Corporate Economics and Financial Fundamentals

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Contents

Introduction

Today, financial awareness is becoming increasingly essential. It is important and even indispensable for a graduate engineer to understand the basic economic and financial relationships of a company. As a result, there is a demand for a textbook called Corporate Economics and Financial Foundations specifically for engineers. Business economics and basic financial knowledge are compulsory in some bachelor's programmes of the Faculty of Engineering of the University of Szeged, and as elective subjects in others. These subjects are extremely popular among engineering students.

This curriculum has been prepared considering the learning outcome-based approach. After learning the content of the book, students' knowledge, skills, attitude, autonomy, and responsibility are likely to develop. As a result, we hope, the student

a) from the point of view of his/her knowledge, it can be said that

- knows the general and specific principles, rules, relationships and procedures of natural sciences, management, and organizational sciences necessary for the cultivation of the technical field;
- learns about the real, human, economic and social relationships of production and service processes, and their mechanism of action on health and safety;
- is aware of the basics, requirements, and relationships of the fields of management and organizational sciences related to the technical

field (management, innovation management, strategic management, enterprise management, marketing, etc.);

- is familiar with the methodology for conducting environmental impact assessments and the preparation of impact assessments, as well as the basics of legislation;
- is aware of the main procedures and methods of planning, economic studies and technical implementation of investments and development projects;
- knows the relationship between investment economics calculations (PB, DPB, NPV, IRR, PI), investment risk (scenario analyses, sensitivity analyses, break-even point calculations and the financing of investments (from own and external sources);

b) his/her skills also develop and thus

- is able to apply the acquired principles, rules, relationships, and procedures of general and management and organizational science in solving routine tasks arising in the field of technology;
- is able to understand and process technical-economic documentation;
- it is suitable for the management, organization, control, and coordination of technical, technological, investment, production, logistics, quality assurance and IT processes;
- develop and implement innovation strategies;
- is able to assess and manage investment needs and to conduct technical and economic studies related to investments;

- prepare the investment decision financially; calculates the economic indicators of the investment (PB, DPB, NPV, IRR, PI); carry out a risk analysis; prepare a financing plan;

c) his/her attitude will hopefully change in an even more positive direction

- strives to make its decisions in full respect of the law and ethical standards;
- it strives to make its decisions by getting to know the opinions of the supervised staff, if possible in cooperation with them;
- strives to promote their professional development through continuous self-education and further training;
- has a comprehensive systems approach;
- accept the rules on the calculation of depreciation and the preparation of cash flow as binding on itself in Act C of 2000;
- estimates the start-up, operating and final cash flows;
- be conscious in choosing the right investment proposal and financing;

d) its autonomy and responsibility are also likely to develop

- is able to independently perform management tasks related to the technical-economic and human processes of production and service enterprises;
- selects and applies the relevant problem-solving methods while solving analytical tasks related to his/her field of expertise;

- evaluate the results of his/her work realistically;
- takes responsibility for his/her professional decisions;
- formulates an independent proposal on which investment proposal (price offer) the company should implement;
- formulates proposals for the innovation strategy it undertakes.

The textbook consists of ten chapters, the first five of which deal with the principal areas of corporate economics. Consequently, we will talk about businesses and their environment, strategy, marketing, the importance of innovation, and the management of human resources by the company. In a separate chapter on marketing and innovation, students can read a practical concrete example. In the other half of the book, they get insight into the world of corporate finance. The following topics are described in detail: the basic concepts of corporate finance, the definition of investment, types of cash flows, economic calculations, risk, and financing. In the last chapter, I gave another corporate example related to the topic of investment economics. These are selected chapters because I was forced to skip certain parts due to space limitations.

The curriculum is not intended to provide an overly detailed description of certain topics. It is important that during the learning process, the student reaches the end of the given chapter quickly, does not get lost in it, thus having a sense of achievement, and thus increases their motivation. At the end of the chapters, there are review questions that help you highlight the essence and process of the curriculum.

It is my unwavering intention that students get a comprehensive picture of the operation of companies. They should see this process in its context and be able to place themselves and their own (future or existing) jobs in it.
I hope that engineers of the future will receive useful guidance for their successful work.

1 Businesses and their environment

The **concept of business economics** has been formulated by several people: according to Attila Chikán (2010), it discusses the basics of the operation of companies and explains them. Mária Illés (2014) gave the following definition: the object of study of corporate economics is the company, but it examines it exclusively from an economic point of view.

Business economics deals with the management, operation, management and management of companies.

The most critical areas **of the studies of business economics** (Illés M., 2010):

- the interaction between the company as an economic entity and its environment,
- the farming process and its expedient methods,
- the laws of corporate behaviour.

Business is an activity that aims to make a profit by satisfying consumer needs (Chikán A., 1997).

A **company** is an organizational form of a business enterprise with legal personality (Chikán A., 2010).

- Next, we will talk about how to group companies. Nábrádi et al. (Nábrádi A. et al., 2007) **distinguish between** production and service enterprises **according to their activities**.
- The activity of the production company generates some kind of material result. For example, it manufactures and manufactures

finished products, semi-finished products (e.g. brake hoses, tyres, etc.).

- The essence of the service enterprise is that no new finished products or semifinished products are created through its activities. It only deals with the provision of services that cannot be stored or stocked (e.g., hairdresser, freight taxi service, banking services).
    - The type of service that performs certain tasks of product production, thus making the process more efficient and safer, is called a production service (e.g., quality control, property protection, temporary staffing).
    - The type of service that aims to deliver the product to the consumer is called a distribution or commercial service (e.g., web shop, DIY shop, car dealership).

It should be noted that in practice we can talk about not only production or only service companies, but these can also be mixed in order to gain a larger market share and thus make even greater profits. For example, a given company manufactures the automatic garage door; this is its production activity, operates a web shop through which it sells it and then delivers it to the customer (wholesaler, retailer, or directly to the customer) and installs it as required. The latter three activities qualify as services.

Another way to group enterprises can be the sphere in which their activities are conducted. According to this, we distinguish between **agricultural, industrial, commercial, financial,** etc. enterprises (Nábrádi A. et al., 2007).

- An **agricultural** enterprise may be engaged in animal husbandry, crop production, seed production, feed production, agricultural services (e.g., cultivation), etc.
- A good example of **an industrial** enterprise can be car manufacturing, or the production of parts, etc.
- **Commercial** enterprise, e.g. grocery store or chain, car dealership, etc.
- **Financial** enterprises are financial enterprises. It is important to note here that a financial enterprise is a legal entity that does not belong to the scope of credit institutions and may only carry out one or only a specified range of their credit institution activities (according to the Credit Institutions Act). In addition to account management and deposit collection, the student is entitled to perform all other financial and ancillary financial services (Act CCXXXVII of 2013 on Credit Institutions and Financial Enterprises).

From the point of view of profit orientation, we distinguish:

- **Profit-orientated enterprises, one of the most important goals of which is to achieve as much profit as possible.**
- and we can talk about **nonprofit** businesses. In the case of the latter, it should be noted that nonprofit does not mean that the company does not strive for profit, but that profit (profit) cannot be divided among the owners.

Businesses can also be grouped for tax purposes. According to this, there are the following:

- **sole proprietorships subject to personal income tax** (Act CXVII of 1995 on Personal Income Tax),
- **Partnerships subject to the Act on Corporate Tax and Dividend Tax** (sole proprietorships may also be included in this category based on the legislation in force) (Act LXXXI of 1996 on Corporate Tax and Dividend Tax),
- and **budgetary bodies** that do not pay taxes (state institutions and organizations) (Nábrádi A. et al., 2007).

From the point of view of property, we distinguish:

- **privately owned**,
- **state-owned**,
- and **municipally owned enterprises** (Nábrádi A. et al., 2007).

Furthermore, based on the size of the capital requirement at the time of foundation, we can distinguish between sole proprietorships, partnerships, and cooperatives.

The difference between sole proprietorship and partnership is illustrated in Table 1.

Table 1. Comparison of sole proprietorship and partnership

	Advantage	*Disadvantage*
Sole proprietorship	- ease of incorporation and dissolution -perspicuity - independence of the entrepreneur - the absence of a public disclosure obligation on business operations - tax benefits	- more modest profit-making potential - limited access to financial resources - excessively versatile requirements for the contractor - unlimited liability - the limited lifespan of the business
Partnership	- Easy Incorporation - tax benefits - ownership opportunity without more capital - legal protection in case of disputes - significant capital and credit sources - the possibility of continuation in the event of a change of ownership - limited liability of owners - wide range of capital raising opportunities - unlimited lifetime	- the possibility of personal conflicts - the possibility of aggressive efforts on the part of employees to partner - lack of clear managerial responsibilities - the obligation to provide public data - the complexity and cost of incorporation and dissolution - tax disadvantages

Source: Fülöp Gy. (2004): Small Business Management. Budapest University of Economics and Public Administration, Aula Publishing House, p. 60.

The initial capital requirement of a sole proprietorship is typically low. One person provides the capital. The establishment cost of a business is the lowest among the types of enterprises (Bedő Gy., Varga S., 1998). One of the most well-known forms of joint ventures is business associations, within which we separate partnerships and public limited companies. A partnership (limited partnership, Ltd.) can be established with a smaller capital requirement than a public limited company. The cooperative is the property of several members and private individuals (Nábrádi A. et al., 2007).

The **life and operation of the company are influenced and even decisively determined by its environment**. We distinguish between **external (macro) and internal (micro) environments** (Roóz J., 2002).

External **environmental factors** are the following (Roóz J., 2002):

- the political-legal environment,
- technological environment (R+D),
- socio-cultural environment,
- economic environment.

Internal, micro-**environmental factors** are the following:

- employees,
- owners, board of directors,
- consumers,
- suppliers,
- competitors,
- financial entities,
- government
- interest groups.

Individuals or groups who can influence the operation of the undertaking or are interested in it **are called stakeholders.** (Illés M., 2010).

The circle of stakeholders can be grouped in other ways. We can talk about **internal**, internal stakeholders and external, **external stakeholders** (Chikán A., 2010).

Internal **stakeholders**:

- owners,
- managers,
- workers.

External **stakeholders**:

- consumers,
- suppliers,
- strategic partners,
- competitors,
- local and voluntary organisations,
- public institutions, organisations of the European Union,
- civic communities, civil society organisations,
- natural environment.

The company operates through internal stakeholders. Owners invest their capital (for example, shareholders), managers manage the company, and employees carry out instructions. This is the classic setup. It should be noted that managers can also be partial owners in some cases and even employees. They can have so-called employee shares (in public limited companies). In this case, they became interested in making as much profit as possible.

Of the external stakeholders, consumers, suppliers, and competitors are the market. The goal of the company is to satisfy the needs of the consumer, of course, after it has developed that need in the consumer. By satisfying consumer needs as up-to-date and wide ranging as possible, it wants to gain

as much share of the market as possible, thus overtaking its competitors and realising as much profit as possible.

References

Act CXVII of 1995 on Personal Income Tax.

Act LXXXI of 1996 on Corporate Income Tax and Dividend Tax.

Act CCXXXVII of 2013 on Credit Institutions and Financial Enterprises.

Bedő, Gy., Varga, S. (1998): Business Management Knowledge. Perfect, Budapest.

Chikán, A. (1997): Business Economics. AULA Publishing House, Budapest.

Chikán, A. (2008): Business Economics. AULA Publishing Ltd., CORVINUS University of Budapest, Budapest.

Chikán, A. (2010): Introduction to Business Economics. AULA Publishing Ltd., CORVINUS University of Budapest, Budapest.

Fülöp, Gy. (2004): Small Business Management. Budapest University of Economics and Public Administration, Aula Publishing House.

Illés, M. (2014): Corporate Economics I. University of Miskolc, Miskolc.

Nábrádi, A., Pupos, T., Takácsné, György, K. (2007): Üzemtan I., University of Debrecen Centre for Agricultural and Technical Sciences, Faculty of Agricultural Economics and Rural Development, Debrecen.

Roóz, J. (2002): The Economics of Enterprises. Perfekt Economic Consulting, Training and Publishing Company.

Review questions

1. What is the definition of corporate economics?
2. What are the key areas of scientific research in business economics?
3. What is a business venture?
4. How do we group businesses based on the activities they perform? Please illustrate it with an example!
5. How can you group the companies according to the sphere in which they carry out their activities?
6. What kind of business do we differentiate from the point of view of tax payment?
7. What kinds of business did you know based on the form of ownership?
8. How did we classify the companies according to the amount of capital available at the time of foundation?
9. Who are the main stakeholders of the company?

2 Company strategy

In the previous chapter, it has already been mentioned that the **goal of the business** (Chikán A., 2008) is to satisfy the needs and demands of consumers, through which it also creates value for the owners.

And the company's **mission** is an answer to how it can achieve its fundamental goal.

The company must have a basic goal structure; one could say that the goals have an order of importance and hierarchy.

Basic goal → mission →long-term goal → direct goal →operational goals (Roóz J., 2002).

The basic goal may be to satisfy consumer demand, of course, in the hope of profit. Mission is how the company achieves this. In the long-term goal, they formulate what must be completed for the mission. Below it in the hierarchy are the direct goals, where the tasks are defined, and the operational goals must show results in the short term.

Goals can also be classified according to functions. These will be the **functional goals,** e.g. development goal, marketing goal, etc. (Roóz J., 2002).

A **value chain** is nothing more than a value-creating interconnection of corporate activities. Porter (1985) divides corporate activities into two parts accordingly. There are value creation processes and there are corporate processes that support them (Figure 1).

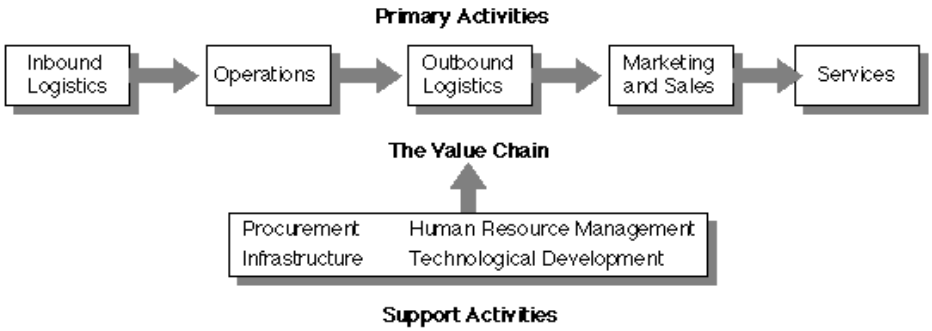

Figure 1. Porter's value chain

Source: Porter, M. (1985): Competitive advantage. Free Press, N. Y. p. 37.

The **task of the strategy** is for the company to provide the greatest possible value to the consumer, thus overtaking its competitors in the market (Chikán A., 2010). However, we should not ignore the fact that consumer needs are constantly changing, and new competing companies are appearing on the market. Therefore, the corporate strategy must be constantly re-evaluated and changed.

Strategic management is the management of a company that develops the company's strategy, implements it and applies feedback, and then modifies the original strategy taking this feedback into account. This can be seen as a spiral process in which previous activities are attempted to be carried out at a higher level.

Therefore, strategic management has three elements:

- defining the mission,
- the company must gain a lasting competitive advantage by fulfilling the mission;

- the coordination of the company's resources and the activities of the stakeholders (Chikán A., 2010).

There are **three levels of corporate strategy**:

- **company-level strategy** (strategy of the company as a whole),
- **the strategy of the business units** (e.g. how the given business unit can achieve even greater success in meeting consumer needs),
- **the strategy of the company's functional components** (e.g. marketing, finance, innovation).

