kW, from the simplest to the most demanding applications. The case company's headquarters is located in Vaasa, Finland and it has sales offices and R&D departments in 27 countries in three different continents. The organization aims at building its competitive advantage upon global presence, multiple sales channels, exceptional know-how and innovativeness. Since winning the leadership within the AC drives business requires providing customers with innovative solutions, the company focuses in particular on the research and development as well as shortening the distance to the customer by locating its units worldwide.

The company aims to be a leader supplier of AC (alternating current) drives therefore the strategic choices comprise of product leadership, total focus on AC drives, multi-channel sales network and global presence. The overall ambitious goal of being a leading AC drives imposes investments in research and development as well as maintaining a well-developed customer interface.

The company is constantly facing the challenges that stem from operating in a turbulent environment as well as the growing competition. Moreover, maintaining and coordinating operations worldwide imposes additional challenges in company's operations. Therefore, the process of strategy redevelopment was initiated.

The respondents chosen for the study represent the top management level. For the convenience of analysis they were divided into two groups out of which one represented of "strategy developers" (executive officers, vice presidents) and the "strategy implementers" (directors responsible for the main operations- logistics, global sourcing, business controlling, production testing). The main reason for such division was to examine whether the outlined groups differ in their perception of current situation as well as the expectations regarding the future.

Methodology and research background

Case study approach was implemented in order to address the aforementioned research aims. Single

case approach was chosen in order to address the depth rather than the breadth. Nithisathian et al. [8] suggest that single cases are generally recommended for gaining an in-depth and detailed understanding. The study presented in this paper comprises of data collection through a detailed survey. The emphasis was put on gathering quantitative evidence as well as providing description both of the situation in a given point of time and the expected development in the future.

The research presented in this report was based on the survey conducted in the company. The representatives of different management levels were selected for the research and all together 14 responses were gathered. The responses were divided into two following groups:

- group 1 (employees responsible for strategy crafting; 5 answers in total),
- group 2 (employees responsible for strategy execution; 6 answers in total).

Weak market test

The weak market test was conducted in order to validate the results of the empirical research as well as to determine whether the model would require any corrections. The results of the weak market test revealed certain discrepancies between the suggested directions of development and the perception of the company's president. Therefore, the method should be given additional attention especially in terms of calculating the formulas and the meaning of statistical measures.

The weak market test was conducted with the president of the company. The interviewee was asked to comment on the proposed directions of development. As it can be observed from the tabular summaries there is a significant resistance towards the proposed increase of attributes. Such results suggest that there might be some weaknesses in the method in terms of the construct of questionnaire or the formulas.

Presentation and interpretation of the results

The empirical data gathering was accomplished through a survey distributed among employees of the case company. The respondents were asked to express their opinions on the aforementioned attributes in terms of both present and their future development. To facilitate the process of data analysis the respondents were asked to express their opinions by assigning values from 1 (lowest, the worst) to 10 (highest,

the best) to their opinions.

The aim of the presented research was, apart from providing guidelines for the case company, testing the method for its potential flaws and weaknesses. In particular, the weak market test was expected to provide a valuable insight into rethinking the method.

Figures 1 and 2 presents the results of BCFI (OP and BSC questionnaires) calculations for group 1. Figures 3 and 4 present the same calculations for group 2. Graphs present the tendencies for the past and the future (experiences and expectations).

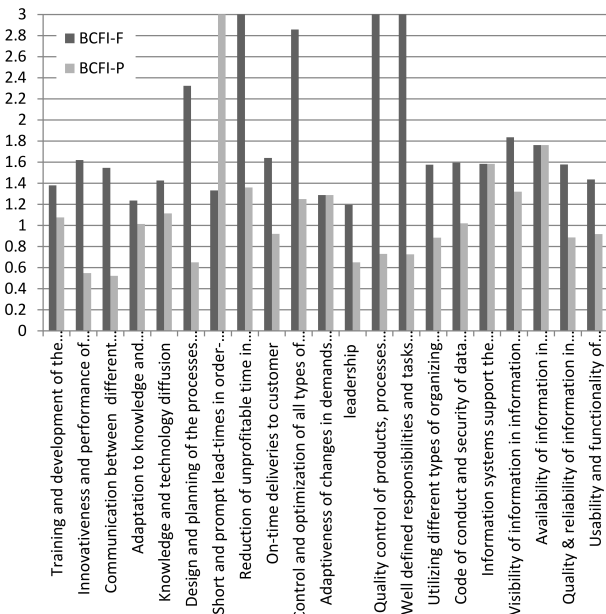


Fig. 1. BCFI calculations for group 1 (OP questionnaire).

