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## The use of the balanced scorecard in bank strategic management

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Daria Balkovskaya\* and Liubov Filneva

Department of Economics,  
National Research University Higher School of Economics,  
Nizhny Novgorod, B. Pecherskaya, 25/12, 603155, Russia  
Email: dbalkovskaya@hse.ru  
Email: liubovfilneva@gmail.com

\*Corresponding author

**Abstract:** In this study, we employ 'step-by-step' algorithm for constructing a strategy map of the balanced scorecard (BSC) for banking institutions using the example of one of the Russian regional banks. The key evaluation indicators of banking performance are selected through the relevant literature analysis while considering the peculiarities of a sample bank. Further, the decision making trial and evaluation laboratory (DEMATEL) method is employed in order to identify causal relationships between the KPIs, i.e., direction and strength of their mutual influence, as well as to define the most strategically important indicators. Finally, both the KPIs and logical links between them are illustrated on the strategy map, so that bank managers could easily draw up various strategies on that basis. The DEMATEL method resulting in a clear map helps managers to prioritise their strategic steps in the limited resources context, and thus navigate their bank's strategy in a most effective way.

**Keywords:** balanced scorecard; BSC; key performance indicator; KPI; strategy map; decision making trial and evaluation laboratory; DEMATEL; bank; strategic management.

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**Biographical notes:** Daria Balkovskaya is a Senior Lecturer of Banking Department, Faculty of Economics, National Research University Higher School of Economics, Nizhny Novgorod, Russia and is currently concluding her doctoral studies from Lobachevsky State University of Nizhny Novgorod. Her research interests cover strategic bank management and monetary policy efficiency assessment.

Liubov Filneva is a graduating master student of Banking Department, Faculty of Economics, National Research University Higher School of Economics, Nizhny Novgorod, Russia. Her research interests cover the application of strategic bank management.

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## **1 Introduction**

The year of 2012 has marked 20 years since the first publication on the balanced scorecard (BSC) by Robert Kaplan and David Norton, professors of Harvard Business School (Hoque, 2013).

Initially, the BSC was designed to overcome a number of shortcomings common to traditional systems of indicators. In the 1980s, Kaplan and Norton examined 12 large US companies and found out that achievement of short-term indicators in those companies inevitably leads to a reduction in the costs of training, marketing and customer service. This in turn proved to have a negative impact on the organisation's overall financial position. Having concluded that sample companies' employees often do not realise their roles in the process of corporate strategy implementation and, therefore, lack motivation to facilitate achievement of the organisation's long-term goals, Kaplan and Norton had developed the BSC concept (Gershun and Nefedeva, 2005).

The BSC represents a tool of strategic and operational management, allowing to associate organisation's strategic goals with its internal business processes and activities of employees at all levels, as well as to monitor the process of strategy implementation (Gershun and Nefedeva, 2005).

In more than 20 years of its existence, the BSC has gained enormous attention in both academic and business communities (Barnabe and Busco, 2012; Kraus and Lind, 2010; Salterio, 2012) and has become a widely accepted as a tool for evaluating organisational performance within the framework of four perspectives: finance, customer, internal process, learning and growth. These perspectives are related to the four aspects of the organisation: accounting and finance, marketing, value chain and human resources, respectively (Wu, 2012). What is important here, according to Norton et al. (1997), the essential principle of the BSC is to strike a balance between traditional financial indicators and equally important non-financial factors.

Currently, the vast majority of the world's leading organisations, including banking institutions such as Metro Bank, Deutsche Bank, J.P. Morgan Chase and Sberbank of Russia, have already implemented or are about to implement the projects on the basis of BSC (Kaplan and Norton, 2004, 2005; Horvath and Partners, 2006).

This paper presents the detailed algorithm for constructing a strategy map of the BSC for banking institutions using one of the Russian regional banks as an example. The paper is organised as follows. In Section 2, we describe the general idea of key performance indicators (KPIs) and strategy maps. In Section 3, we review the literature, covering empirical evidence on the BSC in general and strategy maps in particular. In Section 4, the strategy map for a sample bank is constructed using the decision making trial and evaluation laboratory (DEMATEL) method. Section 5 presents the conclusions.

## **2 Elements of the BSC**

In this section, we dwell on the concepts of KPIs and strategy maps as the essential elements of the BSC apart from the four perspectives framework mentioned above.

### 2.1 *Key performance indicators*

KPIs are commonly used in order to evaluate the degree of the strategy implementation. Gershun and Nefedeva (2005) highlight that the KPIs allow both monitoring the strategy implementation process and adjusting the strategy when is necessary. Moreover, the KPIs serve as a basis for budget planning and evaluation of budget administration, as well as for staff performance assessment.

For all the KPIs target values are set on the both long- and short-term basis. The target values achievement is necessary for accomplishing organisation's strategic objectives. Therefore, it is advisable to choose the number of KPIs so that they can be estimated quantitatively by the formula or another method of calculation.

It is worth mentioning that when developing the BSC it is necessary to strike a balance between leading and lagging performance indicators. Leading indicators such as return on investments (ROIs) or market share show the way to achieve organisation's strategic goal by allowing to estimate on the very early stages how successful the strategy implementation process is going on.

Lagging indicators give organisation's business units an opportunity to reach long-term improvements in their daily activities and enhance financial results, e.g., customer and employee satisfaction. Theoretically, BSC should consist of an optimal combination of leading and lagging indicators, which must reflect strategy of a business unit (Wu, 2012).

### 2.2 *Strategy maps*

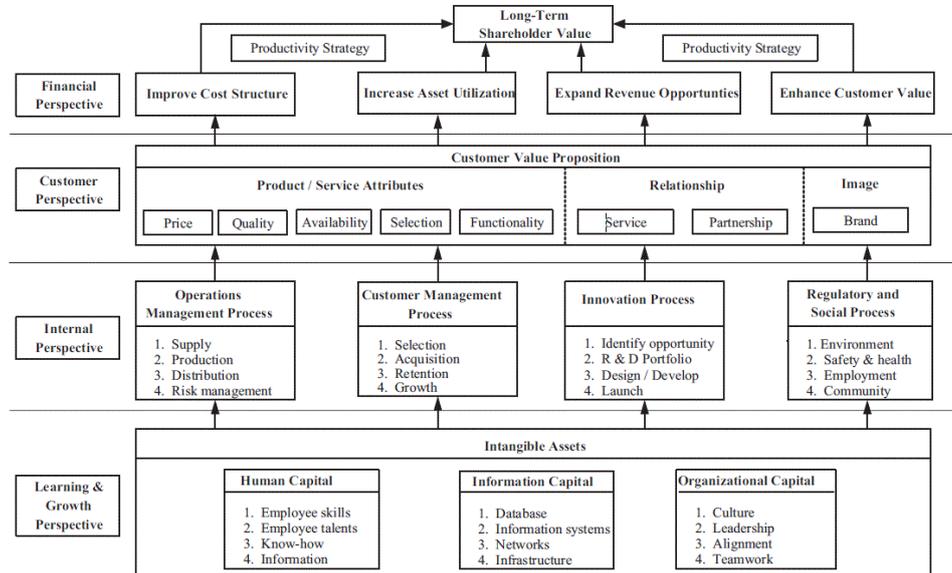
For successful implementation of an organisation's strategy one should not assume that KPIs represent some independent parameters of the four perspectives of the BSC. Alternatively, it is of great importance to consider KPIs as interdependent, connected by causal relationships objectives of those perspectives. Visual representation of the causal relationships among the elements of an organisation's strategy is known as a strategy map (Kaplan and Norton, 2005).

Constructing a strategy map is a necessary step in the BSC development process as far as those maps help separate business units and employees realise their roles in the strategy implementing (Gershun and Nefedeva, 2005). What is more important here, strategy maps change the very concept of the strategy description, which is not just about setting goals and targets but is also about monitoring and managing them. In other words, the strategy map is a link between strategy formulation and putting it into practice (Kaplan and Norton, 2005).