The tasks of the corporate strategy include coordinating the business and functional strategies, as well as determining the mode of operation of the company, and communicating it to the stakeholders (Chikán A., 2010).

The **corporate headquarters can play four main roles** (Johnson G., Scholes K., 2002):

- portfolio manager (business units with a relatively high degree of autonomy are managed by the centre based on their financial results and future prospects),
- restructuring (the centre can buy new business units, sell, or reorganise),
- synergy manager (the centre strives to ensure that the business units it manages can perform and operate together as efficiently as possible),
- developer (the development of business units is supported by the company headquarters).

In reality, of course, these roles do not appear "purely", but in combination.

Why are the given business units present in the company's portfolio, and what development opportunities do they have in the future? The company-level strategy provides the answer to this. Various analysis methods are used. The best known is the **BCG** (Boston Consulting Group) **portfolio matrix** (Figure 2). Dogs, also referred to as "dead dogs" in other literature, are the worst performing business units because their market share is low and their market growth is not significant. The corporate headquarters must think about whether it is worth maintaining these business units (Chikán A., 2010).

Dairy cows have a remarkably high market share in a low-growth market. The results of a previous investment are now being made. Money for corporate development comes mainly from this source.

The market share of the question marks is low, but their market growth is very high. Therefore, the company's management must decide how much it wants to support these business units.

The market share and market growth of stars are also high. Therefore, these business units should be supported by the centre (Chikán A., 2010).

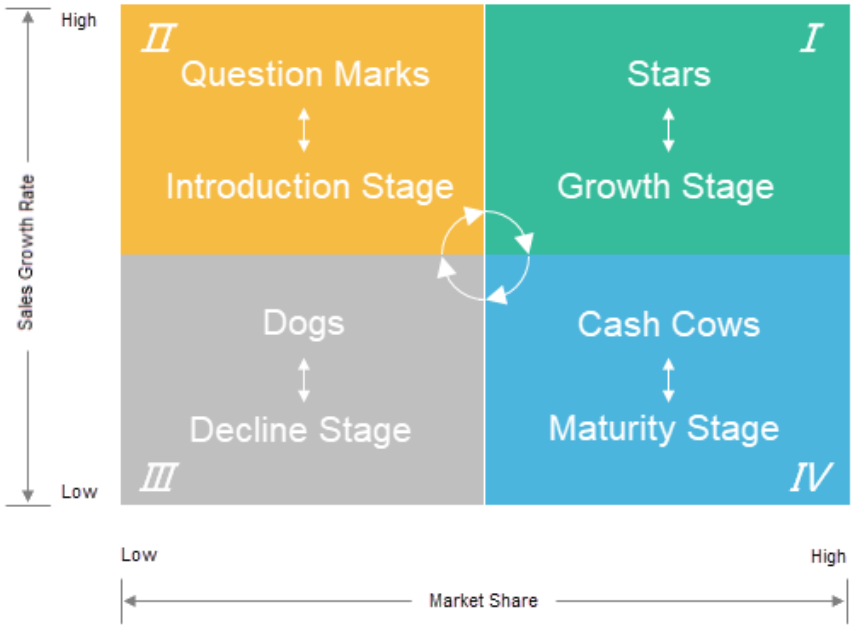

Figure 2. BCG's portfolio matrix

Source: https://help.fanruan.com/finebi-en/doc-view-733.html

(Retrieved 19/05/2025)

In connection with the strategy of business units, Porter (1980) collected **five forces that determine the attractiveness of the industry**:

- competition between companies in the sector,
- bargaining power of suppliers,
- bargaining power for customers (Csorba L., 2022),
- new competitors,
- competitors' substitute products can change the needs of customers.

According to Porter (1980), **the main task of strategic management of business units is to provide the business unit with a competitive advantage in the market.**

It describes three strategic methods for gaining a competitive advantage:

- **by using a cost-management strategy**, the company generates a high turnover with little profit, as it offers customers a wide range of products at a relatively low price (compared to the price of comparable products from competitors).
- **With the differentiation strategy, the given product (or service) has an extremely good feature that is so important to customers that competitors' substitute products do not.**
- By applying a focus strategy, the company targets one or a few segments of the market. It strives to assess and serve the needs of these segments specifically.

How does the company's top management relate to the strategy? Mintzberg (1979) provides an answer to this question**.** According to him, he can behave in three ways. It distinguishes **between an entrepreneurial approach, an adaptive approach, and a designer approach**.

The entrepreneurial approach is typical for company managers and private entrepreneurs who are both owners and managers of the company. They have a strong hand in managing the company and, in some cases, they also take risks. The key features of this approach include:

- the leader sees strategy as the search for new opportunities,
- responsibility and power are concentrated in his hands, there are no formalities, he has definite ideas,
- takes risks in the hope of making a big profit in the future,

- a very important goal of the strategy is corporate growth, building an "empire" (Chikán A., 2010), the goal is no longer to create personal well-being.

The adaptive approach is typical for companies (company leaders) that operate in an opaquely complicated environment and are afraid even of the smallest changes. The key features include:

- there are no well-defined goals,
- They are always looking for answers to current problems, there is no time or energy to look for new opportunities,
- they are afraid of changes, so they try not to stray too far from the usual routine, they feel that it is safe, stable,
- they provide multifaceted answers and solutions to multifaceted problems and challenges, but they are unable to connect and harmonise them.

The design strategy approach is characterised by:

- the analyst is an especially important participant in the strategic creation process, he knows the methodological background necessary for the creation of a strategy,
- the strategy is based on a systemic analysis: e.g. cost-benefit analysis of decision-making alternatives, etc.
- It is important to link the strategy, and the decisions related to it.

At the end of planning strategy analyses, it is assumed that the company management and the analyst get to know the environment to the extent that

they can influence it (Syuhaini Abdul Wahi N., Berényi L., 2024) (Chikán A., 2010).

The strategic approaches described above do not exist in reality; they usually appear in a mixed way.

The process of strategic management presupposes managerial awareness. The elements of the process are as follows:

- **creating a vision**,
- **realisation of the planned ideas,**
- feedback.

The creation of the strategy must begin with the analysis of the external and internal environment and with the determination of the location.

General environmental conditions must be considered:

- political factors,
- economic trends,
- social factors, the technical environment, the natural environment and the
- the legal conditions (Chikán A., 2010).

Based on these, scenarios can be prepared for the development of the company's future environment (Zsótér B., Császár V., 2013).

To assess the current and future situation of the company, we use SWOT analysis, which is the final stage of the company's strategic situation analysis.

SWOT stands for: Strengths, Weaknesses, Opportunities, Threats, Strengths, Weaknesses, Opportunities, Threats. With this analysis, the company's internal factors (our strengths and threats) and external factors (opportunities and threats) must be taken into account, of course, from the point of view of strategic planning (Kis K., Tóth A., 2016).

After taking these into account, we can set goals for where we want to go through the strategy. This is followed by implementation, then evaluation and feedback.

Könczöl (2007) described **four steps in the implementation of the strategy**:

- enumerating, securing, and allocating the necessary resources,
- during the implementation of the strategy, it is possible that the organisation may change and transform somewhat in line with this,
- the implementation of the strategy takes place during the day-to-day operation of the company, a crucial element of which is management and management,
- performance evaluation.

Performance evaluation forms is the basis for strategy evaluation and feedback.

References

BCG's portfolio matrix. Source: https://help.fanruan.com/finebi-en/doc-view-733.html (Retrieved 19/05/2025)

Chikán, A. (2008): Business Economics. AULA Publishing Ltd., CORVINUS University of Budapest, Budapest.

Chikán, A. (2010): Introduction to Business Economics. LOBBY, Budapest.

Csorba, L. (2022): The Effect of a Stronger Bargain Position on the Perfection and Completeness of a Contract Financial and Economic Review 21:(3), pp. 101-121.

Johnson, G., Scholes K. (2002): Exploring Corporate Strategy. Prentice Hall, New York.

Kis, K., Tóth, A. (2016): Examination of the local system of ecotourism in Poroszló, with special regard to the evaluation of the local economic development role of the Lake Tisza Ecocentre. North-Hungarian Strategic Booklets 13:(1), pp. 73-91.

Könczöl, E. (ed.) (2007): Corporate Strategy. Alinea Publishing House, Budapest.

Mintzberg, H. (1979): The Structuring of Organisations: A Synthesis of the Research. Prentice-Hall, Englewood Cliffs, N. J.

Porter, M. E. (1980): Competitive Strategy. The Free Press.

Porter, M. E. (1985): Competitive Advantage. Creating and Sustaining Superior Performance. Free Press, New York.

Porter, M. E. (1985): Competitive Advantage. Free Press, N. Y. p. 37.

Roóz, J. (2002): The Economics of Enterprises. Perfekt Economic Consulting, Training and Publishing Company.

Syuhaini Abdul Wahi, N., Berényi, L. (2024): Quality of enterprise resource planning in the local authorities in Malaysia. GRADUS 11(3) Paper: 2024.3.ECO.008 , 6 p.

Zsótér, B., Császár, V. (2013): Examination of the socio-economic effects of a large food company in the South Hungarian plain on a given settlement. In: Ubreziová I, Horska E (eds.): Modern Management in the 21st Century: Theoretical and practical issues. Nitra: Slovak University of Agriculture, 2013. pp. 359-385.

Review questions

1. What is a mission?
2. How can you describe the target structure?
3. What did you learn about Porter's value chain?
4. What is the task of the strategy?
5. What is strategic management?
6. What are the three elements of strategic management?
7. What are the levels of strategic management?
8. What is the BCG portfolio matrix? Describe it in detail!
9. What are the characteristics of cost management, differentiation, and focus strategies?
10. What did you learn about Mintzberg's strategic approach to entrepreneurship, adaptation, and planning?
11. What are the elements of the strategic management process?
12. What is a SWOT analysis?

3 Marketing

Nowadays, the key to corporate success is to satisfy consumer needs as quickly and as perfectly as possible (Szakály Z., 2017). Companies compete for the favour of customers (Chikán A., 2010).

Consumer needs and the factors influencing them must be considered to develop a successful marketing strategy (Hawkins D. I. et al., 2001). Hawkins et al. (1986) described that **consumer behaviour is determined by the consumer lifestyle, the purchase situation, and the product itself that is being sold**.

The **consumer lifestyle** is determined by culture, values, demographics, social status, reference groups, the consumer's household, personality, motivations, memory, information evaluation and learning process.

The consumer is always looking for a solution to some problem with the need satisfaction process. It considers and evaluates the ways to solve it. It takes into account the maximum possible benefit that you can achieve with it and the costs involved. In technical terms, the customer performs a cost/benefit analysis and then decides on the purchase of the product or service based on this (Chikán A., 2010).

The company's management must decide with the company's mission and strategy which consumer needs it intends to satisfy. They need to collect as much information as possible about these consumer needs.

We distinguish between individual and organisational consumers (Griffin, R. E., Ebert, R. J., 1989). The **needs of individual consumers are influenced** by psychological factors (e.g. motivation, attitude), personal

factors (e.g. the consumer's personality, lifestyle) (Kiss M. et al., 2016), social factors (e.g. reference groups) and cultural factors (e.g. belonging to a social stratum, lifestyle). The individual consumer is usually the end user of products and services. On the other hand, the **organizational consumer** usually has a demand for intermediate products and services (e.g. raw materials, semi-finished products for further processing). The organizational consumer usually has professionals with special knowledge, and after the sale and purchase transaction, there is usually a relationship between the organizational consumer and his supplier, in contrast to the individual consumer, who does not necessarily have professional knowledge and in most cases does not keep in touch with the seller after the sale and purchase (Chikán A., 2010).

The corporate strategy is a competitive strategy, as the company competes with competing companies on the market for the favour of customers. Considering this**, the tasks of marketing strategy** are the following (Chikán A., 2010):

- **defining and concretizing consumer needs,**
- **analysing competitors, developing a competitive strategy**,
- **to achieve that the consumer chooses us, our product or service**, so **the consumer must be won over** somehow.

Based on the above, let us see **how we can determine consumer demand in three steps**!

The three steps are:

- **market segmentation,**

- **choosing a target market,**
- **positioning.**

The essence of **market segmentation** is to divide the market according to consumer groups with distinct characteristics. The most common segmentation considerations for individual consumers include:

- product-oriented segmentation (e.g. features expected from the product, price sensitivity),
- demographic information (e.g. age, gender, marital status)
- social factors (e.g. education, religion, income)
- personality characteristics (e.g. lifestyle, attitude to life),
- geographical factors (e.g. climate, country, region, city).

Segmentation aspects related to organizational consumers can be, for example:

- the nature of the product,
- the nature of the purchasing organisation
- the situation of procurement in the organization (Chikán A., 2010).

Market analysis and **Market research are** important for the company, in the course of which the factors influencing the needs and behaviour of consumers and their purchasing habits (Zsótér B., Kaliczka R., 2014) are assessed, systematised and evaluated. Nowadays, the use of mathematical-statistical tools and software is essential for evaluation (Hampel Gy., 2018a). In addition, we must also take into account the current situation of the given industry (Panyor Á., 2017).

This is followed by **the selection of the target market**. The company narrows down the segments whose needs it wants to satisfy. The narrowed segments must be clearly and specifically defined, because it is not possible to fully meet the needs of all segments, e.g. we assume that baby food will only be purchased by those who have babies in the family or in their immediate environment (Gál J. et al., 2010).

Then the product is **positioned** a. Where is our own product positioned among products with similar characteristics in a given target market, e.g. a poultry processing company examines the packaging and design of its competitors in stores with a shelf survey, and what its product can do in this respect (Zsótér B., Molnár M., 2015), or the products of a mineral water production company compare to those of its competitors. (Zsótér B., Balog R., 2015).

From the point of view of the choice of competitive strategy, Kotler formulated in 1991 that there **are four types of companies based on their role in the target market**:

1. **Leaders**
2. **Challengers**
3. **Following**
4. **Hiding.**

The task of the leading companies is to expand the market as a whole, protect and increase the existing market share.

Challengers are aggressively trying to increase their existing market share to gain a leading position.

Followers want to maintain the status quo, either because they are in an advantageous position or because they do not have the energy to challenge them.

Stalls are looking for niches in the market where they are not confronted by leading and challenging companies.

We have seen the first two components of the marking strategy, the definition of consumer needs and the way in which the competitive strategy is chosen. In the following, we will talk about the third component, which is the winning of the consumer. Since consumer needs are diverse, it is quite difficult for companies to meet individual needs. Mass personalization has appeared, which is nothing more than a way of satisfying individual needs with mass production tools and technology (Chikán A., 2010). The products are individually produced.

Customer retention is particularly important. This is a great emphasis, especially in the case of organisational consumers. Long-term cooperation would be the main goal. This is where **relationship marketing** helps. Consumers are treated as individuals and not only products are sold to them, but a system of complex services is provided (Chikán A., 2010).

With **e-marketing** tools, electronic data management and market segmentation become more efficient, they can satisfy customer needs in a much more personalized way, as we can learn a lot about them from databases (Hampel Gy., 2018b) (e.g. we can send discount coupons tailored to the customer's own needs based on their previous shopping habits), this is what **customer relationship management** and CRM deal with

(Customer Relationship Management) **Systems** that have personalized information about each consumer, have a data management data mining subsystem, are suitable for planning and conducting marketing campaigns, etc. (Chikán A., 2010).

The **marketing mix** contains elements that can win the favour of consumers and keep them. These elements are **Product, Price, Place and Promotion**. We simply **refer to it as 4P**.

