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STUDY ON RESOURCE ALLOCATIONS FOR SUSTAINABLE COMPETITIVE ADVANTAGE

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Abstract
Today's concern and problem for most of the companies is the way of surviving and prospering in current and future periods of time in the marketplace. Sustainable competitive ability can be one of the ways of adaptation to the global business and rapid environment requirements. Operational competitiveness is not easy to be sustainably improved because of unpredictable environment situations, such as continuous increasing customer needs, global competitive environment, rapid and unpredictable changes in government policy, company crisis during significant changes etc. However, it is possible to make adaptive adjustments on operations strategy level in dynamic business environment and to become competitive enough compared to the competitors. The purpose of this paper is to define and assess sustainable competitive advantage and the direction of development in housing business. It can be analysed by two core factors, i.e. Sense and Respond (S&R) methodology, Analytical Hierarchical Process (AHP) as well as Sustainable competitive advantage (SCA) method. This study also focuses on applying S&R method in order to optimize operational competitiveness as well as defining the competitive priorities of the case company. The analysis results show the critical areas in different departments of the case company, which can help the managers to make quick decisions. In addition, they reveal that during the crisis the resource allocation is continuously changing and therefore the operation strategy of the case company is not well defined as well as competitive advantages are not enough sustainable.

Keywords
sustainable competitive advantage, competitive priorities, manufacturing strategy, housing business, sense and respond, analytical hierarchical process, case study.

Introduction

The aim of operations strategy is providing a broad framework for defining how it prioritizes and utilizes its own resources to have a sustainable competitive advantage in the marketplace. Competitiveness is the ability and performance of an organization to offer products and/or services that can meet market needs and requirements, the ability to react faster compared to your competitors to the market changes and needs [1]. Although most of the companies show their own goals from the aspect of customer satisfaction or level of quality, their primary aim is to be better than their competitors. One of the methods to gain a competitive advantage is by developing the current functions of operations management in a more effective way than their competitors. Moreover, the developing of production process will bring more benefits and competitive edge for a company.

The purpose of this paper is to define and assess sustainable competitive advantages and the direction of development in housing business. Analysis of the operational competitiveness will be held by three core factors: Sense and respond (S&R) methodology and Sustainable Competitive Advantage (SCA) method and Analytical Hierarchical Process (AHP) method. The term Sense and Respond (S&R) first appeared and defined as a business concept in 1992

by Haeckel [2]. However the S&R thinking was developed by Bradley and Nolan [3] and Markides [4] in order to have a possibility and method to analyze the dynamic of business performances and strategies. Critical Factor Index (CFI) and Balanced Critical Factor Index (BCFI) models in S&R method are introduced to optimize strategic adjustments, which can give supports during the fast strategic decision-making process, and in addition they provide the information about critical attributes which should be strengthened. S&R method is presented as a questionnaire, which was sent to the case company, where five departments were participating in the survey.

According to SCA, Rautiainen and Takala [5] defines it as "risk level (probability in percentage) for that the operations strategy should essentially be improved to sustain the operations performance competitiveness during the period considered". The developing of SCA goes by integrating reciprocally global operations strategy with resource allocations. This method includes the validation based on several methodologies: Manufacturing Strategy Index (MSI) [6] and method of detection of a company's preferable strategy type through utilization of S&R methodology.

Research methodologies

Operations strategies

Raymond Miles and Charles Snow [7] identified and developed a new strategy typology from the study of business strategies which is based on the new product development and penetration and adaptability to new markets or to uncertain competitive environment. Companies compete differently in the market as they estimate their environments on a distinctive basis and make resource allocation decisions based on these views. Miles and Snow [7] classified business units into four strategic types, such as prospector, analyzer, defender and reactor.

Prospector is a strategy in which a company continually innovates and improves the product by finding and exploiting new market opportunities. This competitive strategy is considered to be as a creator of changes in the market place. They are able to respond quickly to existed or early signals concerning areas of opportunities and are keen to be the first in entering into a new product/market area [8].

Analyzer is a strategy, which helps organizations to keep the high level of competency by analyzing and imitating the competitive advantages of other organizations. Analyzer company is thought to be intersection of defender and prospector strategies. Analyzer can take some good ideas from prospector strategy and as a result successfully implement them in the marketplace. There is a necessity in flexibility as well as stability in the business processes and market [9].