Figure 1 illustrates the basic template of a strategy map, developed by Kaplan and Norton (2004) in their book called *Strategy Maps: Converting Intangible Assets into Tangible Outcomes*.

On the whole, the BSC converts mission and strategic vision of an organisation into goals and objectives thanks to balanced set of perspectives and performance indicators as well as visualisation of causal relationships among them on the strategic maps.

**Figure 1** Basic template of a strategy map



Source: Wu (2012)

### 3 Literature review

The past studies on the BSC indicate an increasing interest in linking BSC aspects with various other organisational processes such as value chain analysis (Sundharam et al., 2013), quality management (Jalili and Rezaie, 2010), supply chain management (Turhan and Vayvay, 2011), IT management (Kim and Davidson, 2004) and corporate governance (Callaghan et al., 2010).

Taking into account the fact that BSC focuses on intangible assets and customer centricity, a number of authors (Davis and Albright, 2004; Littler et al., 2000; Mouritsen et al., 2005; Wu, 2012) note the particular relevance of the BSC for banking institutions, since non-financial indicators, such as customer relationships, play a particularly important role for them.

Not surprisingly, numerous papers have been devoted to the implementation of the BSC in banking institutions. So, for example, Davis and Albright (2004) presented an empirical analysis of the BSC impact on the financial results of banking organisations. They conducted a comparative analysis of banks with and without BSC and came to the conclusion that the first group demonstrated better financial performance.

Kim and Davidson (2004) used the BSC concept in order to evaluate the cost effectiveness of information technology in the banking sector. Regression models and t-test were used as an analysis tool. According to the research results, bank managers should use BSC to measure the effectiveness of both management and information strategies.

A number of authors underline the particular importance of BSC and strategy maps in decision making process. Cheng and Humphreys (2012) argue that causal relationships

among strategic objectives presented on the strategy map enhance both managers' ability to interpret the strategic relevance of external information and to assess an organisation's strategy appropriateness.

Glykas (2013) emphasises that strategy maps represent particularly useful tool for promoting understanding and clarity of a strategy; encouraging greater employee participation in the strategy development and commitment to its follow-up implementation; aligning strategy with the resources required to implement it; identifying gaps or 'white spots'; more effective and efficient use of available resources.

Lawson et al. (2007) note additional opportunities that strategy maps offer to an organisation, such as a chance to see the big picture of a corporate strategy; explain to all employees the principles of a strategy to be implemented; identify key internal processes that constitute the drivers of success; align internal processes with human capital, information technology and organisational culture.

However, papers on strategy maps development seldom focus on elaborating methods for identifying causal relationships among the BSC performance indicators. Although Thakkar et al. (2007) offer to use integrated structural modelling (ISM) to link strategic objectives, they take into consideration the direction of influence only and ignore its strength.

Tseng (2010) and Jassbi et al. (2011) use the DEMATEL method for strategy maps construction. However, they just categorise performance indicators into 'cause' and 'effect' groups, rather than conduct a detailed analysis of complex interactive relationships among them.

#### **4 The BSC development and strategy map construction using the DEMATEL method**

In this section, in order to construct the BSC strategy map for one of the Russian regional banks we take the model described in the research conducted by Hung-Yi Wu, the professor of National Chiayi University in Taiwan, and employ the DEMATEL method.

The object is to consider an illustrative 'step-by-step' example of the strategy map constructing process, and consequently to show the bank managers an effective way to find the most suitable at the current point strategic path.

##### *4.1 Step 1: defining mission and strategic vision of a sample bank*

On the first stage of the BSC development, it is of great importance to select as many performance indicators as possible in order to cover the full range of bank's activities. This could be achieved by means of interviewing bank managers concerning their views on strategic vision and mission of their bank.

Within the scope of this paper, when developing the BSC for a sample bank we base on the mission and the strategic goal published on its website. *The mission* of the case bank lies in satisfying the needs of Russian regions inhabitants in qualified banking products and services as well as enhancing customers' satisfaction by expanding and improving the product line, using innovative banking technologies and raising the quality of the banking activities in general. *The strategic goal* is to take a leading position on the region's banking market, as well as to make a significant contribution to the economies of all the regions where the bank operates.

#### 4.2 Step 2: defining objectives on the basis of mission and vision within the framework of four perspectives

Then, using the mission and the strategic vision as a basis, one should synthesise relevant objectives of a bank's performance, i.e., the directions in which the strategy is going to be implemented. Further, those objectives should be grouped according to the four perspectives. Relying on the mission and vision of the case bank, the following objectives have been selected:

- 'finance': increasing profitability; enhancing financial stability
- 'customer': improving quality of customer service; expanding customer base; expanding the number of services per customer; boosting customer loyalty; expanding geographic footprint; increasing return on customer
- 'internal process': improving quality of provided services; implementing innovative banking technologies; rationalisation and automatization of business processes; developing remote banking services
- 'learning and growth': creating the conditions for encouraging employees motivation and self-actualisation; promoting employees professional development; supporting employees' participation in addressing principal matters of the bank's development.

#### 4.3 Step 3: defining KPIs for each perspective of the BSC

KPIs were picked up based on the relevant literature as well as the strategic objectives that have been determined at the Step 2 in reliance on the mission and strategic vision of the case bank. Table 1 shows the KPIs selected for the case bank along with the description of each indicator.

**Table 1** Description of the KPIs selected for a sample bank

<i>Perspective</i>	<i>KPIs</i>	<i>Description</i>
F: finance	(F1) Return on assets (ROA)	After-tax profit (loss) divided by average total assets
	(F2) Return on equity (ROE)	After-tax profit (loss) divided by average total equity
	(F3) ROI	After-tax profit (loss) divided by total cost
	(F4) Profit margin	After-tax profit (loss) divided by total operating revenue
	(F5) Leverage ratio	Total liabilities divided by total assets
	(F6) Operating income-to-assets ratio	Operating income divided by total assets
C: customer	(C1) Profit per customer	After-tax profit (loss) divided by total number of customers
	(C2) Profit per online customer	After-tax profit (loss) divided by total number of online customers

**Table 1** Description of the KPIs selected for a sample bank (continued)

<i>Perspective</i>	<i>KPIs</i>	<i>Description</i>	
C: customer	(C3) Market share	Sales volumes of banking products and services over the period divided by total market demands over the same period	
	(C4) Customer retention rate	Share of repeat customers	
	(C5) Customer growth rate	New customer growth rate	
	(C6) Number of active products/services per customer	Average number of active products/services per customer	
	P: internal process	(P1) Number of new products/services	Total number of new products/services over the period
		(P2) Transaction efficiency	Average time spent on solving problems occurring during transactions
(P3) Customer complaint		Number of critical comments from customers dissatisfied with products/services	
(P4) Rationalised processes		Share of procedures automated by computer systems (CRM, ERP, etc.)	
(P5) Time for new product/service development and launch		Average total time required to develop and launch new product/service	
(P6) Sales channels development		Share of transactions through remote channels	
L: learning and growth	(L1) Professional training	Number of training sessions per employee	
	(L2) Training costs	Training costs per employee	
	(L3) Staff turnover	Number of laid-off and resigned employees divided by total number of employees	
	(L4) Motivation	Number of incentive programs (bonuses, awards, rewards to the best workers, etc.) per employee	
	(L5) Proactiveness	Number of improvements suggested by employees	

#### 4.4 Step 4: determining causal relationships between the KPIs

Further, the DEMATEL method was employed in order to identify causal relationships between KPIs listed in Table 1. For this purpose, we have conducted interviews with ten bank managers. They were requested to evaluate the direct influence (scores ranging from 1 to 4) among the selected criteria (four perspectives and the KPIs) according to their own judgment, where:

- 4 – extremely strong influence
- 3 – very strong influence

- 2 – moderate influence
- 1 – slight or no influence.

