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PERFORMANCE MANAGEMENT SYSTEM (PMS) PRACTICES IN HOTELS IN THE GREATER ACCRA REGION OF GHANA

Dolores Mensah Hervie - Csaba Bálint Illés - Anna Dunay

Abstract
Performance Management System (PMS) is gaining momentum as a strategic Human Resource Management tool that facilitates performance of employees, teams, department and corporations to achieve their strategic goals. The aim of the study is to examine the extent to which PMS is practiced in hotels in the greater region of Ghana through the review of relevant literature. The results indicate that about 30 percent of the hotels that practiced PMS understand the system and are achieving expected outcomes whilst other hotels could not effectively manage the system because of their level of understanding in its implementation. It was identified that Hotels that practiced PMS used the same process (goal setting, feedback, performance assessment etc.) and had similar challenges. The variations were the implementation strategies, the cultural diversity and practical delivery of the system.

Key words
Performance Management System. HRM practices. Hotel industry. Goal setting. Feedback

JEL Classification: M12, O15, Z32, Z38

Introduction

Efficiency and effectiveness have become two key words in every organizations' management. Modern organizations expect their human capital to execute their responsibilities to their uttermost best. Getting the best out of employees demands an organization to put certain systems in place that would improve employee engagement, organisational and individual performance. It requires putting performance management system in place that would create a link between employees' performance and organizational goals. It makes employees' contributions very significant in the achievements of the organization.

Aguinis (2007) defines performance management as a continuous process of identifying, measuring and developing performance in organisations by linking each individual's performance objectives to the organisation's overall mission and goals. This definition has two main components. The first component is that PMS is a continuous process monitoring detailed specific task. It is ongoing and involves a never-ending process of setting objective to achieve targeted goals, observing performance, giving and receiving ongoing coaching and feedback. The second component is that PMS is linked to missions and strategic goals of an organization (Samsonowa, 2012). Therefore, managers at every level are expected to ensure that employees' activities and outputs are consistent with the organisation's strategic goals and, consequently, promote the organisation gain a competitive business advantage in pursuit of gaining the largest market share or become the best-known name in the industry. Employee behaviour and development are also considered in this process.

Figure 1. Diagram showing a typical Performance Management Process

Source: own compilation

The diagram shows important activities that take place in the performance management process, from the planning stage, setting of individual, departmental and corporation goals (with timelines) to align with the strategic plan of the organisation, coaching employees and giving consistent feedback through appraisal, reviewing and rewarding performance. These are processes that should be in place to achieve maximum performance in the practice of PMS. Hotels are part of the hospitality industry forming integral part of its Service Sector. Hotels are springing up rapidly and modern hotels are bigger, prestigious, extravagant and technologically advanced. Meeting guests' satisfaction has become increasingly difficult, and the competition is very high hence, the need for a system that would enhance employees' performance. Sahida et al. (2011) define hotel as an establishment providing for reward accommodation, food and drink for travellers and temporary residents, usually also meals, refreshments and sometimes other facilities for other users.

Kastamu (2013) state that without hotels, it may be difficult for guests/tourists to travel to a particular preferred destination. The hotel industry plays significant role in most countries by providing facilities for business transactions, conferences, meetings, recreation, entertainment and even employment. This they do by contributing to the overall output of goods and services, which constitutes the material and well-being of nations and communities. For example, a research conducted by the W Hospitality Group in collaboration with Hotel Partners Africa, estimated contribution to employment by Africa's hotel sector to be 136,000 in 2014, 87,000 in 2015 and 70,000 in 2016.

Receding trends in employment indicates that there is a gap in the area of performance in its human resource delivery which is opening up and the need for application of PMS to reverse the trend. It is necessary for management of modern hotels to align their employees' activities to organizational goals. However, studies show that most hotels do not practice PMS particularly in Ghana, what they practice is performance appraisal which is only a subset of PMS.

According to Boadu et al. (2014), previous studies had shown that appraising employees performance (using performance appraisal tools) was one of the major obstacles in the hospitality industry in Ghana. Their survey of 50 hotels in the Ashanti Region of Ghana revealed that most managers took the evaluation of employee performance lightly, no feedback was given, and the employees did not fully understand the process. The purpose of this study is to assess the degree to which performance management system is practiced in hotels with it significant in quality service compared to the traditional ways of appraisals.

The paper is structured into four sections: Introduction summarizes the research goal, the Literature review focuses on performance management system, its features, importance, implementation, and challenges were discussed in the first subsections, later hotels in Ghana are discussed, focusing on how they practice PMS. Section three indicates the methodology used for the study and the fourth section considers the conclusion and recommendations for the implementation of PMS in hotels in Ghana.

Literature Review

The Concept of PMS

According to (Altin et al., 2018), many efforts have been made to examine the development of performance management system in some sections of the service industry, like the banks, retail, and insurance. However, no significant studies have been done focusing on the performance management literature in the hospitality and tourism industry. Heathfield (2018) defines Performance management system as the process of creating a work environment in which people are enabled to perform to the best of their abilities. Performance management system is a whole work system that begins when a job is defined as needed and ends when an employee leaves the organization. Asare-Bediako (2013) also states that the foundation of an effective PMS is the establishment of clear-cut targets, permitting both employees and their supervisors to compare performance against targets periodically. Lucas, Lupton and Mathieson (2006) indicate that performance management system is supported by the idea that continuous organisational success is achieved through strategic and integrated approach to enhancing the performance, improving the skills of individuals and broader teams. They reiterate that performance management system is a current development that is goal oriented and focuses on strategies that applies to entire workforce in order to maximize their performance and potentials.

According to Pulakos (2004), PMS designed for an organization should have a purpose, which should be determined in conformity with the needs of the organization, the culture and the system's integration with other human resource management systems in the organization. For example, if the purpose for designing PMS for a hotel is to improve customer service, the content of appraisal should be used to guide training of employees (particularly those who come into direct contact with the hotel clients), coaching, and other developmental actions that employees would be involved should target their competences and skills in good customer relations.

Figure 2. Represents the process flow of Performance Management System
Source: Ravi Chandra and Saraswathi, 2018

Performance management system is an intricate part of human resource management. It comprises activities like planning, joint target setting, constant progress review and regular interaction, feedback and training for improved performance, implementation of employee advancement programmes and rewarding accomplishments. PM process is an unending cycle (as shown in Fig. 2.); every member of the organization is enrolled into it at the inception of employment and ends when there is resignation or termination. It fosters superior accomplishment by letting employees know what is expected from them, describe roles within a required competence framework and instituting realistic standards (Ravi Chandra and Saraswathi, 2018). This agrees with what Makori (2014) state that PMS is an integrated concept. It is incorporated into the running of a business and is connected to the major activities like corporate strategy, workforce development and overall quality management.

According to Girma (2016), performance management system serves strategic, administrative, communication, development, organizational maintenance and documentation purposes:

- Strategically, it connects organizational goals with individual employee's target by encouraging behaviour consistent with organizational objectives.
- Administratively, PM gives valuable information about employees that helps in decision making. For instance, decisions concerning promotion, transfers, recognition, acknowledgement, termination, employee poor performance, retention and so on.
- Under communication, it enhances specific corrective feedback from both superiors and subordinates. The feedback enables managers to coach employees on regular basis to enhance their performance.
- Organizational Maintenance: PMS helps the organization to collate employees' information regarding competences, skills, potentials and other necessary data for human resource planning.
- Documentation: PMS data is used to analyse the accuracy of newly recommended selection methods.

According to Girma (2016), the main goal of performance management system is to create a high performing culture in an organization where individual employees and teams can take responsibility for incessant improvement of corporate process and for their own capabilities and contributions within a framework provided by effective leadership.

Main Features of PMS

According to Jain and Gautam (2014), managing people has been more formalized and specific now than before. Most performance appraisal practices have been elemental part of the concept of performance management system which is a more comprehensive management process. This could be as a result of the challenges identified with the performance appraisal system. As Toppo and Prusty (2012), identified in their study that evaluation of employee performance is woefully inadequate for the advancement of the field of management and the growing intricacy in corporate spheres. Performance appraisal is the conventional method of evaluating employee performance. It has been in existence since time immemorial and almost all organizations including the hospitality industry practice some form or method of performance appraisal (routine and unrevised performance appraisal methods e.g. ranking, checklist etc.) Toppo and Prusty (2012) stated, the expanded competitive nature of economies and fast changes in the external environment has forced many organizations to shift from reactive performance appraisals to the proactive performance management to increase productivity and enhance organizational performance. Equally, emerging hotels need more capable human resource function that can link corporate strategy with the individual goals to

foster productivity and create competitive advantage. By the interpretation of Hervie (2016), the main features of PMS are as follows:

- Objective, measurable performance criteria: PMS should have a set standard on which employees' performance would be measured. The standard should be made known to the employees.
- Employees are given targets to work with. These targets are based on employee competencies that is, their technical, personality and managerial competencies
- Day-to-day and regular official/unofficial feedback on performance is planned with the respective employees before the annual review meeting which provides chance to summarize all the feedback provided in the course of the year.
- Unbiased, fair annual assessment of performance is dependent on beginning of the year's mutual identification of specific, measurable performance objectives.
- Meetings between supervisors and subordinates allow for fair discussions of accomplishments and non-accomplishments of targets, the problems and perspectives of both are also discussed (Asare-Bediako, 2013).

Furthermore, in GIZ Performance Management handbook for Myanmar Banks (Benedikt, 2014), it was indicated that before HR managers embark on the development of a new performance management system, there is the need to put human resource management (HR) practices in place to support the performance management process. This is because it is necessary to ensure that PMS can align with other HR systems in the organization. For instance, business values used as basis for performance management should be the same as that used for recruitment, staffing and training. According to the handbook, it would ensure that employees are being hired, trained and appraised on a consistent set of critical job requirements and also sends a strong message, internally and externally, about what is valued by the organization. Other HR management practices that must be put in place are: Well-designed Jobs and written Job Descriptions, Effective supervision, Comprehensive Employee Orientation and Training, a Positive and Supportive work Environment, Reward and Recognition and Performance Improvement Plan.

Implementation of PMS and Challenges

According to GIZ Performance Management handbook (Benedikt, 2014), a successful implementation of PMS entails the establishment, communication and review of clear performance benchmarks. Regular feedback should be given, and the final performance evaluation which usually happens at the end of the institutional year should give all year feedback which completes performance management process. Boipono et al. (2014) also indicate that timely and frequent feedback is critical for any performance management system. It is necessary for managers to discuss issue relating to PMS with the subordinates on a regular basis. This could ensure timely improvements that may enhance productivity.

Pulakos (2004), also gave some key best practices which when followed could ensure the successful implementation of PMS. Pulakos reiterated that all members of the hotel must be involved in its implementation particularly, top management level. Commitment of the Chief Executive Officer who is not skewed to other practices by virtue of the background or handed over from older generations and other top-level managers is very vital to the success of the implementation of PMS. Communication should even start before the commencement of its application to get the buy-in of all members of the hotel. Because PMS implementation involves a lot of administrative, Pulakos (2004), suggests that administrative procedures should be automated to expedite considerably to reduce the paperwork involved in its interpretation. She further mentioned that pilot testing the system should be gradual while training managers

and other employees of the hotel, before full implementation. Subsequently there should be continuous evaluation to improve the system.

Ravi Chandra and Saraswathi (2018) also stated that for PMS to be effectively implemented, it must be designed to adapt to all levels of employees. Moreover, employees job descriptions should be well-constructed parallel with department strategic plans which are also allied with the comprehensive organisational strategy. This means that an organisation's operational, tactical and operational plans should be supported to ensure the successful implementation of PMS.

Pulakos (2004) describes PMS as the "Achilles' heel" of human resources management. This shows the delicateness of the handling of PMS. Lucas (2013) argues that it is difficult to maximize the full potential of PMS and that an improper use of this system produces detrimental effects to the organisation. Lucas (2013) again mentions that most part of PMS is still under theory and that practitioners avoid the theoretical aspects that may address the challenges and uncertainties that connect PMS within the global environment.

Pulakos and O'Leary (2011) indicate that in spite of the vast research and practice centered on knowledge of PMS and its improvement in organizations, the formula for its effective implementation is tenuous. Pulakos and O'Leary (2011) arrived at this conclusion after compiling data of a survey conducted consistently showed bad attitudes toward PMS. According to them, during the survey, many employees reported that their system failed to provide valuable feedback and establish clear expectations. Consequently, after massive analysis and study, the formula for effective PMS they said, remains elusive.

A study conducted in Kenya, (Ngumbau, 2013), revealed the following as the main challenges with the implementation of PMS in a government institution:

- lack of strong link between annual corporate planning and performance planning cycles,
- setting of weak performance measures,
- use of difficult evaluation tools,
- under-utilization of performance monitoring tools for example, tracking sheets and performance boards,
- lack of performance feedback mechanisms,
- inactive participation of line managers,
- weak culture, weak matrix structure leading to double reporting,
- lack of union involvement and long turnaround times in performance management activities.

These could be consistent with challenges that hotels might face in the implementation of PMS as Pulakos and O'Leary (2011) identified some of these challenges in their studies.

Also, at Hilton Hotel, Addis Ababa, departmental heads see giving feedback to their subordinates as trivial, they are reluctant to give negative feedback, employees also become defensive and offensive to negative but constructive criticism, there is often argument about appraisal results, self-appraisal and raters' appraisal varies, although PMS processes and procedures had been documented in the Hotels HRM manual, it was not strictly followed for implementation (Girma, 2016).

It is suggested that key performance indicators should be developed for organizations and departments which should be used in appraising performance. There should be a link between the objectives of hotel teams and individual employees. Targets set should be flexible and easily adjustable to match changes in the environment. Management in hotels should draft employee development plans to direct the employees and the organization at large. These development plans should be divided in specific timebound targets with assessment standards.

This would enhance employees' primary skills through training, draw them close to the vision of the organization and empower them to achieve excellent performance.

Importance of PMS

Performance management is an important people management tool that every organisation should practice. Sahoo and Mishra (2012), because when fully implemented, it would promote high-performing employee by accentuating job descriptions, creating a performance-enhancement plan and forming a 360-degree feedback structure within a competence framework.

Abrudan and Coita (2008), argue that PMS supports the achievement of the overall objectives of the organization. The enthusiasm and performance of the organization is safeguarded because it focuses on developmental plans and prospects for individual employees. Through PMS, employees are motivated and committed to accomplishing their respective tasks.

PMS gives clear sense of what job expectations, removing ambiguities and allowing managers and employees to be held accountable for their functions and obligations. Regular feedback about performance facilitates better communication helping employees to identify their strengths and weaknesses. It also allows for possibilities of hearing and exchanging views and opinions away from the normal pressures of work. PMS again allows for performance monitoring and assessment. It builds employee confidence if well implemented and provides platform for training and career development which helps the organization in succession planning. Through PMS outstanding performance are identified and rewarded. Effective PMS would increase hotels employee engagement and productivity, give the hotels a competitive urge and leads to the overall productivity of the industry.

How Hotels Practice PMS

Interest in Human Resource Management (HRM) within the hospitality sector has been increasing since the 1990s, with first studies, showing lack of interest among managers in HRM practices. However, it was only during the 2000s that it was possible to find specific evidence of the systematic use of HRM practices within the hospitality sector (Bresciani et al., 2012).

The hotel business is becoming more competitive due to the sophisticated nature of tourists, the magnitude of building with required services and clients that utilize these facilities. To remain in business and expand, it has become pertinent for the hospitality industry to embrace human resource management practices that could build the capacity of their employees, enhance their performance and motivate them to achieve their expected goals which would ultimately lead to the accomplishment of goals of hotels in the hospitality industry.

A study conducted by (Makori, 2014), on four and five start hotels in Nairobi, Kenya with the aim of determining the extent to which these hotels practiced PMS, revealed that, about 85 percent of the respondents agreed that their hotels practiced effective PMS. It was revealed that individual employees' performance targets were based on departmental and organizational objectives. The goals of the various departments and the organization were drawn from the strategies that the hotels were practicing becoming competitive in the market. The study however, revealed that establishment of Key Performance Indicators (KPIs – like the number of errors, appraisal, management by objective, work efficiency, handling clients etc.) and evaluation of employee core competences which are paramount to PMS were not consistent across all the hotels.