Defender is a strategy in which company is looking for market stability and tends to have a narrow product market. Compared to prospectors, the main concern of defenders is stability and economy. This strategy does not search for new market places, tries to keep the current customers. They pay attention primarily on internal efficiency and controlling the high-quality of production process for already existed customers. Therefore defender companies become highly dependent on their narrow product/market area. In order to protect its domain, defender companies use lower prices, high quality of products and better delivery [8].

Reactor is strategy which does not have a consistent strategic plan or plan about the means of competing in the marketplace. According to sustainable competitive advantage, reactor strategy is not recommended as a competitive strategy. It is passive in dealing with most issues such as responding to environmental threats and opportunities. As long as a top manager does not define a strategic plan or explicit mission, vision or goals, as a result company acts in order to meet immediate and important for this moment needs [9].

Competitive priorities

Looking at operations strategies from companies' perspective, it can be seen that different organizations in different sectors of industry focuses on different competitive priorities and capabilities. The main idea of success in operations strategy plan lies on identifying, prioritizing the choices and in guidance the ensuring trade-offs. Moreover, the decision making in the company is primary based on market needs and requirements. According to Slack, Chambers and Johnston [10] four competitive priorities are defined, such as quality, cost, time and flexibility.

Quality advantage means "doing things right", but the things which will be done in a right way will vary according two directions: design quality and process quality. Design quality means the set of features which product and/or service has. It is something that a customer finds very easy to make his/her own conclusions and judgments about product and/or service. While process quality is vital as well as design quality because it is related directly to the quality inside the operations and it can lead to cost reduction and dependability increase. If the company makes fewer mistakes during the operation process, then the less time will be spend for fixing

these mistakes and less dissatisfaction and confusion will be spread inside the company.

Companies in which main competitive advantage is cost usually follow the elimination of all waste. If there is a low cost in production processes of goods and services, the lower price can be presented as a result to final customer. However, such a situation does not always guarantee profitability and success for a company [11].

Time can be related to quick delivery and delivery in time. Being competitive enough in the market means that the company has ability to deliver more quickly the product or service rather than its competitors. Quite simple rule that the faster the company delivers the product or service, the faster customer buys it and consequently will return to buy more. It can be reached by quick inside respond to external customers: fast decision-making, movement of material, and information. Also, delivery in time brings to the company the dependability for the organization and respect and satisfaction from customers [10].

Flexibility as a competitive advantage means the ability of the company to produce different types of products, improve the current product, and introduce new products to market and quick respond to customer need and requirements. According to internal aspect, flexible operations can also bring following advantages: speed up response, time saving, and dependability maintaining [10].

Sense and respond method

As a business concept sense and respond (S&R) was firstly described in 1992 by Haeckel [2] in Management Review article. However, S&R thought was developed further by Bradley and Nolan [3] and Markides [4] in order to analyze and describe dynamic business strategies. This method is based on the tools which can help to handle company's future obscurities. In other words, S&R helps companies to expect, foresee, adapt and respond to continually changing environment situations. The method evaluates business operations and customer needs in the organization, which does not mean that it shows the future incomes. The main idea of this method is to react to signals as fast as possible and also to see the weakened, continually changing or stable business attributes of the company.

Rautiainen and Takala [5] have developed S&R questionnaire method based on the S&R methodology. Further developing made by Ranta and Takala [12] paid attention on controlling and evaluating the company's internal and external attributes from experience and expectation perspective. The main role of this questionnaire is to develop a fast and reliable way of defining market needs and to react to those requirements in such a way that current important attributes are developing and changing towards right direction.

The questionnaire includes two forms: one evaluates the company's daily operations (OP), and the other one – company's activities in a more general level (BSC). Operational form evaluates Knowledge & Technology Management, Processes & Work flows as well as organizational and information systems. The aim of this form of the questionnaire is to define the critical factors which effect on production process of the company. Balanced score card (BSC) questionnaire defines and evaluated the company's external structure, internal process, learning and growth, trust and business performance. According to Kaplan and Norton [13] a BSC helps the companies to answer into tree critical performance questions such as how customers see the company in general; what must we distinguish in ourselves; how can the company continue to improve, develop and create additional value.

The results can be indicated as "traffic lights". For example, red attributes mean that they are critical and need to be reviewed again and put some resources. Green indicates that the attributes are in order. Yellow attributes mean that results are scattered and respondents have different understanding and view about the situation in the company. Balances Critical Factor Index (BCFI) which was developed from Critical Factor Index (CFI) is considered to be one of the main tools in detection of the critical factors.