The next step is a mathematical treatment of the survey results. First of all, we calculate *the initial direct influence matrix*, where each element is derived from the mean of the same elements in the direct matrices of all the respondents. This matrix can be represented as follows [Wu, (2012), p.310]:

$$Z = \begin{bmatrix} z_{11} & \cdots & z_{1j} & \cdots & z_{1n} \\ \vdots & & \vdots & & \vdots \\ z_{i1} & \cdots & z_{ij} & \cdots & z_{in} \\ \vdots & & \vdots & & \vdots \\ z_{n1} & \cdots & z_{nj} & \cdots & z_{nn} \end{bmatrix} \quad (1)$$

where  $z_{ij}$  represents the strength of influence from element  $i$  to element  $j$ .

The initial direct influence matrix of the four BSC perspectives is shown in Table 2.

**Table 2** The initial direct influence matrix of the four BSC perspectives

Perspectives	Finance (F)	Customer (C)	Internal process (P)	Learning and growth (L)
Finance (F)	0.000	2.700	3.000	2.700
Customer (C)	3.700	0.000	2.800	2.800
Internal process (P)	3.200	3.400	0.000	2.500
Learning and growth (L)	2.400	3.200	2.900	0.000

Subsequently, we derive *the normalised direct influence matrix*, which can be obtained by the following formula [Wu, (2012), p.310]:

$$X = \frac{Z}{\max \left( \max \sum_{\substack{1 \leq i \leq n \\ 1 < j < n}} z_{ij}, \sum_{\substack{1 \leq j \leq n \\ 1 < i < n}} z_{ij} \right)} \quad (2)$$

The normalised direct influence matrix of the four BSC perspectives is shown in Table 3.

**Table 3** The normalised direct influence matrix of the four BSC perspectives

Perspectives	Finance (F)	Customer (C)	Internal process (P)	Learning and growth (L)
Finance (F)	0.000	0.290	0.323	0.290
Customer (C)	0.398	0.000	0.301	0.301
Internal process (P)	0.344	0.366	0.000	0.269
Learning and growth (L)	0.258	0.344	0.312	0.000

Next, we calculate *the matrix of total relations*, the coefficients of which combine direct and indirect influence among indicators. This matrix can be formulated by equation (3) [Wu, (2012), p.310]:

$$\begin{aligned}
T &= \lim_{k \rightarrow \infty} (X + X^2 + \dots + X^k) \\
&= \lim_{k \rightarrow \infty} X(I + X + X^2 + \dots + X^{k-1}) \\
&= \lim_{k \rightarrow \infty} \begin{bmatrix} I - X^k \\ I - X \end{bmatrix} \\
&= X(I - X)^{-1}
\end{aligned} \tag{3}$$

where

$I$  is the identity matrix

$X = [x_{ij}]_{n \times n}$  is the direct influence matrix

$\lim_{k \rightarrow \infty} (X^2 + \dots + X^k)$  is the indirect influence matrix (when  $0 \leq x_{ij} < 1$ , then  $\lim_{k \rightarrow \infty} X^k = 0$ ).

The matrix of total relations of the four BSC perspectives is presented in Table 4.

**Table 4** The matrix of total relations of the four BSC perspectives

<i>Perspectives</i>	<i>Finance (F)</i>	<i>Customer (C)</i>	<i>Internal process (P)</i>	<i>Learning and growth (L)</i>
Finance (F)	4.5428	4.7327 <sup>a</sup>	4.5396	4.2544
Customer (C)	5.1849 <sup>b</sup>	4.8578 <sup>b</sup>	4.8632 <sup>b</sup>	4.5762 <sup>a</sup>
Internal process (P)	5.0938 <sup>b</sup>	5.0647 <sup>b</sup>	4.5717	4.5015
Learning and growth (L)	4.8028 <sup>a</sup>	4.8163 <sup>a</sup>	4.5823 <sup>a</sup>	4.0762

Notes: <sup>a</sup> denotes the value is between 4.5760 and 4.8500

<sup>b</sup> denotes the value is between 4.8500 and 5.1849

Finally, in order to analyse the obtained results we define the level of influence and the level of relations as the sum of columns ( $D$ ) and the sum of rows ( $R$ ) of the matrix of total relations and calculate them by the equations (4) and (5), respectively [Wu, (2012), p.310]:

$$D = d_{i \times 1} = \left[ \sum_{j=1}^n t_{ij} \right]_{n \times 1} \tag{4}$$

$$R = r_{j \times n} = \left[ \sum_{i=1}^n t_{ij} \right]_{1 \times n} \tag{5}$$

where  $i, j \in \{1, 2, \dots, n\}$ .

Thus, we assume that the value of  $(D + R)$  indicates the so-called ‘degree of central role’, which reflects the importance of each indicator or, according to Wu (2012, p.310), ‘the strength of influence of both dispatch and receipt’. Therefore, the higher the value of  $(D + R)$  between two factors is, the stronger relations they have. Likewise, the value of  $(D - R)$  denotes the ‘severity of influence’. When  $(D - R)$  is positive, then we have to do with a ‘cause-factor’, which dispatches its influence to other factors. Alternatively, when  $(D - R)$  is negative we deal with an ‘effect-factor’, which is being affected by the others. Hence, the higher the value of  $(D - R)$  an indicator has, the more influence it dispatches to the other factors. It is also worth mentioning that the more influential the indicator is

[greater value of  $(D - R)$ ], the higher priority it has within the context of strategy implementation (Wu, 2012).

**Table 5** Results of the DEMATEL analysis: degree of central role and severity of influence

<i>Perspectives/indicators</i>	<i>D + R</i>	<i>Rank</i>	<i>D - R</i>	<i>Rank</i>
(F) Finance	37.6939	3	-1.5548 <sup>b</sup>	4
(F1) ROA	15.1564 <sup>c</sup>	2	-0.6289	20
(F2) ROE	15.1483	3	-0.8546 <sup>b</sup>	23
(F3) ROI	15.0384	5	-0.3026	16
(F4) Profit margin	15.1370	4	-0.0725	14
(F5) Leverage ratio	13.7441	17	-0.3636	18
(F6) Operating income-to-assets ratio	14.6452	9	0.4771 <sup>a</sup>	5
(C) Customer	38.9537	1	0.0105	3
(C1) Profit per customer	14.6030	11	-0.3529	17
(C2) Profit per online customer	14.0979	13	-0.2132	15
(C3) Market share	14.6420	10	-0.7986 <sup>b</sup>	22
(C4) Customer retention rate	14.6684	8	-0.7229	21
(C5) Customer growth rate	15.2273 <sup>c</sup>	1	0.0746 <sup>a</sup>	10
(C6) Number of active products/services per customer	14.3466	12	-0.5214	19
(P) Internal process	37.7886	2	0.6750	2
(P1) Number of new products/services	14.9605 <sup>c</sup>	6	0.1360	8
(P2) Transaction efficiency	13.5174	18	1.0116 <sup>a</sup>	1
(P3) Customer complaint	12.1656	20	0.3958	7
(P4) Rationalised processes	14.0928	14	0.7341	3
(P5) Time for new product/service development and launch	14.8978	7	-0.0010 <sup>b</sup>	12
(P6) Sales channels development	13.8691	16	0.8955	22
(L) Learning and growth	35.6860	4	0.8692 <sup>a</sup>	1
(L1) Professional training	14.0323 <sup>c</sup>	15	0.1307	9
(L2) Training costs	11.7524	22	0.4088	6
(L3) Staff turnover	10.9838	23	-0.0121 <sup>b</sup>	13
(L4) Motivation	13.2868	19	0.0033	11
(L5) Proactiveness	12.0729	21	0.5765 <sup>a</sup>	4

Notes: <sup>a</sup> denotes the main 'cause-factor': dispatches the strongest influence to others [the highest  $(D - R)$  value]

<sup>b</sup> denotes the main 'effect-factor': receives the strongest influence from others [the lowest  $(D - R)$  value]

<sup>c</sup> denotes the 'central role' factor for each perspective [the highest  $(D + R)$  value]

<sup>d</sup> denotes the factors eliminated from the further analysis.