1. **Product** policy includes the choice of product structure, product lifecycle management, and product presentation. By examining the product structure horizontally, we distinguish between product groups, and vertically we can determine the range within the product group. For example, Mercedes showroom offers A-class Mercedes, B-class, C, E, S classes, etc., these are the product groups. From a vertical point of view, the given customer would need a black car equipped with a 2000 cm3 diesel engine within the C class, which is the choice. Since we can talk about individualization, they do not only want to sell a product to the customer, but a complete package. The factory warranty is 2 years but can be extended for another 2 years in exchange for all compensation. You can request a phone application as a service, which is suitable for tracking the condition and location of the car, etc.

While the product is on the market, that time is called **the product life cycle.**

There are life stages of this:

1. **Introduction**

2. **Growth**
3. **Maturity**
4. **Decline.**

In **the introduction phase**, the company enters the market with the new product, which it must introduce to the customers and make them accept. Initially, it involves significant expenses, sometimes the company realizes losses.

At the growth stage, customers have already accepted and are buying the product. Sales turnover increases and profits also increase. The company is still conducting intensive advertising campaigns. It broadens its sales network (Chikán, A., 2010).

In the stage **of maturity,** the market slowly saturates. The costs are relatively low, and the profit is significant. It is worth investing the extra profit generated in the development and introduction of a new product, even more so because by the time our first product reaches the end of the decline phase and is phased out, the newly introduced product reaches the stage of maturity. So, we will have a well-profitable product all the time.

In **the phase of decline**, turnover decreases, so much so that by the end of the phase, we have to withdraw the product from the market.

The company must use different marketing methods at each stage. The product lifecycle curve depicted above is typical, but there are many other variants.

Other crucial elements of the product policy are **the choice of brand name, packaging and labels**.

These are crucial factors that allow the customer to distinguish the product from similar products of other companies. The packaging also protects and helps to make the goods desirable. The innovative design and new packaging can be dangerous, as the brand-loyal consumer will be averse to the new packaging, fearing that it does not contain the usual quality product. A careful advertising campaign must be used to support the customer to dare to take the product in new packaging off the shelf.

The label includes the name of the manufacturer, the name of the distributor, the registered office, the composition of the product, the shelf life, etc. In the case of foodstuffs, the label must comply with strict food labelling rules.

2. **Pricing** policy deals with determining the price of the products offered and adapting to the rapidly changing environment and the methods of doing so.

The **pricing strategy was planned in six steps** by Kotler (1991):

- **choosing pricing targets** (based on the company's intention with pricing).
- The next step is **to determine, assess and analyse demand**, during which the price sensitivity of consumers and how demand and supply develop in the given market are examined. The principle of the shorter side usually applies, according to which the side that is shorter sets the price, i.e. the one that has less of the demand, then the demand side, the buyer, sets the price, and if there is less supply, then the seller.
- Then **they estimate the expected costs**. Of course, the company strives to sell at least as many products whose revenue covers all its

costs. That is, to sell at least the volume corresponding to the break-even point.

- The **price behaviour of competitors is then analysed**. They collect information and conduct market research on how competing companies price their similar products.
- **They choose the method of pricing**. This can be cost-based, demand-based, or competitor-based (Chikán A., 2010).
- Finally, the **final price is determined**.

3. The sales journey policy is the third element in the marketing mix. The path through which a product travels from the manufacturer, producer, through the supplier to the consumer is called the sales path or **marketing channel. It is important to analyse and select sales paths**. During the analysis, it is necessary to assess where, what, when, how, in what packaging, etc. the customer buys. The company must adapt to this in such a way that it can satisfy the needs of customers with the least possible waiting time, providing good accessibility and product selection. Sales routes should be designed in accordance with this analysis (Chikán A., 2010).

If the company delivers its products to consumers through intermediaries, it requires a high degree of cooperation between the company and the intermediaries. This is called **a distribution system. There are three types of distribution systems: corporate, managed and contracted. This also includes franchising**, in which the company transfers the right to use the

distribution of products and services that have already been well established on the market (e.g. McDonald's, Subway, Duna House).

4. The fourth marketing mix element is **sales promotion**, which is part of the company's communication policy, including the **communication mix, in addition to advertising, personal sales and PR (public relations).** The task of marketing communication is to provide and convince consumers in the target market with information.

Sales promotion is the use of methods that encourage the buyer to make more purchases. For example, giving coupons and product samples. These should be used in conjunction with advertising.

Advertising can be brand advertising (we advertise a specific product), company advertising (a given company) and product family advertising.

Due to its excessive costs, the use of personal sales is only economical in cases where personal contact and trust are very necessary due to the particularly high value or uniqueness of the product or service.

The **purpose of PR** (public relations) is to increase the image of the company and to create a favourable image of the company. These include corporate press releases, media appearances by company managers, corporate social engagements, etc.

In the chapter, we have seen that the goal of marketing activities is to put its products and services in a more favourable position on the market compared to similar products and services of competitors.

References

Chikán, A. (2010): Introduction to Business Economics. LOBBY, Budapest.

Gál, J., Németh, M., Vincze-Lendvai, E. (2010): Baby food buying and consumption habits in Sándorfalva. In: Csépe A., Papp-Váry Á. F. (eds.) EMOK 2010 - New Marketing World Order: the 16th National Conference of the Marketing Instructors' Club of the Hungarian Marketing Association. 1038 p. Date and place of the conference: Budapest, Hungary, 26.08.2010-27.08.2010. Budapest: Budapest College of Communication and Business, 2010. pp. 295-299. (ISBN:978-963-88943-1-1)

Griffin, R. E., Ebert, R. J. (1989): Business. London: Prentice-Hall International.

Hampel, Gy. (2018a): Using Excel to test a normal distribution using the Shapiro-Wilk test. Contemporary Social and Economic Processes 13:(1-2), pp. 77-82.

Hampel, Gy. (2018b): Information and Information Systems as Keys to Success. Quaestus Multidisciplinary Research Journal 13, pp. 71-82.

Hawkins, D. I., Best, R. J., Coney, K. A. (1986): Consumer Behavior: implications for marketing strategy. Business Publications, Inc. Plano.

Hawkins, D. I., Best, R.J., and Coney, K.A. (2001): Consumer Behavior: Building Marketing Strategy, Boston: Irwin Mc Graw-Hill.

Kiss, M., Szakály, Z., Soós, M., Kontor, E. (2016): The appearance of health consciousness in the eating habits of the Hungarian population

by age groups, In: Bíró L., Gelencsér É., Lugasi A., Rurik I. (eds.) The 60th Annual General Meeting of the 60-year-old Hungarian Nutrition Society: Program and abstracts of the lectures, Esztergom, Hungary, 2016.10.06-2016.10.08. Budapest: Hungarian Society for Nutrition, p. 38.

Kotler, P. (1991): Marketing Management. Technical Publishing House, Budapest.

Panyor, Á. (2017): Characteristics and Challenges of the Hungarian Food Economy in the XXI Century. Contemporary Social and Economic Processes 12:(3), pp. 107-112.

Szakály, Z. (2017): Food Marketing, Akadémiai Kiadó, Budapest.

Zsótér, B., Balog, R. (2015): Customers' opinion on the Mizse mineralwater in Kecskemét and its neighbouring settlements. Review of Faculty of Engineering Analecta Technica Szegedinensia 9:(1), pp. 7-11.

Zsótér, B., Kaliczka, R. (2014): Examinations carried out in relation to the shopping habits and satisfaction of costumers in the shops of Coop Szeged Ltd. Review of Faculty of Engineering Analecta Technica Szegedinensia 8:(1), pp. 38-41.

Zsótér, B., Molnár, M. (2015): Customer satisfaction and shelf survey related to the products and packaging technology of a poultry processing plant in Bács-Kiskun county. Economica (Szolnok) 8:(4/2), pp. 139-148.

Review questions

1. What factors influence consumer behaviour?
2. What are the things that determine the consumer lifestyle?
3. What did you learn about individual and organisational consumers?
4. What are the tasks of a marketing strategy?
5. How can you describe the three steps to determine the consumer need?
6. What is market segmentation?
7. What did you learn about choosing your target market?
8. Can you provide a practical example of product positioning?
9. What four types of company did Kotler distinguish based on their role in the target market?
10. What are the elements of the marketing mix?
11. What did you learn about the product policy?
12. What is the product lifecycle?
13. What are the six steps of Kotler's pricing strategy?
14. What is covered by the sales journey policy?

4 Innovation

Companies are trying to find the hidden, **latent needs** of the market and bring this hiddenness to the surface with their new products and services. Innovation is nothing more than the new, higher-quality satisfaction of consumer needs than before (Szilágyi T. et al., 2023). Features of the innovation:

- uncertainty,
- consumer-orientation,
- novelty.

The company invests a lot of capital in the development of the novelty, but it is not possible to know in advance whether the money invested will ever pay off. Predictive methods are used, but the uncertainty is still there. So, these investments are risky. Innovation can only occur in a competitive situation (Piskóti, I., 1993).

Through research and development, companies create new technologies. Consumer needs are always at the heart of developments, as a novelty must be created that the consumer will buy.

Forms **of innovation** (Chikán A., 2010):

- new organisational,
- new technological solutions,
- the appearance of a new product,
- and different combinations of the former.

Using a different approach, we distinguish between market-driven innovation and technological innovation. In the first case, the company

wants to meet the needs of the market with its developments, and in the second case, the new technology makes it possible to take advantage of market opportunities (Máté D. et al., 2024).

The company must react flexibly to changes in market needs, so innovation must be a principal element of the company's strategy (Matras-Bolibok, A., Kis, K., 2014). Based on this, we can talk about an innovation strategy.

There **are two types of innovation strategy**:

- conscious development work, as a result of which novelty is created,
- spontaneous developments.

Tidd et al. (2001) write about technological innovation, product differentiation, structural innovation, and complex solutions in their work.

Product differentiation is necessary so that different segments can buy the product variant developed specifically for them (e.g. Japanese cars are sold on the American market with larger bodies than in Japan.

The following factors will determine how quickly the novelty developed by the company **will be accepted and spread as widely as possible on the market**:

- relative advantage (whether the product is better than competitors),
- compatibility (compatibility with existing technology, etc.),
- complexity (the simpler it is to use, the easier it is to spread),
- trialability (the customer is more likely to buy the new product if they can try it out beforehand),
- observability (whether you can learn from the experiences of others).

Furthermore, factors related to the user of the innovation must be considered (Nagy S., 2020). For example, in the case of an individual consumer, their age and education (Kozári J., 2009). In the case of an organizational consumer, the size of the plant, the size of the capital, the sector (Benkő-Kiss Á., 2010).

We distinguish between organisational innovation, technological innovation, and product innovation.

Organisational innovation may become necessary due to inefficient organisational operation, or the company may simply have to flexibly adapt to changes in the environment, e.g. the need to introduce a quality assurance system. Business processes need to be reorganised. The operation of the company must be broken down into its elements, analysed, the processes must be rationalised, and, in the end, the whole thing must be put back together.

Technological innovation affects the entire product production process, not only the means and equipment. It has a significant financial implication, so it must be thoroughly prepared.

Tidd et al. (1997) distinguished between two types of **product innovation** and process models. One is based on research activity (basic research), through which a novelty is created, and the other is based on the needs of consumers.

Another process model of product innovation was put on paper by Hoványi (1988) and later modified by Chikán (2010). Consequently, the process begins with the idea. Such activities are either carried out within the company in a purposeful manner, or they are generated by the corporate

culture and environment (e.g. placing an idea box at the workplace and the employee receives a reward for successfully implemented ideas). The collection of ideas is followed by their evaluation, and then the design and concretization of the product (Kline, S., Rosenberg, N., 1986), which is the task of the designer. Once the product has been manufactured, it will be tested for the first time on the market. At this time, the consumer can try, for example, a newly developed yoghurt (Lendvai E., 2012) or functional pastry (Zsótér B., 2016) (Gyimes E. et al., 2012), etc., with sensory examination, also known as tasting, followed by a questionnaire survey or interview. In these, the consumer is asked whether they would buy the product, whether they know a similar product, how much money they would give for ours compared to its price, etc. This will be followed by further product development, at which point the prototype will be completed. The effects of the product are evaluated, experimented with, and continuously tested (e.g. testing nutritional supplements with athletes). It is best to maintain as close a relationship as possible with the consumer. This is followed by the second market test and then production. The new product must be introduced to the market. This was already discussed in the marketing chapter. Innovation has a constant and direct connection with marketing (Piskóti I., 2007), stemming from the same root (Buzás N. et al., 2006).

References

Benkő-Kiss, Á., Bodnár, K., Kis, K., Horváth, J. (2010): Innovation sensitivity of agricultural enterprises in the Southern Great Plain Region: Research report: BAROSS DA_ELEM_07_ MGK_INNO. University of Szeged, Faculty of Agriculture, Hódmezővásárhely.

Buzás, N., Piskóti, I., Vágói, M. (2006): Innovation marketing. Akadémiai Kiadó, Budapest.

Chikán, A. (2010): Introduction to Business Economics. LOBBY, Budapest.

Gyimes, E., Csanádi J., Szabó P. B., Krisch, J., Gábor, Mné., Horváthné Almássy, K., Baráné Herczegh, O., Fenyvessy, J., Kárnyáczki, Zs., Szűcs, T., Tóth, Zs., Véha, A. (2012): Development of functional foods: background and results. Food Science Technology 66:(2), pp. 6-14.

Hoványi, G. (1988): Preparation and management of technical development at companies. Study within the framework of the Microeconomic Research TS 1/4 program, BKE.

Kline, S.-Rosenberg, N. (1986): An Overview of Innovation. In Landau, R.-Rosenberg N. (1986): The Positive Sum. National Academy Press. Washington.

Kozári, J. (2009): Agricultural consultancy. Szaktudás Kiadó Ház, Rt.

Lendvai, E. (2012): Analysis of the consumers' habit by the functional milk products. Review of Faculty of Engineering Analecta Technica Szegedinensia: 3-4, pp. 1-6.

Matras-Bolibok, A., Kis, K. (2014): European Innovation Partnership as a Framework for Open Innovation in Agriculture. Annals of the Polish Association of Agricultural and Agribusiness Economists 16:(6), pp. 339-343.

Máté, D., Estiyanti, N. M., Novotny, A. (2024): How to support innovative small firms? Bibliometric analysis and visualization of start-up incubation. Journal of Innovation and Entrepreneurship 13:(1), pp. 1-26.

Nagy, S. (2020): Economic and social impacts of innovation startup ecosystems and some aspects of their development. Contemporary Social and Economic Processes, 15:(3-4), 11-23.

Piskóti, I. (1993): The Requirements of Innovation Marketing Marketing 27:(1–2), pp. 17–25.

Piskóti, I. (2007): Innovation Marketing–Marketing Innovation Miskolc, University of Miskolc, 154 p.

Szilágyi, T., Zádori, I., Nemeskéri, Zs. (2023): The Importance of Innovation in Interregional Cooperation Programmes in the Southern Border Regions of Hungary: An Examination of the Programming Documents for the 2021-2027 Period. THE VILLAGE. Az innováció jelentősége az interregionális együttműködési programokban Magyarország déli határrégióiban: A 2021-2027 közötti időszak programdokumentumainak vizsgálata. A FALU, 38:(2), pp. 47-56.

Tidd, J., Bessount, J., Pavitt, K. (2001): Managing Innovation. John Wiley and Sons, Ltd.