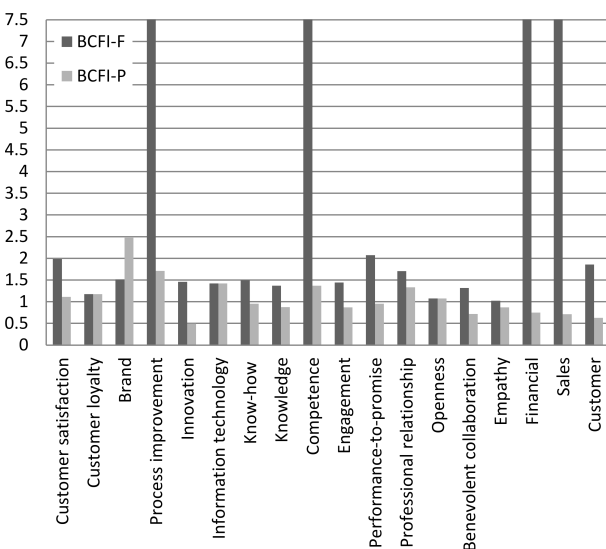


Fig. 2. BCFI calculations for group 1 (BSC questionnaire).

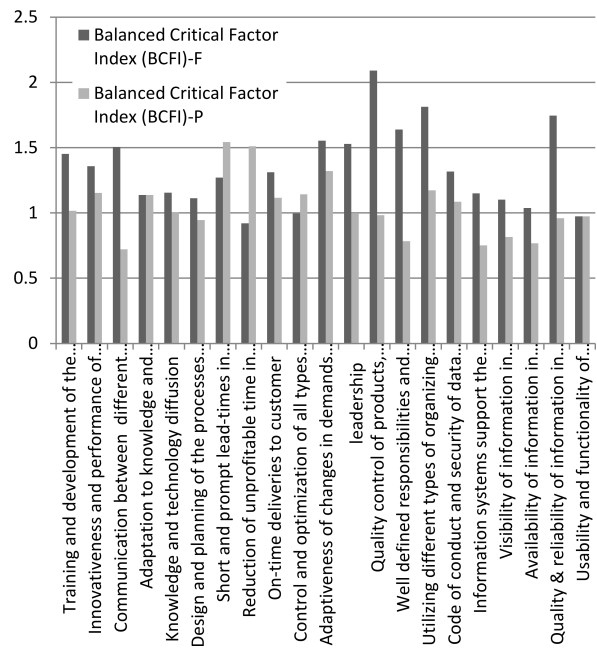


Fig. 3. BCFI calculations for group 2 (OP questionnaire).

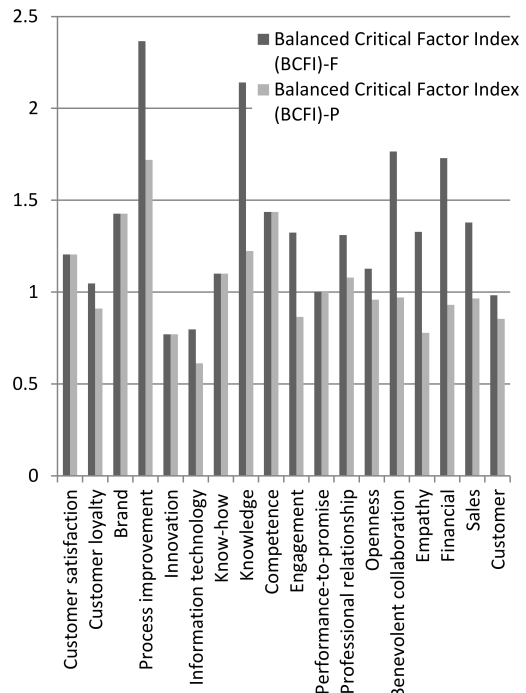


Fig. 4. BCFI calculations for group 2 (BSC questionnaire).

Based on the values of the calculated BCFIs the attributes were divided into critical (requiring immediate action), green ones (not requiring immediate action however, should be monitored), and yellow ones (unclear in their meaning). Based on the numerical values calculated for every attribute the division was made and suggestions for the future de-

velopment were outlined. Tables 1 and 2 present the suggestions contrasted with the results of the weak market test during which the company’s president commented on the proposed improvements (agree or disagree).