Another study conducted at Hilton Addis Ababa Hotel, Ethiopia, with the aim of assessing employees performance through the application of PMS, discovered that

organizational objectives were not fully aligned with organizational and individual objectives, participation of employees' in the planning, execution, assessment and review stage of performance management was not across board, managers lacked the competence to implement PMS and employees were not given regular feedback on their strengths and weaknesses. According to Girma (2016), although the hotel had made provision for goal setting and standard for performance measurement, employee targets were not well defined, there were no structures for celebration of achievement or upgrade non- achievements. Employees had no knowledge about PMS and even the reason why they should be appraised (Girma, 2016).

Although some international hotels in Ghana may be practicing performance management system, no studies had been carried out on that specifically. From literature, the only identified study was by (Boadu et al, 2014) on employee appraisal and performance in the hospitality industry. This also applies to India. Most of the study identified on PMS in India focused on other sectors of their economy. However, Chand and Ranga's (2018), study focused on performance appraisal practices in India hotel industry and the perception of the employees, although was not on PMS. It touched on performance appraisal which is a subset of PMS. That study revealed that employee performance assessment was centered around set goals which relates to the strategies of the hotel. Performance standard had been established on which employee performance evaluation was based and modern appraisal methods (example 360 degrees feedback) were adapted by these hotels. The evaluation process encouraged cooperation and there was continuous performance monitoring and feedback. Moreover, decisions relating to employee development, reward and so on were made from the results of the appraisal.

In the study of Chen *et al.* (2011), on Performance Management of Hilton Hotels Corp in China, a multinational company with five hotels in five provinces with 2405 guest rooms, they identified two clear qualities in the performance management system practiced by these hotels. These they termed as strict system and mature methods of operation. The hotels have a complex PMS; they practiced enterprise performance management models. Payne et al. (2001), define enterprise performance model as an incorporated system of procedures for monitoring and controlling performance of a business. He mentioned five important features of an enterprise performance model and these are: knowledge enhanced, market centered, causally related, focused on change (predictive and prescriptive), and potentially "real time" in nature. It is worth mentioning that PMS practiced in multinational hotels may vary from how it is practiced in smaller hotels because of the size, complexity and technology.

In Hilton Hotels Corp China, individual positions had their powers and responsibilities defined in the respective job descriptions. The values and vision of the hotels are made clear to all categories of employees. Clear, measurable, achievable and realistic goals are set, and the Human Resource Departments have the responsibility to maintain the basis of the repeated communication with all employees, evaluated on the development of performance plans implemented on the foundation of performance assessment. Performance evaluations are carried out at the end of the year and timely feedback is given so that poor performers are counselled and given the opportunity to improve on their performance to achieve their expected targets. A corporate assessment is also carried out. Results of both evaluations have influence on employee training, promotions, transfers, salary increments, employee career developments and other management decisions (Chen et al., 2011).

In a study of Irish hotels (eight four star and one five star), to identify if PMS practiced in the hotels which accommodate cultural diversity in their employees. It was revealed that adaptation of diverse culture into design and implementation of PMS was not necessary. This is because employees come from different backgrounds and cultures but come together to form

an organizational culture. All the hotels practice PMS from target setting, giving regular feedback to their employees, reward, training and performance evaluation.

In addition, five of the hotels, the study identified two types of PMS: the one used for new employees and another used for existing employees. Managers had informal conversations with new employees known in the hotels as "Job chats". Through these chats, they informed employee about their progress and performance, while allowing managers to find out critical issues that may impair the employees' performance. The Job chats also enables managers to informally acquaint new employees with the process of open communication between superiors and subordinates which may be important for continuous improvement.

It was again revealed that these hotels practiced participative performance appraisals with an element of self-assessment by employees. Both managers and employees fill out appraisal forms prior to the period of performance appraisal. During the evaluation, both parties discussed and agree on what would be recorded on a third appraisal form which was the formal document that would-be put-on file. This allows employees to be receptive to the entire process and enable managers to unearth work-related problems that may hinder performance O'Donovan and Linehan (2014).

Materials and Methods

According to Snyder (2019), using literature review as a research method can largely depict more or less logical way of accumulating and integrating previous research if done effectively, establishes a strong footing for advancing knowledge and accelerating theoretical growth. Based on a wide literature review, the future research concepts are to be formulated. This study used secondary data by reviewing literature on the subject matter to conceptualize Performance Management System and identify how some hotels across the globe practice it. In doing so, the features and important elements that would ensure the success of the implementation of PMS were discussed, including challenges.

Result and Discussion

The results indicate that about 30 percent of the hotels that practiced PMS understand the system and are achieving expected outcomes whilst other hotels could not effectively manage the system because of their level of understanding in its implementation. It was identified that Hotels that practiced PMS used the same process (goal setting, feedback, performance assessment etc.) and had similar challenges. The variations were the implementation strategies, the cultural diversity and practical delivery of the system. Some hotels have performance appraisals only, they did not practice PMS. It was also realized that there have not been enough studies of PMS in hotels.

Observation from (Ngumbau, 2013), was that there should be a strong link between annual corporate planning and performance planning cycles to minimise the challenges that hotels might face in the implementation of PMS. Makori (2014) in studying four and five start hotels in Nairobi, Kenya revealed that establishment of Key Performance Indicators (KPIs) and evaluation of employee core competences stipulated in the job description which are paramount to PMS were not consistent across all the hotels. Another study conducted at Hilton Addis Ababa Hotel, Ethiopia, with the aim of assessing employees' performance through the application of PMS, discovered that objectives were not fully aligned with organizational and individual objectives. Managers lacked the competence to implement PMS. In the study of (Chen *et al.*, 2011), on Performance Management System at Hilton Hotels Corporation in China, it was revealed that the hotels have a complex PMS; they practiced what is known as enterprise performance management models. Results from evaluations have influence on employee training, promotions, transfers, salary increments, employee career developments

and other management decisions. Studies show that most hotels do not practice PMS particularly in Ghana, what they practice is performance appraisal.

Conclusion

From literature, it can be concluded that the practice of Performance management system may be comparable across hotels in international situations. The features, processes and challenges may be related, what may vary are the implementation strategies, the cultural diversity and understanding of the system. PMS should build a direct connection between employee performance and the hotels' goals and makes the employees' contribution to the hotels very explicit.

Performance management has the ability to make a considerable impact on individual and organisational performance, but for organisations to achieve such potential, investment is required in the development and implementation of robust and consistent PMS.

Performance management system should be crucial to the hospitality industry because most of its employees have direct interactions or contact with guests and tourist who utilize services of this industry. The workforce must be well trained to skillfully handle guests in order to ensure continuity and productivity.

Furthermore, for PMS to succeed in hotel, top management must buy into the idea and be committed to its implementation. Efforts should be made to identify, remove and prevent all potential barriers to its effective operation. Structures should be put in place to continuously monitor the process from start to finish and recommend areas of improvement. Establish key performance indicators (KPIs) for example, customer retention, profitability and expansion, and a standard of measurement to monitor progress.

Training should be organized for all categories of employees to understand and appreciate the need to support the implementation of PMS and performance appraisal, (which is performed at the end of the year) and reward systems should be designed to reward outstanding performance.

This research sees the need to realign all these practices under the general umbrella of PMS to have models which are easily executable to ultimately improve performance with its accompanying expansion in the hotel industry more especially in Africa. Documentation should be reduced to the barest minimum with more focus on issues which would be targets for improvements. The introduction of PMS in hotel should be gradual, pilot testing with intensive training monitoring its impact before full application in order to achieve the desired results.

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ATTITUDES RELATING TO MAKING USE OF SPA SERVICES IN HUNGARY

Zoltán Szabó

Abstract
For the last decades, there has been increasing interest in natural therapies. Natural cure factors have been continued to gain importance in maintaining and improving health status. Hungary - as the consequence of its very favorablemedical water supply - can be a considerable actor in the spa tourism related services market, because medical water based tourism is the classical branch of Hungarian spa tourism. Adaption to opportunities for expanding capacities of health tourism related services on the basis of medical water and to market demands is only possible, if consumer thinking, motivation and attitude are known. This paper aims to segment consumers, based on their spa-attitude preferences, according to my recent study. With the considerable growth rate of the spa market, it is vital for spa professionals to understand spa-consumers preferences. However, academics and industry professionals have not devised a structured method by which to manage spa-consumers. Based on the results, I identified three consumer dimensions based on spa attitude preferences: the first was health awareness, the second was passivity related to spa tourism, and the third was bathing use limitations. Given the limited academic interest in the research area, this study contributes to the literature by providing insights into spa-consumers preferences and how those preferences can be used to segment spa-consumers. This study could help spa professionals to design customized spa products for the distinct segments, and thus retain and attract more spa-consumers.

Keywords
Consumer. Spa Tourism. Preference. Spa Service. Tourism.

JEL Classification: I31, M21, Z32, D12, D91.

Introduction

For the last two decades, besides the market expansion of tourism and health tourism within it, typical areas of spa tourism have also been changed and widened (Li - Yang - Liu 2017, Jafari 2013). For the last decades, there has been increasing interest in natural therapies (Csirmaz - Pető 2015, Botterill et al. 2013, Bauer 2008). Natural cure factors, including medical water resources have been continued to gain importance in maintaining and improving health status (Phillips 2012). In international literatures, relative small number of references can be found to investigations of consumer attitudes toward bath tourism (Chambers 2016, Gonzales et al. 2007). There is a small number of Hungarian research studies, but these studies are of simple descriptive statistics. Adaption to opportunities for expanding capacities of health tourism related services on the basis of medical water and to market demands is only possible, if consumer thinking, motivation and attitude are known (Hojcska - Szabó 2019). Health economy is the most dynamic sector of developed countries (Kim et al. 2010). These days, in our competitive world, maintaining and improving health status is getting more important (Coskun et al. 2003). In relation to prognosis in Hungary, an increasing proportion of the population recognizes that good health status is the base for labor productivity and emotional, intellectual and physical improvement (Baji et al. 2015).

In the center of spa tourism background, recovery and rehabilitation are the main motivational factors among travelers suffering from a disease or having pain. These travelers characterize themselves preferably as patient rather than tourist (Lukács 2013). The target

group of spa tourism is patients suffering from chronic disease(s) or desiring to be relieved of pain. Spa tourism principal motivational factors are recovery and rehabilitation. During these, the patient (not in emergency cases) requires primarily health care treatments, but, in their free time, they also demand for touristic services. Some demanded health care services can be financed by compulsory health insurance (Kútvölgyi 2017, Cassens et al. 2012).

Medical services, typically based on natural medical factors (medical water, medical caves, medical mud, medical gas) are mainly characterized by medical treatment (Hojcska 2018, Bender 2014) that can be completed by touristic services (Table 1).

Table 1 Based on natural medical factors in Hungary (piece)

Name of the region	Medical water	Medical caves	Medical mud	Medical gas
Central Hungary	10	1	0	0
Central Transdanubia	6	1	0	0
Western Transdanubia	46	0	2	0
Southern Transdanubia	32	1	0	0
Northern Hungary	27	2	1	2
Northern Great Plain	75	0	2	0
Southern Great Plain	53	0	1	0
Total	**249**	**5**	**6**	**2**

Source: Budapest Capital City Government Office (2021), own editing

Both in Hungary and abroad, guests make use of medical services for medical prescription, but own financing is also becoming widespread The ratio is beginning to drift towards to self-financing, as state health insurance ceases and private health insurance agencies appear (Hojcska - Szabó 2017). The average length of medical tourist's stay at a resort is longer than in the case of other touristic products. Medical tourists are of middle aged or old persons, so typically above 50. In respect of their family life cycle, these adults or retired persons live without their children, but have own income (Kiss - Török 2001). Consuming medical touristic products is socially typical for the middle-class, physical workers, and intellectual workforce with low level occupational status (in Hungary, the proportion of physical workers is much less than abroad).

The majority of the segment is characterized by traditional lifestyle, conservative approach to life, moderate self awareness and price sensitivity (Murphy 2013, Cassens et al. 2012). The medical wellness tourist differs exactly in awareness from the average tourist. In the case of a wellness tourist, before the establishment of a treatment program, there is a medical examination that, in relation to the health status of the patient, defines what treatments are well-founded (Bodeker - Cohen 2008). The majority of touristic products is specialized for the place, their attractiveness and potential infrastructure arise from the specialties of the location. Such an example could be the spa tourism on the bases of natural medical factors

(Szabó 2017, Hall 2013, Bieger - Beritelli 2012). When making a decision about travelling, the most important viewpoint is motivation (in this case recovery, rehabilitation, regeneration and health status maintenance), which is followed by the selection of a geographical place to travel (Bujdosó 2016). Due to developments - in relation to investigations of Hungarian bath resort tourism – considerable expansion could be experienced over the past period (Bujdosó - Gyurkó - Benkő 2019, Mundruczó - Szennyessy 2005). My research objectives are to reveal actual and potential consumers of spa tourism and to profoundly know consumers' demands.

Materials and Methods

There is a small number of Hungarian research studies, and these studies are of simple descriptive statistics. The information on consumers of spa tourism has also been implemented by quantitative data collection. The survey covered all regions of Hungary, which were selected by a randomized sampling method. The traditional paper-based questionnaires reached the respondents through intermediaries. The intermediaries carried the papers to the respondents' homes where they filled out the form themselves. The questionnaires were then later collected at a pre-agreed future date (Babbie 2017, Majoros 2006). After computerizing the questionnaires I have used several statistical analysis methods -taking into account the characteristics of the data- in order to achieve the research objectives. From the statistical methods in addition to the simple descriptive statistics I have used complex multivariate methods for processing data (Takács 2016, Füstös et al. 2007).

This job was basically made by categorical principal component analysis, one of an improved variety of factor analysis (Gorsuch 1990). Compared with traditional factor analysis, categorical principal component analysis allows mathematically precise handling of variables measured on categorical scales (for instance Likert-type interval scale) (Lakner 2006, Timmerman 2002). I determined three principal components. In the case of the three principal components, there is a big difference in principal components scores. For the statistical analysis of data, I have used the SPSS 23.0 Windows 10 software package (Székelyi - Barna 2008).

Respondents represented the broader Hungarian rural middle class. Socio-demographic characteristics of 573 respondents are summarized in Figure 1.

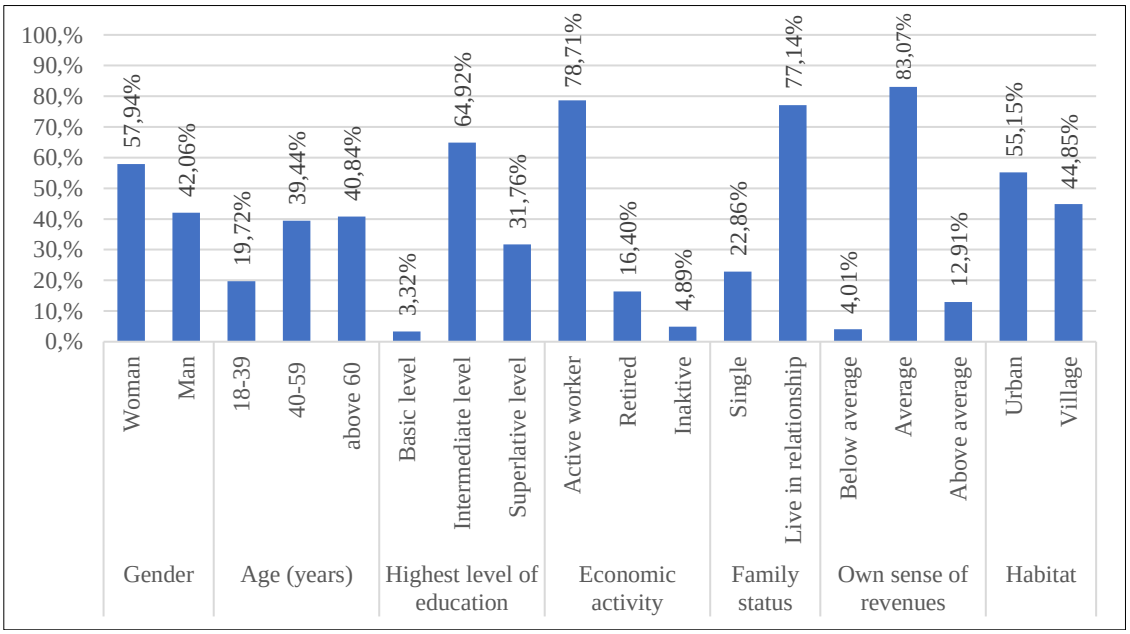

Figure 1 Socio-demographic characteristics of respondents (N=573)
Surce: own calculation, own editing

The age groups of the respondents (42% men, 58% women) were 18-39 years (20%), 40-59 years (39%) and above 60 years (41%). Concerning the highest level of education, 3% of them had basic level, 65% intermediate and 32% superlative level of education, concerning economic activity, 79% were active workers, 16% retired and 5% inactive. Concerning family status, 23% of them were single, 77% were married or in a relationship, 55% of them had urban, 45% village habitat. Concerning their own sense of revenues, 4% were below average, 83% average, and 13% above average.