Table 5 presents the results of the DEMATEL analysis, including the ‘degree of central role’ and the ‘severity of influence’ of each factor as well as their ranking according to these criteria. It is worthwhile noting that in order to decrease the number of indicators not having strong influence on the others and by doing so to avoid the necessity to analyse trivial relationships; the thresholds were set for the values of  $(D + R)$  and  $(D - R)$ .

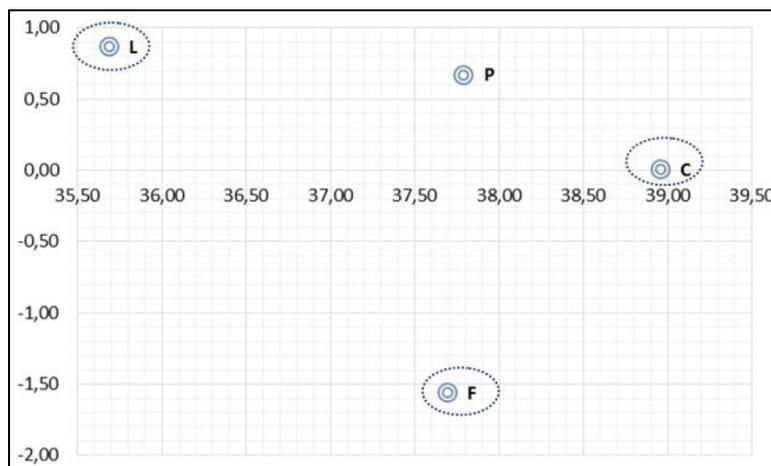
In this paper, the thresholds were set on the second quartile, i.e., to 4.5760 and 0.3091 for the four BSC perspectives and the KPIs, respectively. Thus, the indicators with the values below the corresponding thresholds were eliminated from the further analysis and were not considered when constructing a strategy map. Since the values of some factors were close to the set threshold, in these cases the selection process was conducted in accordance with the expert judgments. As a result, two KPIs, namely training costs (L2) and staff turnover (L3), were eliminated from the further examination.

As is clear from Table 5, the four BSC perspectives are ranked according to their  $(D + R)$  values as follows: ‘C: customer (38.9537)’, ‘P: internal process (37.7886)’, ‘F: finance (37.6939)’, ‘L: learning and growth (35.6860)’. As far as the KPIs are concerned, the top five central indicators with the highest value of  $(D + R)$  involve ‘C5: customer growth rate (15.2273)’, ‘F1: ROA (15.1564)’, ‘F2: ROE (15.1483)’, ‘F4: profit margin (15.1370)’, ‘F3: ROI (15.0384)’.

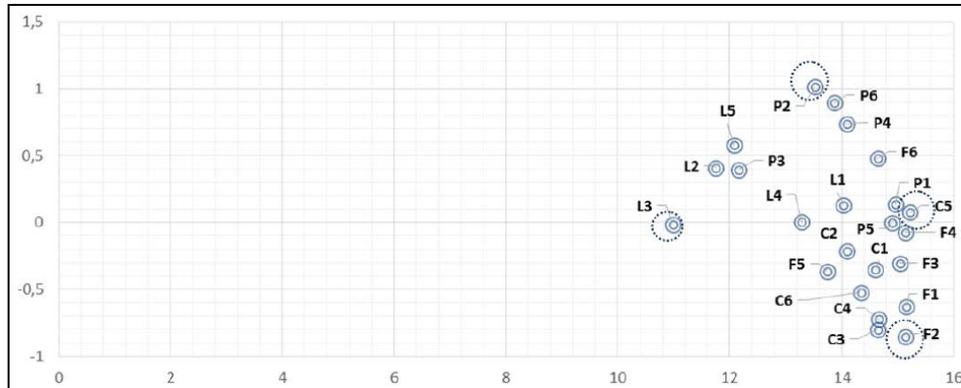
According to the ‘severity of influence’ [the  $(D - R)$  value], the four perspectives are ranged in the following order: ‘L: learning and growth (0.8692)’, ‘P: internal process (0.6750)’, ‘C: customer (0.0105)’, ‘F: finance (-1.5548)’. The top three KPIs with the highest  $(D - R)$  value are ‘P2: transaction efficiency (1.0116)’, ‘P6: sales channels development (0.8955)’, ‘P4: rationalised processes (0.7341)’. The top three KPIs with the lowest  $(D - R)$  value, in turn, include ‘F2: ROE (-0.8546)’, ‘C3: market share (-0.7986)’, ‘C4: customer retention rate (-0.7229)’.

Hereafter, on the basis of Table 5 we construct the diagrams illustrating the distribution of the four BSC perspectives and the performance indicators by the ‘degree of central role’ and the ‘severity of influence’ (Figures 2 and 3, respectively), plotting the values of  $(D + R)$  and  $(D - R)$  along the X-axis and Y-axis, correspondingly.

**Figure 2** Distribution of the BSC perspectives by the ‘degree of central role’ and the ‘severity of influence’ (see online version for colours)



**Figure 3** Distribution of the KPIs by the ‘degree of central role’ and the ‘severity of influence’ (see online version for colours)



As can be seen from Figure 2, ‘C: customer’ has the highest value of  $(D + R)$  and, consequently, the largest number of relations with the other perspectives. Besides, as is clear from Figure 3, ‘C5: customer growth rate’ has the highest  $(D + R)$  value and the most numerous relationships with other KPIs, from where we infer that this is the ‘central role’ factor.

Moreover, in Figure 2, ‘L: learning and growth’ exhibit the highest value of  $(D - R)$  indicating the main ‘cause-factor’, which dispatches the greatest influence to the other KPIs. Similarly, in Figure 3, ‘P2: transaction efficiency’ is assumed to be the main ‘cause-factor’ among the performance indicators.

As for the factors that receive the greatest influence from the others [the lowest  $(D - R)$  value], ‘F: finance’ and ‘F2: ROE’ stand out in Figures 2 and 3, respectively.

Finally, it is worth mentioning the factors that happened to be the least important. Within the framework of the current analysis, ‘L3: staff turnover’ proves to be the least important among the KPIs [the lowest  $(D + R)$  value]. This performance indicator, as was mentioned above, has been eliminated from the further examination.

#### 4.5 Step 5: constructing the strategy map

The strategy maps for the four BSC perspectives and the 21 performance indicators are depicted in Figures 4 and 5, correspondingly. In Figure 4, dotted lines illustrate fairly weak relationships among the factors (the strength of influence is between 4.5760 and 4.8500); while solid lines denote strong relationships (the strength of influence is between 4.8500 and 5.1849). Arrows indicate the direction of an influence. The customer perspective, being the central role factor, is presented in the bold circle, highlighting that this factor has the most numerous relations with the others and, therefore, is of great importance for the bank’s strategy.

As one can see in Figure 4, ‘L: learning and growth’ while being the main ‘cause-factor’ dispatch influence to each of the remaining three perspectives. Meanwhile, ‘F: finance’ receives influence from all the other factors, from where we can conclude that the finance perspective represents the main ‘effect-factor’.

