

# INTEGRATING ENTERPRISE PROJECT PORTFOLIO MANAGEMENT WITH THE BALANCED SCORECARD: A CASE FROM THE PHARMACEUTICAL INDUSTRY

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Enterprise Project Portfolio Management systems (EPPM) play a critical role in obtaining organizational success and are far more than just IT projects. Despite their popularity, EPPMs have seemed to fail when trying to work together with performance management systems, e.g. the Balanced Scorecard (BSC). Therefore, the aim of this study was to develop an EPPM-BSC model at both the strategic and project level. We tested the model on a case from the pharmaceutical industry and found it to be successful. Contrary to past studies, these results show that BSC, when integrated with EPPM, can be successfully cascaded from the strategic level on to the project level and thus enable managers in developing their own project scorecards. This paper is especially useful to companies who are in pursuit of developing their own performance management systems. Still, further research is needed, especially in finding a suitable model for KPI selection.

**Keywords:** Enterprise Project Portfolio Management, the Balanced Scorecard, Key Performance Indicators, strategic map, pharmaceutical industry, performance management

## Integriranje sustava za upravljanje portfeljem poduzeća s tablicom uravnoteženih rezultata na slučaju farmaceutske industrije

Izvorni znanstveni članak

Enterprise Project Portfolio Management (EPPM) ima ključnu ulogu u poboljšanju uspješnosti upravljanja projektima tvrtke. Unatoč njegovoj vrijednosti, EPPM je do sada bilo teško povezati sa modelima za mjerenje rezultata izvršenjem, kao što je npr. Balanced Scorecard (BSC). Stoga je glavni cilj ovog rada bio razviti jedinstven EPPM - BSC model, kako na strateškoj, tako i na projektnoj razini. Model je testiran na slučaju iz farmaceutske industrije, gdje se pokazao vrlo uspješnim. Za razliku od prijašnjih istraživanja, ovaj rad dokazuje kako BSC i EPPM mogu uspješno funkcionirati zajedno. Nadalje, njihova sinergija dovodi do kaskade ciljeva sa strateške na projektnu razinu te tako omogućuje projektima menadžerima razvoj ključnih pokazatelja izvršenja, koji direktno očitavaju ispunjenje poslovne strategije. Ovaj rad je posebno koristan za tvrtke, koje su fazi razvoja vlastitog sustava upravljanja učinkom, jer ovaj članak pokazuje testiranje modela na primjeru stvarne farmaceutske kompanije. Ipak, potrebna su daljnja istraživanja, posebice u području odabira ključnih pokazatelja izvršenja unutar perspektiva BSC-a.

**Ključne riječi:** Enterprise Project Portfolio Management (EPPM), tablica uravnoteženih rezultata (BSC), ključni pokazatelji izvršenja, strateška mapa, farmaceutska industrija, upravljanje izvršenjem

### 1

#### Introduction

In recent years, Enterprise Project Portfolio Management (EPPM) systems have evolved to be efficient tools covering a wide span of industries, e.g. construction, pharmacy, automotive etc [1]. Although EPPM is often seen as a software package, it is much more – it affects how a business conducts itself. Thus EPPM represents a system for integration of business processes and applications in order to manage almost any operation/project in an organization. The EPPM model has thus become the last generation of project approaches to strategic planning, which includes constant monitoring and control of strategic objectives.

Unfortunately, almost half of EPPM implementations fail and do not achieve the desired results. The reason can be found in the inability to connect with business strategy [2, 3]. Furthermore, the majority of EPPM fail because of soft and often neglected factors – i.e. resistance to business process reengineering and strategic management [4, 5, 6]. Although EPPMs have just begun to develop, authors agree that the main success factor for EPPM implementation is to create strategic demands from the highest levels of management and try to "force" them on to the lower levels [7, 8, 9]. Therefore, a link that will merge EPPM and a performance management system (PMM) is of unquestionable importance for an organization if it wants to set, monitor and control strategy implementations at every management level.

Practice has shown that regular use of PMM can positively influence business results [10÷15]. Unfortunately, similar to EPPM, more than half of BSC

implementations today also fail [16÷19]. There are different PMMs, among which the Balanced Scorecard (BSC) is probably the most popular (The Harvard Business Review at the end of the millennium declared BSC to be "the most influential management idea of the past 75 years" [20]). As soon as Kaplan and Norton [21] introduced BSC, it became a hit and showed its advantages over other PMM models. This was especially evident in its high strategic focus and the communication of strategic objectives throughout the organization. Besides the traditionally criticized financial indicators [22÷25], BSC also introduced additional perspectives. Still, the tool has been criticized [26÷29] for not being able to align KPIs with lower level scorecards, i.e. to cascade the BSC [30, 31, 32]. Furthermore, issues with managing strategy in companies are more than present. Thus only 5 % of employees understand the company's strategy, only 25 % of managers have initiatives closely tied to strategic priorities, only 40 % of organizations link their budget with strategy, and less than 15 % of project teams spend even up to 1 hour on discussions about strategy [33÷36]. Therefore many authors have suggested further integration of BSC in this direction [23, 24, 37, 38, 39], but until now little has been achieved.

The pharmaceutical industry today is under great pressure from the market. It demands an impeccable product with the maximum reduction of terms of delivery. Current development of new technologies and higher quality analysis allow much faster and automated production of products. Still, large market pressures and competition affect the judgment and determination of management in making decisions regarding which projects are or are not profitable for their company.

The aim of this research was to design a conceptual

framework for integrating BSC and EPPM. The framework will use BSC for setting and EPPM for implementing business strategy, monitoring and controlling the strategy on the strategic as well as the project level. Besides integration, this research also challenges the applicability of BSC to the pharmaceutical industry in Croatia. This is important since many Western authors have questioned its applicability to transitional economies [1, 32, 48]. First, we will give a brief overview of the relevant literature. Then, we will explain the framework and show how it was implemented in one pharmaceutical company in Croatia. And at the end, we will discuss the findings and present guidelines for further research.

**2 Literature Review**

**2.1 Enterprise Project Management (EPPM)**

Enterprise Project Management (EPPM) has been viewed from different viewpoints. One approach is that EPPM is software that helps to plan and implement all projects within an organization [9]. From another point of view, projects are selected, planned, controlled and implemented from a central location that rigorously assures all projects report progress to a single element [40]. Both of these approaches could fit an organization, but the bigger picture, however, helps understand the full potential of an EPPM. The five biggest problems at the level of strategic planning studies by Cooper, Edgett and Kleinschmidt [41]:

1. No link between strategy and project selection
2. Poor quality portfolio
3. Deductions from termination of a project, bad allocation of resources and lack of attention to the implementation of the project
4. Preference for short-term, affordable and "easy" projects

Problems identified through their own experience and observations:

1. With implementation of strategic plans, there is not sufficiently attention paid to the strategic priorities
2. Non-exploitation of the synergies of projects within a single business system
3. Lack of risk assessment, control of resources and time constraints
4. Unclear accountability at the level of strategic management
5. The strategic orientation of the strategic plans is

6. The development of computer technology allows much better use of IT applications in the function analysis and control of the strategic plan.
7. Large market pressures and competition affect the speed and quality of strategic management decision-making about which projects are profitable for the company, and which are not
8. At the level of strategic decision-making, there is a need for linking the strategic and project evaluation plans and their implementation
9. The application of new methodologies and IT applications is needed to classify the existing base of software projects which aimed to speed up development time, reducing costs and giving some flexibility when choosing projects (drugs).

Implementation of an EPPM is a continuous process of implementing many PM tools and processes as the maturity of a company grows over a time. Therefore an EPPM should always be considered as a continuous process. The process starts from the top, from the strategic level where the need arises to define project portfolio(s), to integrate plans with budgets and possible resources and to establish core procedures for project initiation, planning and actualizing of project status at regular time intervals.