Outcomers

In the of investigation, I tried to reveal and analyze attitudes relating to making use of spa services. I determined three principal components. When the number of principal components was determined, I considered it crucial to take Cronbach's value into consideration in line with earlier Hungarian marketing-research practice. These values indicated how many principal components are justified in the investigation. As it can be seen in Table 1, three principal components were justified to be involved. In the case of the third principal component, the Cronbach's value was arguably of low level, but it was worth to be included, because it was still able to interpret 9.6% of the variance of the sample. The selected three principal components together were able to explain 48.7% of the variance of the sample. This means, there is a large proportion of factors that could not taken into consideration even by application of principal components. In other words, it was a warning signal that highlighted that only a small proportion of the variance of the sample could be interpret by my principal components. All these emphasize that, in relation to attitudes toward spa services, there is a big difference in opinions about spa services and related motivation. In the case of the three principal components, there is a big difference in principal components scores. This enables me to create three trends in motivations to making use of spa services. This enables to create three trends in motivations to making use of spa services (Table 2).

Table 2. Principal component scores in different dimensions

	Statement	Identification number of dimensions		
		1	2	3
1.	Because of our competitive life, recreation is often needed.	0,205	**-0,348**	0,182
2.	I take care of my health.	**0,429**	-0,197	-0,148
3.	I personally know people, whose diseases were relieved by medical water treatment.	**0,528**	0,012	0,081
4.	It is patriotic to spend money in Hungary.	**0,304**	-0,249	0,154
5.	I try to know the values in Hungary.	0,421	**-0,451**	0,014
6.	I do not have enough money to pay for health and recreational and spa services as often as I would like to do.	-0,006	-0,221	**0,665**
7.	Because of my job, it is not possible for me to travel and recreate for longer periods.	-0,052	-0,081	**0,657**
8.	I try to combine spa visit and trips to know locations.	**0,419**	-0,347	0,091
9.	Spa visit means none doing for me.	-0,192	**0,466**	0,062

10.	It is boring to sit in the medical water.	-0,253	**0,374**	0,037
11.	I know some good bath resorts, I do not try others.	0,297	**0,451**	0,004
12.	Because of my family circumstances, it is not possible for me to travel and recreate for longer periods.	-0,041	0,077	**0,737**
13.	If you really want to get somewhere, you can arrange it.	0,290	-0,113	**-0,458**
14.	If I can manage, I try to exercise regularly.	**0,310**	-0,278	-0,202
15.	I use spa services only if I have a medical prescription to do so.	-0,083	**0,564**	0,076
16.	I personally have good experiences on favorable effects of medical waters.	**0,700**	0,116	0,052
17.	I consciously look for news and pieces of information about medical waters.	**0,770**	0,157	0,085
18.	I am readily informed of Hungarian spa supply.	**0,698**	-0,117	0,086
19.	I know Hungary better than the average.	**0,425**	0,002	-0,186
20.	According to my acquaintances, I am excessively afraid of diseases.	0,189	**0,524**	0,082
21.	I consciously look for the most adequate medical waters.	**0,752**	0,284	0,051
22.	I am very familiar with the physiological effects of medical waters.	**0,717**	0,236	-0,012
23.	I always try to look for new spa resorts.	**0,553**	0,104	-0,039
24.	I can judge which medical water is beneficial to me, and which one is less beneficial.	**0,673**	0,226	0,033
25.	I believe alternative medical treatments.	**0,451**	-0,086	0,119

Source: own calculation, own editing

In the first principal component the following factors had very high scores: health awareness, conscious consumer behavior, knowledge of medical waters' positive effects, and spa tourism related attitudes, such as a demand to know Hungarian landscape or inland tourism. It is remarkable that opinions supporting positive attitude toward alternative therapies also received high scores in this principal component. Because of the mentioned factors, the first trend is a little bit of "expert" character. People with this trend consider it essential to know medical waters and their physiological effectsand to be able to differentiate between them. These people are interested in new spa resorts. In summary, this trend comprises very favorable opinions about spa resorts.

In the second principal component the following opinions scored very high: Spa visit means none doing for me; It is boring to sit in the medical water. People in this dimension make use of or would make use of spa services only if they have medical prescriptions to do so. It is interesting that the opinion recreation is very often needed because of competitive life scored the highest in this dimension. Furthermore, it is also interesting that the opinion According to my acquaintances, I am excessively afraid of diseases scored high. In contrast to the before mentioned, health awareness appears only with relatively low score, so opinions like I take care of my health, I personally know people, whose health problems were solved by medical water treatment scored very low in this principal component. Statements characterizing ignorant consumers scored the highest. These people know little about favorable effects of medical waters, in addition, they are not interested in them at all.

The third principal component basically presents the importance of constraints. Factors, decisively financial constraints, that do not enable to make use of spa services scored very high (opinions, like: I do not have enough money to pay for health and recreational and spa services as often as I would like to do). Time limit and the opinion Because of my family circumstances, it is not possible for me to travel and recreate for longer periods belong to this third dimension, too.

Conclusions

Overall, I managed to separate three attitude groups in relation to making use of spa services by principal component analysis. One principal component group defines factors comprising positive and favorable opinions about spa tourism (1). Those in the second group evaluated spa tourism negatively, and visualized its less eventful, spectacular side (2). People in the third dimension stated participating in spa tourism is basically the function of time and money. Respondents emphasized money constraint and time limit (3).

During investigations, numerous consequences can be drawn in relation to making use of spa services and attitude of older generation toward spa services. The most important ones among them are as follows:

- One third of the broader middle aged consumers in the middle class have very positive attitude toward making use of spa services. The majority of them consciously look for possibilities, when spa visit can be combined with other touristic experiences.
- The second group of consumers consider spa visit still as a none doing activity, a sitting in the warm water. It would be crucial to change these persons images about spa resorts and services.
- The third big group of consumers justifies with excuses why they do not visit spa resorts. In the case of this group, should prove that making use of spa services is also accessible for persons having average (or less) income.
- Investigation of attitudes toward spa tourism emphasizes that increasing number of consumers desires to make use of other tourism services besides the medical ones. For this reason, it is essential to create clusters between companies and to focus other forms of horizontal economic cooperation, above all, conscious development of tourism destination management organizations.

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ARE ISLAMIC BANKS MORE CRISIS-RESISTANT? COMPARATIVE ANALYSIS OF THE AL RAYAN ISLAMIC BANK AND THE OTP BANK BETWEEN 2006 AND 2016

József Varga – Alexandra Pál – Zsuzsanna Széles

Abstract

In our research, we were looking for an answer to the question whether Islamic Al Rayan Bank is more crisis-resistant than the OTP traditional bank. Crisis resilience was measured by banks' profitability, leverage and capital adequacy. The specific purpose of our publication is to find out whether Al Rayan Bank has achieved better results in OTP Bank in terms of profitability and capital adequacy. We chose this Islamic bank because it was the first bank in Europe that based on Islamic principles. OTP Bank was chosen because it is Hungary's market-leading bank. The analysis took place between 2006 and 2016. From the three hypotheses at the beginning of the research, one proved to be true, two weren't true. Based ont he result we can say that the OTP Bank achieved better results in 2 areas than the Al Rayan Bank. The OTP Bank is more stable in terms of efficiency and capitalisation than the other bank. But the Al Rayan Bank proved to be more stable than OTP Bank in the area of capital adequacy.

Key words

Islamic bank system, Islamic finance, PLS, financial indicators, stability of the bank system

Introduction

This paper compares the stability of the Islamic banking system with the traditional system through the analysis of the financial indicators of two banks. For this reason, the conclusions drawn, of course, remain limited; however, the selection of the two banks provides some degree of representativeness. The aim of the research was to answer the question whether Al Rayan Bank is more crisis-resistant than OTP Bank. Al Rayan was chosen for the research for the reason that it was the first bank in Europe that operates based on Islamic banking principles. OTP was chosen since it is Hungary's market leader. The data analysed come from the period between 2006 and 2016. The reason for this was that the research aim was to analyse the impact of the economic downturn of 2008. The downturn that started from the mortgage market shook large economies of the world, as a result of which new methods and techniques were implemented to avoid similar downturns hitting our financial systems to a large extent (Kovács-Szamosi - Bareith - Csonka 2019). In history, we have seen many examples of different cultures entering a more productive, stable phase of social and economic development by using each other's knowledge. *(Széles et al 2010)*

The economy is going through constant change, and it is affected by different factors in different ways. By the time this study is published, another economic crisis will be in the focus of attention. It has been caused by COVID-19 and represents a serious threat to the economies of all countries (Sipiczki 2019), but this will be the subject of a further study.

The basic hypothesis of this paper is that the Islamic Al Rayan Bank showed greater stability in the researched period than OTP. This opinion has been widely shared among economists (Mihálffy (2014), Ligeti (2011), Balázs (2016)). The basic hypothesis was broken down into three further ones:

H1: the profitability of the examined Islamic bank is more stable than that of the Hungarian bank.
H2: Al Rayan has a more stable, higher leverage than OTP.
H3: Al Rayan Bank's capital adequacy is higher than that of OTP Bank; therefore, the Islamic bank can be considered more stable.

The data reflecting the profitability and safe operation of the banks was calculated on the basis of their annual reports. ROE and ROA indicators were used to analyse profitability. Following that, the results obtained in the report were analysed through the leverage ratio (total company debt/shareholder's equity). Capital adequacy was calculated according to the Basel II. system: the quotient of the solvency margin and the adjusted balance sheet total.

The financing principles of Islamic banks

If an Islamic bank wants to operate successfully, it must comply with the principles of Sharia (Islamic law), which are elaborated by the Sharia Supervisory Board. Transactions that do not correspond to the Sharia are haraam transactions (Pálfi, 2010). The Islamic banking system is based on the five principles of Sharia. These principles are obligatory for all financial institutions that are involved in Islamic finance. Two factors out of these will be dealt with in this paper.

Based on the principles of Islamic law, the Sharia, money cannot be seen as anything else than the expression of the value of goods, which in itself has no value. Therefore, making money with money, i.e. making interest, is considered a sin (Balázs et al. 2019). Islamic banks have to avoid all speculative transactions that involve unreasonably high risk. The problem with these transactions is that they make the business non-transparent. As an example, all kinds of card games, gambling and options could be mentioned. Banks need to consider each transactions separately, since there are no standardized types of transactions. Gharar means taking unnecessary risk, and making transactions that are likely to be unprofitable.

PLS is the sharing of profit and loss between the customer and the bank, which is the fifth principle. In Islamic financing, risk can only be taken if the potential future losses are shared between the two parties in a way and to an extent specified in a contract. The shares must be fair in any case. Profit is shared in the same way. Payment cannot be guaranteed to any party in advance according to the Sharia.

Most Islamic financing techniques are based on the Sukuk, which is the Islamic paper. Sukuks are tangible assets, and they are different from traditional bonds used in Western finance. A traditional Western bond issue is a loan, while an Islamic bond is based on a partial transfer of ownership, according to the proportion of the value of the securities held. The AAOIFI (Accounting and Auditing Organization of Islamic Financial Institutions) recognizes a total of 14 types of Sukuk (Sukuk al murabaha, Sukuk al mudaraba, Sukuk al-salam, Sukuk al-ijara, etc.). Sukuk can also become a hybrid form of financing, since the different forms are often used in combination. (Pálfi 2010).

Islamic financing techniques can be put into groups in several ways. In line with one of the most important grouping criteria, these techniques are based on the principle of profit and loss sharing and on non profit and loss sharing.

Table 1 Grouping of financing techniques

Financing based on the principle of profit and loss sharing	Financing based on the principle of non profit and loss sharing
Mudarabah (sharing the profit and loss with venture capital)	Qardh al-hasan (loan on the basis of benevolence)
Musyarakah (partnership)	Bai-Muajjal (selling with a delay in payment)
Muzara`ah" (agricultural partnership)	Bai Salam (sales contract)
Musaqat (partnership related to orchards and fruit bearing trees)	Ijarah or Ijarah wa iqtina' (leasing or renting)
Direct investment	Murabaha (selling contract)
	Dzsu'alah (Service fee)

Source: Gálosi (2010)

Financing techniques based on profit and loss sharing (PLS), as opposed to non-PLS techniques, prioritise risk-sharing and partnership over collaterals and charging interests. PLS techniques include the following major types of transactions.

Mudarabah (joint investment) is the most commonly used financing technique. It is used not only in trade, but also in project financing. The entrepreneurs provide their work and expertise, while banks provide the required capital. The profit is shared between the bank and the client in a proportion agreed in advance. In contrast, the loss is borne by the bank. However, if it can be proved that entrepreneurs made a loss due to their own fault, they become fully responsible for the loss (Mihálffy 2014). In order for the transaction to remain Sharia compatible, three conditions must be met:

- The bank cannot request collateral, at most only some guarantee;
- the financing institution cannot be involved in the management of the company;
- it is necessary to share the profit, the profit rate is determined as a percentage, not as an amount.

In a Musyarakah (joint capital and service transaction), two or even more parties provide money for the transaction, in which profits and losses are shared alike based on the amount of invested assets. There can be both active and silent partners; however, those who take part actively in the management, also get a monthly salary on top of the shared profit. The bank is not the sole provider of capital; the business also provides some of it. Financing and management is shared between the bank and the client. This technique is usually used in the case of long-term investments (Balázs et al 2014)

Muzara`ah is mainly used in agriculture and it is very similar to Mudarabah; however, in Muzara`ah it is the crops that are shared, not the profit. The bank provides capital or land. Musaqat is similar to Muzara'ah, and it is used in the case of growing fruits in orchards. The harvested produce are shared in proportion to the contributions. Direct investment in Islamic banks is the same as in traditional banks. Nevertheless, in this case, Islamic banks cannot invest in goods and services that are against Islamic values, such as gambling etc.

In addition to PLS transactions, we also describe some non-PLS methods (non-profit-and-loss-sharing financing methods). These types of transactions are the solutions when PLS methods cannot be used to achieve a certain goal. These might be consumer loans or small loans.

Qardh al-hasan is a form of interest-free loan based on benevolence. The borrowers can decide whether they want to give the lender any amount in addition to the total sum of the loan. The additional amount is independent of the size and the maturity of the loan.

As regards Bai-Muajja transactions, sellers can sell even with a delay in payment. Payment can be made at once or in instalments. The parties agree on the price when making the deal, and the price may not include any additional charges arising from later payment.

As for Bai'Salam (Pre-purchase), the bank pays the price in advance and the seller obliges to deliver the goods at a later date. This transaction is typically used when purchasing manufactured or agricultural products.

Ijarah or Ijarah wa iqtina' (leasing or renting) is known as leasing in traditional Western banking. The bank leases an item, for which the lessee pays instalments in a pre-determined amount. The bank remains the owner of the object along with all liabilities until the lessee pays off the full amount. By paying the last instalment, the item becomes the property of the lessee.