Figure 4 Strategic map of the four BSC perspectives

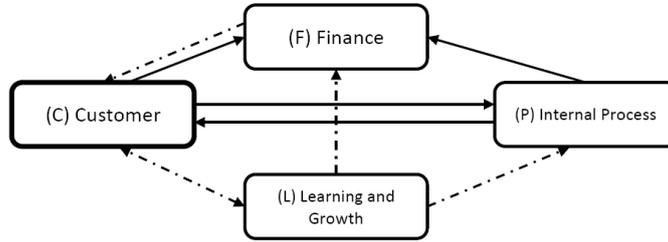
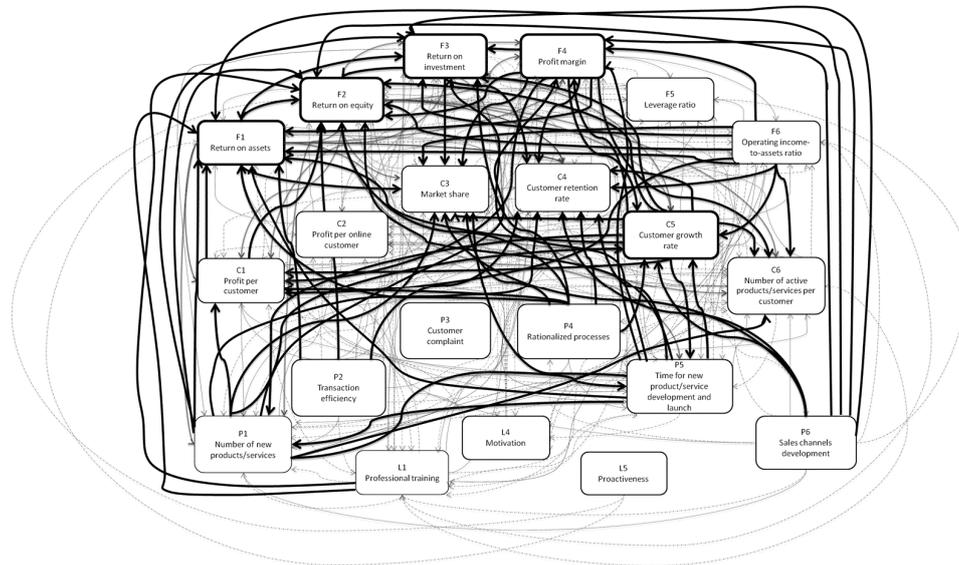


Figure 5 Strategic map of the 21 performance indicators



In Figure 5, in turn, dotted lines illustrate moderate influence (between 0.3091 and 0.3300), solid lines denote strong influence (between 0.3300 and 0.3500) and solid bold lines indicate the strongest relationships (between 0.3500 and 0.3823). As before, arrows indicate the direction of an influence.

As far as relations among the indicators illustrated in Figure 5 are highly numerous, pure graphic analysis seems not sufficient when examining these causal relationships. For that reason, we build an additional analytical table aggregating the number of indicators dispatching influence to and receiving influence from other factors as well as the strength of those relationships (Annex 1).

According to the table mentioned above, five indicators with the highest value of  $(D + R)$ , including 'C5: customer growth rate', 'F1: ROA', 'F2: ROE', 'F4: profit margin' and 'F3: ROI' dispatch influence to and receive influence from more than 11 indicators. Accordingly, in Figure 5 these five indicators are marked as bold circles.

Moreover, main 'cause-factors' [the highest value of  $(D - R)$ ], namely 'P2: transaction efficiency', 'P4: rationalised processes' and 'P6: sales channels development' dispatch influence to more than 11 indicators while receiving influence from less than 11 indicators (or do not receive any influence at all).

Summary of the results analysed by DEMATEL is presented in Annex 2.

#### *4.6 Step 6: interpretation of the results*

Within the BSC framework, strategy is considered as the combination of 'logical links' (causal relationships) among the KPIs. Since the strategy map comprises a great number of those links and at the same time the resources of the Bank are limited, the final step of this research boils down to the selection of the areas which are to be improved and optimised in the first place.

##### *4.6.1 The central indicators*

As one can see in Annex 2, among the four perspectives the central role belongs to 'C: customer'. Along with that, 'C5: customer growth rate' is the central factor among all the KPIs, dispatching influence to 17 indicators and receiving influence from 18 indicators. It is noteworthy that 'C5: customer growth rate' especially influences the bank's profitability indicators ('F1: ROA', 'F2: ROE', 'F3: ROI', 'F4: profit margin'). In other words, the greater the customer base the higher income the Bank gains, which positively affects its profitability.

Furthermore, within the customer perspective two lagging indicators stand out: 'C3: market share' and 'C4: customer retention rate'. These indicators receive influence from 18 and 19 other factors, correspondingly, and are affected primarily by the profitability indicators ('F3: ROI', 'F4: profit margin', 'F6: operating income-to-assets ratio').

Apart from this, 'C3: market share' and 'C4: customer retention rate' are strongly influenced by the indicators of internal processes ('P1: number of new products/services', 'P4: rationalised processes', 'P5: time for new product/service development and launch' and 'P6: sales channels development'). Given the fact that 'P4: rationalised processes' has an impact on 'P5: time for new product/service development and launch' which in turn affects 'P1: number of new products/services', one can conclude that in order to keep existing customers and gain new ones the bank should, first of all, increase a number of computer aided processes which results in the reduced time for new product/service development and launch. Eventually, expanding a product line as well as an active development of remote service channels ('P6: sales channels development') will lead to an increased market share and an expanded pool of loyal customers.

As far as 'L: learning and growth' is concerned, 'L1: professional training' proves to be the central factor, receiving the strongest influence from 'F6: operating income-to-assets ratio'. This implies that the number of training days per employee is determined by the bank chiefly according to its financial capability.

Aside from that, 'L1: professional training' dispatches the greatest influence to the indicators of financial perspective, namely 'F1: ROA', 'F2: ROE' and also more moderate influence to 'C5: customer growth rate'. The latter as was mentioned above strongly affects ROA and equity. Hence, we can conclude that the more highly skilled specialists are employed at the bank, the better service it could offer and, consequently, the more new clients it could gain, resulting in increased incomes in future.

With respect to 'F: finance', the most significant performance indicators are 'F1: ROA' and 'F2: ROE', which turn out to be lagging indicators as well. Both factors receive influence from 19 other indicators, among which we can distinguish 'C5:

customer growth rate', 'P1: number of new products/services', 'P2: transaction efficiency', 'P4: rationalised processes', 'P5: time for new product/service development and launch' and 'P6: sales channels development'. Thus, profitability indicators are evidently substantially dependent on internal processes. It is also worth noting that the indicators of internal processes listed above have a considerable impact on 'C5: customer growth rate'. To put it another way, the more effectively internal business processes are organised, the greater range of services the bank is able to offer and, therefore, the higher the customer growth rate and financial effectiveness of the bank's performance.

Within the fourth perspective, '*P: internal process*', one can lay the emphasis on 'P1: number of new products/services' and 'P5: time for new product/service development and launch'.

#### 4.6.2 *The prioritisation of the critical indicators*

The indicators with the highest positive ( $D - R$ ) value influence other factors much more than other factors influence them. Therefore, it is deemed that the Bank's managers should focus on improving these indicators in the first place. According to the research results summarised in Annex 2, the critical indicators are 'P2: transaction efficiency', 'P4: rationalised processes', 'P6: sales channels development'. In other words, these four factors represent the main 'cause-factors' within the framework of the developed strategy map.

As can be seen from Figure 5 and Annex 2, '*P2: transaction efficiency*' being a critical factor dispatches influence to 15 indicators (while is not affected by any indicator), especially to 'F1: ROA', 'F2: ROE' and 'C4: customer retention rate'. It is also worth mentioning that the share of repeat customers has a positive impact on the bank's profitability (F1, F2, F3, F4). Thus, the less time the bank's employees spend on problem solving while carrying out the transactions, the faster and better they serve customers, and the more loyal the customers eventually become. This in turn causes the increase in the bank's performance profitability since according to the famous 80/20 rule, 80% of one's profits can be attributed to 20% of one's customers (i.e., loyal customers).

'*P6: sales channels development*' has the most impact on the profitability indicators as well as the customer perspective factors ('C3: market share' and 'C4: customer retention rate'). As far as financial indicators are concerned, increasing the share of transactions through the remote channels boosts the profitability for a number of reasons. First of all, the net cost of remote operations is much lower compared to traditional offices. Moreover, remote banking encourages gaining new clients and keeping existing ones, giving them an opportunity to save time, and what is more, offering clients with disabilities access to the bank's services. Consequently, an increase in the number of clients raises the bank's income and profit. Hence, developing remote channels has both direct and indirect positive impact on the bank's performance profitability.