CFI diagram includes such indexes which need to be calculates: gap index, average of expectations, average of experiences, importance index, performance index, direction of development past and future, CFI, BCFI and Scaled Critical Factor Index (SCFI).
Gap index:

$$\left| \frac{Avg\ (experience) - Avg\ (expectation)}{10} - 1 \right|. \quad (1)$$

Direction of developemtn index:

$$\left| \frac{Better\% - Worse\%}{100} - 1 \right|. \quad (2)$$

Importance index:

$$\frac{Avg\ (expectation)}{10}. \quad (3)$$

Performance index:

$$\frac{Avg\ (experience)}{10}. \quad (4)$$

SD expectation index:

$$\frac{std\ (expectation)}{10} + 1. \tag{5}$$

SD experience index:

$$\frac{std\ (experience)}{10} + 1. \tag{6}$$

CFI:

$$\frac{std\{experience\} * std\{expectation\}}{Gap\ index * Direction\ of\ development\ index * Importance\ index}. \tag{7}$$

BCFI:

$$\frac{std(experience) * std(expectation) * Performance\ index}{Importance\ index * Gap\ index * Direction\ of\ development\ index}. \tag{8}$$

SCFI:

$$\frac{a^* * b^* * Performance\ index}{Importance\ index * Gap\ index * Development\ index}, \tag{9}$$

where

$$a^* = \sqrt{\frac{1}{n}\sum_{1}^{n}(experience(i) - 1)^2},$$

$$b^* = \sqrt{\frac{1}{n}\sum_{1}^{n}(expectation(i) - 10)^2}.$$

The most important indexes are CFI, BCFI and SCFI because they help to find the critical attributes and areas of the company. BCFI can be considered as the same index as CFI but it is calculated by performance index. Moreover, BCFI is the most useful and used index in order to define the most critical factors which have significant influence on the whole company's performance. SCFI index main aim is to solve the problems that happen when the respondent sample is too narrow and limited.

The value of these critical indexes can be interpreted in such a way that all attributes with a value below one can be considered to be critical and put more resources on it. The more value is going into the direction of zero the more critical attribute is. The value one means that the attribute is an optimal whereas the attribute with value above one is considered to be "high performer". However the "high performer" does not necessarily mean that there is a high performance in this area, it only indicates that expectations are met by the experience and the direction of development is higher than then one.

Analytic hierarchy process

According to Saaty [14] the Analytic Hierarchy Process (AHP) method which allows considering qualitative and quantitative measured to evaluate a big amount of attributes. The main purpose of AHP method which is used in the empirical part is that to analyze questionnaires and calculate the weighting of the main criteria which are competitive advantages, namely cost, quality, time and flexibility. AHP method uses pairwise comparison among all the factors to support decision-making process [15]. It explores the degree of importance of the attributes and the main competitive priorities of the company. In order to be able to answer to use the AHP method, firstly it is necessarily to compare two factors and define the importance of each attribute, i.e. which one is more important and then to weight within the scale from 1 to 9 to indicate in what extent selected factor is more important than the other one. Inconsistence ratio (ICR) should be also calculated because it shows the validity of answers. If the ICR is less than 0.30 then the answers are considered to be valid and reliable and can be used in decision making process. The form of AHP is shown by Fig. 1 below.

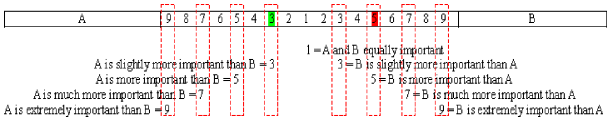

Fig. 1. The form of AHP.

Manufacturing strategy

In order to succeed in the market in a long-term period of time companies continuously take decisions mostly about the resource allocation. Therefore based on these decisions company can define the position in the market by determining the operational strategy. Manufacturing strategy plans an important role in this situation. Firstly the concept of manufacturing strategy was defined by Skinner [16] as a model which evaluates the competitive priorities of the company in order to reach competitive advantages in the market. These competitive indexes of companies belong to different competitive groups such as analyzer, defender, prospector and reactor [7]. According to Takala, Kamdee, Hirvela and Kyllönen [6] manufacturing strategy index (MSI) is modelled based on the multi-criteria priority weights of quality (Q), cost (C), time (T), and flexibility (F), which is evaluated with the help of AHP method mentioned above; and presented as a function MSI = f_{MSI} (Q, C, T, F).