The benefits of implementing EPPM are clear and scientifically proven, and are listed in Tab. 1. However another study [43] showed that such EPPM projects should not be assessed immediately after their implementation, but after eight months. The same study also showed median savings of \$1,6 Mio that directly came from EPPM. However, the cost of EPPM implementations varies from a few thousand dollars to several million of dollars [44]. This cost, of course, further escalates with hiring consultants, specialists and maintenance staff. The Gartner group [45] found that companies spend up to three times as much money on consultants as they do on EPPM itself. Additionally, there are the costs of end-user-training, change management and, the most important, the battle with new levels of complexity.

**2.2 The Balanced Scorecard**

Kaplan and Norton [21] presented The Balanced Scorecard (BSC) in 1992 (see Fig. 1). BSC balances between financial and non-financial indicators and measures critical activities and processes in order to control implementation of a business strategy [29]. A balance can be found in short-term and long-term objectives, as well as in

**Table 1** Benefits of EPPM

<b>Direct benefits</b>	<b>Indirect benefits</b>
<ul style="list-style-type: none"> <li>• Inventory reduction</li> <li>• Reduction of personnel</li> <li>• Increased productivity</li> <li>• Improvements in order management</li> <li>• More rapid closing for financial cycles</li> <li>• Reduction in IT and procurement costs</li> <li>• Improvement in cash flow management</li> <li>• Increase in profits and revenues</li> <li>• Reductions in transportation and logistics cost</li> <li>• Reduction in the need for system maintenance</li> <li>• Improvement in on-time delivery performance</li> </ul>	<ul style="list-style-type: none"> <li>• Improved visibility of corporate data</li> <li>• New improved business processes</li> <li>• Improved responsiveness to customers</li> <li>• Unanticipated reduction of cost</li> <li>• Tighter integration between systems</li> <li>• Standardization of computing platforms</li> <li>• Increased flexibility</li> <li>• Global share of information</li> <li>• Improved business performance</li> <li>• Improved visibility in Supply Chain Management process</li> </ul>

Source: Callaway [42]

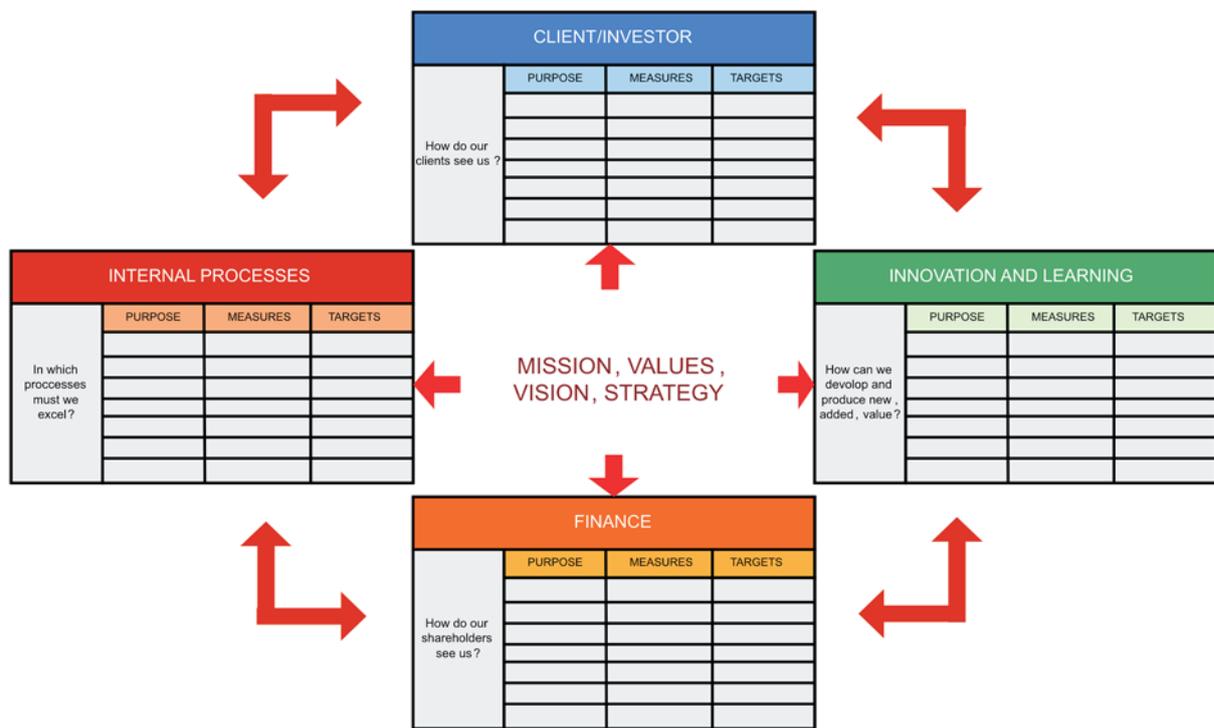


Figure 1 The Balanced Scorecard

quantitative and qualitative measures. Kaplan and Norton [33] state that BSC supplements traditionally criticized financial indicators with indicators from three other perspectives: Investor/Shareholders, Clients, Internal Processes and Learning and Innovation. BSC possesses great strengths e.g. safety from sub-optimization, it communicates strategy objectives throughout the organization and, if implemented correctly, generates only a small number of activities to control. It also identifies the company's present state and future business potential and can be applied (so the authors claim) to both for-profit and not-for-profit organizations [22, 36]. BSC is a strategic planning and management system that is used extensively to align business activities to the vision and strategy of the organization, improve internal and external communication, and monitor organization performance against strategic goals. Among many it is perhaps the best known framework.

To embark on the Balanced Scorecard path an organization first must know (and understand) the following [46]:

- The company's mission statement
- The company's strategic plan/vision
- The financial status of the organization
- How the organization is currently structured and operating
- The level of expertise of their employees
- Customer satisfaction level.

### 3

#### The research question

After summing up the literature, we found that project portfolio management today represents the driving force of business processes in a company for its active action, innovative approaches and management processes, and ensures the survival, development and continuous development of a project-oriented business system on the competitive global market. Furthermore managers in

pharmaceutical companies, at all levels of business, have many indicators in the process of strategic planning. Often these indicators are not in direct dependence with the company strategy and cannot be closely tied with certain strategic objectives [24]. Therefore identification of key indicators at the project level and their alignment with the strategic goals of the organization will enable effective monitoring and control strategies with the design perspective [47].

For all these reasons, in this study we question whether managers in a project-oriented company can use the synergy of the Balanced Scorecard and the EPPM model to: identify strategic objectives, communicate strategic priorities to lower levels of management and thus, through projects, coordinate strategic planning.

### 4

#### The research methodology

The main objective of this research was to establish a model as a combination of EPPM and BSC. In order to do this, we first reviewed the literature to learn about current achievements in integrating BSC and EPPM. However, an important prerequisite for integrating these two models was the more rapid development of the project documents of a company or the organization of PMO at a strategic level. ARIS software was used to integrate BSC and EPPM. ARIS is software developed for planning, monitoring and control of business processes in enterprises and especially for integrating BSC and EPPM: For the sake of conciseness in this article we will not describe the software in detail, but we will only present its main characteristics. The main possibilities of ARIS:

- Several individual strategic perspectives may be defined for the enterprise.
- With ARIS it is possible to define consistent "cause and effect chains" throughout the enterprise for your strategic goals. These "cause and effect chains" can be brought down to lower hierarchical levels (e.g. using ARIS variants).