Among the factors receiving the greatest influence from '*P4: rationalised processes*' one can distinguish 'F1: ROA', 'F2: ROE', 'F3: ROI', 'C3: market share', 'C4: customer retention rate' and 'C5: customer growth rate'. This result is fully consistent with the expectations since, first of all, automatised processes help to reduce costs and thereby lead inevitably to an increase in profits. Secondly, it is possible to optimise the working time and reallocate staff in the most effective way, which has a positive impact on the quality and time of client servicing. As long as high-quality customer service is of great

importance nowadays, an optimisation of the bank's internal processes might result in a considerable expansion of a customer base.

## 5 Conclusions

This paper presented a detailed road map of the BSC development for a commercial bank. The method employed within the scope of this research involves constructing a strategy map of KPIs, which is of great importance when prioritising strategic steps. First of all, KPIs have been selected on the basis of the mission and strategic vision of a sample bank. Then bank managers filled out a questionnaire where they were invited to evaluate the mutual influence among the KPIs based on their own judgment. Further, the respondents' answers were averaged and normalised to exclude a subjectivity factor. Finally, the DEMATEL method was applied in order to calculate the 'degree of central role' and the 'severity of influence' for each performance indicator.

As a consequence, we distinguished three critical factors, i.e., the bank's performance areas that need to be enhanced in the first place. These factors involve 'P2: transaction efficiency', 'P6: sales channels development' and 'P4: rationalised processes'. These indicators have a dramatic impact on the bank's performance. Automated processes as well as enhanced transaction efficiency help to optimise operations boosting the quality of customer service and, therefore, increasing the number of clients. Developing remote banking channels, in turn, leads to an increase in profitability both directly (cost saving) and indirectly (customer base expansion).

Finally, it is worth mentioning that despite all the incontestable advantages of the BSC it should be complemented with some other analytical methods (analytic hierarchy process, fuzzy integrals, etc.) to verify causal relationships among the performance indicators.

The perspectives of the future research lie in extending the analysis from developing an overall corporate strategy to elaborating lower level strategies, i.e., competitive strategy and functional strategies (e.g., financial, marketing, R&D).

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**Annex 1**

*Statistics on the KPIs mutual influence*

No.	KPIs	Dispatching influence to (indicators)	Total no.	Receiving influence from (indicators)	Total no.
1	(F1) ROA <sup>a, b</sup>	F2 <sup>e</sup> , F3 <sup>e</sup> , F4 <sup>d</sup> , F5 <sup>c</sup> , F6 <sup>c</sup> , C1 <sup>d</sup> , C2 <sup>c</sup> , C3 <sup>e</sup> , C4 <sup>d</sup> , C5 <sup>d</sup> , C6 <sup>d</sup> , P1 <sup>d</sup> , P5 <sup>d</sup> , L1 <sup>c</sup>	14	F2 <sup>d</sup> , F3 <sup>e</sup> , F4 <sup>e</sup> , F5 <sup>d</sup> , F6 <sup>e</sup> , C1 <sup>e</sup> , C2 <sup>d</sup> , C3 <sup>d</sup> , C4 <sup>d</sup> , C5 <sup>e</sup> , C6 <sup>d</sup> , P1 <sup>e</sup> , P2 <sup>e</sup> , P4 <sup>e</sup> , P5 <sup>e</sup> , P6 <sup>e</sup> , L1 <sup>e</sup> , L4 <sup>e</sup> , L5 <sup>c</sup>	19
2	(F2) ROE <sup>a, b</sup>	F1 <sup>d</sup> , F3 <sup>d</sup> , F4 <sup>d</sup> , F5 <sup>c</sup> , F6 <sup>c</sup> , C1 <sup>d</sup> , C2 <sup>c</sup> , C3 <sup>d</sup> , C4 <sup>d</sup> , C5 <sup>d</sup> , C6 <sup>d</sup> , P1 <sup>d</sup> , P5 <sup>d</sup> , L1 <sup>c</sup>	14	F1 <sup>e</sup> , F3 <sup>e</sup> , F4 <sup>e</sup> , F5 <sup>d</sup> , F6 <sup>e</sup> , C1 <sup>e</sup> , C2 <sup>d</sup> , C3 <sup>d</sup> , C4 <sup>d</sup> , C5 <sup>e</sup> , C6 <sup>d</sup> , P1 <sup>e</sup> , P2 <sup>e</sup> , P4 <sup>e</sup> , P5 <sup>e</sup> , P6 <sup>e</sup> , L1 <sup>e</sup> , L4 <sup>d</sup> , L5 <sup>c</sup>	19
3	(F3) ROI <sup>a, b</sup>	F1 <sup>e</sup> , F2 <sup>e</sup> , F4 <sup>d</sup> , F5 <sup>c</sup> , F6 <sup>c</sup> , C1 <sup>d</sup> , C2 <sup>c</sup> , C3 <sup>e</sup> , C4 <sup>e</sup> , C5 <sup>d</sup> , C6 <sup>d</sup> , P1 <sup>d</sup> , P4 <sup>c</sup> , P5 <sup>d</sup> , L1 <sup>c</sup> , L4 <sup>c</sup>	16	F1 <sup>e</sup> , F2 <sup>d</sup> , F4 <sup>e</sup> , F5 <sup>c</sup> , F6 <sup>e</sup> , C1 <sup>d</sup> , C2 <sup>d</sup> , C3 <sup>c</sup> , C4 <sup>d</sup> , C5 <sup>e</sup> , C6 <sup>d</sup> , P1 <sup>e</sup> , P2 <sup>d</sup> , P4 <sup>e</sup> , P5 <sup>e</sup> , P6 <sup>e</sup> , L1 <sup>d</sup> , L4 <sup>c</sup>	18
4	(F4) Profit margin <sup>b</sup>	F1 <sup>e</sup> , F2 <sup>e</sup> , F3 <sup>e</sup> , F5 <sup>d</sup> , F6 <sup>d</sup> , C1 <sup>e</sup> , C2 <sup>d</sup> , C3 <sup>e</sup> , C4 <sup>e</sup> , C5 <sup>e</sup> , C6 <sup>e</sup> , P1 <sup>d</sup> , P5 <sup>d</sup> , L1 <sup>c</sup> , L4 <sup>c</sup>	15	F1 <sup>d</sup> , F2 <sup>d</sup> , F3 <sup>d</sup> , F5 <sup>c</sup> , F6 <sup>e</sup> , C1 <sup>d</sup> , C2 <sup>c</sup> , C3 <sup>c</sup> , C4 <sup>d</sup> , C5 <sup>e</sup> , C6 <sup>c</sup> , P1 <sup>e</sup> , P2 <sup>d</sup> , P4 <sup>d</sup> , P5 <sup>e</sup> , P6 <sup>e</sup> , L1 <sup>d</sup> , L4 <sup>c</sup>	18
5	(F5) Leverage ratio <sup>b</sup>	F1 <sup>d</sup> , F2 <sup>d</sup> , F3 <sup>c</sup> , F4 <sup>c</sup> , F6 <sup>d</sup> , C1 <sup>c</sup> , C3 <sup>c</sup> , C4 <sup>c</sup> , C5 <sup>c</sup> , C6 <sup>c</sup> , P5 <sup>c</sup>	11	F1 <sup>c</sup> , F2 <sup>c</sup> , F3 <sup>c</sup> , F4 <sup>d</sup> , F6 <sup>d</sup> , C1 <sup>c</sup> , C5 <sup>d</sup> , P1 <sup>d</sup> , P2 <sup>c</sup> , P4 <sup>c</sup> , P5 <sup>c</sup> , P6 <sup>c</sup>	12
6	(F6) Operating income-to-assets ratio <sup>a, b</sup>	F1 <sup>e</sup> , F2 <sup>e</sup> , F3 <sup>e</sup> , F4 <sup>e</sup> , F5 <sup>d</sup> , C1 <sup>e</sup> , C2 <sup>d</sup> , C3 <sup>e</sup> , C4 <sup>e</sup> , C5 <sup>e</sup> , C6 <sup>e</sup> , P1 <sup>d</sup> , P4 <sup>c</sup> , P5 <sup>d</sup> , L1 <sup>d</sup> , L4 <sup>c</sup>	16	F1 <sup>c</sup> , F2 <sup>c</sup> , F3 <sup>c</sup> , F4 <sup>d</sup> , C1 <sup>c</sup> , C4 <sup>c</sup> , C5 <sup>d</sup> , C6 <sup>c</sup> , P1 <sup>d</sup> , P2 <sup>c</sup> , P4 <sup>c</sup> , P5 <sup>c</sup> , P6 <sup>c</sup> , L1 <sup>c</sup>	14
7	(C1) Profit per customer <sup>a, b</sup>	F1 <sup>e</sup> , F2 <sup>e</sup> , F3 <sup>d</sup> , F4 <sup>d</sup> , F5 <sup>c</sup> , F6 <sup>c</sup> , C3 <sup>d</sup> , C4 <sup>d</sup> , C5 <sup>d</sup> , C6 <sup>c</sup> , P1 <sup>d</sup> , P5 <sup>d</sup> , L1 <sup>c</sup>	13	F1 <sup>d</sup> , F2 <sup>d</sup> , F3 <sup>d</sup> , F4 <sup>e</sup> , F5 <sup>c</sup> , F6 <sup>e</sup> , C2 <sup>c</sup> , C3 <sup>c</sup> , C4 <sup>c</sup> , C5 <sup>e</sup> , C6 <sup>c</sup> , P1 <sup>e</sup> , P2 <sup>d</sup> , P4 <sup>e</sup> , P5 <sup>d</sup> , P6 <sup>d</sup> , L1 <sup>c</sup>	17
8	(C2) Profit per online customer <sup>b</sup>	F1 <sup>d</sup> , F2 <sup>d</sup> , F3 <sup>d</sup> , F4 <sup>c</sup> , C1 <sup>c</sup> , C3 <sup>d</sup> , C4 <sup>d</sup> , C5 <sup>c</sup> , C6 <sup>c</sup> , P1 <sup>c</sup> , P5 <sup>c</sup>	11	F1 <sup>c</sup> , F2 <sup>c</sup> , F3 <sup>c</sup> , F4 <sup>d</sup> , F6 <sup>d</sup> , C3 <sup>c</sup> , C4 <sup>c</sup> , C5 <sup>d</sup> , C6 <sup>c</sup> , P1 <sup>d</sup> , P2 <sup>c</sup> , P4 <sup>d</sup> , P5 <sup>d</sup> , P6 <sup>c</sup> , L1 <sup>c</sup>	15
9	(C3) Market share <sup>b</sup>	F1 <sup>d</sup> , F2 <sup>d</sup> , F3 <sup>c</sup> , F4 <sup>c</sup> , C1 <sup>c</sup> , C2 <sup>c</sup> , C4 <sup>d</sup> , C5 <sup>d</sup> , C6 <sup>c</sup> , P1 <sup>c</sup> , P5 <sup>c</sup>	11	F1 <sup>e</sup> , F2 <sup>d</sup> , F3 <sup>e</sup> , F4 <sup>e</sup> , F5 <sup>c</sup> , F6 <sup>c</sup> , C1 <sup>d</sup> , C2 <sup>d</sup> , C4 <sup>d</sup> , C5 <sup>e</sup> , C6 <sup>d</sup> , P1 <sup>e</sup> , P2 <sup>d</sup> , P4 <sup>e</sup> , P5 <sup>e</sup> , P6 <sup>e</sup> , L1 <sup>d</sup> , L4 <sup>c</sup>	18