Tidd, J., Bessant, J., Pavitt, K. (1997): Managing innovation. Integrating Technological, Market and Organizational Change. Chichester: Wiley

Zsótér, B. (2016): Consumer and employee survey prior to the introduction of functional foods , pp. 493-500., 8 p. In: Fehér, A.; Kiss, Virág Á.; Soós, M.; Szakály, Z. (ed.) EMOK XXII. National Conference 2016 Volume of studies: Credibility and Value Orientation in Marketing. Debrecen, Hungary: University of Debrecen, Faculty of Economics and Business Administration, (2016) p. 765

Review questions

1. What is a latent need?
2. What is innovation?
3. What is research and development?
4. What are the forms of innovation?
5. What is the difference between market-driven innovation and technological innovation?
6. What is an innovation strategy?
7. What are the types of innovation strategy?
8. What are the factors that can help the novelty spread as widely as possible?
9. What do we mean by organisational innovation?
10. What is technological innovation?
11. How is the product innovation process model structured?

5 Practical examples for marketing and innovation topics

In this chapter, we can see a practical example of how closely marketing and innovation, including product innovation, are closely linked. The results of a preliminary consumer survey related to the introduction of a new product group in a Szeged hypermarket will be discussed below (Zsótér B., 2016).

New consumer habits are also becoming increasingly widespread in Hungary, such as functional foods that are part of a healthy diet, thanks to the faster flow of information, which makes it necessary for stores - in this case, a hypermarket in Szeged – to follow the latest food trends with their product range. Consumer society is generally more sceptical about a new product, as new products appear every day, all of which promise health preservation or health-improving effects.

The recipes for the functional foods participating in the study are the result of a new development, which was carried out by a special research group specialising in this field. So, the products went beyond the brainstorming and product design process within the innovation process. In the example, you can read the results of the first and second market testing (Zsótér B., 2016).

The ultimate goal of the market testing was to prove that the hypermarket management should buy the recipes and introduce these new functional foods as private label products. The latter activity was the task of the hypermarket marketing experts.

To give the reader even greater insight into the field of research, it is worth clarifying the basic concepts and basic connections in advance.

According to Biacs (2006), only 16% of the Hungarian population eats consciously. According to the results of a survey conducted on the consumption of functional foods (Németh-T. A. et al., 2013), the certificate of the control organisation, and the trademark give the population a sense of security.

The general awareness of functional foods among customers is still relatively rudimentary. The **definition of functional foods** is currently not uniform, so according to the definition defined by FUFOSE (Functional Food Science in Europe): a product can be called functional if, in addition to the physiological effects of proper nutrition, the food has a positive effect on one or more functions in the body, which manifests itself in better health, better well-being and/or reduction of the risk of certain diseases. The functional composition should be presented exclusively in the form of food; it should not be in the form of tablets or capsules. It must be part of the traditional nutritional system, and it must have an effect even at the amount of food consumed (Biro Gy. 2004).

The appearance of functional foods was required by the needs of the consumer society. Adapting to these needs has led to the research and development programmes of food companies. When developing its products, the consumer expectation is that they should be as healthy as possible and contain materials that make the product truly functional. Food manufacturers must meet all these expectations in such a way that the taste, texture, appearance, and other characteristics of the product do not differ

from the usual, traditional products. In other words, consumers want to consume foods that are healthy yet provide the same enjoyment value as other ordinary products (Végh K., Illés S., 2011). The conditions for the realization of food product innovations should not be ignored either (Balogh S., Véha A., 2010).

The market share of functional products has increased in recent years. Japan is at the forefront of the production and consumption of functional products, followed by the United States and the European Union. Several events are also organized in the United Arab Emirates on this topic (Herdon I., Nábrádi A., 2014). These foods must also be naturally safe (Véha A., 2011). Like all products, functional foods are also developed for a target group. When selecting target groups and attracting their attention, food manufacturers and sellers use different marketing strategies (Simonyi P. et al., 2013). Nutrition marketing deals with this problem. The conceptual definition of nutrition marketing is a marketing activity aimed at target groups, placing nutritional information at the centre of the marketing and communication strategy (Szakály Z., 2011). Zoltán Szakály (2011) **classified consumers living in large cities into four lifestyle clusters.** Based on these, we distinguish between traditional values, modern trend-followers, modern innovators, and rejecting types. These consumer groups were formed based on the results of a survey based on how the respondents related to functional foods.

A whole series of literature works deal with functional foods (Málnás A., 2008) (Papp-Bata Á. et al., 2015) and their trade (Szincsák A., 2009) (Szincsák A. 2010). It is worth considering the methods of marketing

(Lehota J., 2001) (Veres Z., Szilágyi Z., 2007) and agricultural marketing (Lehota J., Tomcsányi P., 1994) in the course of similar studies. These foods are often associated with a geographical location, due to the quality, as in the case of onions, of the city of Makó (Gál J. et al., 2010). This characteristic can be observed especially in the case of baby food, as we are talking about children of special ages where expectations are high (Gál J. et al., 2008).

Functional foods can be divided into two group – animal, and plant. During the research, the popularity (organoleptic) examination of four products produced by the bakery industry was carried out among customers and employees.

During the research, 239 questionnaires were filled out by customers and employees of a Szeged hypermarket after tasting the products. Although the survey involved the entire range of hypermarket employees, customers were simply randomly selected. The survey and the two tests took place between 1 p.m. and 7 p.m. on 8 December 2010 and between 1 p.m. and 7 p.m. on 15 December 2010. These dates were set by the hypermarket management. On these two days, a test baking could take place in their bakery, followed by tastings and consumer interviews in the sales area. At the same time, the employees also tasted the products to be introduced and filled out a questionnaire.

The questionnaire included whether the respondents were familiar with functional foods and how well they were aware of the concept of these foods. The most important goal was to assess whether there would be a

demand among customers for the introduction of these products and whether they would buy them if they were available and what consumer price they could imagine for the products. Taste and sensory examination of the sample products helped with this.

The questionnaire included the respondents' overall impressions of the products tasted (of course, by product), and how satisfied they were with the texture, taste, and appearance. We use five-step scales. The next question was whether he would buy the new products and how much more he would pay for them compared to traditional products.

During the survey, 41% of the customers surveyed classified themselves in the age group between 41 and 60 years old. Based on the answers given by the employees, 35% of the respondents belonged to this age group. Among employees, the highest proportion of respondents were between the ages of 26 and 40, representing 53% of the employees. The ratio between the sexes did not show any major differences among the surveyed customers; they were in a half-to-half ratio of men and women. However, the gender ratio was no longer so balanced among the employees, since the proportion of women was 67%.

Forty percent of the customers surveyed had some kind of secondary education, but the proportion of university or college graduates was also remarkably high (37%). 72.5% of the store employees had some kind of secondary education.

Before presenting the test results, we look at the main physiological characteristics of the products that have been tasted and evaluated and are

about which the tasting and responding persons were informed in person and with the help of a leaflet before the survey. Previous studies have already addressed the outstanding importance of providing information in a language that is understandable to consumers (Szakály Z. et al., 2014). The interviewers gave the following **informative text** before the tasting. Of course, it was also received in printed form by the people participating in the study.

Spelt buns

The spelt flour in the buns provides the body with energy that can be used easily and quickly and strengthens the immune system. It is easily digestible, and its fibre cleanses the intestines. It improves blood circulation and, due to its fibre content, reduces the risk of atherosclerosis. The special starch in the product further increases the fibre content, and the effect of increasing blood sugar levels is less than in the case of traditional buns.

Croissant with oat bran

Croissants are enriched with oat flour, which has a significant beta-glucan content, which reduces cholesterol levels, protects the mucous membranes of the stomach and intestines, and helps eliminate intestinal sluggishness. Eating oat bran can result in a 10-15% reduction in cholesterol.

Cocoa snail

The sugar content of cocoa snails is reduced, so its energy content and the physiological effects of the antioxidant compounds in cocoa are also

favourable. Minerals (calcium, magnesium) and antioxidants have a good effect in preventing the development of cardiovascular disease.

Flaxseed biscuits

A significant part of the fat in biscuits is vegetable oil (linseed oil) with a high omega-3 fatty acid content, which makes it effective for general cardiovascular problems. These substances have anti-inflammatory, anticoagulant, increase blood viscosity, and protection effects of the vascular membrane. They moderate the increase in blood lipid levels after meals.

This book is not intended to provide a detailed description of the ingredients in the products. A separate research team compiled the recipes.

Of course, the results were relevant at the time of the survey. In the questionnaire, the respondents could choose how consciously they ate on a scale of 1 to 5. Twenty percent of them are interested in it and try to live according to the expectations of a healthy lifestyle in some way. And in the case of employees, it can be observed that they are interested in healthy eating but for some reason cannot pay much attention to it. Few of the respondents paid no attention to their health at all and did not want to change it (10% of the customers surveyed and 7% of the employees). Compared to the result of a national survey of 50%, this is a good ratio (Szakály Z. et al., 2014).

Sixty-two percent of the respondents did not know or had heard about functional foods.

Based on the answers to the previous question, it was asked if they could define functional foods in some way. Most of the respondents gave some kind of definition that is close in terms of content, which was usually formulated in a few words. However, no one gave an exact fully formulated definition of functional foods during the study.

After that, the tasting followed. Respondents tasted each product in a specific order and evaluated it on a scale of 1 to 5 based on specific criteria. **The order of the tasting was particularly important.** Its essence is to keep the product with the most intense taste until the end. The products had to be evaluated on the basis of the overall impression, taste, texture, and appearance with the help of the scale.

Some of the respondents were only willing to taste a few products, which had to be taken into account during the evaluation.

The first product was spelt buns. During the evaluation based on **overall impression**, 62% of customers and 66% of employees rated the product as suitable. **Based on taste, 36% of customers and 69% of employees rated it very good.** Of the respondents, only one person rated it as bad. He was one of the store employees. We will see later that store employees are much more critical of a product than a customer in a given case. **Satisfactory results were also achieved among respondents according to consistency, with 39% of customers and 81% of employees rating the product as very good.** During the appearance-based evaluation, the vast majority of respondents were satisfied with the appearance of the product, although they noted that the size of the bun is a little smaller than that of a regular bun, but this did not affect them much during the evaluation, as 44% of

customers and 81% of employees considered the appearance to be very good. Fifty-nine percent of customers and 85% of employees would buy the product. In the following, I will mention only the most important results.

The next product was the croissant with oat bran. When evaluating it according to taste, 53% of the surveyed customers and 83% of the employees rated it very good. None of the respondents rated the product worse than average. It also received a very good rating based on its appearance. Fifty-six percent of customers and 89% of employees considered the appearance of the product to be very good. When asked if the product would buy it when it became available, a very large majority of the respondents answered yes. Seventy-three percent for customers and 92% for employees.

The following product was one of our most popular. This product is the cocoa snail, as can be seen from the results, as only twenty-four people out of all those surveyed did not taste or appreciate it. When evaluating based on taste, respondents did not find much difference between a "functional cocoa snail" and a "traditional cocoa snail". Many people thought that it was good that its sugar content was reduced and yet could not notice it in its taste. Seventy percent of the customers rated the product as very good based on its taste. Some of the employees evaluated it very critically and extremely.

In the appearance-based evaluation, 67% of customers and 85% of employees rated the product as very good, although some respondents missed the powdered sugar decoration on the product, but only because of

the usual sight. Ninety-three percent of the customers surveyed and 84% of the employees would buy it in the future.

The last product that customers and employees could taste was the small flaxseed cake. This product was the functional food that was a hit with most people, as only 7% did not taste it overall. Based on its taste, 60% of customers and 63% of employees rated the product as very good. In the survey conducted two times, the taste of the flaxseed biscuit was slightly saltier the second time, so customers who lead a low-salt lifestyle took into account during the evaluation that the product is 'very' salty for them, so they rated the product a little underrated. Regarding the appearance of the flaxseed biscuit, it can be said that the majority were satisfied. Eighty-one percent of those surveyed would buy the product.

In general, consumers are very price sensitive, which is why it was necessary to assess how much more they would pay for the given functional products than for traditional ones.

On average, shoppers would pay 16% more for functional foods they tasted, while workers would only pay an average of 5% more.

This is well below the national representative experimental results, which are 19% (Szakály Z., 2009). However, the client needed the recipes.

As a result of the research, it can be said that those who knew functional foods and could define them in some way all had a university or college degree.

Furthermore, during the aggregation of the questionnaires completed by the employees, it was observed that in the case of some products compared to

customers, the product "does not meet at all" as an answer occurred in the rating from 1 to 5. Some of the workers were self-respecting, especially those who worked in the hypermarket bakery. The negative attitude and rejection of the consumers (respondents) was observed. Eszter Jakopánecz wrote more about this behavior (Jakopánecz E., 2015).

The most popular product was the cocoa snail. During the tasting, this was sold out the fastest. In the survey, when asked if they would buy the product, the vast majority of customers answered yes. Based on this, the hypermarket management bought the recipes for the new products and introduced them to the market within a few months. The answers to the last question **helped to price the new products**.

References

Balogh, S., Véha, A. (2010): Realization Conditions of Food Product Innovations. Food, nutrition and marketing. 7:(1), pp. 31-35.

Biacs, P. (2006): Production, distribution and consumption of functional foods. The 8th Professional Conference of the "National" Association of Hungarian Dietetics. Budapest, February, 17-18.

Biro, Gy. (2004): New functional food ingredients – Malignant tumors and oxidative degradation. Confectionery industry. 50:(4), pp. 137- 146.

Gál, J., Németh, M., Vincze-Lendvai, E. (2010): Baby Food Purchasing and Consumption Habits in Sándorfalva, MOK 2010 "New Marketing World Order", Budapest College of Communication and Business, Budapest, 26-27 August 2010. ISBN 978-963-88943-1-1, pp. 295-299.

Gál, J. (2008): The Examination of Onions and some Interesting Effect to Makó, 50. Jubilee Georgikon Days Conference, Keszthely, 25-26.09.2008 conference CD, ISBN 978-963-9639-32-4

Herdon, I., Nábrádi, A. (2014): Market access opportunities in the field of functional foods. Nutrition marketing. 1:(1-2), pp. 55-56.

Jakopánecz, E. (2015): Affinity for consumer resistance among Hungarian consumers. Nutrition marketing. 2:(2), pp. 29-45.

Lehota, J. (2001): Marketing Research in Agricultural Economics. Mezőgazda Kiadó, Budapest.

Lehota, J., Tomcsányi, P. (1994): Agrármarketing. Mezőgazda Kiadó, Budapest.

Málnás, A. (2008): On functional foods. Refrigeration industry.56:(1), pp. 18.

Németh, A., Vincze-Tóth J., Hegyi J., Troján Sz. (2013): Survey of potential consumer and customer groups of functional foods. Farming. 57(6) 579-587.

Papp-Bata, Á., Csiki, Z., Tósaki, Á., Szakály, Z. (2015): Sour cherry seed extract–a new product on the functional food market? Nutrition marketing. 2:(1), pp. 31-34.

Simonyi, P., Végh, K., Kincses, Á., Illés, S. (2013): Sustainable food consumption of the elderly. In Bottlik, Zs. (ed.): Independent steps in the field of science. Eötvös Loránd University, Doctoral School of Earth Sciences, Budapest, pp. 83-99.

Szakály, Z., Kiss, M., Jasák H. (2014): Functional foods, consumer attitudes and personalized nutrition. Nutrition marketing. 1:(1-2), pp. 3-17.

Szakály, Z. (2009): Health Behaviour and Functional Foods: What Do Hungarian Consumers Think? Food Nutrition and Marketing. 6:(1-2), pp. 9-18.

Szakály, Z. (2011): Nutrition Marketing. Mezőgazda Kiadó, Budapest.

Szincsák, A. (2009): Functional foods and their trade I. Refrigeration industry. 57:(4), pp. 6-7.

Szincsák, A. (2010): Functional foods and their trade turnover II. Refrigeration industry. 58:(1), pp. 5-7.

Végh, K., Illés, S. (2011): Hypothetical models of food consumption behaviour by the elderly. Lambert Academic Publishing, Saarbrücken.