- Cause and effect chains can be analysed in special reports.
- With ARIS it is possible to define and document your key indicators (lead and lag indicators) and the initiatives needed to attain your strategic goals.
- With the help of the WebPublisher you can communicate your strategy and strategic goals with all your employees (intranet and internet).
- The current data or values of your key indicators gathered are compared with the planned values, with a clear presentation of their differences (positive and negative aspects).
- It is also possible to link (interface) with data warehouses: (e.g.) IDS PPM and other information systems (SAP, Baan, Navision...).

The Primavera Enterprise system was chosen as the EPPM, as it is currently the most used EPPM software in project oriented firms. Further, the IT module HR.net was installed, by which the demanding BSC perspective of internal processes and the satisfaction of employees are completely integrated into both the BSC and EPPM reports. In order to validate the models, the BSC-EPPM model was implemented in JGL, a pharmaceutical company, for a period of 5 years. The effectiveness of the model was monitored on a half-year basis. As the main goal, to confirm this model, a main strategic goal was set (to increase EBITA\* by at least 10 % a year).

## 5 Model design

Enterprise project management is an asset of the organization that changes the way business is conducted through projects. Fig. 2 shows the model's scheme which embraces the concept of joining EPPM and BSC.

In this presentation we see that without synergy BSC is a static model and that to attain the goals set, dynamic monitoring of realization is needed. The response to monitoring and realization of strategic goals through the EPPM method is quick and the company becomes more competitive in response to the external and internal environment.

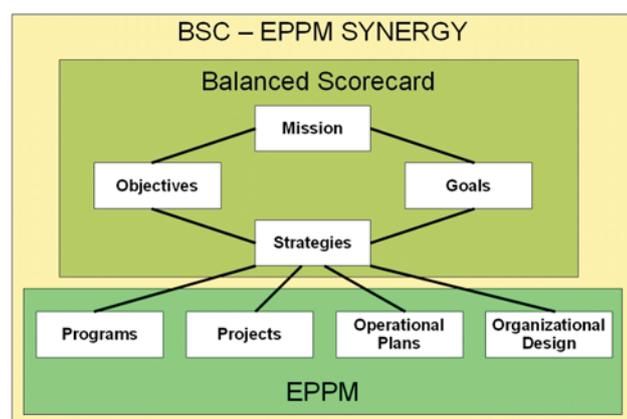


Figure 2 Elements of a Strategic Design for Enterprise Project Management

The BSC EPPM model was designed through five steps, as shown in Fig. 3:

1. Defining the SWOT factors
2. Connecting the BSC objectives

3. Selecting the right option from the BSC chart
4. Prioritizing projects to portfolios and the BSC perspectives
5. Generating the prioritization matrix
6. Prioritizing the results

Each of the implementation steps will be explained in detail in the next chapter.

## 6 Validating the model

### 6.1

#### Introduction of JGL and the pharmaceutical business environment

The current business environment for pharmaceutical research companies has experienced significant changes, which have resulted in several key challenges, including the tremendous costs of drug development, the continuous productivity crisis, the inevitable wave of expiration of patent "blockbuster" drugs and tightening of regulatory laws, rates and charges. Pressures on pharmaceutical costs and revenues result in a difficult environment, in which high profit growth has been maintained by the industry over the past two decades.

Pharmaceutical executives are under significant pressure to restore and maintain earnings growth, and thereby restore the investor confidence lost during the recession period. These strategies must be developed and implemented with maximum efficiency if they are to increase share value. Therefore establishing an efficient EPPM and the supporting infrastructure are major factors of success in meeting these goals.

As mentioned in the methodology, the integration of BSC and EPPM was conducted in the pharmaceutical company JGL d.d. The company employs 515 staff, of whom more than 70 % have a university education. The market share in the Republic of Croatia is 5 %, and 65 % JGL products are exported to 24 world markets. JGL's vision is: to be an international pharmaceutical company with a wide spectre of brand generics focused on development and production of medication for the senses. The company would like to become the leader in using the benefits of sea water for health purposes.

The company mission is to improve the quality of life through care for the health of its customers and the whole of society.

### 6.2

#### Strategic Map of JGL

We developed a BSC strategic map as a central statement of the company's strategy. The version of the map presented in Figure 4, is structured as four primary strategic themes. Although the themes include the creation of separate strategic areas, they all together produce a synergy when achieving the final goal – in this case: "Long term growth of shareholder value". Impacts between the strategic objectives, within each strategic area, are represented by cause-effect relationships (Fig. 4).

As shown in Fig. 4, Strategic Areas are expressed in separate themes. Considering the positions of themes and objectives and the logic of the cause and effect relationship is obvious that Theme 2: Focus on Customers/Partners, dominates Strategic Objective 2.1 and the system of

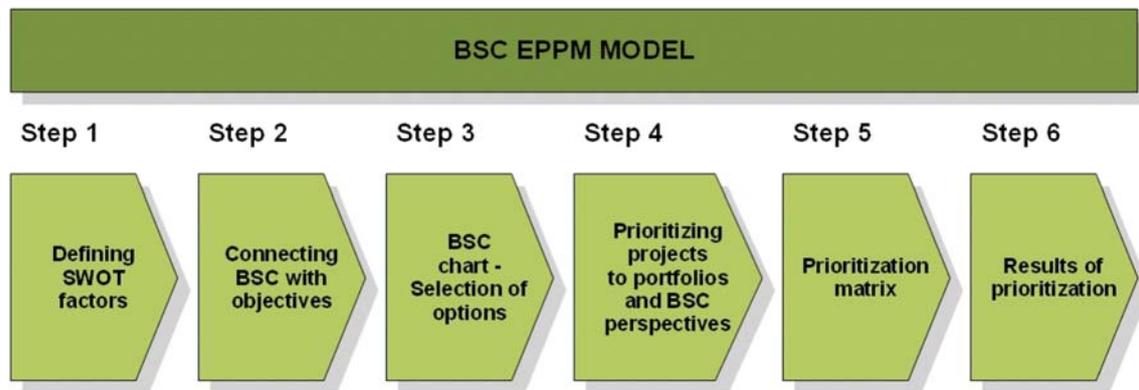


Figure 3 Steps in a BSC EPPM model

strategic marketing focuses on customers/partners. Development of a Customer Value Proposition (CVP) for key groups of customers/partners is the underlying goal of the first three strategic themes.

Theme 4: Customer/ Partner Focused Organization, is completely contained in the perspective 04: Growth and Knowledge, to ensure the success of the implementation of other strategic issues. The strategic objectives under this theme will thus become the main critical factors for the realization of the strategic goals. The other issue which is clearly visible from the cause-effect relationships is the great influence on the objectives of Themes 1, 2 and 3.

The latest generation of BSCs have introduced a set of goals closely tied with strategic objectives – called the Destination Statement. The lack of such a statement in the Balanced Scorecard model proved to be very demotivating to see the bigger picture of the strategy. Furthermore, without their presence BSC becomes static and slow. Table 2 shows the destination statement developed for JGL while designing the BSC-EPPM model.

### 6.2.1

#### Strategic Theme 1: Operating Efficiency

Objective 1.1 (To integrate and improve project management product realization, Fig. 4) involves the creation of new value in the product realization processes. The current state of JGL's organization was strongly oriented to the business functions and functional management of product realization processes. Furthermore, there was typically a lack of quality insight into the functioning of the whole process, which usually had a so-called "multi-functional" character (cross-functional processes). It was therefore necessary to introduce a new line of management responsibility, a higher level than the current function, which would integrate the product realization processes and implement project management within the system.

It certainly needs to be pointed out that the task of management at that level should not be management of individual projects to realize products or optimization of business functions in their support, but management of the interaction between them. Management of these projects should be left to lower-level management, that is, the owners of those processes. The reason for introducing this strategic theme was greater productivity of the RandD portfolio, where management intended to increase the realization of planning new products through a project approach.