Equations below present the calculation of normalized weights of main competitive priorities.

$$Q' = \frac{Q}{Q + C + T}, \tag{10}$$

$$C' = \frac{C}{Q + C + T}, \tag{11}$$

$$T' = \frac{T}{Q + C + T}, \tag{12}$$

$$F' = \frac{F}{Q + C + T + F}, \tag{13}$$

where Q – quality, C – cost, T – time and F – flexibility.

Equations (13)–(16) stand for the analytical models that provide the calculations of MSI of operational competitiveness in each group.

The MSI model for prospector group:

$$MSI_P = 1 - [(1 - Q'^{1/3}) * (1 - 0.9 * T') * (1 - 0.9 * C') * F'^{1/3}]. \tag{14}$$

The MSI model for analyzer group:

$$MSI_A = 1 - (1 - F') * [abs[(0.095 * Q' - 0.285) * (0.95 * T' - 0.285) * (0.95 * C' - 0.285)]]^{1/3}. \tag{15}$$

The MSI model for defender group:

$$MSI_D = 1 - (1 - C'^{1/3}) * (1 - 0.0 * T') (1 - 0.9 * Q') * F'^{1/3}. \tag{16}$$

Sustainable competitive advantage method

According to Peteraf and Barney [17] the "company has a competitive advantage when it is able to create more economic value than the marginal (break-even) competitor in its product market". Competitive advantages in the company have two characteristics as temporary and long lasting periods of time. Based on resource logic, when the company has a sustained competitive advantage then it means creating more economic value than the marginal firm in the marketplace while other companies or competitors cannot copy and implement these benefits in its strategy.

The sustainable competitive advantage does not focus only on a company's competitive positions which are already existing and operating in the marketplace. According to Baumol, Panzar and Willing [18] a company's competition is considered to contain not only its current competitors, but also there should be enough attention on the potential competitors, which will enter a marketplace at some future date.

According to the conclusion and discussion of the TIIM13 paper "Validating knowledge/technology effects to operative sustainable competitive advantage" it was found out that SCA is considered as a risk probability, with the help of which the main operation strategy of the company can be chosen with the lower or lowest risk level. It was concluded that operation evaluation of SCA may provide better sensitivity, sustainability and flexibility for the company in general as well as strengthen the performance and competitiveness in the market place. Equally important that SCA evaluation gives opportunities for company to take a right decision about operation strategy which will lead to the better performance and higher competitiveness; secondly, it helps to understand whether all the departments of the company follow the same operational strategy.

In order to implement and identify sustainable competitive advantage (SCA) in the company, the S&R method with operations strategies and AHP with calculated competitive priorities are used. SCA can provide the basis of implementations of highly competitive operations strategy for managing the business situation in the marketplace.

In order to calculate SCA there three methods are used: MAPE, RMSE, and MAD. If SCA is between 0 to 1, and there are more SCA resulting value, situations is the better.

MAPE (absolute percentage error)

SCA=1-SUMi(ABSi((BS-BR)/BS)) (17)

RMSE (root means squared error)

SCA=1-(SUMi((BS-BR)/BS) 2) 1/2 (18)

MAD (maximum deviation)

SCA=1-MAX(ABSi(BS-BR)/BS)) (19)

where SUMi and angle B (in radians), max π go from alpha, beta and gamma angles corresponding analysis in Defender, Prospector and Analyzer categories. And, S refers to op strategy (MSI) and R to S&R (BCFI) resource allocation (either in Past or Future).

Case study

Case company A is a real-estate company established in 1944 and is situated and belonged to the city Turku. It is considered to be as non-profit organization, which has government restrictions concerning to operation profitability. The main idea of this company is providing rental housing. The mission of this organization is to "maintain and promote the welfare by housing means, and to contribute the local success". In addition the vision 2020 is that "A Company is the most attractive and largest of homes in the Turku region; and to provide a comfortable living experience".

The main services of case company A are offering safe and acceptable rental homes for people of different life levels, housing counseling property maintenance, care and repair, rent control, and property portfolio development. Moreover, it offers a wide

range of houses such as blocks of flats, terraced houses and small private homes in Turku region. The company owns and manages approximately 11000 different types of homes, which are equipped with the basic utilities. The year turnover of the company is about 66 million euros and the general balance includes over 400 million euros. The company's market share includes approximately 10% of all dwelling and around 25% of the entire apartments in Turku region. Consequently, it can be considered as the largest individual dealer in Turku.