Véha, A. (2011): The role of higher education in the process of safe food production. Canned newspaper. 2011:(3-4), pp. 24-25.

Veres, Z., Szilágyi, Z. (2007): The Basics of Marketing. Perfect, Budapest.

Zsótér, B. (2016): Consumer and employee survey prior to the introduction of functional foods , pp. 493-500., 8 p. In: Fehér, András; Kiss, Ágnes Virág; Soós, Mihály; Szakály, Zoltán (ed.) EMOK XXII. National Conference 2016 Volume of Studies: Credibility and Value Orientation in Marketing Debrecen, Hungary: University of Debrecen, Faculty of Economics and Business Administration, (2016) p. 765.

Review questions

1. What is a functional food?
2. What does nutrition marketing do?
3. What are the four lifestyle clusters of consumers living in big cities?
4. Why is it important to have an informative text before the survey?
5. Why you need to pay attention to the order of the foods you taste?
6. What criteria did the testers use to evaluate the products?
7. What method helped you price new products?

6 Human resource management

Nowadays, human labour is becoming increasingly valuable. Companies view employees as human resources. They must also be able to manage this resource. This is what the literature calls **human resource management (EEG).** Due to the labour shortage, this is particularly important (Kozák, 2019). The goals and aspirations of the organisation and the expectations of the employees are coordinated by human resource management (Roóz J., 2002) (Zádori I. et al. 2021).

According to József Roóz (2002), the functions of human resource management are as follows:

- attracting the workforce,
- keep,
- motivating,
- exploitation.

In the formulation of Attila Chikán (2008), human resource management **can be grouped around five main functions:**

- **general tasks (determining labour demand, acquiring, selecting, employing, developing, and retaining labour),**
- **motivation and incentives** (pay and fringe benefits),
- **organisation of work**,
- **training,**
- **management of labour relations** (e.g. organising and conducting negotiations between the employer and employee organisations).

Human resource management is influenced by the social, political, and cultural environment (Estiyanti N. M. et al., 2025) (Tóthné Sikora, G., 2004). For example, the labour law background is different from country to country (Karoliny Mné., Poór J., 2010). In the same way, advocacy organizations, e.g. trade unions, are also different. Since the labour market is usually a local market (Chikán A., 2010), the labour demand and supply of the given geographical area also influence the EEG. For example, if there is a shortage of labour in a given profession in the market, this will move wages upwards.

In the following, we will take into account the **activities of the EEG** (Fülöp Gy., 2004) (Chikán A., 2010):

1. **the determination of labour needs and labour coverage,**
2. **the recruitment of the workforce,**
3. **dismissal**,
4. **the development of work and human resources,**
5. **motivation, wages, incentives,**
6. **and the reconciliation of interests with the trade unions.**

1. **Determination of Labour Demand and Labour Coverage**

   The company must assess how many and what kind of skilled workforce it needs to perform the future tasks set out in the strategy and whether there is adequate workforce coverage for it.

2. **Hiring**

   After determining the need for the workforce, you must plan the hiring process (Nagy S., Gulyás L., 2014). The necessary workforce

can come from within the company or from outside the company (Nagy G. D., 2021). If we want to hire new employees from outside the company, we have to recruit. In all cases, we are looking for a person with appropriate competencies for a specific position (Bakacsi Gy. et al., 2006). The supply in the labour market determines what tools we have to use. If it is a shortage profession, we have to make a big effort (e.g. through a recruiting company), but if there is an oversupply of the profession in demand, the employee will apply to the company himself.

The company can use the following tools to find the workforce from external sources (Fülöp Gy., 2004):

- application,
- employment centre,
- advertisement,
- recruitment agency,
- temporary employment agency (they are usually looking for a trained employee this way),
- recruiting company,
- job fair,
- luring an employee of a competing company,
- by an internal employee, etc.

After recruitment, comes the **selection** process, which can vary from company to company. These include test writing, interviews, and interview series.

Once the company has selected the necessary workforce and signed the **employment contract**, the **employment** and **training process** follows. In most cases, a probationary period is set.

3. **Dismissal**

The **dismissal of an employee** can be carried out for several reasons. Such as the decrease in the need for labour within the company (due to cost savings or reorganisation), the employee's inappropriate behaviour or the employee's inability to perform the given position. The forms of termination/termination of employment and the legal conduct of the employment relationship are regulated by the prevailing labour law.

4. **Work and Human Resource Development**

As soon as the employee starts working, he or she must know what task he or she has to perform, with whom he or she must cooperate; these **are related to the issue of work organisation**. The employee can work full-time, part-time, with flexible working hours or outsourced work (e.g., as a subcontractor), teleworking, in an agency relationship, mediated by a temporary employment agency, etc.

The employee's performance at work is measured at regular intervals, then evaluated with various tools, recorded in writing, and discussed with the employee in a formalised framework. During the meeting, they discuss what the employee needs to improve on the quality and quantity of the work performed, and whether they need

training. It is important to increase employee satisfaction. This process is called performance evaluation in the literature (Juhász I., Matiscsákné Lizák M., 2014), which is dealt with by **performance management** (Csordás T., 2010). In the performance management process, performance must first be planned and then monitored.

It is important to provide continuous feedback and to remove any obstacles that may arise. This is followed by evaluation, where, in addition to performance, the employee's behaviour is also judged. All of these can be taken into account in the salary process (e.g., if someone receives their salary based on performance, this is called performance-based pay) or in promotion, or they may be sent for training.

Education and training are part of the career planning of employees, which can take place both within the company (e.g., courses) and outside (e.g., at universities, other training institutions, etc.) (Kiss T. J., 2017). The acquisition of knowledge can be informal and formal, outside the school system or within the school system (Bencsik A., 2015). Investing in the training of employees can be a good investment for the company (Nagy G. D., Jancsák Cs.,2022). This can be seen as a long-term investment that we hope will pay off in the long run.

5. Motivation, Salary, Incentive

The goal of the employer is to retain its employees and encourage them to perform well, thereby helping to achieve the goals of the

organization (Fábián E., 2008). This is what incentive management deals within detail, contributing significantly to employee commitment (Kozák, 2020). The ideal employee is sufficiently motivated. Depending **on the direction of motivation**, it can be internal (e.g. satisfaction with oneself, feeling useful, one's job, etc.) or external (e.g. salary, awards, income supplements, other fringe benefits). Employee remuneration is more than simply a reward for having money in their hands. Money is important, but it is not the only important factor (Armstrong, M., Murlis, H., 2005).

An employee's income from the company is called earnings.

The components of an action may be as follows.

- basic rate,
- rewards, bonuses,
- commissions,
- other wage-like benefits,
- Supplements.

They can be non-monetary benefits (Chikán A., 2010):

- paid holidays, holidays,
- pension-related benefits,
- benefits in kind (e.g. company car, mobile phone),
- the range of insurances (e.g. compulsory social security),
- social services (e.g., kindergarten, holiday home, restaurant),
- Loan guarantees, discounts.

Of course, of the above-mentioned **non-monetary benefits, in-kind benefits (**e.g. company car, company mobile phone, swimming pool pass, meal contribution, etc.) **and a part of the social services** (e.g. kindergarten, restaurant, holiday home) **can only be provided and not obligated by the company**. To a large extent, the range of tax benefits available and the financial situation of the employee will determine what they give and what they do not give to their employees. Nowadays, the cafeteira system is very popular. The employer may determine a limit for its employee and the range of fringe benefits that can be used from which the employee can freely choose up to the value of the budget, according to his or her individual needs.

6. Reconciliation of interests with trade unions

During the **reconciliation of interests**, the employer and the employee organisations (e.g., trade unions, works councils) negotiate regarding wages and working conditions, keeping in mind the interests of the company management and employees. A collective agreement is a framework agreement that contains a long-term agreement between employees and the management of the company.

References

Armstrong, M., Murlis, H., (2005): Remuneration Management. Legal and Business Publishing House, Budapest.

Bakacsi, Gy., Bokor, A., Császár, Cs., Gelei, A., Kováts, K., Takács, S. (2006): Strategic Human Resource Management, Akadémia Kiadó, Budapest.

Bencsik, A. (2015): Knowledge Management in Theory and Practice, Akadémia Kiadó, Budapest.

Chikán, A. (2008): Business Economics. AULA Publishing Ltd., CORVINUS University of Budapest, Budapest.

Chikán, A. (2010): Introduction to Business Economics. AULA Publishing Ltd., CORVINUS University of Budapest, Budapest.

Csordás, T. (2012): Performance Management, Performance Evaluation. In: Matiscsákné Lizák M.: Human Resource Management, Chapter 8, Complex Kiadó, Budapest.

Estiyanti, N. M., Novotny, A., Máté, D., Vveinhardt, J. (2025): Exploring Human Resource Management Challenges in Start-Up Ecosystems. Management Theory and Studies for Rural Business and Infrastructure Development 47:(1), pp. 1-14.

Fábián, E. (2008): Motivation and Incentive Management. Magyar Grafika 2008:(4), pp. 77-78.

Fülöp, Gy. (2004): Small Business Management. Budapest University of Economics and Public Administration, Aula Publishing House.

Juhász, I., Matiscsákné Lizák, M. (2014): Human Resource Management. Eszterházy Károly College.

Juhász, I., Matiscsákné Lizák, M. (2014): Human Resource Management. Eszterházy Károly College.

Karoliny Mné, Poór, J. (2010) Human Resource Management Handbook, CompLex Kiadó, Budapest.

Kiss T., J. (2017): Macroeconomic analysis of expenditures on education as human capital investments = Az oktatás, mint humántőke-beruházásra fordított kiadások makrogazdasági vizsgálata. International Journal of Engineering and Management Sciences/Műszaki és Menedzsment Tudományi Közlemények 2:(4), pp. 520-530.

Kozák, A. (2019): Organizational Responses and Employee Behavior in the Context of Labour Shortages: Reflections Based on the Findings of an Empirical Study. Magyar Tudomány 180:(9), pp. 1376-1385.

Kozák, A. (2020): Higher employee commitment by strong people management system. Balkans Journal of Emerging Trends in Social Sciences 3:(2), pp. 1-11.

Nagy, G. D., Jancsák, Cs. (2022): The Future of Human Resource Management Education and Training in Tertiary Academic Institutions. Social Science and Humanities Journal 6:(11), pp. 2973-2980.

Nagy, G. D. (2021): The philosophy of the labor market, employer power and social responsibility. Southern Great Plain Regional Social Science Research Association. Dél-Alföldi Regionális Társadalomtudományi Kutatási Egyesület (DARTKE), Szeged.

Nagy, S., Gulyás, L. (2014): The New Challenge of the Labor Market: the Management of Aging Workers. Taylor: Journal of Management and Organizational Sciences: Bulletins of the Virtual Institute for Central European Research, 6:(1-2), pp. 310-319.

Roóz, J. (2002): The Economics of Enterprises. Perfekt Economic Consulting, Training and Publishing Company.

Tóthné Sikora, G. (ed.) (2004): The Economics of Human Resources. Bíbor Publishing House, Miskolc.

Zádori, I., Horváth, Péter, J., Nemeskéri, Zs. (2021): The Philosophy and Practice of the post-Covid workplace. Acta Cultura Et Paedagogicae 1:(1), pp. 109-123.

Review questions

1. What is human resource management?
2. What are the functions of human resource management?
3. How is EEG affected by the environment?
4. What are the activities of EEG?
5. What did you learn about the recruitment process?
6. What tools can the company use to find the workforce from external sources?
7. What is selection in EEG?
8. What are some examples of the reasons for dismissing an employee?
9. What can be included in the scope of work organisation?
10. What does the literature call performance evaluation?
11. What is the performance management process?
12. What is incentive management?
13. What did you learn about education and training?
14. What types of motivation do we distinguish from the point of view of orientation?
15. What can be the ingredients of an action?
16. What are some nonmonetary benefits?
17. What did you learn about the cafeteria?
18. Who are the actors in the reconciliation of interests?
19. What is a collective agreement?

7 Basic concepts of corporate finance

The primary goal of the company is to increase the income of the owners (Cinnamon, R., Helweg-Larsen, B., 2002). However, financial performance must be measured on a regular basis and possible investments, and their financing methods and risks must be evaluated in advance and prepared very thoroughly (Bélyácz I., 2007). These methods are worth being known and even interpreted by company managers (Rappaport, A., 1998), because their decisions regarding an investment, for example, are long-term (Pálinkó É., Szabó M. 2006) and involve risks (Katits E., 2002).

In this chapter, to comprehensively understand corporate finance, some basic concepts need to be clarified, such as the time value of money, including the calculation of present value and future value, as well as their special types of cash flow, annuities.

In the following chapters, you can read about corporate investments and their economic calculations, risk estimation, and financing. At the end of the book, we can see a practical example. Due to the limitation of volume, the book does not aim to describe the topics of working capital management and securities (bonds, shares).

The time value of money

According to the widely accepted definition of the time value of money, a unit of money is worth more today than a unit of money is worth tomorrow. Put differently, a 'safe' unit of money today (forints, dollars, euros, yen) is more valuable to an investor than a 'risky' tomorrow. If we accept that the amounts of money due at various times are not equivalent, then we must

also accept that the amounts **of money (cash flows, revenues, expenses)** from different times **cannot be directly compared or summed** up (Illés Iné., 2007).

Sums of money due at various times may be made equivalent if they are all converted to the same date at an appropriate interest rate. In this context, mention should be made of the future value (FV) calculation, which is the value of a present amount of money for a future date, or the present value (PV) calculation, which is the determination of the present value of a sum of money due at a future date (Illés Iné., 2002).).

In financial calculations, in addition to or instead of the interest rate, the terms Opportunity Cost, the expected return, the Cost of Capital, or simply the current market return are used in various situations (Magyar G., 2007).

Companies invest their money in various real assets; these investments are called investments. Real assets can be tangible assets (e.g. machinery) or intangible assets (e.g. patents). The company's goal is to find assets that generate more income at present value than their cost (Brealey, R. A., et al., 2005).

Present Value (PV)

A unit of money (HUF, EUR, NOK) is worth more today than a unit of money tomorrow because today's money can be invested and some income can be generated from it in the future. Therefore, the amounts due at various times are not equivalent and cannot be directly compared. To compare, they must be "brought" to the same point in time with the help of the calculation of present value and future value.

The formula for calculating the present value and discounting (Nagy S., 2014) is as follows.

$$PV = \frac{C_t}{(1+r)^t}$$

Or, rather,

$$PV = C_t \cdot \frac{1}{(1+r)^t}$$

In this formula, the C_t symbolizes the future, t-th year cash flow, the

$$\frac{1}{(1+r)^t}$$

The formula is called the discount factor, where r is the real interest rate, also known as the market interest rate.

The combined present value of future incomes from several periods can be calculated using the following formula:

$$PV = \frac{C_1}{1+r} + \frac{C_2}{(1+r)^2} + \frac{C_3}{(1+r)^3} + \ldots + \frac{C_t}{(1+r)^t}$$

Future Value (FV)

Current cash flow expresses its increased value over a specified period of time.

Here, it is necessary to mention some important concepts.

Interest is the increase in invested capital over a unit of time. Interest measures the time value of money in absolute amounts (HUF, EUR, NOK).

Nominal interest rate: the annual capital increase expressed as a percentage of the initial capital (nominal value).

The interest rate given as a percentage is used in the calculations in the form of a coefficient.

Symbol: i.

Interest period, term: the length of time that has elapsed between the start and end of interest. It is denoted by n, but it can also be t.

Interest period: the frequency of interest payments, usually for annual periods, but it can also be different. Sign: m

There are two types of future value calculation, simple **compound interest and compound interest**.