Table 2 Destination Statement of JGL

Financial and market characteristics	External Relations
	The administration has clearly accelerated and the clients are satisfied with the service they receive
	Clients are well reflected in the promotion of housing
Marketing initiatives are reflected in increased sales by 32 % and 7 % increase in customer satisfaction	
Increasing investment in the promotion of quality housing is seen as a driving force to increase business	Local and State Board recognizes the excellent business
Shares of rivals within the top ten shares on the Zagreb Stock Exchange	Satisfaction with manufacturers and partners to increase by 10 %
Activities and Processes	Organisation and culture
Projects are executed within 1,2 % deviation from the agreed amount and 10 % of the time	60 % of employees are held responsible for the specific KPI
The number of repairs during the warranty period has been reduced by 20 %	The organization is very structured as a matrix organization with an emphasis on project orientation
The number of disputes with investors has been reduced to 0	A special department founded for marketing and sales, and given complete authority in the development of new products / services, the pricing, advertising, point of sale, the employees' relationship with clients
90 % of machinery, for earth-moving machinery was replaced	
Number of accidents at work decreased by 50 %	

### 6.2.2

#### Strategic Theme 2: Focus on Customers/Partners

The main premise of the strategic themes was a gradually focus on key segments over the coming five years. To realize this ambition and to set financial limits (revenue growth, profitability), it was necessary to develop and manage the customer/partner value proposition (CVP) and

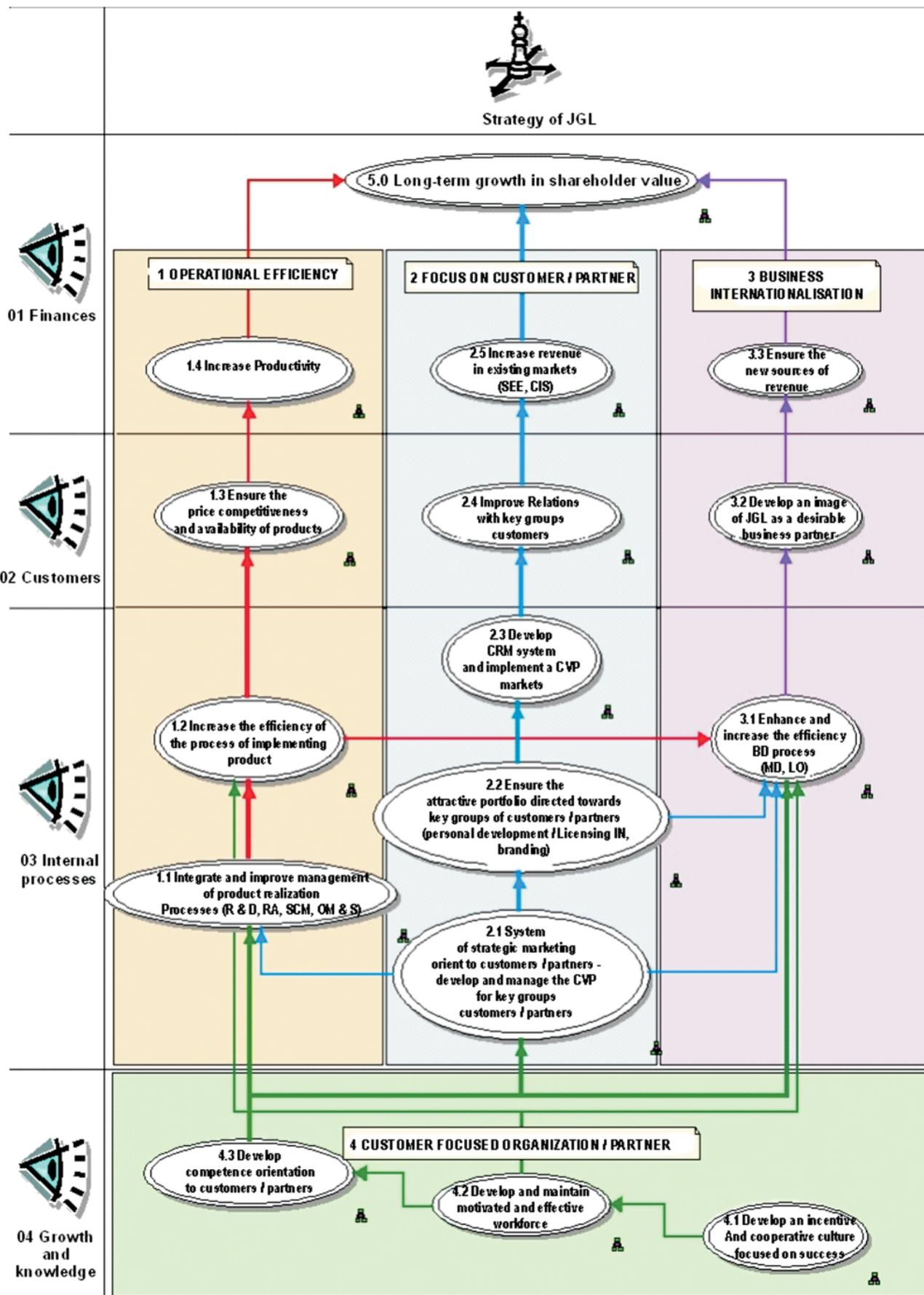


Figure 4 ARIS BSC Cause-and-effect diagram: Strategic map of JGL

thus increase competitiveness in selected segments - Target 2.1 (Fig. 4).

Furthermore, to implement CVP in markets where interaction with customers is of crucial importance, it was necessary to develop an effective Customer Relationship Management (CRM) system, whose structure would be consistent with the structure of the CVP and thus allow easier deployment and implementation of effective control of the CVP in some segments - Objective 2.3 (Fig. 4).

All together, these strategic objectives should allow the implementation of Objective 2.4 (Fig. 4): Enhance Relationships with Key Groups of Customers /Partners, and this certainly contributes to an increase in revenues by market segment - Objective 2.5 (Fig. 4).

In order to support Strategic Objective 2.1. it is necessary to supplement the existing process of strategic analysis, oriented towards products, with a strategic analysis of customers and competitors in selected segments. What is true for the strategic analysis of products is also true for the processes and projects of strategic marketing planning and control. To support the realization of Strategic Objective 2.1., it needs to be restructured and focused on customers. Further, the development and implementation of a system of management of corporate branding is a strategically planned project necessary for creating CVP for groups of customers on the market.

### 6.2.3

#### Strategic Theme 3: Internationalization of business

Implementing the project approach in managing the business development process is necessary for easier and long-term business development and planning activities and resources necessary for their implementation. In addition to planning business development resources, this approach would facilitate management and integration with other processes that also require support for planning their resources. The main reason for introducing this goal is to be found in a systematic and long-term approach to the development of this organizational segment, which will enable the company to become as desirable as possible as a business partner, and the company will rise in a shorter period of time into new "market niches" for drugs on the international market.

### 6.2.4

#### Strategic Theme 4: Organization Geared towards Customers / Partners

To emphasize the importance of this topic it is sufficient to mention that the success of its implementation depends on the realization of other strategic themes and strategies of the company.

For good strategic alignment of human capital, there are two approaches which give a good balance of maximum effect. Within the "Models of strategic sub-family affairs", the company concentrates the efforts of its HR program on several tasks that are critical for the realization of the strategy. On the other hand, the "Model of strategic values" starts from the assumption that the strategy should be the job of all employees - and that the strategy promotes a set of values and priorities that should be incorporated into the objectives and actions of all employees.