In Murabaha (Selling with a profit fixed in advance), the customer instructs the bank to buy an item, which will then be sold to the customer at a contractually fixed price, of course, for a higher price than it was bought by the bank. Payment can be made in a single amount, or even in instalments. This can also be the case if the customer orders the bank to sell an item for a certain price, which includes the costs and the profit. The buyer can make payment in a single amount, or even in instalments. (Mihálffy 2014)

In the case of Dzsu'alah, one of the parties undertakes to pay the other one a certain amount for providing services in accordance with the terms of a contract. This transaction is used e.g. in asset management, consulting and expert services. (Balázs et. al. 2014)

Takaful is a special deal, and corresponds to insurance in Western services. It is a transaction with multiple parties. The insurance company is on one side and the insured ones on the other side. The insured ones enter into a contract first with each other and only later with the bank. The insured set up a so-called "takaful self-help fund" and then enter into a contract with each other to determine how much money they are entitled to in case of certain events. The bank will then invest the set amount in Islamic transactions, and this will be used to help those in need.

Material and method - Comparison of the crisis resilience of Al Rayan and OTP Bank using financial indicators[1]

The goal of this research is to analyse whether the chosen Islamic bank is more crisis-resilient than the chosen Hungarian bank. Thus, those indicators were analysed, which show which bank's stability and future was more at risk during the global economic crisis of 2008. The period between 2006 and 2016 was analysed.

The indicators and figures used in the analysis come from the annual reports of the two institutions. The reports were elaborated in accordance with the IFRS (International Financial Reporting Standards).

Based on the facts mentioned in the introduction, the hypotheses were as follows:

H1: the profitability of the examined Islamic bank is more stable than that of the Hungarian bank.

H2: Al Rayan has a more stable, higher leverage than OTP.

H3: Al Rayan Bank's capital adequacy is higher than that of OTP Bank; therefore, the Islamic bank can be considered more stable.

Profitability analysis

Profitability figures are usually based on after-tax profit and measure a bank's ability to generate profit. Regarding profitability, we used two indicators, the ROE and the ROA. Figure

[1] The analysis of the financial indicators of Al Rayan Bank and OTP Bank is included in a study by Pál-Varga (2019).

1 shows the development of the ROE indicator in Al Rayan Bank and OTP Bank between 2006 and 2016.

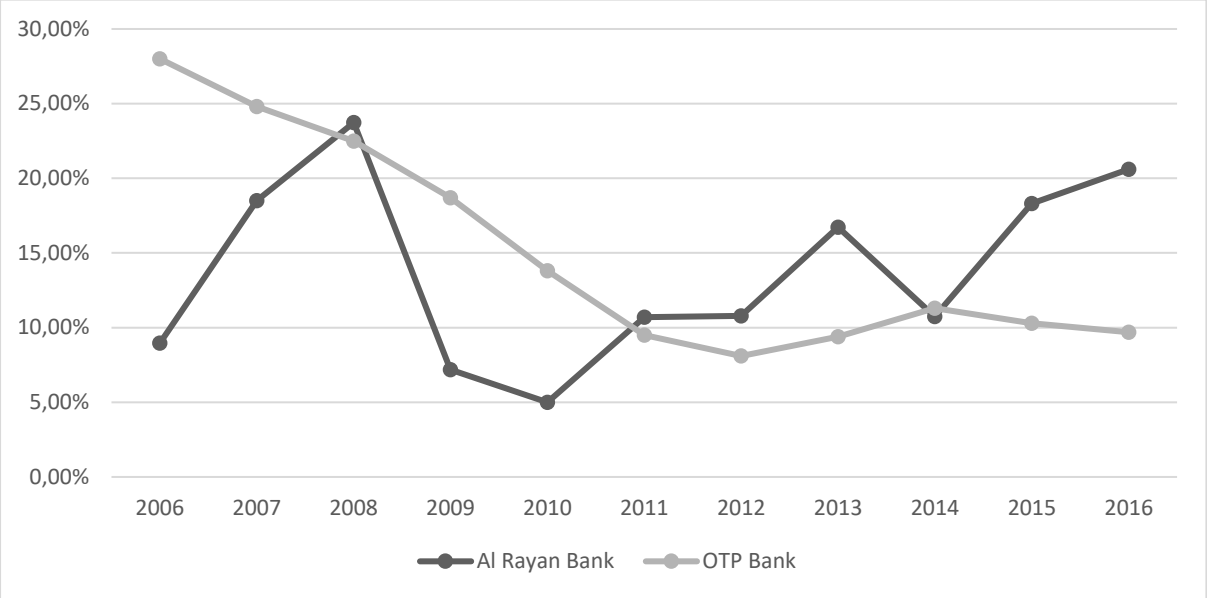

Figure 1 Development of the ROE indicator between 2006 and 2016
Source: Own figure based on the annual reports of the banks

Based on Figure 1, OTP Bank's return on equity started to decrease dramatically from 2006. The fall slowed down only in 2012 and then began to show an upward trend, partly in line with the effects of the downturn. The indicator reached a peak of 28% in 2006 and reached a low point of 8.1% in 2012. The difference between the maximum and minimum values was 19.9 percentage points. This fall lasted for a period of seven years. The fluctuation between 2012 and 2016 was less intensive though. In contrast, Al Rayan's indicator was fluctuating rather intensively, rocketing between 2006 and 2008 and then showing a decline until 2010. Here, the highest value was 23.8% in 2008 and the lowest one 5% in 2010. The fluctuation between the two was 18.8%. The change took only two years, not seven, as in OTP Bank's case. Based on the above, it can be concluded that there is a parallel between the global economic crisis and the data. The Islamic bank's indicator was constantly fluctuating between 2010 and 2016, and the changes were not as even as the changes in OTP data.

The other profitability indicator, the ROA, can indicate how efficiently a bank can use its assets. This indicator shows the income-generating capacity of the total assets. The development of the ROA indicator showed a less clear picture than that of the ROE. This is also shown in Figure 2.

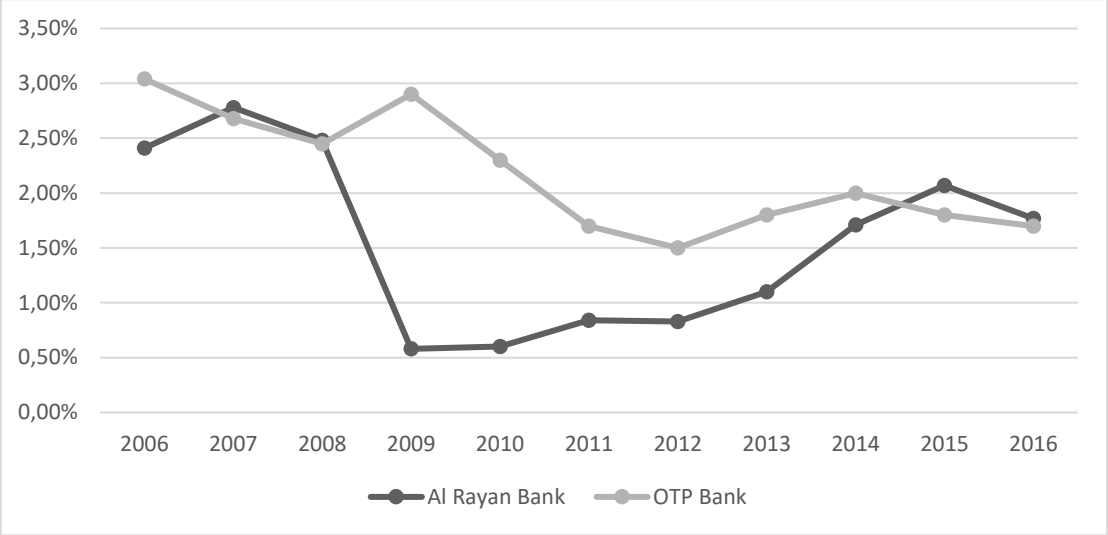

Figure 2 Development of the ROA indicator between 2006 and 2016
Source: Own figure based on the annual reports of the banks

Figure 2 shows that there are differences between the ROA values of the two banks. It can also be seen that the Islamic bank achieved a lower return on assets than OTP. OTP's values fluctuated much less, meaning that the Hungarian bank was more stable than Al Rayan. OTP's ROA peaked at 3.0% in 2006, and reached a low point at 1.5% in 2012. The two values were observed with a six-year difference, and the value decreased by 1.5 percentage points. In contrast, Al Rayan's ROA reached a peak at 2.8% in 2007, and the lowest value was at 0.6% in 2009. As it can be seen, there were only two years between the lowest and highest values and the difference was bigger. The figure shows that the Islamic bank was hit by the downturn more than the Hungarian one. However, ROA started to increase gradually in 2009 and by 2015 it had reached a higher value than in OTP. By 2016 the ROA values became identical.

In conclusion, the downturn affected both banks, though it hit Al Rayan more severely. In Hungary, the introduction of the bank tax had a negative effect on the entire banking sector, which is also shown in Figure 2. The ROA values of the two banks were similar in several years, such as in 2007, 2008 and in 2016.

Based on the data, it can be concluded that the hypothesis regarding the stability of profitability (H1: the profitability of the examined Islamic bank is more stable than that of the Hungarian bank) could not be proved, i.e. the profitability of the Islamic bank is not more stable than that of the Hungarian one.

Leverage analysis

The version of the leverage ratio used in this publication is the debt-to-equity ratio. A too high a proportion of equity is inappropriate since it suggests too cautious business operations, which can be detrimental to profitability. In contrast, if the debt ratio is high, the bank’s operations are too risky (Varga 2013). The development of the leverage ratio of the two banks is shown in Figure 3.

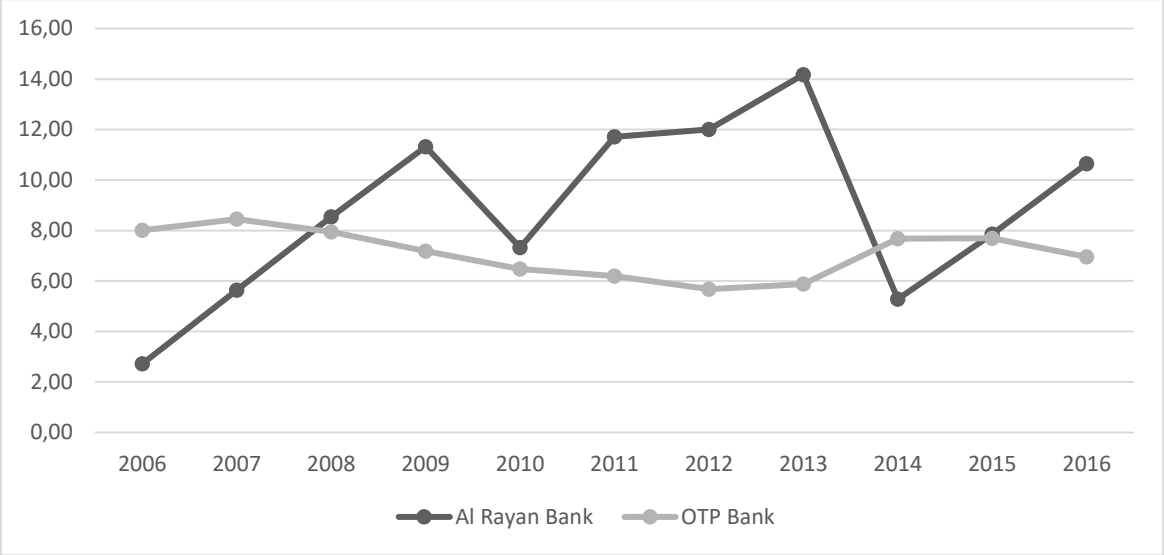

Figure 3 Development of the leverage ratio between 2006 and 2016
Source: Own figure based on the annual reports of the banks

OTP Bank has a much higher leverage than Al Rayan Bank in three years. The peak was at Al Rayan in 2013, with equity accounting for 14.17% of debt. The lowest value of 2.72% at Al Rayan can be observed in 2006. The highest value of the traditional bank was 8.45% in 2007; and the lowest in 2012, which was 5.68%. At the conventional bank, as shown in Figure 3, slightly fluctuating values could be observed, which did not change to an extremely large extent in any of the years. Values range between 5.68% and 8.45%, compared to 2.72% and 14.17% at the Islamic bank.

During the years of the downturn, the Islamic bank had higher leverage than the traditional one. The second hypothesis stating that Al Rayan has a more stable, higher leverage than OTP, was proved.

Capital adequacy analysis

Using the capital adequacy ratio (CAR), the safe operation of the banks was analysed. Capital adequacy was calculated according to the Basel system of the Basel Committee.

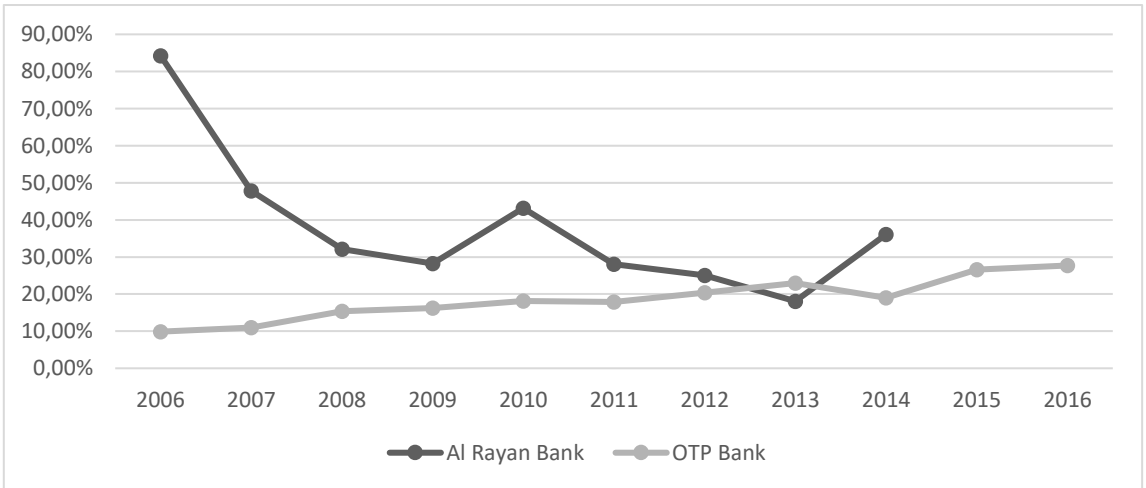

Figure 4 Development of the *capital adequacy ratio* between 2006 and 2016
Source: Own figure based on the annual reports of the banks

Based on Figure 4, both banks comply with the Basel requirements, since both reached the capital adequacy ratio threshold of 8%. While there was a fluctuation in the CAR of Al Rayan, OTP's showed a gradually increasing trend. At OTP Bank, the lowest value was 9.88% in 2006, and it peaked in 2016 at 27.7%. It can be stated that the values increased by a total of 17.82 percentage points over 10 years. In contrast, Al Rayan Bank had the highest value in 2006 at 84.26% and the lowest one in 2013 at 18.08%. The difference between the two is 66.18 percentage points, which is a rather significant change in the period of seven years.

As I has been mentioned above, the data analysed in this research were obtained from the annual reports of the two financial institutions. However, unfortunately not all necessary data could be found in the reports of Al Rayan to calculate the capital adequacy ratio for 2015 and 2016. The Tier 1 and Tier 2 values were available, which provide information on solvency margin, but no data were found on the value of risk-weighted assets. The Tier 1 and Tier 2 values presented in the reports were higher than those from 2014, so it was concluded that in 2015 and 2016 the values of the capital adequacy ratio were also higher in the years in question.

In all, looking at the data as a whole, it can be stated that the operations of both banks can be considered safe before, during and following the crisis alike. Hypothesis H3, according to which the capital adequacy of Al Rayan Bank is higher than that of OTP Bank, and therefore the Islamic bank can be considered more stable, was proven correct. Al Rayan's capital adequacy was higher than that of OTP during the downturn.

Conclusion

The data reflecting the profitability and safe operation of the banks was calculated on the basis of annual reports. ROE and ROA indicators were used to analyse profitability. Three hypotheses were analysed using data on profitability, leverage, and capital adequacy. The research goal was to compare the operations of an Islamic bank with those of a traditional bank regarding stability using financial indicator analysis. Overall, as for the first hypothesis, it can be stated that the downturn affected Al Rayan Bank's return on assets to a much higher extent than that of the Hungarian bank. The first hypothesis stating that the profitability of the examined Islamic bank is more stable than that of the Hungarian bank was rejected.