Table 1
Directions of development and the results of the weak market test (group 1)

attribute	suggestion	comments
Adaptation to knowledge and technology	increase	agree
Adaptiveness of changes in demands and order backlog	increase	agree
Empathy	increase	agree
Openness	increase	agree
Customer loyalty	increase	agree

Table 2
Directions of development and the results of the weak market test (group 2)

attribute	suggestion	comments
Control and optimization of all types of inventories	increase	agree
Usability and functionality of information systems	increase	agree
Innovation	increase	agree
Information technology	increase	agree
Communication between different departments and hierarchy levels	increase	disagree

Improvement suggestions were presented in terms of the attributes that require attention or, in other words, need to be increased. It is assumed that available resources are limited and therefore, more resources allocated into certain areas might imply that the development of other potentially important areas would have to be at least temporarily abandoned. Since such a tradeoff is challenging to address, this paper does not provide clear suggestions regarding the decrease of certain attributes. The further development of the model will be focused on sharpening the suggestions regarding the decrease. Currently, the results provided by the model are not reliable enough to serve as basis for outlining the managerial implications.

Conclusions

The empirical study was intended to examine a set of attributes divided into two separate questionnaires.

Based on simple statistics and more complicated calculations the attributes were examined in terms of their criticality. According to [4] the final value of the Balanced Critical Factor Index (BCFI) can serve as a basis for division into critical, not critical or unknown. The factors influencing the final value of BCFI are: standard deviation index (relating to past and future), performance index, importance index, gap index, and direction of development index. The indexes rely on the values of standard deviation and therefore the number of respondents is critical and should preferably be at least five. The number of respondents for this empirical research was 11 which support the validity of results. The process of coding the responses did not reveal any serious mistakes or misunderstanding therefore all the responses were considered usable.

The weak market test was conducted in order to validate the results of the analysis and its results revealed several challenges regarding the interpretation of the suggested directions of development. Therefore, the question of the reliability of the final formula appeared. One of the opportunities for the future research is redesigning the final BCFI equation or its components in order to avoid extremely high values caused by the variance in responses.

The final values of BCFI served as a reference for determining whether a given attribute is critical or not. Determining the criticality of attributes was followed by the suggestions regarding the resource allocation (assign more resources, assign less resources or restrain from any actions). Therefore, the method not only beneficial for the critical evaluation of company’s current situation by also of is directly useful in the decision-making process and supports the understanding the organization’s situation in terms critical attributes.

References

- [1] Sterling J., *Translating strategy into effective implementation: dispelling the myths and highlighting what works*, Strategy & Leadership, 32, 3, 27–34, 2003.
- [2] Pough J., Burgeois L.J., *Doing “strategy”*, Journal of Strategy and Management, 4, 2, 172–179, 2011.
- [3] Harrison F.E., *A process perspective on strategic decision making*, Management Decision, 34, 1, 46–53, 1996.
- [4] Nadler D., Takala J., *The development of the Critical Factor Index Method*, Proceedings of the 7th International Conference on Innovation and Management.

- [5] Lukka K., Kasanen E., *The problem of generalizability: anecdotes and evidence in accounting*, Accounting, Auditing & Accountability Journal, 8, 5, 71–90, 1995.
- [6] Satayapaisal A., Takala J., Wiriyacosol S., Chansangavej C., *Critical performance attributes of Thai automotive supply chains*, Management and Production Engineering Review, 3, 2, 36–48, 2012.
- [7] Wu Q., Shamsuddin A., Tasmin R., Takala J., Liu Y., *Transformational leadership in operational competitiveness improvement: a case study in Malaysian automotive industry*, Management and Production Engineering Review, 3, 1, 62–70, 2012.
- [8] Nithisathian K., Takala J., Rattanakomut S., Walsh J., Wu, Q., Liu Y., *Operational competitiveness development in turbulent business environment: a case study in Thailand fine gold jewelry export industry*, Management and Production Engineering Review, 3, 3, 53–62, 2012.
- [9] Ranta J.M, Takala J., *A holistic method for finding out critical features of industry maintenance services*, International Journal of Services and Standards, 3, 3, 312–325, 2007.
- [10] Barnbè F., *A “system dynamics-based Balanced Scorecard” to support strategic decision making. Insights from a case study*, International Journal of Productivity and Performance Management, 60, 5, 446–473, 2011.
- [11] Eisenhardt K.M., Graebner M.E., *Theory building from cases: opportunities and challenges*, Academy of Management Journal, 50, 1, 25–32, 2007.