## 6.3

### Implementing the model steps in JGL

#### 6.3.1

##### STEP 1: Defining SWOT factors

In the first step, after three months of internal workshops and the participation of all functional management of the company, SWOT factors and a detailed analysis of the external and internal environment of the company were defined. Each functional manager was given a period of 15 days in which to write a SWOT analysis of his own business functioning. A general SWOT analysis for the company was adopted at a special workshop of the Strategic Committee after the matrix for SWOT analysis had been established. Table 4 shows the first step in implementing the BSC - EPPM model. By using the numerical method we arrive at the mutual influence of internal and external factors related to the four BSC perspectives. Each factor has a weight according to its strategic importance.

#### 6.3.2

##### STEP 2: Connecting BSC with Objectives

The second step in the model was to connect the BSC strategic options with long-term corporate objectives. In the second step the strategic board analysed and adopted the connection between individual critical factors of the SWOT analysis with critical factors of the Strategic Map of the company. A separate comparison was made of factors according to BSC perspectives.

#### 6.3.3

##### STEP 3: BSC chart – Selection of Options

Fig. 4 shows the interconnected strategic options. They are assessed and sorted by a numerical matrix model.

Colour key: Yellow= strength, Blue= threat, Red= weakness, Green= opportunity.

The presentation of strategic options was reached through the matrix of mutual influences and their assessment.

The result of the assessment is also the position of each option in one of the four squares on Fig. 5.

In the third step in the model the Strategic Committee, together with the PMO of the company chooses aggressive and advanced options. Aggressive and advanced options for further analysis were selected, because the company objective was to maintain stable revenue growth.

In the end the selected options become the strategic goals and projects were launched for them.

In the fourth stage of the BSC EPPM model we approached prioritizing BSC objectives and projects in various portfolios of the company.

It is also worth pointing out in this step the mutual influence of priorities from the BSC perspective and the EPPM. Each project in an individual portfolio (in this example RandD) was assessed according to its strategic influence. In the work on this step, the role of experts in individual project portfolios of the company was vital. In separate workshops, they analysed the strategic options according to individual perspectives. Specifically, the financial department analysed and assessed topics from financial operations and sales and assessed the potential of the market, together with strategic marketing. Support in decision-making and summary assessment on the Strategic

INTERNAL FACTORS	INTERNAL FACTORS										EXTERNAL FACTORS										
	STRENGTHS					WEAKNESSES					OPPORTUNITIES					THREATS					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
1 FLEXIBILITY & UNDERTAKING CULTURE	3	2	2	2	2	3	2	0	2	1	0	0	0	0	0	0	1	1	1	1	0
2 NEW PLANNED PRODUCTION CAPACITIES	2	3	3	3	3	2	2	1	1	1	1	0	0	0	0	0	1	1	1	1	0
3 MODERN EQUIPMENTS	3	3	1	1	1	1	1	1	2	2	1	0	0	0	0	0	1	1	1	1	0
4 COMPREHENSIVE PORTFOLIOS	1	2	1	2	2	1	2	0	1	1	1	0	0	0	0	0	1	1	1	1	0
5 FINANCIAL STABILITY	1	2	2	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
6 UNBALANCED PORTFOLIOS	0	1	1	1	2	3	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0
7 COSTS INEFFECTIVENESS	2	1	2	2	3	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0
8 UNDEVELOPED STRATEGIC MANAGEMENT SYSTEM	2	2	2	2	2	3	1	1	2	1	2	1	0	0	0	0	0	0	0	0	0
9 MARKET TIME FRAME	1	2	1	1	2	0	2	1	3	1	0	0	0	0	0	0	0	0	0	0	0
10 PRODUCTION PLANNING	2	1	1	1	2	1	3	1	3	1	0	0	0	0	0	0	0	0	0	0	0
11 STRATEGIC ALLIANCES	1	3	2	3	1	2	1	1	1	0	0	0	0	0	0	0	1	1	1	1	0
12 GROWING TREND OF GENERICS	1	3	3	2	1	2	0	0	0	0	2	0	0	0	0	0	1	1	1	0	0
13 GROWING TREND OF BRIC MARKETS	1	3	3	1	2	0	0	1	2	2	1	0	0	0	0	0	1	1	1	1	1
14 EQUITY AVAILABILITY	2	3	3	1	1	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0
15 NEW MARKETS (MIDDLE EAST, NORTH AFRICA, EX-USSR)	2	2	2	1	2	0	0	1	2	2	1	0	0	0	0	0	1	1	1	1	1
16 GLOBAL ECONOMIC CRISIS, ILLIQUIDITY, EXCHANGE RATE RISKS	3	3	2	1	3	0	0	0	0	0	2	2	1	3	1	1	0	2	1	2	1
17 BETTER & FINANCIAL STRONGER COMPETITORS	2	2	1	3	1	0	0	2	2	2	2	0	0	0	0	0	2	2	1	2	1
18 LOBBYING SYSTEM (DISLOYAL COMPETITION)	1	1	1	1	1	0	0	0	0	0	2	0	0	0	0	1	1	1	1	1	1
19 DOMESTIC PRODUCERS PROTECTION	1	2	1	1	1	0	0	0	0	0	2	0	0	0	0	1	1	1	1	1	1
20 HIGHER REGULATORY & LEGISLATORY REQUESTS	1	1	1	0	1	0	2	0	2	1	0	0	0	0	0	0	0	0	1	1	1
	29	40	34	28	33	15	18	10	20	16	20	3	1	3	1	2	11	12	13	6	