The second hypothesis stated that Al Rayan Bank has a more stable, higher leverage than OTP. Based on the analysis of the financial indicators, it can be stated that this assumption proved to be true.

Finally, by analysing the capital adequacy ratio (CAR) of both banks, their safe operation was analysed. Both banks comply with the Basel requirements, since both of them reached the capital adequacy ratio threshold. However, while there was a fluctuation in the CAR of Al Rayan, OTP's was gradually increasing. In all, looking at the data as a whole, it can be concluded that the operations of both banks can be considered safe before, during and following the crisis as well. The hypothesis related to CAR was proved correct, as Al Rayan Bank’s capital adequacy was higher during the downturn than that of OTP Bank.

The aim of the hypotheses was to examine whether the Islamic Al Rayan Bank proved to be more crisis-resistant than OTP Bank. In terms of profitability, the Islamic bank has not proved to be more stable; in terms of leverage it has. Similarly, in terms of capital adequacy Al Rayan has also been shown more stable when financial indicators were analysed, but it has not proved to be more stable in statistical analyses. Based on the results above, it cannot be concluded that the Islamic bank, or that the traditional bank were in a more advantageous position in terms of the three indicators analysed. The results obtained, of course, apply only to the two banks, and they cannot be interpreted as a general comparison of the two banking systems. This paper analysed only a small slice of a complex issue.

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PÁLINKA OR HOMEMADE DISTILLATE? FOLLOWING IN THE FOOTSTEPS OF HUNGARIAN PÁLINKA CONSUMPTION

László Mucha

Abstract
The consumer perception of pálinka – as the national spirit of Hungary – has changed in a positive direction in the last 20 years. However, the change in legislation and the legalization of home-made distillation raises important issues that need to be analyzed from the point of view of both consumers and pálinka producers. The aim of this study is to explore the consumption of pálinka in Hungary and related consumer preferences, focusing primarily on the consumer perception between pálinka and home-made distillate. First, the relevant Hungarian studies were examined by traditional content analysis in the research, then a questionnaire survey with 626 respondents clarified the effect of consumer ethnocentrism on pálinka consumption. The most important research findings demonstrate that Hungarian consumers prefer homemade distillate over pálinka made by commercial producers. Consumer ethnocentrism is more pronounced in the consumer preference of homemade distillate than in case of pálinka made by commercial producers.

Keywords
Pálinka-consumption, consumer ethnocentrism, Hungarikum

JEL Classification: M31

Introduction

Pálinka (made from 100% fruit) has the same tradition in Hungary as grappa in Italy, Borovička with a 200-year tradition in Slovakia (Bevan, 2016; Fejér et al., 2019), Schnapps in Austria (Heap, - van den Bersselaar, 2008) or vodka made from rye in Poland (Wiśniewska et al., 2015). In Hungary, pálinka culture dates back centuries, including the ceremonies and traditions of making and consuming this noble drink (Jónás, 2006). By the middle of the 19th century almost all major estates, settlements and farms in Hungary had their own pálinka distilleries.

According to Totth (2009) and Totth et al. (2018b), Hungary's accession to the European Union, as well as the legislative changes that took place at the beginning of the 2000s, created the possibility for pálinka to be positioned as a high-quality, valuable Hungarian beverage around the world. According to Panyik and Béli (2008) and Béli (2013), the questions and measures regulating alcoholic beverages played a key role in the negotiations on the threshold of Hungary's accession to the European Union. As a result of these negotiations, the Regulation (EC) No 110/2008 on the definition, description, presentation, labeling and the protection of geographical indications of spirit drinks signed by the European Parliament, provides for the protection of the terms "Pálinka" and "Törkölypálinka" (pomace pálinka), hence the name “pálinka” can be used only in Hungary (furthermore, in case of apricot spirits in another 4 Austrian provinces). Compared to the 2008 EC Regulation, the LXXIII. Hungarian law lays down further regulations on the production and use of pálinka. According to the law, a beverage can be called only pálinka, if it is made from 100% noble and wild fruits, grape pomace and aszú pomace grown in Hungary, mashed, matured and bottled in Hungary. The pálinka must have a minimum alcohol content of 37.5 percent and must not contain any additives. The law also regulates the list of excipients that can be used in the preparation of

pálinka and pomace pálinka. Moreover, it regulates that a product obtained by mixing pálinka or pomace pálinka in any proportion can only be named a spirit drink, even if the alcohol content of the product is 100% derived from those two ingredients. The term pálinka cannot be applied to a product produced by a brewer or homemade distillate.

According to the 2016 report of the Research Institute of Agricultural Economics in Hungary, pálinka making is mostly a seasonal activity. In 2016, pálinka brewing took place on an average of 138 working days, for 10 hours a day, and more than 70 percent of pálinka distillery and distilled spirits manufacturing organizations operated at capacity utilization in excess of 60 percent. In 2017, pálinka brewing took place on an average of 135 operating days for 10 hours a day; in addition, more than three-quarters of the 220 data-providing pálinka distilleries operated with a capacity utilization of more than 60 percent. The share of plants with very low, low and medium capacity utilization decreased, while the share of enterprises with high and very high capacity utilization increased from 2016 to 2017. Unfortunately, the Research Institute of Agricultural Economics report does not cover the size or nature of the responding companies.

According to Section 1 (1) (c) of the Hungarikum Act, which entered into force in 2012, the concept of Hungarikum is: "hungarikum: a collective term, which in a unified classification, registration system denotes a value worthy of distinction and emphasis, which with its characteristic uniqueness, specialness and quality characteristic of the Hungarians, is the top performance of the Hungarians." Pálinka has been a Hungarikum since 2013.

Literature review

So now pálinka or distillate?

As Harcsa (2017) and Danku (2011) highlighted, the discrepancy between pálinka and homemade distillate derives from legal regulation. In 2010, act XC of 2010 on the regulation of excise duty allowed individuals in Hungary to distillate a maximum of 50 liters of spirit per year for their own consumption tax-free. This product has been known (incorrectly) colloquially as “homemade pálinka”. Retail turnover, the production of commercial breweries and the consumption of their product were pushed back by home distillates. The decline in commercial pálinka making was accompanied by an increase in the production of wage breweries.

From January 1, 2019, the Public Health Product Tax for food and beverages that pose a health risk has generally increased by 20 percent, in addition, fruit spirits, pálinka, and herbal beverages are also the subject of the taxable beverages. Public Health Product Tax does not apply to wage distilleries, since half of the HUF 1,700 per liter wage distilling fee is the beverage tax. Private distilling costs 700 HUF per liter, which can be paid by a distillate ticket. There are only estimates of the true size of the distillate produced in private way. These changes did not lead to an increase in quality, and transparency.

The taste, the fruit and even the quality can be exactly the same for pálinka and homemade distillate. According to the LXXIII of 2008 act on pálinka, the final product produced by a commercial distillery can be called pálinka, while in case of private and contract distilling only the word “distillate” can be used. Harcsa (2017) emphasized that the name “distillate” was introduced primarily to protect pálinka declared Hungarikum. While commercial distilleries must meet strict standards, homemade distillates prepared without sufficient expertise can negatively affect the judgment of pálinka. Nevertheless, high-quality distillate can also be produced in private brewing, which can also strengthen cultured pálinka consumption (Harcsa, 2016). According to the Pálinka National Council in Hungary, the situation threatens the success of the sector, and the Council highlighted the problem of the

black trade caused by private distilling (https://www.palinkanemzetitanacs.hu/hu/aktualitasok/42). In addition, the consumers mix pálinka with pálinka-type beverages, ie those that incorrectly appear as pálinka in the public consciousness, but do not comply with the provisions of the Pálinka Act. According to Szegedyné et al. (2017) home-made distillate, which is not a pálinka from the point of view of excise duty, still means pálinka for most people in Hungary, which is often associated with properties that cause inferior quality.

This is another reason why repositioning pálinka is necessary, for which it is very important to get to know consumer needs and knowledge as thoroughly as possible. In their study, Fodor et al. (2011) had already pointed out that pálinka - like cognac for the French, whiskey for the English, Scotch or tequila for the Mexicans - could become a Hungarian drink with a national image.

Consumption of pálinka

Totth et al. (2017) attracted attention to the fact that the growing interest in pálinka and the possibility of extending the community marketing activity to pálinka, as well as the structural transformations make it necessary to get to know the consumer attitudes, preferences and habits related to pálinka as thoroughly as possible. Balázs (2012) and Harcsa et al. (2014) pointed out that pálinka is not well known worldwide despite being a high-quality beverage made from one of the most valuable ingredients in spirits. Furthermore, they also highlighted that not everyone in Hungary knows this product in the way that the actors in the sector would consider appropriate. According to Panyik (2006), in order for consumers to have the right image of pálinka, poor quality should be avoided and they should only be introduced as high-quality products free of technological defects. The change in the legal environment and the authorization of home distilling caused significant damage to commercial pálinka brewers, who pioneered the improvement of the image of pálinka and the acceptance of pálinka as a high-quality valuable Hungarian drink (Totth et al., 2016).

Consumer ethnocentrism was defined by Sumner (1960) and Shimp and Sharma (1987) as a term that refers to consumer behavior that refuses to purchase foreign goods.

Material and methodology

The research method was implemented in two steps. First, the relevant Hungarian research findings were examined by traditional content analysis, then a questionnaire survey with 626 respondents clarified the effect of consumer ethnocentrism on pálinka consumption. In the primary research, data collection was performed by standard questionnaires, quota sampling methods and personal interviews between the end of 2019 and the beginning of 2020. The respondents came from the adult Hungarian population over the age of 18. The composition of the sample, based on the 2019 national data (HCSO, 2019a; HCSO, 2019b), is the same as the composition of the Hungarian population over the age of 18 in terms of gender, age group and region. As an inclusion criteria respondents had to consume pálinka in the three months prior to the survey. The demographic distribution of the sample is shown in Table 1. Correlations were examined using cross-tabulation method using Pearson's χ^2 (Chi-square) statistics, the strength of their relationship was determined using Cramer V and gamma coefficients, and significant relations were examined based on corrected standardized residuals (Freedman al., 2005). Data were analyzed with Excel and SPSS 25.0.

Table 1. Demographic Data of Respondents (%, capita)

		HCSO, 2019, %	Sample, capita
Gender	Men	47,85	300
	Women	52,15	326
Age group	18-24-year-old	9,42	67
	25-34-year-old	15,4	109
	35-44-year-old	19,08	117
	45-54-year-old	16,84	106
	55-64-year-old	15,82	99
	older than 65 years	23,44	128
Region	Budapest	17,93	114
	Pest	13,09	82
	North Hungary	11,53	72
	North-Great Plain	14,85	93
	South-Great Plain	12,66	79
	Central Transdanubia	10,83	68
	West-Transdanubia	10,12	61
	South-Transdanubia	9,00	57

Source: Author's own compilation, 2020, N=626

To measure consumer ethnocentrism, the 17-item statement list (consumer ethnocentrism scale: CETSCALE) from Shimp and Sharma (1987) was used. In Sharma's (2015) opinion, the scale they developed is able to predict purchasing intentions and actual buying behavior for domestic and foreign products in different product categories in many countries around the world. According to Jaffe and Nebenzahl (2001), products, such as food, which is essential to a country's economy, generates stronger ethnocentric behavior.

Results and discussion

Pálinka consumption habits

In this chapter, most important (qualitative and quantitative) research results examining consumer habits for pálinka are summarized. The studies are presented in chronological order.

In 2003, the OszKő-TNS study commissioned by the Agricultural Marketing Center conducted a consumer survey in order to develop a marketing strategy for pálinka. The study found that this alcoholic beverage is consumed mostly because of tradition, which determines the occasions of consumption. The study attracted attention to the lack of information that characterizes both consumers and trade. The study described a different pálinka offer depending on the type of store.

The NRC Ltd (marketing research company) reported an improvement in the image of pálinka as a result of its surveys in 2007, 2008 and 2009, which were conducted among young people. In their studies, pálinka was presented as a product that turns from a throat-scraping, strong, percussive, "make you get sick" product into a trendy alcoholic drink that can be consumed at a social event or festival.

In 2008, the GFK Hungária Market Research Institute carried out a representative survey of 1,000 people on behalf of the Agricultural Marketing Center. Their analysis showed growing interest and many new customers. However, attention was drawn also to the ignorance

of consumers, their poor information, and the high proportion of non-store traffic. According to their study, the name pálinka is aged but not emptied, to which new ideas can be associated.

Totth et al. (2011a) highlighted in their qualitative and quantitative research that consumer preferences and the associated willingness to spend differ depending on whether the product is purchased for personal consumption or as a gift. Moreover, their research demonstrated that consumers have not been able to keep pace with developments in the production and supply of pálinka, a dissonance that has been most pronounced at low level of brand awareness.

Totth et al. in another study also in 2011 analyzed the preference system that determines purchasing process. According to the study, taste, packaging and price have the greatest influence on preference, but brand and alcohol content are also among the most important elements. The purpose of the purchase determines the order of the most important purchase criteria, but not the range of elements dominating the preference system (Totth et al., 2011b). Their research emphasized that the lack of brand awareness in case of pálinkas is striking, but consumers are not informed about the name of the producer or the region.

Fodor et al. (2011) also confirmed that the consumption of pálinka is most typically related to events and company. Many respondents in their research said that on special occasions they toast with pálinka along with relatives. In their study, they presented that consuming pálinka and homemade distillate intertwines with friends, family moments, on the one hand because it "starts the conversation" and on the other hand because it "lends a festive atmosphere to being together" and is thus "great for creating a good mood and relieving tension". In their study, the majority of respondents preferred traditional flavors (plum, pear, peach). Furthermore, a significant part of their respondents agreed that pálinka is a real strong drink (96%), a Hungarian product (95%) and a Hungarikum (94%). A higher proportion of respondents were also aware that pálinka is made only from fruit (57% fully agreed, with a further 23% preferring to agree). Seven-tenths of their respondents (70%) agreed with the statement that pálinka is not as good as homemade distillate. Their survey also proved that the consumption of pálinka in Hungary has a kind of "sacral" character, ie the consumption of pálinka is strongly connected to important life events, "border-crossing" situations, such as weddings, baptisms, praises or funerals etc.

In 2016, Totth et al. reported a changed image of pálinka, finding that pálinka is associated with positive consumer perceptions. Their respondents not only rated pálinka as a simple drink for an elderly, rural person, but also as a quality, valuable Hungarian product. According to the authors, pálinka is in a phase of "repositioning" and consumers see pálinka as a traditional, value-adding beverage.

Totth et al. (2017) found that young generation prefers whiskey, pálinka, and vodka with roughly similar popularity. The purchase of alcohol among young people is typical in parties and gathering friends, where the consumption of pálinka, whiskey and vodka is highly preferred. Two-thirds of those surveyed by the researchers had already bought pálinka for gatherings of friends and family. And the three-quarters of the respondents had already bought pálinka for celebrating an occasion. The study emphasized that – according to nine out of ten respondents – pálinka is a real Hungarian product. Many of the young respondents agreed that pálinka is not as good as homemade distillate and that pálinka is only made from fruit. They didn't really agree that pálinka was old-fashioned. Young people primarily chose plums, strawberries, and apricots in terms of taste. The researchers defined four well-distinguishable segments among young people based on their personality characteristics, habits, and attitudes. The formed groups differed in the factors of compassion, help and respect for traditions as personality characteristics. The study named the consumer groups identified in the sample as

"Independent Creative Creators," "Followers of Traditional Values," "Compassionate Happiness Seekers," and "Safety Seekers."