Data collection and analysis

The data for analyzing and investigating company situation in general as well as defining the critical performance attributes was gathered by opinion survey questionnaire. The questionnaire which was developed by Ranta and Takala [12] based on S&R method includes two types of questionnaire: OP (twenty one attributes) and BSC (seventeen attributes). The questionnaire was sent to five departments of the case company, which are Hallinto, Isännöinti, Johto, Vuokraus, and Vuokravalvonta. Based on answers from these departments, the data will be analyzed and interpreted. The quantity of respondents was different in each department. For example, in Hallinto there were only 4 respondents, while in Vuokraus – 9 respondents.

The value of each index in the S&R model can be obtained by such form of questionnaire (Tables 1, 2, and 3).

Table 1
Format of questionnaire (part 1).

Performance attribute	Scale: 1 = low, 10 = high	
	expectation	experience
Performance 1		
Performance 2		

Table 2
Format of questionnaire (part 2).

Performance attribute	Compared with competitor		
	worse	same	better
Performance 1			
Performance 2			

Table 3
Format of questionnaire (part 3).

Performance attribute	Direction of development		
	worse	same	better
Performance 1			
Performance 2			

Results

It is reasonable to start from tracing similarities in what the case company A expects to achieve in the future period and considers more important attribute or area for the future competitiveness. The comparison of experience and expectation in every department means that it reveals the gap between experience and expectation, where the resources should or should not be put in the future period. As there are five departments were analyzed, it can be noticed that the general trend is that expectation is more than experience. Taking Johto department from the case company A as a basic and main, Fig. 2 below will demonstrate the gap between experience and expectation in OP questionnaire.

The most interesting attributes with the biggest gap between experience and expectation are communication between different departments and hierarchy levels; well defined responsibilities and tasks for each operation; information systems support the business processes. It means that top administration feels that the company A is lacking in the mentioned attributes and expects it to improve in the future. However, there is a gap which means that one attribute (innovativeness and performance of research and development) does not need more resources put into it in the future period.

Figure 3 below will demonstrate the gap between experience and expectation in BSC questionnaire.

The matches between the expected positive changes for the company can be belonged to such attributes as information technology, and knowledge. On the other hand, it shows that there is no need in considerable improving in such areas as customer loyalty and innovation. In addition, there is no difference between expectation and experience in such attributes as brand, know-how and customer, which means that the resources should be invested continuously in the past.

After making calculations of BCFI in order to define the critical areas and attributes of the company, the general situation is stable and in future will be improved. For example, the following Fig. 4 (Resources: OP) and Fig. 5 (Performance: BSC) will demonstrate the comparison of BCFI in past and future and the changes of critical attributes into normalized one.

Figure 4 (Resources: OP) shows that in general the situation in future will be improved. However, there will be some unchangeable attributes in future: communication between different departments and hierarchy levels; leadership and management systems of the company; and well defined responsibilities and

tasks for each operation. At the same time, in future new critical attributes will appear.

Next figure reveals the same situation as in Fig. 4 (Resources: OP): it will be developed and improved. On the other hand, there are still some critical attributes, which will remain critical. They are customer loyalty, know-how, financial and customer. It means that company should pay more attention on such attributes and put more resources in improving and changing them (Fig. 5).

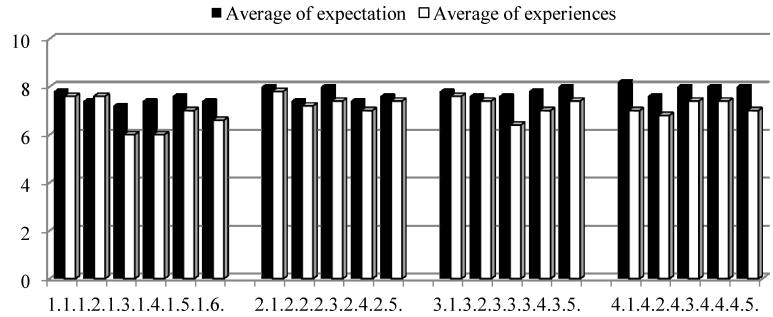

Fig. 2. Resources (OP): Expectation vs. Experience in Johto department.