LEGEND  
 3 STRONG IMPACT  
 2 MEDIUM IMPACT  
 1 WEAK IMPACT  
 0 WITHOUT IMPACT

Figure 5 SWOT factors impact matrices

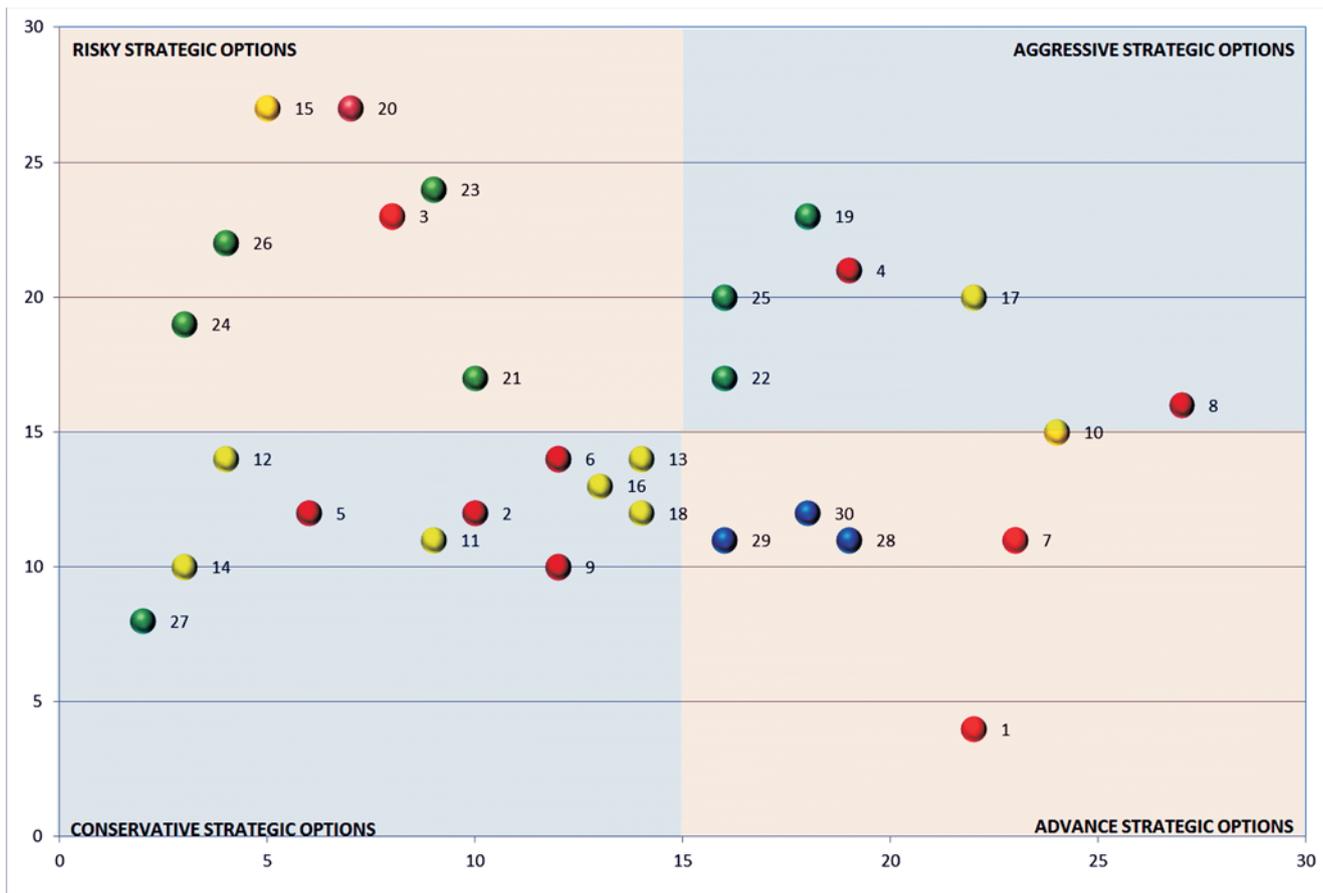


Figure 6 BSC Strategic Options

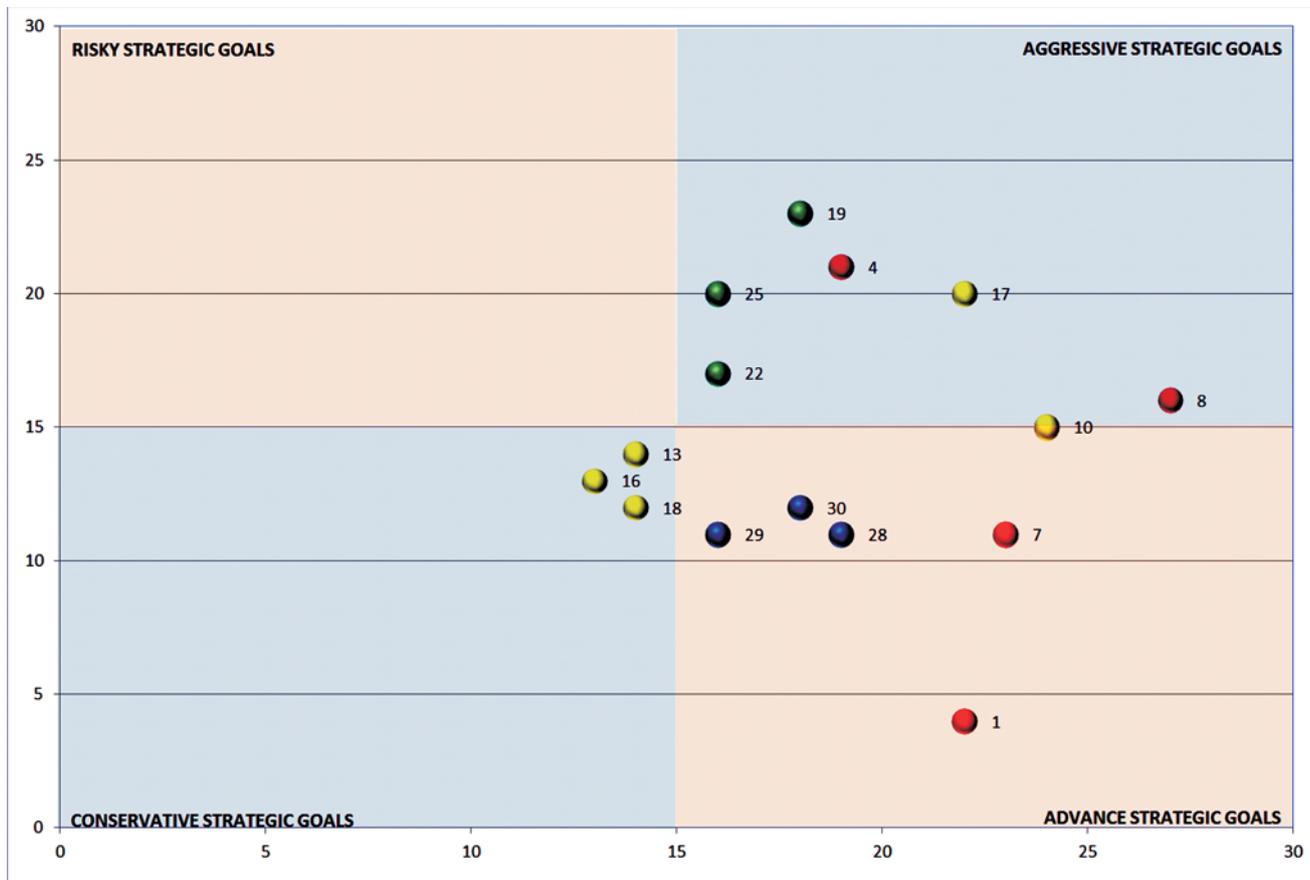


Figure 7 Final selection of BSC strategic objectives

**Table 3** KRI and KPI classification for a pharmaceutical company (JGL case study)

1	NPV (Net Present Value)	NPV is a standard method for assessing long-term financial projects. It is used in evaluating investments, and measures the excess or shortfall in cash flow.
2	IRR (Internal Rate of Return)	IRR is the rate of return used for measuring and comparing investment returns.
3	ROI (Return of Invest)	ROI is the ratio of money (obtained or lost) on the project in relation to the amount of overall investment.
1	Unique competitive advantage	Representing a strategic business advantage over your competition
2	The engagement of man/months	Non-numerical KPIs in the process of strategic planning
3	Project Budget (expenses)	Non-numerical KPIs in the process of strategic planning
4	Estimation of uncertainty	Non-numerical KPIs in the process of strategic planning
5	Number of people involved	Non-numerical KPIs in the process of strategic planning
6	Lack of key persons	Non-numerical KPIs in the process of strategic planning
7	Included external business partners	Non-numerical KPIs in the process of strategic planning
8	Technology	Non-numerical KPIs in the process of strategic planning
9	Interdependence	Non-numerical KPIs in the process of strategic planning
10	Uniqueness	Non-numerical KPIs in the process of strategic planning
11	The organizational impact	Non-numerical KPIs in the process of strategic planning

**Table 4** Result of Prioritization

PROJECT	SCREENING	RETURN	RISK	SCORE	PROJECT BUDGET (COST)	CUMULATIVE BUDGET
R&D PROJECT1	64	24	28	60	600.000,00 kn	600.000,00 kn
R&D PROJECT4	61	24	26	59	1.332.000,00 kn	1.932.000,00 kn
R&D PROJECT5	54	20	24	50	300.000,00 kn	2.232.000,00 kn
R&D PROJECT6	53	22	28	47	2.760.000,00 kn	4.992.000,00 kn
R&D PROJECT3	55	14	24	45	950.000,00 kn	5.942.000,00 kn
R&D PROJECT2	54	18	32	40	126.000,00 kn	6.068.000,00 kn
R&D PROJECT7	39	20	20	39	750.000,00 kn	6.818.000,00 kn
R&D PROJECT8	53	16	30	39	390.000,00 kn	7.208.000,00 kn
R&D PROJECT9	46	14	22	38	1.900.000,00 kn	9.108.000,00 kn
R&D PROJECT10	37	18	20	35	5.000.000,00 kn	14.108.000,00 kn
R&D PROJECT11	42	26	34	34	100.000,00 kn	14.208.000,00 kn

Committee was given by the IT department and PMO. Through an interdisciplinary approach we reached the strategic goals in Fig. 7.