Szegedyné et al. also conducted a comprehensive study on pálinka consumption in 2017. Respondents in their study unequivocally described pálinka as a "Hungarian" drink. However, the research attracted attention to the fact that the respondents considered the product, which is technically or technologically slightly or completely defective, to be a real pálinka. Their research confirmed the results of previous studies that the consumption of pálinka can be attributed to special, rare occasions for the majority. Using cluster analysis, the authors distinguished four groups of consumers, who were named: "Those interested", "Passive acceptors", "Pálinka avoiders" and "All drinkers". There was typically a difference between the clusters in terms of the frequency of consumption and the relationship with pálinka. Based on their results, men consume pálinka more often than women, and the most frequent consumers of pálinka were those over 50 years of age and respondents aged 18–24 years. They found that their respondents buy pálinka as a gift for a higher amount than for their own consumption. When buying 0.5 liters of pálinka, their respondents spend on average HUF 1,501–2,000 for their own consumption. For gifts, this amount increased to HUF 2,501–3,000. According to a significant part of their respondents, a product called pálinka can be produced in other countries as well. The research highlighted the sad finding that almost a quarter (23.10%) of respondents say that pálinka can be made from cereals and even many citrus fruits (13.90%) and potatoes (12.10%). The type of fruit that was the raw material of the pálinka was the most important purchase aspect for the study participants, followed by the recommendations of the acquaintances and then the price of the product. The fourth aspect in the order of importance of the respondents' purchases was protection of origin. The participants of the research mostly connected the consumption of pálinka to weddings and house parties. In the study, the income status of the respondents did not significantly affect the classification into individual clusters, nor did the age and education of the respondents. The authors showed the gender of the respondents as the most significant parameter in separating the groups.

Totth et al. (2018a) confirmed the results of domestic drink consumption surveys from recent decades, according to which pálinka is a popular "pre-party mood enhancer, accelerator" among young people, and a kind of sacral drink for older people. Their study emphasized the unbroken nature of the nimbus of "homemade pálinka" (a distillate made at home or brewed in a brewery, properly homemade distillate). Associations related to homemade distillate brewing were observed in half of the participants in the study. The majority of respondents were aware that, since 2002, the name pálinka has only been valid for distillates made from 100% domestic fruit. This aspect is also taken into account in their purchases, as they try to avoid buying distillates that look like pálinka. Respondents mentioned gatherings of friends and family as occasions of pálinka consumption. The research also examined the preference of fruit varieties, in connection with which it was found that the respondents preferred classic flavors, the most popular were plum, peach and pear pálinkas. The third-place pear was nearly double the number of mentions for the fourth-place cherry. Pálinka from plum and peach were selected in the first and second place by the participants of the research, pear pálinka was mostly mentioned in the third and second place. "For me, taste doesn't matter at all, it should be just homemade distillate," "only homemade distillate is pálinka, taste doesn't matter, only quality and reliability," the authors quote their respondents, thus demonstrating consumer preference for the homemade distillate. The authors found that homemade spirits represent an extremely heterogeneous ensemble in terms of quality, which does not affect their perception in terms of image. Respondents in the study spent an average of HUF 2,500 to 6,500 on a bottle of pálinka, taking into account all consumption occasions. They spent between HUF 3,000 and HUF 6,000 for celebrating occasions, while between HUF 2,800 and HUF 5,500 for social events, family

and friends gatherings. Respondents intended the least amount for their own consumption, namely between 2,500 and 5,000 HUF on a bottle of pálinka.

In 2017-2018, Totth and co-authors examined consumer preferences related to pálinka consumption, brand awareness, and attitudes related to pálinka in a survey with 1207 respondents (Totth et al., 2018b). Participants in the research mainly buy spirits for family and friends gatherings, less for their own consumption. In case of gift purchases, the two most preferred beverages were whiskey and pálinka, with nearly a third of respondents fulfilling their gift obligations with these beverages, as long as they favor a drink. The rate of maximum spending was highest for whiskey, which is not surprising because whiskey is one of the most expensive spirits. The authors emphasized that their respondents spent most to buy spirits on spirits purchased as gifts. More than a quarter of the respondents in the study celebrate with pálinka. The second place here was also whiskey, and the third was vodka. Comparing the average maximum costs for family events and self-purchases, the authors found that respondents were more likely to spend more for themselves, then for family and friends, when they buy pálinka, gin and whisky. Men were more likely to buy alcohol for their own consumption, in a higher average price. The best-known pálinka flavors were plum, pomace and mixed pálinka, to the astonishment of the authors, as the latter two pálinkas are not really popular, so in this case, fame and popularity did not go together. The most popular pálinkas were from plums, apricots and peaches. However, in case of plum pálinka, the rejection rate was the highest. Rejection of pomace and mixed pálinkas reached almost 50%, and only 5-5% of respondents would choose them first. In the opinion of the participants in the research, pálinka is closely related to the Hungarian traditions. Nine out of ten respondents characterized pálinka as a strong hungarikum / Hungarian drink. Totth et al. (2018b) found that the image of homemade distillate still lives in people. These consumers believe that real pálinka is only the homemade distillate, made from fruit, consumed at any time, and loved by young and old alike. According to the authors, the image of pálinka has not deteriorated and it is still the beverage that many people buy, but the proportion of whisky and vodka buyers in the younger age groups precedes those who buy pálinka.

In summary, the most important characteristics of pálinka consumption are the next.

- Occasion of consumption: Most often the pálinka consumption is related to events, company, border crossing situation. This result was obtained by OszKő-TNS (2003) in their quantitative research (questionnaire, national sample); Fodor et al. (2011) in their qualitative research (focus group and individual interviews); Szegedyné et al. (2017) in their quantitative research (questionnaire, national sample); Totth et al. (2018) in their qualitative research (focus group and individual interviews with young people).
- Pálinka is a Hungarikum, or a Hungarian beverage: Most part of the customers knows, that pálinka is related to the Hungarians. This result was obtained by GFK (2008) in their quantitative research (questionnaire, national sample); Totth et al. (2016) in their qualitative research (focus group and individual interviews with members of generations X and Y); Szegedyné et al. (2017) in their quantitative research (questionnaire, national sample); Totth et al. (2017) in their qualitative research (focus group and individual interviews with young people)
- The lack of adequate knowledge about pálinka: Customers' knowledge about pálinka is mostly associated with homemade distillate. They don't know what the difference is between pálinka and homemade distillate. Most part of the customers thinks that the real pálinka is the distillate made at home by their relatives or familiar. Homemade distillate preference is manifested both in terms of consumption and image. This result was obtained by NRC Kft (2007; 2008; 2009) in their quantitative research (questionnaire among young); Totth et al. (2011) in their quantitative research (questionnaire, national sample); Fodor

et al. (2011) in their qualitative research (focus group and individual interviews); Szegedyné et al. (2017) in their quantitative research (questionnaire, national sample); Totth et al. (2018a; 2018b) in their qualitative research (focus group and individual interviews with young people).

The effect of consumer ethnocentrism

In the questionnaire of the primary research examining the consumption of pálinka, 12 questions were about how fashionable, masculine, patriotic, low-calorie, tasty, fragrant, high-quality, reliable, addictive, representative of Hungarians, high status and cheerful is the pálinka and the homemade distillate. Respondents had to express their agreement on a 7 points Likert scale, where 1 = strongly disagree, 7 = strongly agree. They were able to nuance their opinions with intermediate responses. The aim of these questions was to find out the consumers preference of pálinka and homemade distillate.

Based on their answers to the statements, the respondents were divided into three groups, starting from groups of equal number of items, the groups were given the names "preferential", "neutral", "non-preferential". The same method was used for the 17-item CETSCALE statement list, the groups were given the "less ethnocentric", "moderately ethnocentric", "ethnocentric" names. Analysis of the relationship between the two properties resulted a significant correlation in the case of homemade distillate, the value of Gamma showing the relationship between the ordinal scales indicates medium strength ($\gamma = 0.455$; $p < 0.001$). 54.1% of the "less ethnocentric" respondents gave the lowest score for emotionally charged claims about homemade distillate. Only 20.6% of them belonged to the group emotionally who liked homemade distillate. 17.2% of the "ethnocentric" respondents were not attached to home distillate, 27.3% were neutral, and 55.5% of them gave the highest scores to related questions. 18.9% of the respondents who prefers homemade distillate are "less ethnocentric", 30.3% are "moderately ethnocentric", and 50.9% are "ethnocentric" consumers. No significant results were detected for pálinka ($\gamma = 0.076$; $p = 0.144$). In case of pálinka, 35.4% of the "ethnocentric" respondents were not attached to pálinka, 33.0% gave neutral answers and 31.6% gave the highest answers to the questions concerning the preference. 24.9% of the respondents who are preferred pálinka are "less ethnocentric", 42.3% are "moderately ethnocentric", and 32.8% are "ethnocentric" consumers.

Conclusion

Pálinka is a product exclusively related to Hungary, which is produced from valuable raw materials, sometimes from rare fruit varieties, and is suitable for its basic properties, and is even worthy of being promoted by an effective and successful marketing strategy. The nimbus of home-made distillate has been unbroken in the recent past, and even the growing interest in pálinka and changes in legislation to help with home distilling and wage distilling have had a positive effect on improving the image of these products. However, allowing home distilling caused significant harm to commercial breweries, who played a pioneering role in improving the image of pálinka and in accepting pálinka as a high-quality valuable Hungarian beverage. Furthermore, we must not forget the black trade, which is an increased danger in case of pálinka. The processing of the literature so far shows that it is still necessary to thoroughly analyze the consumption of pálinka, to examine consumer preferences and attitudes in detail. Educational communication about pálinka should be continued, emphasizing the differences that separate them from products superficially and unprofessionally called pálinka. Furthermore, the positioning of pálinka needs to be continued and strengthened in order to make it as widely known as possible: pálinka is one of the most valuable raw materials in its category, competing in value with world-renowned products.

The changes mentioned in this study, the decline in commercial brewery production, the expansion of wage brewery production, the unbroken popularity of home-made distillate and the decline of pálinka in the order of preference of younger age groups have resulted increased competition. This affected competition both within the industry and with narrower substitutes. In order to both pálinka and commercial breweries are able to compete in this situation, a more conscious and intensive use of marketing tools is essential. Consumer ethnocentrism is more pronounced in the consumer preference of homemade distillate than in case of pálinka.

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THE IMPACT OF ARTIFICIAL INTELLIGENCE ON THE ECONOMY AND MANAGEMENT

Ján Morvai

Abstract

The Fourth Industrial Revolution, also referred to as Industry 4.0, has brought about changes that fundamentally call into question the operation of current economic models. On the one hand, digitalization, automation and artificial intelligence are simultaneously emerging as drivers of economic and corporate growth, and on the other hand, several studies are trying to point out the inherent risks. The study analyzes the impact of automation on Slovakia's economy, addressing the vulnerability caused by the fact economic development was based largely on the automotive industry. We also address the management challenges that are posed by the innovations of the new era. In our opinion, a rethink of current modern management trends, such as Malik's Wheel of Effectiveness, is warranted as several studies highlight that the management of processes that can be automated by artificial intelligence is possible through the implementation of artificial intelligence into corporate strategy.

Key words

Industry 4.0. Artificial intelligence. Automation. Management. Strategy

JEL Classification: O14

Introduction

The first industrial revolution dates back to the 1800s when steam energy and the mechanization of production superseded human and animal power used in previous eras. The use of steam energy at an industrial scale was one of the biggest breakthroughs in increasing productivity. The second industrial revolution was characterized by the use of electricity as well as the acceleration of production with production lines, which Henry Ford successfully used in automotive manufacturing. The third one can be traced back to the 1970s; programmable memory controllers were introduced and detailed digital transformation was accomplished via computers. We are currently living in the age of the Fourth Industrial Revolution, which is characterized by full digital transformation and the use of information and communications technologies (ICT) at an industrial scale. The concept first appeared in 2011 at the Hanover trade and industry fair (Hannover Messe) and, in 2012, the German government first articulated its own expectations for industrial development.

The tremendous development Industry 4.0 has brought is presented by Molnár (2018) via an excerpt from IBM's (2015) presentation which states that the world's largest taxi company (Uber) owns no cabs, the largest accommodation agency does not own any real estate (Airbnb), the largest telephone company does not have a telecommunications infrastructure (Skype, WeChat), the world's most valuable retailer has no inventory (Alibaba), the most popular media do not create their own content (Facebook), the fastest growing bank has no real money (SocietyOne), the world's biggest movie theater doesn't have its own movies (Netflix), the largest software vendors do not write applications (Apple or Google). Although IBM's summary is no longer fully up-to-date at the time of writing this study, it is important to note that hundreds of years of economic experience are being proven wrong, that technological change is implying job creation and increased productivity and consumption. (Molnár, 2018)

Industry 4.0, and with it the application of artificial intelligence, has meaningfully affected virtually every industry, and the rapid development has brought with it the formation

and application of entirely new business models. The concept itself was formulated by McCarthy (1956), and it is thanks to him that the discipline became independent (at that time, however, artificial intelligence was still treated only as part of other sciences).

According to a compilation by Russel and Norvig (2003), attempts to define artificial intelligence can be divided into four groups in terms of systems that think/act in a human or rational way, but as they put it, over time, all four trends have found followers. But as expected, there is a tension between the human-centric and the rationality-centric approaches. The human-centric approach is necessarily an empirical science, with hypotheses and empirical justification. The rationality-centric approach relies on mathematics and engineering. Each group slandered, but also helped the other groups. (Russel és Norvig, 2003)

Searle (1980) distinguishes between weak and strong artificial intelligence. He sees as weak those which only seem intelligent; these systems can simulate any aspect of the human mind. In contrast, in the case of strong systems, he interprets the relationship between the human brain and the mind as computer hardware and software, and assumes that human thinking can be emulated by installing the right software. (Searle, 1980) It is true that Searle's theory was born more than 40 years ago, but his assumptions imply the existence of artificial consciousness, which has not been created even up to the time of writing this study; current systems make independent decisions by processing huge amounts of data, with the help of which they can react to their environment and its changes. An excellent example of this is the case of Garry Kimovich Kasparov, a Russian chess player who became world chess champion in 1985 and was one of the best chess players for 20 years. His game is characterized by incredible spontaneity: many of his opponents commented that it was practically impossible to prepare for him. In 1997, however, Deep Blue, a computer developed by IBM defeated the world champion in a regular one-on-one match.

The digital transformation of businesses has serious consequences for society, business, management and the labor market. As formulated by Brynjolfsson and McAfee (2014), artificial intelligence poses a serious challenge to organizations' management systems as it is one of the drivers of the Fourth Industrial Revolution. (Brynjolfsson and McAfee, 2014)

In their work, Chernov and Chernova (2019) highlight that companies need to respond in a timely manner to the suddenly changed business environment, the new conditions and opportunities can be new cornerstones of business success. In their view, technological innovations change the labor market through the direct replacement of employees from their previous job positions and the increase in demand for jobs created as a result of development. (Chernov – Chernova, 2019)

Z. Karvalics (2015) cites Miller (2004), who said that automation linked to artificial intelligence used to threaten factory and office jobs, but today it is entering into the world of knowledge work and services. This is one of the reasons why, while it was previously a known fact that job losses would be offset by the creation of new ones, as of today, this is far from certain. In his writing, he also draws attention to the nature of the work in question; a distinction needs to be made between mechanization that renders repetitive brain work unneeded and mechanization driven by artificial intelligence that can adapt to a changing environment. The spread and implementation of the latter is expected to completely transform the labor market and bring to the fore non-automatable, creative tasks. At the same time, it will affect other sectors, especially education, as the future worker will need different types of knowledge and skills. (Z. Karvalics, 2015)

According to a study by Balkin (2018), the rapid development of AI systems was made possible by the rise of Big Data (the concept of Big Data, which appeared in the early 2000s, became utilized by businesses by 2010). In his view, by collecting and organizing data and then using it purposefully, we have entered into a new era, the age of an algorithmic society,

which is defined by large, multinational, social media platforms and algorithms that can be found in the space between countries and average people and the use of artificial intelligence to control the masses. (Balkin, 2018)

Researchers are divided by the legal and liability issues. In Eszteri's (2015) study, we can read the partly contradictory ideas of Asaro (2007) and Sartor (2006). Analyzing the rules of liability and bear the burden of risk of damages, Asaro concluded that, to robots (as a marketed product), the rules of product liability are applicable. In the case of software, however, he believes that the user can be held responsible. According to Sartor, the agent (software) has no consciousness and therefore it cannot be held accountable for its behavior, and assuming that AI makes rational decisions within the set limits, the user is responsible for its behavior. However, he points out that it is not because the user wanted or could have foreseen the outcomes of a particular behavior, but because he chose it as a tool to achieve his goals. (Eszteri, 2015)

The emergence of artificial intelligence also has a significant impact on corporate management. Duchessi, O'Keefe, and O'Leary addressed this issue as early as 1993, but in their work they identified only two areas — product and workforce strategy — in which the implementation of artificial intelligence can provide a competitive advantage.