Notes: <sup>a</sup>The numbers of indicators dispatching influence to are greater than 11  
<sup>b</sup>The numbers of indicators receiving influence from are greater than 11  
<sup>c</sup>The strength of influence is between 0.3091 and 0.3300 (moderate)  
<sup>d</sup>The strength of influence is between 0.3300 and 0.3500 (strong)  
<sup>e</sup>The strength of influence is between 0.3500 and 0.3823 (strongest)

*Statistics on the KPIs mutual influence (continued)*

No.	KPIs	Dispatching influence to (indicators)	Total no.	Receiving influence from (indicators)	Total no.
10	(C4) Customer retention rate <sup>a,b</sup>	F1 <sup>d</sup> , F2 <sup>d</sup> , F3 <sup>d</sup> , F4 <sup>d</sup> , F6 <sup>c</sup> , C1 <sup>c</sup> , C2 <sup>c</sup> , C3 <sup>d</sup> , C5 <sup>c</sup> , C6 <sup>c</sup> , P1 <sup>c</sup> , P5 <sup>c</sup>	12	F1 <sup>d</sup> , F2 <sup>d</sup> , F3 <sup>e</sup> , F4 <sup>e</sup> , F5 <sup>c</sup> , F6 <sup>c</sup> , C1 <sup>d</sup> , C2 <sup>d</sup> , C3 <sup>d</sup> , C5 <sup>e</sup> , C6 <sup>d</sup> , P1 <sup>e</sup> , P2 <sup>e</sup> , P3 <sup>c</sup> , P4 <sup>e</sup> , P5 <sup>e</sup> , P6 <sup>e</sup> , L1 <sup>d</sup> , L4 <sup>e</sup>	19
11	(C5) Customer growth rate <sup>a,b</sup>	F1 <sup>e</sup> , F2 <sup>e</sup> , F3 <sup>e</sup> , F4 <sup>e</sup> , F5 <sup>d</sup> , F6 <sup>d</sup> , C1 <sup>e</sup> , C2 <sup>d</sup> , C3 <sup>e</sup> , C4 <sup>e</sup> , C6 <sup>c</sup> , P1 <sup>c</sup> , P4 <sup>c</sup> , P5 <sup>e</sup> , P6 <sup>c</sup> , L1 <sup>c</sup> , L4 <sup>c</sup>	17	F1 <sup>d</sup> , F2 <sup>d</sup> , F3 <sup>d</sup> , F4 <sup>e</sup> , F5 <sup>c</sup> , F6 <sup>e</sup> , C1 <sup>d</sup> , C2 <sup>c</sup> , C3 <sup>d</sup> , C4 <sup>c</sup> , C6 <sup>c</sup> , P1 <sup>c</sup> , P2 <sup>d</sup> , P4 <sup>c</sup> , P5 <sup>e</sup> , P6 <sup>e</sup> , L1 <sup>d</sup> , L4 <sup>c</sup>	18
12	(C6) Number of active products/services per customer <sup>a,b</sup>	F1 <sup>d</sup> , F2 <sup>d</sup> , F3 <sup>d</sup> , F4 <sup>c</sup> , F6 <sup>c</sup> , C1 <sup>c</sup> , C2 <sup>c</sup> , C3 <sup>d</sup> , C4 <sup>d</sup> , C5 <sup>c</sup> , P1 <sup>c</sup> , P5 <sup>c</sup>	12	F1 <sup>d</sup> , F2 <sup>d</sup> , F3 <sup>d</sup> , F4 <sup>e</sup> , F5 <sup>c</sup> , F6 <sup>e</sup> , C1 <sup>c</sup> , C2 <sup>c</sup> , C3 <sup>c</sup> , C4 <sup>c</sup> , C5 <sup>e</sup> , P1 <sup>e</sup> , P2 <sup>d</sup> , P4 <sup>d</sup> , P5 <sup>d</sup> , P6 <sup>d</sup> , L1 <sup>c</sup>	17
13	(P1) Number of new products/services <sup>a,b</sup>	F1 <sup>e</sup> , F2 <sup>e</sup> , F3 <sup>e</sup> , F4 <sup>e</sup> , F5 <sup>d</sup> , F6 <sup>d</sup> , C1 <sup>e</sup> , C2 <sup>d</sup> , C3 <sup>e</sup> , C4 <sup>e</sup> , C5 <sup>e</sup> , C6 <sup>e</sup> , P4 <sup>c</sup> , P5 <sup>e</sup> , L1 <sup>c</sup>	15	F1 <sup>d</sup> , F2 <sup>d</sup> , F3 <sup>d</sup> , F4 <sup>d</sup> , F6 <sup>d</sup> , C1 <sup>d</sup> , C2 <sup>c</sup> , C3 <sup>c</sup> , C4 <sup>c</sup> , C5 <sup>e</sup> , C6 <sup>c</sup> , P2 <sup>d</sup> , P4 <sup>d</sup> , P5 <sup>e</sup> , P6 <sup>d</sup> , L1 <sup>c</sup>	16
14	(P2) Transaction efficiency <sup>a</sup>	F1 <sup>e</sup> , F2 <sup>e</sup> , F3 <sup>d</sup> , F4 <sup>d</sup> , F5 <sup>c</sup> , F6 <sup>c</sup> , C1 <sup>d</sup> , C2 <sup>c</sup> , C3 <sup>d</sup> , C4 <sup>e</sup> , C5 <sup>d</sup> , C6 <sup>d</sup> , P1 <sup>d</sup> , P5 <sup>d</sup> , L1 <sup>c</sup>	15		0
15	(P3) Customer complaint	C4 <sup>c</sup>	1		0
16	(P4) Rationalised processes <sup>a</sup>	F1 <sup>e</sup> , F2 <sup>e</sup> , F3 <sup>e</sup> , F4 <sup>d</sup> , F5 <sup>c</sup> , F6 <sup>c</sup> , C1 <sup>e</sup> , C2 <sup>d</sup> , C3 <sup>e</sup> , C4 <sup>e</sup> , C5 <sup>e</sup> , C6 <sup>d</sup> , P1 <sup>d</sup> , P5 <sup>d</sup> , L1 <sup>c</sup>	15	F3 <sup>c</sup> , F6 <sup>c</sup> , C5 <sup>c</sup> , P1 <sup>c</sup> , P5 <sup>c</sup> , P6 <sup>c</sup>	6