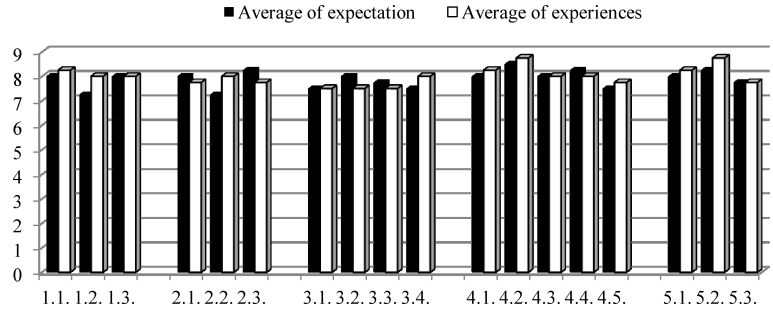

Fig. 3. Performance (BSC): Expectation vs. Experience in Johto department.

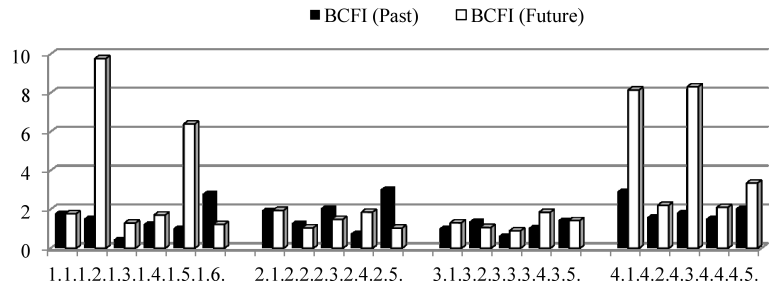

Fig. 4. Comparison of BCFI past and future in Isännöinti department (Resources: OP).

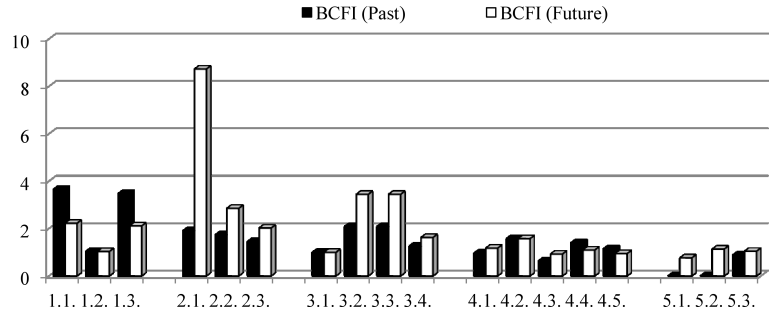

Fig. 5. Comparison of BCFI past and future in Isännöinti department (Performance: BSC).

There are three main organizational strategies/types which should be defined as its features can influence on how to solve the problems and to adopt into external environment. These organizational strategies are: Prospector, Analyzer, Defender, and Reactor.

According to the results which were received after analyzing all departments' answers (Past and Future) of case company it was found out that in the Past period Johto and Hallinto departments see the company strategy not in clear vision: balancing between Analyzer, Defender, and Prospector (Table 4). However, Isännöinti, Vuokraus, and Vuokravalvonta departments are sure in Analyzer as the main operational strategy of the case company A (Table 5).

Table 4
Defining the operation strategy (PAST) based on Johto and Hallinto results.

PAST							
Johto (SCFI)				Hallinto (SCFI)			
P.	**A.**	**D.**	**R.**	**P.**	**A.**	D.	R.
0.91	**0.92**	**0.92**	**0.92**	**0.93**	**0.93**	0.91	0.92

where P. – prospector, A. – analyzer, D. – defender, and R. – reactor

Table 5
Defining the operation strategy (PAST) based on Isännöinti and Vuorkaus results.

PAST							
Isännöinti (SCFI)				Vuokraus (SCFI)			
P.	**A.**	D.	R.	P.	**A.**	D.	R.
0.90	**0.98**	0.89	0.90	0.91	**0.98**	0.92	0.91

On the other hand, in the Future period based on Hallinto, Vuokraus and Vuokravalvonta answers company's operational strategy is considered to be Analyzer (Table 6). It can be mentioned that there is a significant difference between Analyzer strategy and others. However, only these two departments as Johto and Isännöinti have not clearly defined company strategy: balancing between Defender, Analyzer and Reactor (Table 7). Even though there is no big difference in values between all strategies, Johto and Isännöinti departments are still unsure about the defined strategy, which they follow.