Malik (2016) in his Wheel of Effectiveness enumerates the elements necessary for effective leadership, corporate executives need to keep all of these areas under their day-to-day control. According to Malik, only companies that systematically review, transform, manage and improve their management processes can keep their operations under control and/or achieve success. The Wheel of Effectiveness includes the responsibility taken by the management for the activities of the company and the principles that define quality and efficiency, as well as the scope of tasks and the means required to provide for these. The list of tasks includes the activities that management must perform; according to Malik, this includes the following. 1) Providing objectives, simply and clearly stated, is the most effective means of focusing and keeping people together; 2) Organizing to ensure the division of tasks into different areas and responsibilities so that each employee is aware of his/her specific responsibilities and deadlines; 3) Making decisions that determine the directions of further activities; 4) Monitoring, through checks and controls/ measurement/evaluation, that the tasks performed by employees have been properly performed; 5) Supporting and developing people – which is a key task of management so that their strengths come to the fore and their weaknesses become insignificant to the organization. The tools facilitate the performance of the presented tasks; the Wheel of Effectiveness divides them into seven parts. 1) Meetings, which take a significant part of the day-to-day tasks of management, are a very effective tool, but Malik says there is a lot of them in every organization; 2) Written communication, which does not require personal presence but can still ensure accurate understanding and performance of tasks, is also an important tool for effective communication; 3) Job planning and assignment control includes the planning and design of job descriptions; 4) A personal working method should ensure that systematic and methodical work is translated into results, exploiting the opportunities arising from the talent of employees; 5) Budgeting is another tool for controlling efficiency and achieving corporate financial plans; 6) Performance appraisal is a comparison between the actual performance provided by employees and the expected (standardized) performance; 7) The process of systematic abandonment provides processes for the destruction of old, leftover or redundant things. (Malik, 2016)

The question, however, is to what extent Malik's vision of management is being changed by the growing presence of artificial intelligence, and how the role and responsibilities of the manager may change.

Materials and methods

In the previous parts of our study, the basic topics related to the operation of artificial intelligence have been reviewed. The spread of industry 4.0 and artificial intelligence as an integral part of it is fundamentally changing the operating principles and methods of the economy; new models need to be developed and implemented. Two methods were used in the preparation of the study; we made an in-depth interview and complied a review of results of secondary research.

1) Within the framework of qualitative research, in order to get to know and understand the topic better, we conducted an in-depth interview with a leading developer of one of Hungary's main software companies focusing on the healthcare sector.
2) Within the framework of secondary research, we analyze the impacts of artificial intelligence on the economy and management, paying particular attention to the limitations of the applicability of Malik's model of management effectiveness.

Key findings from the in-depth interview

The term artificial intelligence is now a common concept, it is not a foreign concept to most people by far and in many cases even appears in everyday conversations. However, a question arose to us as to whether we can be sure that we know and understand the actual processes behind this term. Is it not just a matter of simply using it as a synonym when talking about mechanization, automation? First and foremost, we would like to clarify what distinguishes artificial intelligence from the other mentioned processes, then perhaps to address where the boundaries between simple mechanization and artificial intelligence are, why and to what extent human control is needed and what opportunities and threats this dynamically developing technological field poses.

What makes something artificial intelligence, where can the boundaries be between simple mechanization and artificial intelligence?

To date, there is no generally accepted exact definition of artificial intelligence, as its field of application is amazingly diverse. Artificial intelligence is equivalent to machine learning; it could be formulated as follows: an artificially created machine system can create a model of individual events in the world based on data, and then after a learning period (supplementing the model with additional data) use these models to predict new expected events.

Only a few people are consciously concerned with the question of what qualifies something to be artificial intelligence and where the boundaries between simple mechanization and artificial intelligence can be. Digital transformation and computing capacities are growing steadily and, as a result, the almost unlimited databases available to us offer tremendous opportunities in all areas of our lives. The accumulation of data over the years has been gradual. The great leap in development can be explained by the fact that we only got there a few years ago to be able to process the available data within an acceptable time interval. Currently, hardware (computing) capacity is what hinders even more dynamic development. Although the data is available, there is currently no computer that can handle and process the entire data set. In time, this will change as quantum computers are going through a great development. We are currently at a point where only information pertaining to a particular, specific area are processed from this large data set. One way to put it is that artificial intelligence can be distinguished from simple mechanization by the size of the data set. A device designed to perform a simple task does not need to record data beyond its function. For example, a robotic vacuum cleaner does not need lexical knowledge, only to interpret and save the data received through its sensors. More sophisticated devices, such as self-driving cars, need to have much

more physical and computing capacity. The more complex a device is, the more instructions it needs to "learn", the more hardware performance is needed. The reaction time increases in proportion to the size of the data set as well as computational performance (saving, processing, and interpretation). The practical difference is best illustrated by the following example. Take a robot that has a single task, to take the packages arriving on a conveyor belt and put them in a predetermined place (for example, loading them onto another conveyor belt). If the boxes are the same size, always at the same angle, and arrive on the conveyor belt with exactly the same frequency, then we are talking about simple mechanization because the robot arm follows a predetermined process. However, in warehouses, the size of the boxes may be different, they may be placed on the conveyor belt at different angles, and the frequency of arrival may be different; all these differences are a reality in everyday practice. The robot cannot perform the same process in all cases, it must adapt to the changed conditions. Thanks to its built-in sensors and databases, it is able to examine the position, distance and size of the box and make a decision to adjust the robot arm so that it can grip the box. In this case, we would call it artificial intelligence.

Why is there still a need for human control over artificial intelligence? How long will this remain to be the case?

Human presence and control will continue to be necessary. The presence of artificial intelligence serves humanity and this will never change. Artificial consciousness does not exist at the moment, so human presence is fully necessary: from the point of creation, through the learning process and during use.

From a developer's perspective, what opportunities and threats does artificial intelligence hold?

Artificial intelligence inconspicuously facilitates the performance of our daily tasks, helps our work processes, so we have more time for other activities. After all, robotics and the totality of networks that connect almost everything with almost everything else have an increasing impact on our lives. In our dynamically changing environment, we usually do not even notice the presence of artificial intelligence, the young generation is practically already socializing in a world where it is present in most aspects of our lives. Its field of application is incredibly wide-ranging, so we couldn't even avoid encountering it. It is enough if you browse the web, use a smartphone, drive a car, go to the doctor, go shopping, travel, or even just go out onto the street. Over the years, the field has undergone tremendous development with many positive advancements. Artificial intelligence makes people's lives much easier. It can (like any other field of development) hold some threats, but under proper control, these can be properly managed. However, professional developers and programmers agree that with such a rapid pace of development, the events of the future are almost unpredictable and the range of possibilities is almost endless.

The in-depth interview provided a comprehensive picture of the operating principles of artificial intelligence, and we also learned that it is able to make independent decisions (within a given framework), which also holds true for the technologies used in the field of economics and management. In the following, we illustrate the opportunities and challenges arising from the rapid development of this field, its impact on the economy and management, using examples and the results of secondary research.

Opportunities and threats

In March 2016, Microsoft launched its AI-driven chatbot called Tay on Twitter. Tay was designed to use the language patterns of a 19-year-old American girl and learn through interaction with the users. For the first few hours after its launch, everything went fine and the chatbot behaved and responded to user posts correctly. However, some users began to communicate to Tay in a politically incorrect, in some cases offensive manner, teaching it inappropriate expressions. Because the artificial intelligence builds its behavior on its existing and new data, within a few hours Tay posted inappropriate political messages, made sexist, racist remarks and her interactions became highly vulgar. At first, the developers only deleted the inappropriate comments, but Tay's behavior deteriorated to the point where the project had to be stopped. Microsoft, of course, took responsibility for what happened. (Zemčík, 2019; Microsoft, 2016)

A similarly problematic case pertains to Facebook, also in the field of chatbot development. In the experiment, the researchers allowed Alice and Bob, two artificial intelligences to interact. Communication between the two systems started slowly and with some difficulty and later they started using a simplified version of the English language. However, the interaction developed to the point where the two artificial intelligences created a language of their own to communicate with each other, which was so complicated that scientists were unable to decode its content. The researchers found it better to stop the interaction between the two robots due to the lack of complete control over the process. Professor of robotics Kevin Warwick put it this way: it is an incredibly important milestone, but anyone who thinks it is harmless has stuck his head in the sand. (Bhattacharjee, 2018)

There are many other examples of such and similar situations. It is important to add that we are still only talking about artificial intelligence, not artificial consciousness. In the case of the latter, researchers should be prepared to face many more unanticipated situations, either from technical and ethical aspects or in terms of responsibilities.

Rights and liability

Perhaps the most controversial issue in the development and use of artificial intelligence is that of liability. Because artificial intelligence makes independent decisions, even if we follow the path of "greatest benefits" or that of "least harm," unpleasant situations may arise.

In 2018, in Tempe, Arizona, an Uber-operated self-driving car hit and killed a pedestrian who suddenly stepped onto the road, the likes of which never seen before. It was proven that the Volvo SUV did not decelerate when the incident happened; experts believed the sensors were sure to have detected the lady, but the system did not respond to her as to a pedestrian (the lady stepped onto the road with her bag, pushing her bicycle, the image of her was thought to have been too complex for the artificial intelligence). The case obviously raised many questions. Who can be held liable? The operator, the driver who didn't actually drive the vehicle, or the pedestrian? (DeArman, 2019)

The ethical issues involved with self-driving vehicles driven by artificial intelligence is still being addressed by many scientists and philosophers. In 2016, the Massachusetts Institute of Technology (MIT) launched a project called Moral Machine. We can evaluate ethically complex situations from the perspective of self-driving vehicles through a website and make a determination as to which one we think is the lesser of the evils. The results of the project show which is the socially and morally preferred decision in such situations and this information can then be used for decision-making algorithms of artificial intelligence. (Bonnefon – Shariff – Rahwan, 2016)

Artificial consciousness, as mentioned earlier, does not currently exist at the time of writing this study, but even current technology allows for the development of machine-controlled behaviors (through the design and application of patterns) that the developers also saw fit to stop, as the possible outcomes and consequences were seen to be unpredictable.

Economic impacts

In 2018, the Member States of the European Union signed a declaration of cooperation on artificial intelligence and the boosting of Europe's technology and industrial capacity. The position of the Visegrad Four regarding the main areas of cooperation included, among other things, the analysis of the expected labor market impacts and the importance of the fields of education and research and development. These areas are particularly important from Slovakia's point of view. The Slovak economy is heavily reliant on the automotive industry, which is among the first sectors to be affected by the discussed technological changes. (European Commission, 2018)

A 2018 study by McKinsey focused on the expected social and economic impacts of the spread of artificial intelligence and as a result, it was concluded that it could increase world GDP by an average of 1.2% over the next 10 years. According to the study, by 2030, 70% of companies will implement at least one solution driven by artificial intelligence – and the key to companies' success is development as early as possible. The second important message of the analysis is that the spread of artificial intelligence will completely change labor market conditions and structures – the proportion of jobs requiring high ICT knowledge will reach 50%. McKinsey does not anticipate a significant increase in unemployment. (McKinsey Global Institute, 2018)

According to another 2018 study, conducted by PwC in 29 countries and examining 200,000 job positions – it [AI] will spread in three overlapping waves over the next ten years. It is estimated that those losing their jobs will initially be women (due to the gender distributions in the various industries). PwC does not anticipate mass unemployment either, job losses will be partially offset by new positions. (PwC, 2018)

The examples also show that partial or complete digital transformation and automation supersedes a significant portion of human work. According to an OECD (2018) survey, 66 million jobs (one in six jobs) in developed countries are at risk due to automation. 14% of jobs will have a 70% chance and a further 32% of positions have a 50-70% chance of being lost. In general, job positions in Anglo-Saxon and Nordic countries and the Netherlands are more difficult to automate than the ones in Eastern and Southern Europe, Germany or Japan. There are significant differences between countries, but the report specifically highlights that Slovakia is one of the countries most affected in this respect – while it is 33% of the jobs in Slovakia that may be lost, this proportion is only 6% for Norway. Slovakia currently has a 62% probability of losing one in six jobs due to automation – the highest value among the 32 OECD countries (the average being 48%). (OECD, 2018)

The figure also results from the sector-based distribution of jobs. Slovakia's economy is highly industry-specific, with only the four car manufacturers and their supplier companies providing a significant share of the jobs. According to the Statistical Office of the Slovak Republic, 27% of Slovak workers work in industry and a further 3% in agriculture; the 30% that is the sum of the two is already close to the report's findings. The most vulnerable sectors are manufacturing and agriculture, but downsizing may also affect some parts of the services sector, especially the low-skilled and young workers.

An interview with the representatives of Slovakia's three car manufacturers at Newmatek's 2018 conference (on new materials and technologies) also confirmed the changing demands in the labor market. Volkswagen Slovakia in Bratislava highlighted the need for a

much more qualified workforce. A spokesperson for Groupe PSA Slovakia in Trnava, however, added that automation in their factories would not lead to staff reductions (given the profit-orientation of companies and the resulting optimization objectives, as well as the high investment requirements for the introduction of new technologies, downsizing will almost certainly take place).

However, Slovakia is not prepared for automation. An OECD (2018) survey shows that a quarter of the Slovak population is computer illiterate and that there is a significant deficit in the number of employees trained in ICT fields. If Slovakia wants to keep up, it must focus primarily on training people, which should start with a transformation of the current school system. Transformation should aim to improve the quality of education. In Slovakia, teacher salaries are low compared to other jobs and the Slovak government is actively working to increase salaries. However, the question arises as to whether higher wages will result in higher quality education. (OECD, 2018)

The Slovak Minister of Finance said in a press conference (2019) that improving the quality of education is an important objective and will receive more attention in the coming period. He believes that if Slovak workers become more skilled, research and development centers can be established in the country (referring to Slovakia's dependence on the automotive industry and that, for the most part, vehicles are only assembled in the country). This, in turn, would require a higher share of GDP to be invested in R&D projects; the current figure is below 1%, the OECD average is 2.3% and for example, the figure for Sweden is 4%. (OECD, 2018)

Impacts on management

In 2019, Forbes Insights, a magazine on strategy conducted a survey of 305 international corporate executives, covering various market sectors. The results of the survey show that almost all senior executives (92%) recognize the importance of a comprehensive artificial intelligence strategy, but only half have full insight into the new technology and its practical application. A consensus was also found that, in addition to a major transformation in the workforce structure, there is a need to create positions that do not yet exist. 45% of executives stated that on the one hand they supervise and possibly override the outputs generated by artificial intelligence, and 25% of them also envisaged hiring corporate ethicists. (Forbes Insights; 2019)

MIT Sloan Management Review (2019) in collaboration with BCG conducted a complex study attempting to assess what is needed from a management perspective to enable a business to adapt to challenges in a rapidly changing business environment – more than 2,500 senior executives were involved in the study. Nine out of the ten companies agreed that artificial intelligence provides a business opportunity, but seven do not currently expect any benefits from the implementation initiative(s) made to date. 45% of respondents see some risk and are also afraid that their competition will react faster, which would put them at a disadvantage. (MIT Sloan Management Review, 2019)

A Microsoft (2019) survey covered 13 countries, including 1,150 business leaders. Based on the results of the survey, 38% of dynamically growing companies implement AI-based solutions to address everyday challenges and plan to use such solutions in other areas (strategic planning, product development, optimization) as well. Another important result is that 93% of the companies surveyed plan to introduce an AI-based decision support system within the next three years, half of them within the next one year. Leaders perceive not only the opportunities but also the challenges. Of these, the most highlighted are adapting to a dynamically evolving business environment, developing the right employee culture to adapt to a changing work environment and how artificial intelligence can generate added value in customer-centric solutions. (Microsoft, 2019)

An international survey by Oracle and Future Workplace in 2019 covering 10 countries and 8,370 employees showed that, on average, half of employees use artificial intelligence in their work, which is significantly higher than the 32% measured in 2018. The study has also pointed out that employees' attitudes towards technology solutions have also changed in a positive direction, with increasing levels of acceptance and trust. The implementation of artificial intelligence also changes attitudes towards leaders. There are areas where robots outperform; according to the respondents, these are the provision of unbiased data, meeting deadlines, problem solving and cost planning. Arguments in favor of human leaders that were used are the ability to understand emotions, personal support activities, coaching and developing workplace cultures. (Oracle, 2019)

Conclusion

In the process of writing this study, we have reviewed research findings on artificial intelligence and automation concerning Slovakia – it is evident that there will be a significant impact on the labor market. In recent years, Slovakia's economy has been largely built on the automotive industry, but only manufacturing and assembly takes place in the country. As we have seen several examples of this in the study, the implementation of automation and artificial intelligence is already underway. Based on expert opinions, we conclude that Slovakia is not yet fully prepared for these relevant changes. The biggest problem lies in the knowledge of the employees in the field of ICT, the Slovakian education system did not place enough emphasis on this area. Another important finding is that Slovakia has so far not focused enough on research and development either. It is certainly not impossible to catch up, but in the short term, economic growth is expected to be hampered by the necessary transition.