17	(P5) Time for new product/service development and launch <sup>a,b</sup>	F1 <sup>e</sup> , F2 <sup>e</sup> , F3 <sup>e</sup> , F4 <sup>e</sup> , F5 <sup>c</sup> , F6 <sup>c</sup> , C1 <sup>d</sup> , C2 <sup>d</sup> , C3 <sup>e</sup> , C4 <sup>e</sup> , C5 <sup>e</sup> , C6 <sup>d</sup> , P1 <sup>e</sup> , P4 <sup>c</sup> , L1 <sup>c</sup>	15	F1 <sup>d</sup> , F2 <sup>d</sup> , F3 <sup>d</sup> , F4 <sup>d</sup> , F5 <sup>c</sup> , F6 <sup>d</sup> , C1 <sup>d</sup> , C2 <sup>c</sup> , C3 <sup>c</sup> , C4 <sup>c</sup> , C5 <sup>e</sup> , C6 <sup>c</sup> , P1 <sup>e</sup> , P2 <sup>d</sup> , P4 <sup>d</sup> , P6 <sup>d</sup> , L1 <sup>c</sup>	17
18	(P6) Sales channels development <sup>a</sup>	F1 <sup>e</sup> , F2 <sup>e</sup> , F3 <sup>e</sup> , F4 <sup>e</sup> , F5 <sup>c</sup> , F6 <sup>c</sup> , C1 <sup>d</sup> , C2 <sup>c</sup> , C3 <sup>e</sup> , C4 <sup>e</sup> , C5 <sup>e</sup> , C6 <sup>d</sup> , P1 <sup>d</sup> , P4 <sup>c</sup> , P5 <sup>d</sup> , L1 <sup>c</sup>	16	C5 <sup>c</sup>	1
19	(L1) Professional training <sup>a,b</sup>	F1 <sup>e</sup> , F2 <sup>e</sup> , F3 <sup>d</sup> , F4 <sup>d</sup> , F6 <sup>c</sup> , C1 <sup>c</sup> , C2 <sup>c</sup> , C3 <sup>d</sup> , C4 <sup>d</sup> , C5 <sup>d</sup> , C6 <sup>c</sup> , P1 <sup>c</sup> , P5 <sup>c</sup>	13	F1 <sup>c</sup> , F2 <sup>c</sup> , F3 <sup>c</sup> , F4 <sup>c</sup> , F6 <sup>d</sup> , C1 <sup>c</sup> , C5 <sup>c</sup> , C6 <sup>c</sup> , P1 <sup>c</sup> , P2 <sup>c</sup> , P4 <sup>c</sup> , P5 <sup>c</sup> , P6 <sup>c</sup>	13
20	(L4) Motivation	F1 <sup>c</sup> , F2 <sup>d</sup> , F3 <sup>c</sup> , F4 <sup>c</sup> , C3 <sup>c</sup> , C4 <sup>c</sup> , C5 <sup>c</sup>	7	F3 <sup>c</sup> , F4 <sup>c</sup> , F6 <sup>c</sup> , C5 <sup>c</sup>	4
21	(L5) Proactiveness	F1 <sup>c</sup> , F2 <sup>c</sup>	2		0

Notes: <sup>a</sup>The numbers of indicators dispatching influence to are greater than 11<sup>b</sup>The numbers of indicators receiving influence from are greater than 11<sup>c</sup>The strength of influence is between 0.3091 and 0.3300 (moderate)<sup>d</sup>The strength of influence is between 0.3300 and 0.3500 (strong)<sup>e</sup>The strength of influence is between 0.3500 and 0.3823 (strongest)

**Annex 2***Summary of the results analysed by DEMATEL*

<i>Perspectives and KPIs</i>	<i>D + R</i>	<i>Rank</i>	<i>D – R</i>	<i>Rank</i>	<i>No. of indicators dispatching influence to</i>	<i>No. of indicators receiving influence from</i>
<i>(F) Finance</i>	37.6939	3	-1.5548	4	1	3
(F1) ROA	15.1564	2	-0.6289	20	14	19
(F2) ROE	15.1483	3	-0.8546	23	14	19
(F3) ROI	15.0384	5	-0.3026	16	16	18
(F4) Profit margin	15.1370	4	-0.0725	14	15	18
(F5) Leverage ratio	13.7441	17	-0.3636	18	11	12
(F6) Operating income-to-assets ratio	14.6452	9	0.4771	5	16	14
<i>(C) Customer</i>	38.9537	1	0.0105	3	3	3
(C1) Profit per customer	14.6030	11	-0.3529	17	13	17
(C2) Profit per online customer	14.0979	13	-0.2132	15	11	15
(C3) Market share	14.6420	10	-0.7986	22	11	18
(C4) Customer retention rate	14.6684	8	-0.7229	21	12	19
(C5) Customer growth rate	15.2273	1	0.0746	10	17	18
(C6) Number of active products/services per customer	14.3466	12	-0.5214	19	12	17
<i>(P) Internal process</i>	37.7886	2	0.6750	2	2	2
(P1) Number of new products/services	14.9605	6	0.1360	8	15	16
(P2) Transaction efficiency	13.5174	18	1.0116	1	15	0
(P3) Customer complaint	12.1656	20	0.3958	7	1	0
(P4) Rationalised processes	14.0928	14	0.7341	3	15	6
(P5) Time for new product/service development and launch	14.8978	7	-0.0010	12	15	17
(P6) Sales channels development	13.8691	16	0.8955	2	16	1
<i>(L) Learning and growth</i>	35.6860	4	0.8692	1	3	1
(L1) Professional training	14.0323	15	0.1307	9	13	13
(L2) Training costs	11.7524	22	0.4088	6	–	–
(L3) Staff turnover	10.9838	23	-0.0121	13	–	–
(L4) Motivation	13.2868	19	0.0033	11	7	4
(L5) Proactiveness	12.0729	21	0.5765	4	2	0