#### 6.3.4

#### STEP 4: Prioritizing Projects in Portfolios and BSC Perspectives

#### 6.3.5

#### STEP 5: The Prioritization Matrix and KPIs

In the fifth step we defined the matrix of return and risk projects. In order to prioritize the selected projects in terms of quality through this new model it was important to understand the classification of KPI for pharmaceutical companies. Many companies work with the wrong criteria, many of which are wrongly defined KPIs (Key Performance Indicators) [23]. Only a small number of organizations/companies actually monitor their KPIs [48]. The reason for this is that very few organizations, directors, accountants or consultants even explore what the KPIs actually are.

There are four types of performance measurement [47]:

1. Key Result Indicators or KRI - show success in perspective and are a critical success factor.

2. Result Indicators or RI - show what has been done
3. Performance Indicators or PI - indicate what to do
4. Key Performance Indicators or KPI - show what to do to significantly increase performance.

Many performance measures used by companies are an often inadequate mixture of these four types. Furthermore, by analysing a large number of KPIs used in construction [50] we concluded that there are the seven features of every KPI:

1. non-financial criteria (not expressed in a currency)
2. measured periodically (continuously, daily, weekly, monthly, ...)
3. triggered by the executive board
4. clearly show the activities required of the CEO
5. measurements associated with EPPM resources
6. have a significant impact – strategic planning
7. point to appropriate action.

After selecting numerical and non-numerical achievement indicators of the EPMO, the PMB Board, in a period of 6 months, revises and presents their proposed order of projects to the Board of Directors after prioritization.

### 6.3.6

#### STEP 6: Result of the Prioritization

The sixth step in the process of implementation of the BSC-EPPM model was the last and most important step in the elaboration of the model. By combining the financial KPIs and the assessment model, a matrix of prioritized projects was obtained (Tab. 3), as the final preparation for deciding on adoption of the annual project plan according to all the perspectives by the Strategic Committee of the company. The time needed to decide on adoption of the

project plan in the phase of planning was reduced in this way from the initial 5 months in 2006 to 45 days in 2010.

As the final result, in the BSC EPPM model RandD projects were adopted, according to the assessment principle, along with the total budget for the following year. Plan revisions were undertaken every half-year according to the needs of the new markets. The PMO, which in the phase of strategic planning becomes the Enterprise Project Management Office (EPMO), prepares the final adopted project plan in the report (Fig. 8). This report is needed to align all the portfolios in terms of time.

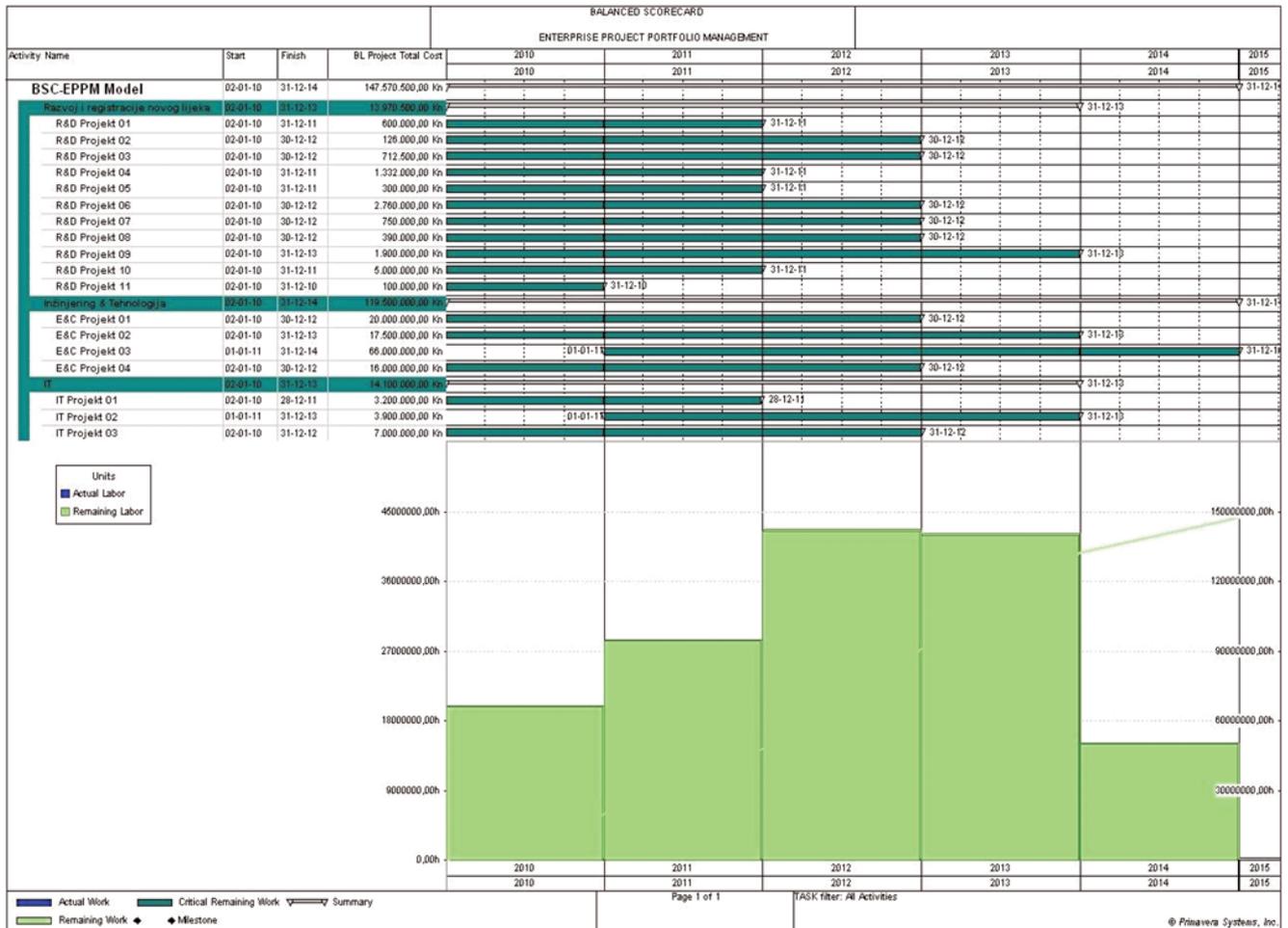


Figure 8 Gantt Diagram of the Proposed Projects with Cumulative Costs

## 7

### Research Findings

After validating this model we found that managers in a project-oriented company can use the synergy of the Balanced Scorecard and the EPPM model to: identify strategic objectives, communicate strategic priorities to lower levels of management and thus, through projects, coordinate strategic planning.

Fig. 9 shows the appearance of the final organizational structure of JGL. Implementation of this new organization began on 1 January 2010. When we initially began to integrate BSC and EPPM the company had an Executive Board, a Portfolio Management Board (PMB) and a Strategy Committee. The Executive Board of the company was a multifunctional board including the directors of the key business functions with the appropriate authority and executive powers. It met according to a defined pace and with previously defined meeting topics.

After the introduction of the EPPM-BSC model, the PMB, from an advisory, multifunctional and multidisciplinary professional body, became the body that decides on the company portfolio. On the basis of assessment of internal documents, through which new topics are formally proposed, the PMB decides by consensus to launch new development projects, expand the portfolio or terminate unprofitable products, where all market and professional factors are taken into consideration. The Strategic Committee is responsible for defining company strategy, analysing achievements and aligning them with the "annual strategic calendar", for defining key goals and success indicators (KPI) in line with defined methods and tools, and communication of strategy to the entire company. It consists of members of the Executive Board, the managers of individual business functions, and the Project Management Office (PMO).