Simple interest

During the entire interest period, interest is only payable on the initial capital. At the end of each interest period, the interest is paid, so the interest is not capitalised.

The future value of today's money (C_0) at the end of the nth year is:

$$FV = C_0 \cdot [1 + (r \cdot n)]$$

In the case of compound interest: the interest received per period is recapitalised, i.e. it is reinvested. Capital thus grows exponentially.

The value of today's money (C0) at the end of the nth year

$$FV = C_0 \cdot (1 + r)^n$$

where $(1 + r)^n$ is the factor of interest.

The interest factor is the reciprocal of the discount factor.

Annuity

Annuity is a special series of definite cash flows due at equal intervals and of the same amount at each period.

In corporate finance, it is common for cash flows to appear at the end of periods in financial calculations. In the case of annuities, cash flows may occur at the beginning of periods (e.g. lease premiums, insurance premiums, rents, etc.). (Illés Iné., 2007).

If the cash flows occur at the end of the period, the series of these cash flows is called **a regular annuity**. However, if money flows of the same magnitude are expected at the beginning of the periods, and, of course, all this happens over a finite period, then this is called an annuity due.

The Future Value of an Annuity (FVA) formula can be used to calculate the amount of money we have at the end of the nth year if we invest C for a certain period of time, at the end of each period, and if our investment provides an annual return of r %, how much we have at the end of the nth year (Illés Iné., 2007).

$$\mathrm{FVA} = \mathrm{C}\frac{(1+r)^t - 1}{r}$$

The Future Value of an Annuity Due (FVAD) refers to a special series of cash flows where cash flows (C) occur at the beginning of the period, and we want to calculate its future value.

$$\mathrm{FVAD} = \mathrm{C}\,\frac{(1+r)^{n+1}-1}{r}$$

In this case, the cash flows will continue to earn interest for one period.

Present Value of an Ordinary Annuity (Present Value) PVA), the total present value of a series of cash flows of equal magnitude expected over a defined n- period.

$$PVA = \frac{1 - \frac{1}{(1+r)^n}}{r}$$

The **present value of an Annuity Due (PVAD) differs from the calculation of the present value of a standard annuity in that it is discounted for one less period because it has already occurred at the beginning of the period.**

$$PVIFAD_{r\%,n} = PVIFA_{r\%,n-1} + 1$$

Determining these values is much easier with the help of the annuity present value and future value tables. It should be noted that with the help of the tables, we can only calculate the usual annuities directly; they cannot be applied directly to the annuities due. Instead, you have to look at the data for a period of one year more and calculate with it.

References

Bélyácz, I. (2007): The Basics of Corporate Finance, Aula Publishing House, Budapest.

Brealey, R. A., Myers, S. C., & Allen, F. (2005): Corporate Finance (8th ed.). New York, NY, McGraw-Hill Irwin.

Cinnamon, R., Helweg-Larsen, B. (2002): How come you don't understand your account? – The essential guide to financial management. Kogan Page Ltd., London.

Illés, Iné. (2002): Corporate Finances, SALDO Financial Consulting and Informatics Ltd., Budapest.

Illés, Iné. (2007): Financial Foundations of Enterprises. SALDO, Budapest.

Katits, E. (2002): Financial decisions in the life cycles of a company, KJK-KERSZÖV Legal and Business Publishing Ltd., Budapest.

Magyar, G. (2007): Financial navigator. Akadémiai nyomda Kiadó, Budapest.

Nagy, S. (2014): Discounting models and a possible application of the results of hyperbolic discounting: Retirement savings. Contemporary Social Economic Processes, 9:(1-2), pp. 85-93.

Pálinkó, É., Szabó M. (2006): Corporate Finance, Typotex, Budapest.

Rappaport, A. (1998): Creating Shareholder Value - A Guide fór Managers and Investors. In: Kiss N. (2002): The Shareholder Value - A Guide for Company Managers and Investors. Alinea Publishing House, Budapest.

Review questions

1. What did you learn about the value of time?
2. Why do we need a time value calculation?
3. What is the present value?
4. What formula can we use to calculate the present value of income from several periods?
5. What is the future value?
6. What is the definition of the nominal interest rate?
7. What is the interest period or term?
8. What is an interest period?
9. What does compound interest mean?
10. What is a simple interest?
11. What is an annuity?
12. What is the difference between a regular annuity and a due annuity?

8 Concept of investment, types of cash flows

The concept of investment

The aim of the investment is to acquire an asset that can increase the company's capital. Its value can be judged by what it has produced for the business during its useful life. Investment is the use of capital, which is aimed at the acquisition of tangible assets, all this primarily for the purpose of earning income (Papp P., Szűcs E., 2013). The impact of investments on society can also be significant (Jenei, T., Kiss, J. T., 2019).

It is very important that the value of the company is maximised. This can be achieved by making an investment decision whose value for the company is significantly higher than the cost of the investment (Brealey, R. A. et al., 2005). If this is the case, then an added value is created.

An investment can be made for the following reasons:

- the goal is to increase the income of the undertaking,
- replacement of old, outdated, worn-out machines,
- minimising costs,
- compliance with the law (Illés Iné, 2002).

Increasing revenues can be understood as a step when a company wants to manufacture or introduce a new product in addition to its existing product or simply wants to increase the volume of its current production.

Maintenance of obsolete production equipment can be more costly in the long run than buying a new machine. We can think of repair costs, downtime, and lack of parts. It is reasonable to replace these machines after a while.

By minimising costs, we can simply think that our expenses will not be as high as before the investment, so we can talk about a kind of cost saving (e.g. heating modernisation, replacement of energy-saving light bulbs in the plant or site).

The last reason is compliance with the law, which can be triggered by the entry into force of a law. These include safety, health, and environmental rules and regulations. Failure to comply with the relevant legislation can result in additional costs. (Illés Iné, 2007).

The motives for investment are different, namely, in terms of information needs and risk. By this we can mean, for example, the following: replacing an old machine does not involve as much risk as introducing a completely new product group and purchasing the necessary production equipment and equipment. In the case of a lower-risk investment, you do not need as much information as when making a riskier investment decision. In a riskier case, we need a much larger amount of information, and more thorough analyses must be carried out.

Before making an investment decision, the company's management must consider it. The investment plan includes the projects the company intends to implement in the upcoming period.

Before embarking on the investment, they must consider the following aspects.

- the initial expenditure involves a significantly large expenditure of money,
- can cover a long period of time,

- Determine the economic and financial situation of the company for a long time,
- the income from the investment is generated later and is uncertain,
- determine the technological and technical characteristics of the company for a long time,
- Any bad investment decision can only be corrected with great expenditure and costs, and in the worst case, the process is irreversible (Illés Iné, 2002).

Types of Investments

When evaluating investments, the relationship between the projects in question should also be examined. Based on this, we distinguish between independent projects, projects that depend on other investments, and projects that are mutually exclusive.

An independent project is not directly related to any other investment. In this case, a financial decision must be made as to whether the given investment is worth implementing or not (Bélyácz I., 2007).

Investments are dependent on other projects. These are projects that are built on each other. This is typically the case with construction. As long as the walls are not in place, we cannot talk about starting a building engineering investment.

In the case of mutually exclusive projects, the acceptance of one proposal excludes the implementation of the other, in which case it is necessary to consider which is better (Pálinkó É., Szabó M., 2006). For example, the company wants to buy a packaging machine. To do this, he asks for quotes

from three companies. These will be mutually exclusive project proposals. The investor only needs one packaging machine, so he will only accept one quote, so these offers are mutually exclusive (Zsótér B., 2015).

Principles and rules to be followed when estimating cash flows

Keeping in mind the profit orientation, the most important question is whether or to what extent the given investment contributes to the growth of the owners' assets.

Before starting to evaluate projects, it is necessary to determine:

- useful life of the investment,
- cash flows that are related to the investment,
- discount rate.

Useful time refers to the period from the commissioning of the equipment to its inactivity (Molnár G., 2007). Depreciation must also be considered. The latter expresses the physical wear and tear that takes place during the actual work, as well as moral obsolescence (Illés Iné, 2007). The rules of depreciation are set out in Act C of 2000 on Accounting, which is in force from time to time.

The following rules and procedures must be applied when estimating investment cash flows.

- Money flows are only taken into account on an incremental basis.
- We must always manage cash flows on an after-tax basis.
- The indirect effect must also be taken into account when introducing a new product, as the demand for the old product may decrease.

- The opportunity cost of existing resources should be considered. For example, if we are unable to collect rent from a previously leased area because we have taken it into our own use, it will be interpreted as a negative cash flow in the calculation of operating cash flow).
- The sunk costs should not be included in the costs of the investment, as these costs were already incurred before the investment.
- The net working capital requirement and its changes must also be taken into account when estimating cash flows.
- Inflation must be managed consistently (Pálinkó É., Szabó M., 2006).

Compliance with these rules contributes to the management of the undertaking to get a realistic picture of the investment (Cinnamon, R., Helweg-Larsen, B., 2002). If they have to choose between several projects, these aspects can be decisive.

Types and Content of Cash Flows

Cash flows related to investments are distinguished between start, operating, and final cash flows.

In the case of initial cash flow, we are talking about the expenses that take place in the interest of the realisation of the investment, more precisely until the time of activation and commissioning of the investment. The first step is to determine the cost of the new asset. At the initial cash flow, we have to consider the cost of transporting, assembling, and licencing the device. These are called capitalizable expenses. In addition, we must also take into account the purchase price of the raw

material and auxiliary material as well as the opportunity cost. Income from the sale of the old asset may be deducted from the amount of the initial cash flow, although it depends on its current state and the market situation, and at what price we can sell it.

The initial cash flow can be obtained in the following way:

+ New asset cost
+ Capitalizable expenses (installation, delivery, administration costs)
+ Net working capital requirement
+ Opportunity costs of pre-existing resources
- Proceeds from the sale of old assets;

Initial cash flow (Illés Iné, 2007)

Operating cash flow must be calculated on an annual basis for the period from the time the device is commissioned to the time it is decommissioned, i.e. for the period of its operation. **The method of calculating operating cash flow** is as follows:

+ Revenue
- Current operating expenses
- Depreciation

Profit before tax
- Corporation tax

Profit after tax
+ Reverse depreciation

+/- Change in working capital

Cash Flow (Brealey, R. A. et al., 2005)

We need to calculate operating cash flow for each year during the useful life of the asset. If the investment is of such a nature that this cash flow is the same every year, it can be interpreted as a regular annuity.

The final cash flow is determined based on two factors which are reflected in the calculation method.

+ Proceeds from the sale of the asset

+ The net working capital freed up

Final Cash Flow (Katits E., 2002)

An important rule is that if the company sells the decommissioned asset at a price above the residual value (book value), it must tax it.

Conventional and unconventional cash flows

We can talk about conventional cash flows when the initial and generally negative cash flow is followed by positive ones every year during the useful life (Zsótér B., 2017). Here, we can mention companies engaged in production and service activities, which generate profit from the beginning of the investment (Zsótér B., Kura B., 2017).

Unconventional cash flows can be considered if there are also cash flows of different signs, i.e. negative cash flows, among the operating cash flows during the operating period even after the investment of initial capital with a negative sign. For example, the establishment of an apple orchard. After the initial expenses, you have to wait up to 5 or 6 years (until then there will be negative cash flows) for the plantation to start making a profit (Balog, Á., 2015).

Decision problems

It helps to decide if we create the answers to the following questions. Is it worth implementing the investment? Which of the mutually exclusive proposals do we recommend, and which is better? When evaluating potential projects, we need to look at whether it is financially viable. Only a viable project should be accepted; otherwise, the investment would be pointless, as it would only involve expenses and would not increase our income.

Of course, acceptance of one project entails rejection of the other in the case of mutually exclusive investment proposals.

The answers to these questions can be obtained with the help of economic calculations.

To get the most accurate results, the following rules must be applied:

- cash flows take place at a specific time, preferably at the end of the year,
- the equipment acquired during the investment is immediately put into operation and put into use,
- the risk of future cash flows is the same.

In the next chapter, we will discuss the most important investment economic indicators.

References

Act C of 2000 on Accounting.

Balog, Á (2015): Preparation of an investment decision related to the planting of an apple orchard in Kupusina with the help of economic calculations. Contemporary Social Economic Processes, 10:(1), pp. 34-40.

Bélyácz, I. (2007): The Basics of Corporate Finance, Aula Publishing House, Budapest.

Brealey, R. A., Myers, S. C., & Allen, F. (2005): Corporate Finance (8th ed.). New York, NY, McGraw-Hill Irwin.

Cinnamon, R., Helweg-Larsen, B. (2002): How come you don't understand your account? – The essential guide to financial management. Kogan Page Ltd., London.

Illés, Iné. (2002): Corporate Finances, SALDO Financial Consulting and Informatics Ltd., Budapest.

Illés, Iné. (2007): Financial Foundations of Enterprises. SALDO, Budapest.

Jenei, T., Kiss, J. T. (2019): Investigating the Social Return on Technical Investments. Hungarian Agricultural Engineering 35, pp. 13-17.

Katits, E. (2002): Financial decisions in the life cycles of a company, KJK-KERSZÖV Legal and Business Publishing Ltd., Budapest.

Magyar, G. (2007): Financial navigator. Akadémiai nyomda Kiadó, Budapest.

Pálinkó, É., Szabó, M. (2006): Corporate Finance, Typotex, Budapest.

Papp, P., Szűcs, E. (2013): Investment Basics. TERC Ltd., Budapest.

Zsótér, B. (2017): Financial planning in connection with accomodation development in a sport centre. Quaestus Multidisciplinary Research Journal, 4:(11), pp. 172-177.

Zsótér, B., Kura, B. (2017): Economic calculations of an investment of a slicing and packaging production line of a meat processing factory in Csongrád county. Review of Faculty of Engineering Analecta Technica Szegedinensia, 11: (1), pp. 23-31.

Zsótér, B., Molnár, M., Gál, J. (2015): Economic calculations related to the purchase of packaging machines in a poultry processing plant, Analele Universitátii din Oradea Fascicula Protectia Mediului 24: pp. 283-286.

Review questions

1. What is an investment?
2. Before the company starts the investment, what aspects should it take into account?
3. What types of investment did you study?
4. What are the rules for estimating cash flows?
5. What types of cash flows are distinguished in investments?
6. What is the initial cash flow? How to calculate?
7. How to calculate operating cash flow?
8. What do we consider when determining the final cash flow?
9. What is the difference between conventional and unconventional cash flows?

9 Investment economy calculations

With the help of static and dynamic calculations, we can compare investment proposals quantitatively, thus preparing the financial decisions of company managers.

Static investment economics calculations are not used on their own nowadays, only as a companion to more complex calculations. Unfortunately, it does not consider the value of time. It does not take into account when and how much cash flow will be generated during the useful life of the investment. This includes the repayment period.

Payback period (PB).

As its name suggests, it shows when the amount invested in a given investment will be recouped in the future. It is helpful to determine the exact payback period if we consider the cash flows appearing each year to be of the same size. In this case, we apply the following formula:

$$\text{Payback period } (PB) = \frac{\text{Amount of initial capital investment}}{\text{Expected annual net cash flow}}$$

This shows how much the initial capital investment was and how the company's expenses and the revenues generated by the investment developed during the period. We can talk about the return on investment or, more precisely, we can call the year of return when this result first takes on a positive value. Analysts like to use it because its strength is that it is easy to calculate and easy to interpret (Papp P., Szűcs E., 2013). An investment is economical if the value invested in the asset pays off over its useful life. The length of the repayment period is related to the risk of the projects.