Table 6
Defining the operation strategy (FUTURE) based on Hallinto and Vuokraus results.

FUTURE							
Hallinto (SCFI)				Vuokraus (SCFI)			
P.	**A.**	D.	R.	P.	**A.**	D.	R.
0.91	**0.99**	0.91	0.91	0.91	**0.98**	0.91	0.91

Table 7
Defining the operation strategy (FUTURE) based on Johto and Isännöinti results.

FUTURE							
Johto (SCFI)				Isännöinti (SCFI)			
P.	**A.**	D.	R.	P.	**A.**	D.	R.
0.91	**0.94**	0.93	0.92	0.91	**0.96**	0.93	0.92
Johto (CFI)				Isännöinti (CFI)			
0.92	0.92	**0.93**	**0.93**	0.89	0.89	**0.92**	0.90

In conclusion, general view of company is not in clear vision as different departments see the operational strategy of the whole company in different ways. In Past period case company A is balancing between Analyzer, Defender and Prospector strategies, which means that the whole operational strategy includes some features from each other. While in Future period case company A is clearly Analyzer.

After evaluation and defining the critical areas of the case company A, the next step of analyzing of this company was to define the risk level in all departments by SCA method. There are two periods were taken into the consideration: before crisis (past) and during crisis. Tables 8–12 below show that Isännöinti, Vuokraus and Vuokravalvonta depertments have highest risks compared to Johto and Hallinto departments, which determine unstable situation before crisis. On the other hand, Tables 13–18 demonstrate that during crisis when some changes are implemented in the company, the risk level increased considerably, which is understandable during company changes and new strategies implementation. However, Vuokravalvonta department has the highest risk level compared to other departments which one of the reasons could be that based on BCFI results company does not invest enough resources in supporting the work of this department. Johto and Isännöinti departments have about the same risk level, which can be explained as the company's changes have not influenced on these two departments considerably.

Table 8
SCA risk level of Hallinto (before crisis).

Hallinto	SCA Values		
	MAPE	RMSE	MAD
CFI	0.95	0.97	0.97
BCFI	0.93	0.95	0.96
SCFI	0.94	0.96	0.97

Table 9
SCA risk level of Isännöinti (before crisis).

Isännöinti	SCA Values		
	MAPE	RMSE	MAD
CFI	0.87	0.92	0.93
BCFI	0.88	0.92	0.94
SCFI	0.87	0.91	0.93

Table 10
SCA risk level of Vuokravalvonta (before crisis).

Vuokravalvonta	SCA Values		
	MAPE	RMSE	MAD
CFI	0.85	0.90	0.93
BCFI	0.89	0.92	0.94
SCFI	0.89	0.92	0.94

Table 11
SCA risk level of Johto (before crisis).

Johto	SCA Values		
	MAPE	RMSE	MAD
CFI	0.97	0.94	0.96
BCFI	0.92	0.95	0.96
SCFI	0.90	0.94	0.95

Table 12
SCA risk level of Vuokraus (before crisis).

Vuokraus	SCA Values		
	MAPE	RMSE	MAD
CFI	0.87	0.92	0.93
BCFI	0.87	0.91	0.93
SCFI	0.88	0.91	0.94

Table 13
SCA risk level of Hallinto (during crisis).

Hallinto	SCA Values		
	MAPE	RMSE	MAD
CFI	0.82	0.89	0.92
BCFI	0.77	0.86	0.89
SCFI	0.76	0.85	0.89

Table 14
SCA risk level of Isännöinti (during crisis).

Isännöinti	SCA Values		
	MAPE	RMSE	MAD
CFI	0.87	0.92	0.94
BCFI	0.86	0.91	0.93
SCFI	0.81	0.88	0.91

Table 15
SCA risk level of Vuokravalvonta (during crisis).

Vuokravalvonta	SCA Values		
	MAPE	RMSE	MAD
CFI	0.79	0.87	0.90
BCFI	0.77	0.86	0.89
SCFI	0.78	0.87	0.90

Table 16
SCA risk level of Johto (during crisis).

Johto	SCA Values		
	MAPE	RMSE	MAD
CFI	0.97	0.91	0.93
BCFI	0.83	0.90	0.92
SCFI	0.83	0.90	0.92

Table 17
SCA risk level of Johto (BCFI T/K – during crisis).

Johto BCFI T/K	SCA Values		
	MAPE	RMSE	MAD
BCFI	0.89	0.93	0.95

Table 18
SCA risk level of Vuokraus (during crisis).