The main advantage of this new organizational model is the location of the PMO at the level of strategic planning.

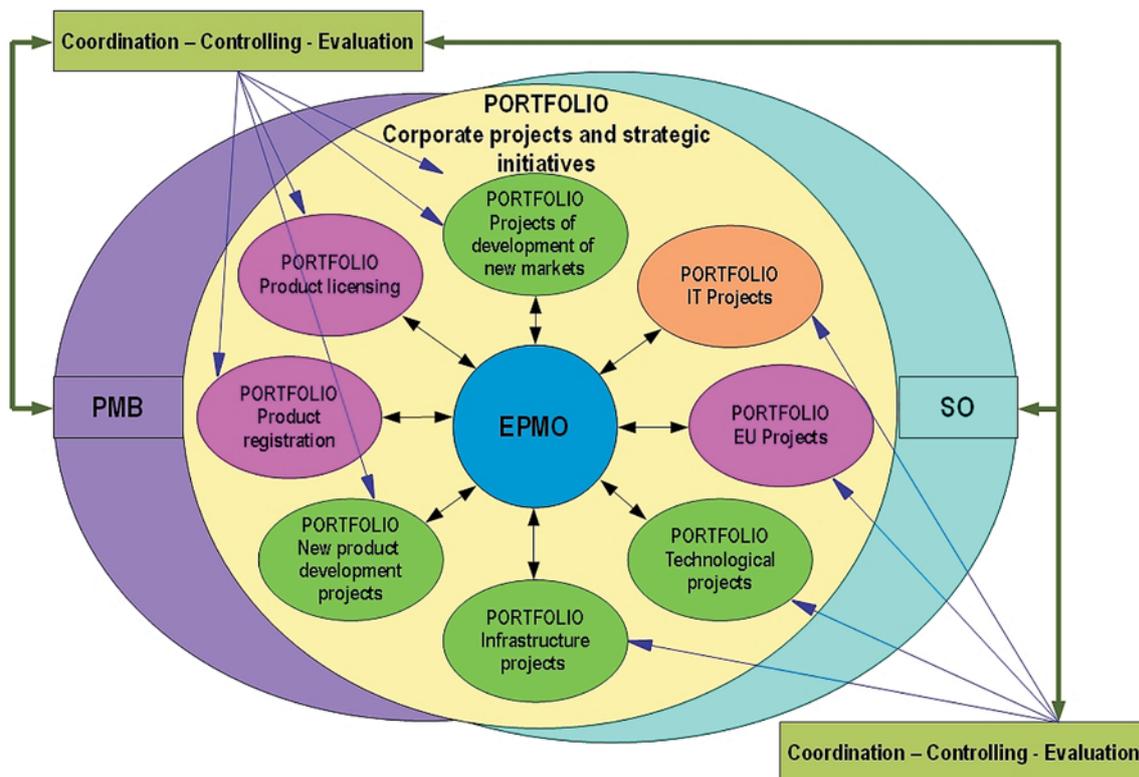


Figure 9 The organizational model after the introduction of the BSC EPPM model

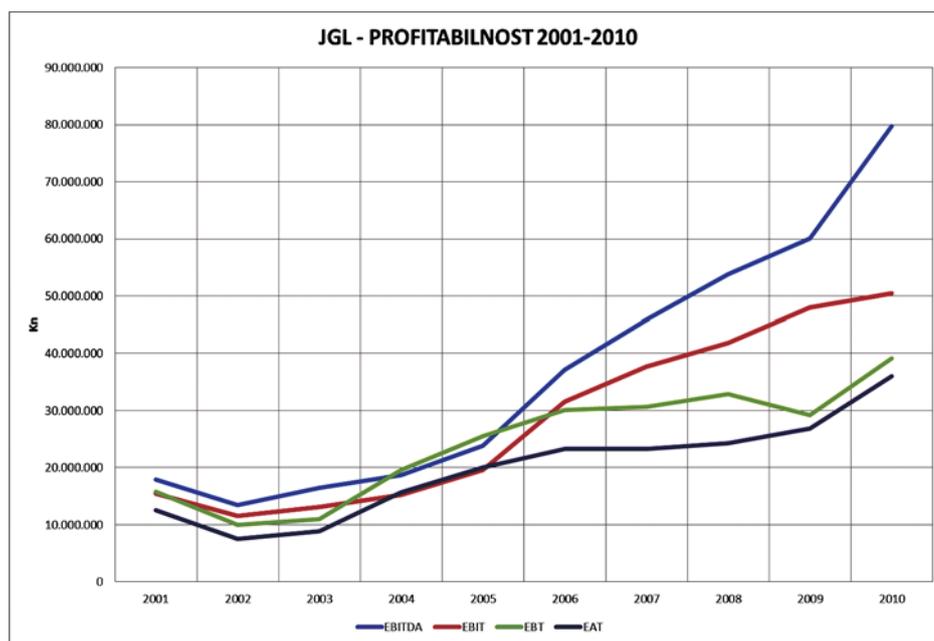


Figure 10 Profitability Rates for 2001-2010

From 2006 when this model was first used, right up to the present, this organizational model has resulted in a flexible pharmaceutical company, which in the planning phase selected the right initiatives for which project plans were written in detail, and, through some iteration, the annual project plans were selected and adopted.

Fig. 10 clearly shows an increase in profitability over the last 5 years after the adoption of the BSC-EPPM model for strategic planning. The model has thus been tested and has enabled faster and better planning of new markets and an increase in exports by 60%. Furthermore, the main goal of the strategy (increasing EBITDA by a minimum of 10%) has been completely met. Tab. 5 shows the basic indicators

of profitability from 2008 to 2010, which also confirm the use of this model. So it may be concluded that by using this model, the time of deciding on adoption of the project plan in the phase of planning was reduced from the initial 5 months in 2006 to 45 days in 2010.

## 8 Conclusion

In this research we found that managers in a project-oriented company can use the synergy of the Balanced Scorecard and the EPPM model successfully to derive an interactive strategic control system. Connecting the

Table 5 Profitability indicators and margin for 2001÷2010

<b>Profitability Indicators</b>	2008	2009	2010
ROE (net profit / capital and reserves)	17,77 %	17,16 %	19,47 %
ROA (net profit and total assets)	5,33 %	5,26 %	6,60 %
<b>Profit margin</b>			
EBITDA margin (EBITDA / business revenues)	13,92 %	16,31 %	16,30 %
EBIT margin (EBIT / business revenues)	11,19 %	13,11 %	10,30 %
Net margin (net profit / business revenues)	6,50 %	7,40 %	7,37 %

Balanced Scorecard and project portfolio management requires a great deal of work, but the effort is obviously worth it. Furthermore, we found that EPPM and BSC are complementary models which may be used to develop strategic goals in the real business environment.

Implementation of the EPPM-BSC model in project oriented industries (i.e. pharmaceutical, construction, etc.) will create a unified system of strategic planning, monitoring and controlling the execution of strategic objectives at all levels of the enterprise.

The process of globalization leads to the opening of national markets, which represents an opportunity for medium and small business systems in Croatia to start using the BSC-EPPM model and thus become more competitive on the market.

Still further research is needed in order to make this model more robust. First, the model needs to be tested on a larger sample, including large international pharmaceutical companies. Second, the four basic perspectives of BSC need to be questioned and if necessary additional perspectives should be added to the model. Third, a model for selecting KPIs within BSC perspectives is needed.

## 8

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