Projects that pay off in a shorter period involve less risk, but as the pay-back period increases, the size of the risk increases. Its weaknesses include that it does not take into account the time value of money (Zsótér B., Horvát I. J., 2017) and does not measure the profitability of the project. It does not look beyond the payback period, it does not deal with the amounts of money generated beyond it. In addition, it prefers short-term investments, which are not always feasible for the given company.

Dynamic investment-economy calculations take into account the time value of money. These include the net present value (NPV), the internal rate of return (IRR), the profitability index (PI), and the discount payment period (DPB).

Net Present Value (NPV)

The calculation of the net present value takes into account the value of time of money. It shows how much cash flow the given investment generates, all of which are discounted (brought to present value) to the date of the investment. The difference between the cash flows related to the investment and the present values of the initial investment costs is also illustrated by the following formula:

$$NPV = -C_0 + \sum_{t=1}^{n} \frac{C_t}{(1+r)^t} = -C_0 + PV$$

If the NPV value is greater than zero, the investment increases the value of the company, and in this case the investment proposal can be accepted. In the case of a net present value of less than zero, the idea of investing should

be discarded, as it would generate a loss. In the case of a value equal to zero, the acceptance or rejection of the investment proposal is indifferent.

In the case of mutually exclusive projects, the **net present value rule** is usually applied as a decision rule. Accordingly, the investment proposal with a higher net present value will be the winner (Brealey, R. A. et al., 2005).

Discounted Repayment Period (DPB)

The calculation of the discounted payback period is somewhat similar to the formula of the static payback period, but here the quotient of the value of the initial capital and the cash flow does not give the result immediately, but only the present value factor of the annuity. From the table of the present value of the annuity, we can read the result with the knowledge of the above.

$$PVIFA_{(r\%,\ t\ years)} = \frac{\text{Amount of initial capital investment}}{\text{Expected annual net cash flow (Cash Flow)}}$$

An investment is profitable if it pays off over its useful life, i.e. the discounted payback period remains within this period. Compared to the static payback period, it already takes into account the time value of the money, so it will give a more realistic picture of the investment. One of its weaknesses is that it no longer takes into account the cash flows generated after return (Brealey, R. A. et al., 2005).

Internal rate of return (IRR)

Its definition can be given as meaning the return at which the net present value of the investment is zero, i.e., it is just being recouped. With a formula, it can be calculated as follows:

$$-C_0 + \sum_{t=1}^{n} \frac{C_t}{(1 + IRR)^t} = 0$$

If, at the time of return (NPV=0), the internal return (IRR) of the investment is higher than what the investors expected (r), i.e. IRR>r, then it is worth implementing. If it fulfils the return expected by investors (IRR=r), it is irrelevant whether we implement the given project or not, but if it does not produce the level that investors would have expected (IRR<r), then it should not be implemented (Katits E., 2002).

Profitability Index (PI)

The profitability index can be defined as the ratio of the present value of future cash flows to the initial cash flow of the investment. It also shows how much money is generated during the investment of a unit amount of money.

Formula:

$$PI = \frac{\sum_{t=1}^{n} \frac{C_t}{(1 + r)^t}}{C_0}$$

In contrast to its easy calculation, it is difficult to interpret, and, in the case of mutually exclusive projects, it can result in a decision proposal contrary to the NPV rule.

If the value of the profitability index is greater than one, then each unit of money invested will result in more than one unit of money over the useful life of the asset. In this case, the investment proposal can be accepted (Pálinkó É., Szabó M., 2006).

If the value of the PI is less than 1, it also does not generate the invested value, so it is unprofitable. This proposal must be rejected (Zsótér B., Deák D. 2017).

If the profitability index is exactly one, it is irrelevant whether we accept the investment proposal (Illés Iné., 2007).

References

Brealey, R. A., Myers, S. C., & Allen, F. (2005): Corporate Finance (8th ed.). New York, NY, McGraw-Hill Irwin.

Illés, Iné. (2007): Financial Foundations of Enterprises. SALDO, Budapest.

Katits, E. (2002): Financial decisions in the life cycles of a company, KJK-KERSZÖV Legal and Business Publishing Ltd., Budapest.

Nábrádi, A, Szőllősi, L. (2007): Key aspects of investment analysis. Apstract-Applied Studies in Agribusiness and Commerce 1:(1), pp. 53-57.

Pálinkó, É., Szabó, M. (2006): Corporate Finance, Typotex, Budapest.

Papp, P., Szűcs, E. (2013): Investment Basics. TERC Ltd., Budapest.

Zsótér, B., Horvát, I. J. (2017): CBA, FNPV and BCR analysis prior to the renovation of the market and market hall. Contemporary Social Economic Processes 12: (1-2), pp. 211-220.

Zsótér, B., Deák, D. (2017): Financial analysis of setting up a solar power plant. Quaestus Multidisciplinary Research Journal 4: (11), pp. 167-171.

Review questions

1. What have you learnt about static payback periods? How would you calculate it?
2. What are the economic indicators of dynamic investments?
3. What is NPV? What formula would you use to calculate it?
4. How can you describe the rule of net present value?
5. How is a discounted payback period different from a static payback period?
6. What does IRR mean? Enter your formula!
7. At what IRR size is it worth implementing the investment proposal?
8. What does PI>1 mean? How can you interpret it?

10 Investment risk and financing

Risk

An investment is considered uncertain if we do not have information about the probability of future events occurring, and this uncertainty is the source of the risk. Certainty is when the expectation related to the investment is certain (Bélyácz I., 2007).

Investment Risk

Investment risk occurs when the expected returns on our investment may differ from the actual return.

Most investors generally take higher risks only with higher expected return (Illés Iné, 2007). In theory, **risk-free investing** is nothing more than investing in short-term government securities and putting the money into a bank deposit. Their returns can be considered risk-free on a theoretical level (Csorba L.,2020).

Depending on the origin of the risk, the following types of risk are distinguished:

- exchange rate risk: which arises from the fact that the price of the asset changes. It can be divided into two parts, the individual and the system risk.
- The individual risk is that part of the exchange rate risk that is specific to the market asset itself. With the help of risk sharing (diversification), it can be eliminated and minimised.
- Systemic risk, market risk means the risk of investing in a given market.

- Operational risk is a risk that may arise from the contributor's assumed mistakes.
- We talk about counterparty risk when the other party fails to perform during the settlement of the transaction, for example, goes into liquidation or bankruptcy proceedings.
- It is not a payment risk if the debtor does not pay our claim.
- Foreign exchange risk exists when a transaction is made in another currency (Brealey, R. A. et al., 2005).

All types of risk are characterized by the fact that due to the impact of the risk, the payment of consideration is not or partially paid (Csorba L., 2024) (Papp P., Szűcs E., 2013).

Business risk

Business risk is the possibility that the cash flows, size, and cash flow of an investment will not be realised as we intended.

It is related to the variability of the company's profit. The most frequently observed profit category is **EBIT** (Earnings Before Interest and Taxes).

Factors influencing business risk:

- the cyclical sensitivity of the company's activities,
- competition within the sector,
- the variability of selling prices,
- changes in input prices,
- too rapid company growth,
- the size of the farm and the sharing of risks,

- the position of the products in the life cycle,
- the corporate cost structure.

These effects are shown in aggregate by sales revenue and current operating costs (Illés Iné, 2007).

Degree of Operating Leverage (DOL)

Operating leverage refers to the ratio of fixed costs related to current operations to total costs.

The higher the fixed cost ratio, the higher the operating leverage, and consequently the business risk.

Formulas:

$$DOL_S = \frac{EBIT\ \%}{sales\ turnover\ \%}$$

$$DOL_S = \frac{sales\ turnover - variable\ costs}{EBIT}$$

The operating leverage rate expresses the percentage change in earnings before interest, taxes, and EBIT changes in the event of a 1% change in sales turnover.

Financial risk

Financial risk is associated with the financial leverage applied by the company. This can only be understood in the case of leveraged companies (Venczel T. B. et al., 2024). **A company is a company that uses sources to finance its investments that have fixed costs (e.g., they regularly pay interest on a loan).** On the basis of this, we cannot talk about such a

financial risk in the case of companies without leverage, as they do not use such funds to finance their investments.

Degree of Financial Leverage (DFL)

Financial leverage expresses the percentage change in pretax income (EBIT) that induces a change in the owners' income.

Formula:

$$DFL = \frac{EBIT}{EBIT - I - D_p/(1-T)}$$

I - interest paid by the company (e.g. on loan, lease)

Dp - dividend is the annual dividend payable to preferred shareholders

T - corporate tax rate.

Degree of combined leverage (DCL)

Combined leverage shows the extent to which a 1% change in sales turnover changes the income of ordinary shareholders (Illés Iné, 2007).

Formula:

$$DCL = DOL \times DFL$$

We can calculate the return on individual assets using the following formula:

$$\text{expected return} = \text{risk-free interest rate} + \text{risk premium}$$

Degree of risk

We can assess the degree of risk (β) as follows:

- If (=1, then for a change of 1% in the market yield, the return of the stock changes by 1%.
- If $\beta>1$, then if the market yield changes by 1%, the return on the stock will change by more than 1%.
- If $\beta<1$, then for a 1% change in market return, the return of the stock will change by less than 1% (Brealey, R. A. et al., 2005).

Methods to Analyse the Risk of Investments

Three methods are used to analyse the risk of investments:

- **Sensitivity analysis,**
- **Scenario analysis,**
- **Break-even point calculation.**

Sensitivity analysis

With the sensitivity analysis, we can determine whether the net present value of the investment is so sensitive to the change in a certain parameter, e.g. the selling price.

The steps to do so are as follows:

- It is necessary to select the essential variables that can fundamentally determine the net present value of a project.
- For each key variable, define at least three values (optimistic, pessimistic, most likely).
- On the basis of the most likely values of the variables, we set up a base model.

- **We calculate future cash flows from investments so that we always change the value of one single factor, leaving the other factors unchanged.**
- The net present value is calculated.
- In the end, it is clear what impact a change in the key factor would have on the net present value of the investment.

If the estimated net present value is very sensitive to changes in one of the factors, the risk is quite high.

Scenario analysis

Scenario analysis gives us the opportunity to **look at different combinations of variables**. The scan steps are the same as described above, but you can modify several variables at the same time. We develop scenarios. **A minimum of five scenario analyses is acceptable, so at least two more pessimistic and at least two more optimistic versions must be prepared from the base case.**

Break-even point calculation

At the break-even point, the turnover is equal to the total production costs, i.e., at this point the enterprise is not yet profitable, but it is no longer loss-making (Nábrádi A. et al., 2007). According to Mária Illés (2014), the break-even point is at the intersection of the revenue function and the cost function.

We distinguish between accounting break-even point calculation and financial break-even point calculation. The latter is the only one that takes

into account the money-time value principle and from then on gives more accurate results than financial analyses.

Accounting Break-Level

The accounting break-even point refers to the volume of issuance (sales) at which sales revenue covers current operating costs.

Formula:

$$Q = \frac{F + ÉCS}{P - V}$$

Q= (F+ÉCS)/ (P-V)

Q Sales volume at the accounting margin point (pcs)

F Fixed operating costs per year

ÉCS amortization

P selling price HUF/pc

V variable cost HUF/pc

Financial Crisis Even

It can be interpreted where NPV=0, so the investment will pay off.

Formula:

$$Q = \frac{F + EAC}{P - V}$$

Q sales volume pcs (in the financial hedging point

F fixed cost

V variable cost HUF/pc

P Selling Price HUF/pc

EAC initial capital investment annual equivalent cash flow (Illés Iné., 2007).

Financing

Depending on their nature, enterprises need different forms of financing to secure their invested assets (Fülöp, Gy., 2004). Investments can be financed from a variety of sources. These can be:

1. Equity financing:
    a) capital increase, in which existing or new owners provide funds to the company by the company issuing new shares, which they purchase;
    b) self-financing (use of the accumulated amount of depreciation or the profit of the current year and the accumulated retained earnings of previous years).
2. Financing from external capital:
    a) bank loans (outstanding loans, loans, and debts),
    b) corporate bond issuance,
    c) leasing and other financial arrangements,
    d) (state, EU) subsidies (Illés Iné. et al., 2013).

The company's experts must plan the optimal combinations of the above which are the most advantageous for the company. This is called the optimal capital structure. We will refrain from describing the details due to space limitations.

Theories explaining the choice of capital structure

Hierarchy theory: Companies do not determine the only possible optimal ratio of external capital to own funds but the optimal order of raising funds. **Herd theory:** Companies closely follow the industry average in their capital structure. Benchmarking theory: Companies copy the capital structure of the market-leading company in the given sector (Illés Iné, 2007).

References

Bélyácz, I. (2007): The Basics of Corporate Finance, Aula Publishing House, Budapest.

Brealey, R. A., Myers, S. C., & Allen, F. (2005): Corporate Finance (8th ed.). New York, NY, McGraw-Hill Irwin.

Csorba, L. (2024): Risk-taking Factors in a Dynamic Approach. Analecta Technica Szegedinensia 18:(3), pp. 107-117.

Csorba, L. (2020): The Determining Factors of Financial Culture, Financial Literacy and Financial Behavior Pénzügyi Szemle/Public Finance Quarterly 65:(1), pp. 67-83.

Fülöp, Gy. (2004): Small Business Management. Budapest University of Economics and Public Administration, Aula Publishing House.

Illés, Iné. (2007): Financial Foundations of Enterprises. SALDO, Budapest.

Illés, Iné., Gyulai, L., Lauf, L. (2013): The Basics of Business Financing, Saldo, Budapest.

Illés, M. (2014): Corporate Economics I. University of Miskolc, Miskolc.

Nábrádi, A., Pupos, T., Takácsné, György, K. (2007): Üzemtan I., University of Debrecen Centre for Agricultural and Technical Sciences, Faculty of Agricultural Economics and Rural Development, Debrecen.

Papp, P., Szűcs, E. (2013): Investment Basics. TERC Ltd., Budapest.

Venczel, T. B., Berényi, L., Hriczó, K. (2024): The Project and Risk Management Challenges of Start-ups. Acta Polytechnica Hungarica 21:(2), pp. 151-166.

Review questions

1. What kind of investment do we consider uncertain?
2. What are the types of risk?
3. What is the business risk?
4. What is EBIT?
5. What are the factors that influence business risk?
6. What is a DOL?
7. What makes a company leveraged?
8. What did you learn about financial leverage?
9. How to calculate DCL?
10. What is β?
11. How can you describe the sensitivity analysis process?
12. How does the scenario analysis differ from the sensitivity analysis?
13. What did you learn about the methods for calculating the break-even point?
14. What sources can be used to finance investments?
15. What theories do you know that explain the choice of capital structure?

11 Practical examples for topics related to corporate investments

In this chapter, you can read a practical example of corporate investments. A company has planned to develop its milking parlour for the next year. Following this step, it will continue to develop in other areas. With the investment in the milking parlour, you can primarily make your own production more economical and reduce your production costs. As a result, it is also able to take better action against competitors that appear on the market. First, the most important thing is how much profit the company will make thanks to the investment (Zsótér B., 2018)? The task is to choose the most economical one from among the investment proposals (price offers) related to the milking parlour, as the economic analysis of agricultural enterprises is essential nowadays (Nábrádi A., 2013). My former student, Tamás Cselei (2017) was a great help during the work.

First of all, let us look at the dairy sector, for the sake of completeness! Of the 546 million litres of milk produced worldwide, 83.5% is cow's milk. From its large share, we can conclude that it is used in large quantities by the food industry as a raw material, or we can just think about the rate of immediate raw milk consumption, which is also high. Of course, the production of this quantity can be maintained if the producers produce cost-effectively and their expenses exceed their incomes. This can be achieved by selecting good feed users and equipping plants with production support equipment with optimal performance. In our situation, with the help of a more advanced milking machine, more quantities can be extracted from

dairy animals daily, it is questionable whether the income from the surplus production will cover the costs of modernization (Blaskó B. et al., 2011).