Vuokraus	SCA Values		
	MAPE	RMSE	MAD
CFI	0.76	0.85	0.89
BCFI	0.76	0.85	0.89
SCFI	0.77	0.86	0.89

Conclusions

The main purpose of this study is to implement sustainable competitive advantage through resource allocation in case company A operating in housing market, which uses the S&R methodology in order to find critical factors in experiences and expectations between different departments and to see the general picture of the company.

In the study it was presented various levels of the organization which are performing in accordance with common strategy. Case company A operates mainly as a Analyzer including other types of operational strategies in the regular housing market – the company is operating in two types of product-market domains: stable and changing; the competitive level of such a combination of strategy focuses on flexibility and cost, while balancing between quality and time. However, in the past it was confusion about the

main operational strategy: balancing between Analyzer, Reactor and Defender. Case company aim is to keep strong position in Prospector type of company in social housing market, which requires a lot of work and a lot of changes in the operation level of the company. Prospector type of a company can be considered as a strong competitor performing in such market area without any competitors.

In order to survive within the global competition, the critical attributes should be determined in the company. Since there are many variables involved and the period when the questionnaire was sent is changeable and unstable, the overall situation in future is expected to be improved, even though new critical factors will appear. The better situation can be seen in the Vuokravalvonta, Isännöinti, and Vuokraus departments.

In the final analysis, there were two periods taken into the consideration during the calculation of risk levels by SCA method, where before crisis period generally the whole situation in the company is normalized and stable, while the crisis has started, the risks increased. Crisis brings a lot of changes in the company and therefore the risk level is increasing, which can be appropriate situation. However, the highest risk level is in Vuokravalvonta department, which can be the reason to go deeply into the department performance and to reorganize or to invest more resources into this department.

In the future research, several ideas can be proposed as follows:

- as there were interviews made in 5 departments of the company, not everybody could give appropriate answers to the questions in questionnaire, which might give a wrong picture of business processes of company. Therefore respondents should be chosen more accurate;
- as S&R, AHP and SCA methodologies show only outcomes of the company analysis, but not the reasons why the company is facing the problems and why there are critical factors in there. Therefore, after making the full analysis based on the questionnaire, the interview should be used in order to see the complete process: income – outcome;
- SCA method should be improved by defining one tool and technique for making better calculations and conclusions.

Appendix

S&R questionnaire:

Table 1

OP questonnaire.

	Attributes	
	Knowledge & Technology Management	
1.1	Training and development of the company's personnel	←Flexibility
1.2	Innovativeness and performance of research and development	←Cost
1.3	Communication between different departments and hierarchy levels	←Time
1.4	Adaptation to knowledge and technology	←Flexibility
1.5	Knowledge and technology diffusion	←Cost
1.6	Design and planning of the processes and products	←Time
	Processes & Work flows	
2.1	Short and prompt lead-times in order-fulfillment process	←Flexibility
2.2	Reduction of unprofitable time in processes	←Cost
2.3	On-time deliveries to customer	←Quality
2.4	Control and optimization of all types of inventories	←Quality
2.5	Adaptiveness of changes in demands and in order backlog	←Flexibility
	Organizational systems	
3.1	Leadership and management systems of the company	←Cost
3.2	Quality control of products, processes and operations	←Quality
3.3	Well defined responsibilities and tasks for each operation	←Flexibility
3.4	Utilizing different types of organizing systems	←Flexibility
3.5	Code of conduct and security of data and information	←Cost
	Information systems	
4.1	Information systems support the business processes	←Time
4.2	Visibility of information in information systems	←Time
4.3	Availability of information in information systems	←Time
4.4	Quality & reliability of information in information systems	←Quality
4.5	Usability and functionality of information systems	←Quality

Table 2
BSC questionnaire.

	ATTRIBUTES
	External Structure
1.1	Customer satisfaction
1.2	Customer loyalty
1.3	Brand
	Internal Process
2.1	Process improvement
2.2	Innovation
2.3	Information technology
	Learning and Growth
3.1	Know-how
3.2	Knowledge
3.3	Competence
3.4	Engagement
	Trust
4.1	Performance-to-promise
4.2	Professional relationship
4.3	Openness
4.4	Benevolent collaboration
4.5	Empathy
	Business Performance
5.1	Financial
5.2	Sales
5.3	Customer

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