Milk production in the European Union has been greatly influenced by the milk quota system that has been in place since 1984. It regulated the amount of raw milk produced at the national level. In 2003, milk prices began to fall in parallel with the liberalisation of the dairy sector, so direct income support was introduced. At the same time, the quantities of raw milk that can be produced, export subsidies, internal subsidies, and protective measures have been determined. Each country can produce the amount of milk determined by the EU. If the amount imposed has been exceeded, they will have to pay a fee as a fine. The member states could distribute the quantity specified in the quota among milk producers in the country based on their own decisions. In general, the overshoot of the quota was not a threatening problem, but the Netherlands, Denmark and Cyprus were exceptions (Blaskó B. et al., 2011).

As a result of the reform introduced by the Common Agricultural Policy, the milk quota system was abolished on 31 March 2015. They envisioned a market for dairy farmers where competition controls the processes. As a result, smaller and less efficient businesses may cease to exist. Milk production can be concentrated in the case of larger capital-intensive enterprises.

The Holstein-Friesian appeared in Hungary thanks to the 1972 government programme; equipment, tools, and milking machines were modernised as a result of this programme. The development is reflected in the fact that in the 1980s, the milk production of one individual was 4,500 litres; by the 1990s

it had already reached 5,500 litres. It is typical of Hungary that 83% of dairy farms account for 18% of milk production, because they have a herd of only 1-10 individuals. A further 70% of the milk produced is made up of farms with dairy cattle of around three hundred or more. Only 3% of farmers can be classified here. In Hungary, the average production per dairy cow was 7,501 litres and the total production reached 1,890.2 million litres (Merényi I., 1999).

The quantity and quality of the milk produced is influenced by feeding. Cattle receive feed of different compositions and concentrate throughout their life cycle. Larger farms usually use silage maize, high-protein crops, feed additives, and additives. The amount that the farm is not able to produce for itself must be purchased with purchase. This will be the so-called procurement logistics process (Gál J., 2008a). This further increases the costs of production, thus further reducing the profit generated during the sale of milk (Schmidt J., 2003).

The quantity and quality of production is influenced by the way cattle are kept. Here, air quality, lighting, and the design of cows' beds must be taken into account in order to ensure that production-related processes can take place undisturbed (Apáti F. et al., 2005). These include eating, drinking, and rumination. In addition to the needs of cattle, attention must also be paid to the appropriate conditions for the work to be carried out. Such are feeding, manure separation, insemination, and milking (Horn P., 1995).

If we want to obtain milk, the main product of dairy cattle, we have to go through the milking operations (Mikó Jné. et al., 2016). We distinguish between preparation, execution, and post-production. This will be the

logistic aspect of the milk production process. During preparation, both mechanical equipment, animals (their health condition must be taken care of), and human factors must be brought into a proper hygienic condition. During execution, milk is extracted from the quarters of the cow's udder. This will be one of the results of production management (Irimie S. I. et al., 2014). Today, machine milking is the most common process used for this. The post-milking work includes the treatment of the udder quarters with disinfectant after milking (Mikó Jné, Baranyi A., 2015), so that there is no possibility of bacterial infection (Tóth L., Bak J., 2001).

The investment is on the equipment for milking in the milking parlour, which is used with informal keeping. There is still a need for human labour for this system, as the preparation and post-processing operations are carried out by humans.

Moderner milking equipment can also be found among milking equipment. This is the case with the milking robot. Nowadays, IT systems are making people's lives and managers' decision-making easier and easier (Hampel Gy., 2009). With the help of IT developments, it is possible to produce and run a company much more efficiently (Scalera F. et al., 2012). It performs all the steps of milking work. In addition, it can also keep a record of individuals, monitor their oestrus, and examine their feeding needs. As a result, the workforce that has been tied up so far is freed up and can be employed in another job (Tóth L., Bak J., 2001). We must also not forget quality management. Efforts must be made to produce quality food (Fabulya Z., Hampel Gy., 2016). Food safety (Fabulya Z. et al. 2015) and food safety and quality logistics should not be ignored (Gál J., 2008b).

In recent years, the cattle farm has undergone several renovations (renovation of a social building, modernisation of the heating of the farm) and there have been investments that can reduce the size of their future expenses. An investment in compliance with environmental regulations was also made (construction of a modern manure storage). Currently, the number of dairy cows on the farm is close to 220. The amount of milk produced daily is delivered by the buyer at the end of each day. Depending on the season, up to 6,000 litres of milk are possible up to 8,000 litres. Their primary income comes from the sale of milk. The subsequent sale of bulls born on the farm is the other source of income. Bulls kept as beef cattle can be sold up to four times each year.

The basic data necessary for the evaluation of the investment proposals were obtained **from the company and the price offers were obtained from two bidders**. After the cash flow calculations, the net present value, the discounted payback period, the internal rate of return, the discounted payback period and the profitability index were calculated. Investments involve a one-time expenditure of a large amount of money, so they must be carefully prepared economically (Nábrádi A., Szőllősi L., 2007). Management decision-making must be prepared on the basis of these indicators (Fenyves V., 2014). These indicators show whether the investment is allowed to be implemented and which one is worth accepting (Fenyves V. et al., 2014). Based on these, the quotations must be ranked. It is important to note that **the subsidy for milk prices varies from year to year, so cash flows had to be calculated separately for each year**.

Operating cash flows should not be treated as annuities. In addition, we must also consider the prevailing tax system (Lenghel R. D., Miculescu M., 2016).

There were two bidders for the construction. The quote given by the first bidder includes the following.

The existing 2x12/24 position herringbone suspended stand structure will be renovated.

LVP type vacuum production system with frequency control (air tank above milking pit would be eliminated, direct connection to milk separators via a 110 mm diameter pipe).

Milk pipe system 76mm diameter single-storey stainless steel lower milk pipe system with the necessary stainless-steel fittings, Hollanders, stainless steel milk pipe connectors, mounting brackets, and support clamps for attachment to the milking pit side walls.

Milk separator end unit: 1 SR70 type milk receiver with 1 FMP 110 milk pump, milk separator volume 70 litres, milk pump capacity 13,200 litres/ha per kPa. Electropulsation system twenty-four electropulsators integrated into the MP400 milking point controller, pulsator rate 60/min, but can be programmed with milking point controllers.

Milking machines. The existing 24 Harmony units would be renovated with component replacements.

The washing system would be implemented with 1 Hygenius C 200 washing machine. Characterised by microprocessor control, all parameters are programmable, has a closed 160-liter stainless steel washing water tank,

alarm functions. liquid detergent dispenser. Milk conveyor pipes made of 40mm diameter stainless steel. MP400 type cup removal machines with MM27BC milk metres and comfort start function. They control the milk metres and the vending machines belonging to them.

The list reveals that most of the equipment will be replaced, but the devices that are still usable will only undergo renovation, thus reducing the costs of the investment, which can also be a favourable aspect when evaluating the project.

The other bidder's bid includes the following machines:

Milkline P4C milking unit: 24 pcs, pulsation-pulsation stop per udder quarter, conductivity test per udder quarter, and alarm in case of udder problems.

Milkline milk volume metre. Milkline Mil4 lifting cell count sensor collector, which includes the baffle, which is also capable of milk separation per quarter of udder.

Milprodynamic milking unit, which is suitable for the cow due to its design and is also excellent from a technical point of view. XF collector The Milkline Milpro 450 professional appliance enables a very high milk flow, improved vacuum stability, and maximum peak load capacity of the milking unit. Mounting materials, electrical cables, vacuum technology pipes, fittings: This includes components installed in the milking pit (pulsator, lifting cylinder, electrical connections).

In this proposal, the idea would be to completely replace the milking parlour equipment, which could clearly lead to an increase in costs.

There is a significant difference between the prices of the two investment offers. The first bid is HUF 30,525,293, while the second bid is HUF 40,008,810. This can be explained by the fact that the first bidder would only renovate the current milking units, as well as the herringbone milking stations (the vacuum production system, milk separation electropulsation system, washing system would be new). The second offer would replace each piece of equipment and equipment with new ones (milking machines, milk volume metre, cell count sensors, pulsators, milking machine, washing tray, milk separator, vacuum system).

The investor expects an 8% return on the investment in the milking parlour equipment and a payback period of 7 years.

The reason for the investment is that the capacity of current milking equipment cannot longer handle the number of cows that can be handed over with high milk yield. On the other hand, the economy may also improve thanks to investment.

The first economic indicator to be examined was the payback period (PB). For both offers, the value is below the useful life estimated by the owners (7 years). The first bid has a better payback period with a value of 4.41. The other bidder promises a return of 5.63 years.

Table 2. Results of the Net Present Value Calculation

Net present value	
NPV= -30,515,293+36,062,108.38 = 5,546,815.38 Ft	NPV=-40,008,810+36,697,595.32 = -3,311,214.68 Ft

Source: Author's calculation

The second aspect was the net present value (NPV). It is one of the most important indicators based on which a decision can be made. It is recommended to accept the project if it is NPV>0, so that it can increase the company's assets in the future. **His first offer proved to be better than this indicator** (Table 2). **It would increase the company's value with a net present value of HUF 5,546,815.38. On the other hand, the other offer is HUF -3,311,214.68, so it would not contribute to the increase in value but would rather reduce it.**

The third is the study of the discounted payback period (DPB). It shows how many years of discounted cash flow the invested amount can be recouped. The most important thing for the company is to recover the investment as soon as possible. The investment according to the first bidder's bid pays off in 5.63 years, while the investment according to the second bid only pays off in 7.86 years, unfortunately beyond the useful life. The penultimate indicator examined is the internal rate of return. The expected and expected returns are compared. It is recommended to accept the investment if the expected return is higher than expected. The first bidder's bid was able to show a better value (Table 3), with a figure of 13.09%, while the other can only offer an expected return of 5.54%. The latter does not bring the level expected by investors.

Table 3. Results of the calculation of the internal rate of return

Internal rate of return	
IRR= 13.09%	IRR=5.54%

Source: Author’s calculation

Table 4. Results of the profitability index calculation

Profitability index	
PI= 27,589,862.84 / 30,515,293 =1.18	PI= 36,697,595.32 / 40,008,810 = 0.92

Source: Author's calculation

The last aspect was the profitability index (PI). It shows how many forints will be generated for every HUF 1 invested. The first of the quotations is acceptable, but the second is to be rejected (Table 4). The first offer shows a value of HUF 1.18, which increases the company's assets. Your second offer only results in HUF 0.92, so you would lose HUF 0.08 for every HUF 1 invested.

Considering the values obtained, the **first bidder's bid was considered acceptable on the basis of the given criteria. In this way, we can recommend it for acceptance.** Development is vital and delaying its implementation may jeopardise economical production, and the company may fall behind competitors. The new equipment would contribute to the growth of the company's capital. The existing production capacities could be used.

References

Apáti, F., Grasselli, N., Nábrádi, A., Nagy, A., Popovics, P. A., Szőllősi, L., Szűcs, I. (2005): The Significance of Milk and Beef Production. In: Szűcs I (ed.) Economic, organizational and market issues of the cattle sector. 207 p. Budapest, Szaktudás Kiadó Ház, 11-64.

Blaskó, B. et al. (2011): Economics of livestock sectors. University of Debrecen, University of West Hungary, University of Pannonia, Digital Teaching Library, 98-106, 119-122.

Cselei, T. (2017): Replacement of cattle farm milking parlour equipment, economic calculations related to the purchase of new machinery (NPV, IRR, PI, discounted payback period). Thesis. Supervisor: Brigitta Zsótér. SZTE MK, Szeged.

Fabulya, Z., Hampel, Gy. (2016): Safety and quality by controlling the heat treatment process of canned food. Contemporary Social and Economic Processes 10:(1), pp. 119-126.

Fabulya, Z., Hampel, Gy., Joóné Muhi, P., Kiss, M. (2015): Higher product safety in the production of canned food with software development. Analele universitatii din oradea fascicula ecotoxicologie zootehnie technologii de industrie alinetara 14:(B), pp. 149-156.

Fenyves, V. (2014): The role of financial indicators in managerial decision-making. Controller Info, 2:(3) 49.

Fenyves, V., Tarnóczi, T., Vörös, P. (2014): Financial indicators in managerial decision-making. Annals of the University of Oradea Economic Science 23:(1), pp. 893-904.

Gál, J. (2008a): The Basics of Logistics. IM Private School of Informatics, Hódmezővásárhely.

Gál, J. (2008b): Food Safety and Quality in Logistics Process in People's View: Food Safety and Quality in the Logistics Process Based on People's Perception. In: The 3rd International Scientific Conference, Safety and Quality of Raw Materials and Foodstuffs. Nitra, Slovakia, 31.01.2008-01.02.2008. pp. 157-160.

Hampel, Gy. (2009): Interpretation of managerial decision, stages of decision-making and support. Contemporary Social and Economic Processes, 4:(1), 91-99.

Horn, P. (1995): Animal Husbandry 1., Cattle, Sheep, Horse, Mezőgazda Kiadó, Budapest, 114-118, 119-123.

Irimie, S. I., Gal, J., Dumitrescu, C. D. (2014): Analysis of a dynamic regional system for the operationalizing of the sustainable development concept. Procedia-Social and Behavioral Sciences, 124, pp. 331-338.

Lenghel, R. D., Miculescu, M. (2016): Some considerations on tax investigations in the context of new regulations. Quaestus (9), pp. 335-345.

Merényi, I. (1999): Milk and its production. Gazda Kistermelői Lap és Könyvkiadó Kft., Budapest, 5-21.,139-147.

Mikó, Jné., Baranyi, A. (2015): Clean cow, good quality milk: the effect of the cleanliness of udders and legs on the somatic cell count content of milk. Agrárunio 16:(10-11), pp. 70-71.

Mikó, Jné., Havranek, E., Horváth, J. (2016): Economical milk production in the mirror of milk quality, In: Éva Szalka, Ágnes Bali Papp (eds.)

XXXVI. Óvár Scientific Day: Tradition and Innovation in Agricultural and Food Economy I-II. 335 p. Date and place of the conference: Mosonmagyaróvár, Hungary, 10.11.2016 Mosonmagyaróvár: Széchenyi István University, Faculty of Agricultural and Food Sciences, 155-160.

Nábrádi, A, Szőllősi, L. (2007): Key aspects of investment analysis. Apstract-Applied Studies in Agribusiness and Commerce 1:(1), pp. 53-57.

Nábrádi, A. (2013): Economic Analysis of Agricultural Enterprises. In: Felföldi J., Nábrádi A., Szűcs I. (eds.) Modern Farm Management. 515 p. Budapest: Szaktudás Kiadó Ház Zrt., pp. 327-350.

Scalera, F., Dumitrescu, C., Talpová, Sz. (2012): International crisis and competitiveness of service companies and public administration in Italy and in Europe: the application of lean office. Business and Management Review 2:(1), pp. 63-75.

Schmidt, J. (2003): Basics of Feeding. Mezőgazda Kiadó, Budapest 209-219., 296-297.

Tóth, L., Bak, J. (2001) The technique of quality milk production. Agricultural Expertise Publishing House, Budapest, 55-70, 76-100.

Zsótér, B. (2018): Economic calculations related to a milk-house investment. Quaestus Multidisciplinary Research Journal 13:(7), pp. 9-17.

Review questions

1. From how many bidders did the investment proposals come from?
2. What was the reason that cash flow had to be calculated separately each year?
3. Was there a big difference between the two prices in the quote?
4. Which offer has a better net present value?
5. Which bidder was the winner?