Based on research results, significant changes are also expected in the field of management. Company managements are facing a strategic decision regarding the introduction of artificial intelligence tools – primarily in terms of when to invest in AI-driven solutions, but all research agrees that despite the high price, early entrants will be the long-term winners. Companies that generate results and growth thanks to innovative technologies closely integrate their artificial intelligence strategy into their corporate and business strategy. As the development of this field can go in numerous directions, artificial intelligence and its development needs to be done as an integral part of corporate strategy.

According to research results concerning the person of the leader, a shift can also be seen in manager-subordinate relations: the person of the manager will no longer necessarily be emphasized in the management of tasks, instead, the moral, human side of the leader will be given more emphasis. Much less human resource allocation will be required, and areas where the principles of rational decision-making cannot be called into question will be the ones primarily under automation. No matter how human-like the behavior and reasoning of artificial intelligence will become, the management of emotional and moral issues and defining corporate goals and directions should remain the responsibility of managers.

From the five tasks defined in Malik's (2016) management performance model, organizing, control/measurement/evaluation will be transferred to management by artificial intelligence. Employee support is expected to be split into two parts. Employee training and development will be automated, but emotion-based leadership and support for employees will remain the responsibility of management, along with setting objectives and taking responsibility for making decisions. In terms of the seven tools, almost everything will be automatically controlled and powered by AI. Reporting and written communication, work planning and control, the budgeting/planning process and systematic abandonment can be fully automated and we believe the measurement of work efficiency could also be done better by a business intelligence. The task of the leader here will be to approve and potentially override

the introduction of individual methodologies and new processes. However, we would like to stress the importance of two tools – meetings and performance appraisal – and not necessarily because of the indispensability of the leader, but rather because of the importance of personal relationships. It is clear that innovative systems will allow virtual meetings through online communication channels (see also the rapid development of virtual and augmented reality), but even if their frequency decreases in the future, face-to-face meetings will remain a constant task of management. As a result, performance appraisal also has quantifiable as well as personal aspects, which is why it cannot be excluded from the scope of management activities.

Based on the above, we do not conclude that the affected processes will be completely out of managements' purview, but rather that the development of an alternative, more up-to-date version of Malik's (2016) management wheel model is warranted. Tasks and tools that can be automated via the introduction of new technologies will need to be addressed as part of companies' artificial intelligence strategies, thereby setting directions for development and maintaining continuous control.

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CURRENT SERVICES AND PROSPECTS OF HUNGARIAN LOGISTICS PROVIDERS IN THE NEXT 5-10 YEARS

Zoltán Valentinyi – Waleed Al-Zaidi – Zoltán Horváth – Regina Reicher

Abstract

The significant emergence of logistics service providers and the outsourcing of logistics tasks have changed supply chain management methods since the 1990's, leading to significant efficiency improvements and cost reductions, helping outsourcing companies to use their resources previously allocated to warehouses and transport vehicles in other areas by also focusing on their core business functions.

However, progress has slowed somewhat and it has become necessary to take supply chain management to a new level where individual service providers can play a greater role in planning, managing and further increasing the efficiency of the entire supply chain by also involving other players in the chain in an integrated planning process. This endeavor is well supported by the IT developments that can be implemented by Industry 4.0.

In our research, we examined the service level at which Hungarian logistics service providers currently operate and whether they may be able to take another level in their activities and actively take over the roles of supply chain management, implementing the Leading Logistics Service Provider concept.

Keywords

Supply Chain Management. Logistics Service Provider (LSP). Logistics services in Hungary. Lead Logistics Provider (LLP). Industry 4.0

JEL Classification: L87, O14, R41

Introduction

In the course of our research on the Hungarian logistics market, we examined the level of service currently available to Hungarian logistics service providers and the expected development in the next period. In terms of possible development, we focused primarily on the possibilities of becoming a leading logistics service provider, but we also examined other (3PL, 4 PL, 5PL) service levels.

We based our research on the available and relevant literature processing. After studying the literature, we conducted a questionnaire survey as primary research among logistics service providers operating in Hungary or in Hungary, examining their services in Hungary and their service elements. As part of the primary research, we examined the current customer relationships, service portfolio and the state of IT development of logistics service providers.

Based on the answers of the companies included in the questionnaire, we formulated our findings on the sample of respondents, however, we believe that we can draw realistic conclusions about the state, services and development potential of the Hungarian logistics market from the results of our research. No descriptive statistics are available for the current population, so the creation of a representative sample cannot be solved. Thus, during the sampling, we could not try to create a representative sample.

The questionnaire survey was started in February 2018 and closed in December 2019. During the 22 months survey period, we sent the online link of the questionnaire directly to more than 250 logistics providers as part of an arbitrary sampling procedure and asked them to complete it. At the same time, HALPIM (Hungarian Association of Logistics, Purchasing and

Inventory Management) asked the representatives of the service providers in the newsletter sent to its members to help us by filling the questionnaire. According to our estimates, a total of about 450-500 companies providing logistics services in Hungary received the questionnaire, and based on this, the response rate was 20-21% by receiving 106 responses, which is good compared to the 8-10% response rate of similar surveys.

Literature review

The key to maintaining competitive advantages lies in the company's ability to leverage its own strengths and to outsource its ancillary activities to the right companies (Szegedi, 2012).

We can talk about the outsourcing of logistics services in the case of commissioning a service provider that takes over 3PL and more. 3PL providers have emerged since the early 1990s and their numbers have grown rapidly. This is also evidenced by a report by Armstrong & Associates (2017) that in 2017, 90% of "US Fortune 500" companies in the United States used 3PL, compared to only 46% in 2001.

3PL providers typically provide customized services and already take certain, but limited role of supply chain integrator through related services. With the advent of 3PL service providers, logistics costs have typically been reduced by 10% and delivery times have also been shortened by about 30%. The 3PL solution also freed up significant corporate capital on the part of the principals (manufacturers) and further helped them to focus on their core business (BeamBerlin, 2018). Based on the experience of the last 30 years, we can state that with the implementation of the outsourcing of logistics tasks and the spread of 3PL, there has been a significant qualitative development in the field of logistics function management.

In 1996, the term 4PL "Fourth Party Logistics" was first used (invented and trademarked by Accenture (formerly Andersen Consulting)). "Supply Chain Management" theories are emerging, in which supply chains are already competing with each other, and the greatest efficiency gains can be achieved if processes are optimized for the entire supply chain. The 4PL provider plays an integrative role, but the service does not have to use its own resources, nor does it always have them (Neher, 2001).

The term 5PL appeared around the turn of the millennium as a result of the development of e-business. Some logistics providers offering e-business solutions have started calling themselves 5PL to differentiate them from their competitors (Langley et al., 2005).

The 5PL concept is already about the supply network. The service provider guarantees the organization of the supply network and organizes it efficiently, develops and, if necessary, transforms it, in constant consultation with the customer. The 5PL service provider typically offers and develops digital, "e-business" solutions for the network. These digital solutions improve manegement and operation processes and influence company competitiveness positively (Illés and Fodor, 2007), and are well accepted even by smaller enterprises (Dunay et al., 2011). In addition, the 5 PL service provider typically brings a new approach, wider knowledge and experience to the collaboration and supports all this with advanced technological solutions, with the necessary redesign and reallocation of the usual business processes and responsibilities. Companies that provide such services can also be called Leading Logistics Service Providers, as they take (and receive) a leading role in shaping and operating the entire supply chain.

Another question is why and on what basis do certain companies call themselves Leading Logistics Service Providers after the release of 5PL?

According to Huang and Hu (2013), the Lead Logistics Service Provider (LLP) is a logistics company with the right expertise to synchronize and optimize material flows within the supply chain (Synchronized Material Flow - SMF). This also means that these companies

have a high level of expertise in transportation services, warehousing solutions, IT applications, and design, among other logistics tasks and capabilities (Huang and Hu, 2013; Mehmann and Teuteberg, 2015). The difference between Logistics Service Providers according to 5 aspects, as illustrated in Table 1.

Table 1: Main Differences Between Logistics Service Providers and Leading Logistics Service Providers

Item/Description	Logistics Service Provider	Lead Logistics Provider
Scope of services	Logistics managed model including transportation, warehousing, inventory management and freight forwarding	full supply chain services, including resource management, information central system and logistics synchronization
Characteristics of services	logistics specialty services focus on transportation and warehousing operation	managing internal and external logistics to synchronize material flow
Facilities and warehouses	possession of facilities and warehouses	outsourcing
Fleet	possession of fleet	outsourcing
IT technology service	not applicable	develop and provide IT

Source: Huang and Hu , 2013

It logically follows from this system of conditions that the formation of the Lead Logistics Service Provider (LLP) function and role is the result of the existence and development of several parallel factors. Innovation and the development of IT systems and solutions play a key role in its implementation.

LLPs should be determined by the interaction of the service provider and their clients, who use these services. This process is mostly related to IT improvements (Oláh et al., 2018). Marchet et al. (2016) underlined the role of efficiency and innovation in this development process.

One way of development and efficiency is to follow lean methods (Dunay and Shaban, 2017; Awso et al. 2019). Szegedi and Illés (2007) and Jazairy et al (2017) highlighted that it is essential to identify the management success factors supporting the fundamental competitiveness of logistics enterprises, both in large and small and medium-sized enterprises. This developmental process and the relationships within it are illustrated based on the key service provider functionalities in Figure 1 (Valentinyi et al. (2020).

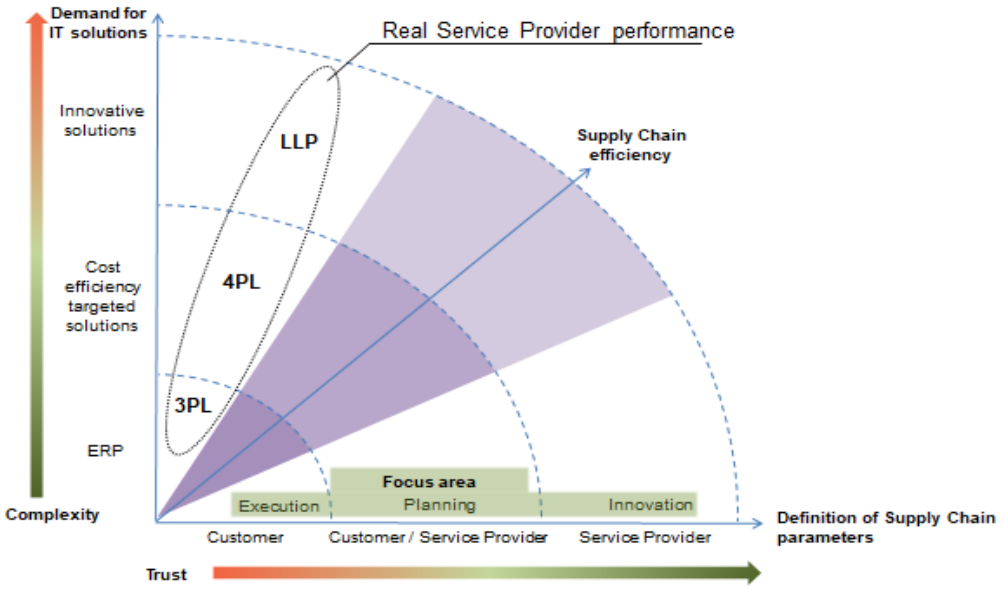

Figure 1: The role of innovation and IT solutions in advanced logistics providers
Source: cited by Valentinyi et al. ,2020, p. 79

Figure 1 shows the development phase from 3PL to LLP, which is based on trust and is constantly growing among the partners. The 5PL level is missing from the developmental stages shown in Figure 1. This is because the types and composition of other advanced service elements can be varied. Due to the resulting and inherent differences in the content of the services, additional publications and proposals defining PL levels have already been published. Based on our research and experience, it is not justified to accumulate service levels and differentiate them up to 10 PL levels, as the specific scope and content of services also differ according to the parameters and optimization needs and possibilities of the given supply chain. In addition, it is also important to note that more advanced and comprehensive services are not yet widespread.

At the same time, the overall goal is to continuously improve supply chain efficiency and reduce costs. To achieve this goal, supply chain professionals with a good knowledge and understanding of the supply chain are increasingly taking over supply chain planning and management by defining supply chain parameters. This is done in regular consultation and agreement with the client, as the proposed changes may need to be implemented several times between the client's previous activities, including taking over certain tasks by the service provider.

Approaching the complete planning and management of the supply chain, the complexity of the tasks of the service provider also increases, which need to be managed with the introduction of innovative solutions and modern, task-oriented IT solutions.

Based on the definitions found and our own research, we have come to the conclusion that the following common features can be discovered in many places in the LLP concept:

- Partnerships,
- Complete supply chain approach and pursuit of optimization,
- Use of own and external resources,
- Planning,
- Consulting,
- Innovation,
- Application of advanced IT solutions.

Methodology

The aim of our research was to assess the service areas and functions, customer relations, IT skills and opportunities of Hungarian logistics service providers for the implementation of the Leading Logistics Service Provider (LLP) concept.

The research was started in February 2018 and closed in March 2020. Experience from previous similar surveys showed a very low propensity to respond, so we considered it important that the questionnaire be short and easy to answer.

We made the questionnaire available online, however, we also contacted most companies in person. The low percentage of respondents' willingness justified providing a higher percentage through personal inquiries. We did not seek to create a representative sample during sampling. A sample can be said to be representative if it reflects the composition of the population based on certain properties chosen by the researcher. However, at present, no descriptive statistical data set is available for the population, so the creation of a representative sample cannot be solved.

According to our estimates, a total of about 450-500 companies providing logistics services in Hungary received the questionnaire, and based on this, the response rate was 20-21%, which is good compared to the 8-10% response rate of similar surveys. In our research, we received 106 evaluable responses.

Characterization of the sample

According to the business data of 2018, the annual sales revenue of the respondents from logistics services exceeds HUF 420 billion. Comparing the annual sales revenue of the respondents' companies with the data of the Hungarian CSO's 2017 yearbook, we found that the companies included in our survey represent about 25% of the sales revenue of the entire Hungarian logistics market (Statistical Yearbook of Hungary, 2017).

Based on the number of respondents and their annual sales revenue measured for the entire Hungarian logistics market, we achieved a very significant proportion of logistics service providers with our questionnaire research. Of course, we can formulate our findings only on the basis of the answers of the companies included in the questionnaire, but we believe that we can realistically draw conclusions about the state and services of the Hungarian logistics market from the results of our research.

The questionnaire did not ask for confidential, specific company and business data, as we hypothesized it could have further reduced the number of respondents. An exception to this is the issue of sales revenue from the service, which, however, can be found on the Internet for all businesses, so it is not confidential data. Nevertheless, there was a respondent who did not provide annual service revenue data. In such cases, we used data from corporate information systems available on the Internet.

Processing of research results

In order to process the results of the questionnaire research with appropriate statistical methods, we examined whether our data show a significant deviation from the normal distribution before performing the statistical analyzes. The normality test helps to decide the methods to be used for the analyzes. As predicted by the small number of items and the sampling procedure, the sample did not show a normal distribution (see Table 2 and Figure 3), so in the calculations we used either non-parametric methods in all cases where we had the opportunity or our results were not parametric procedures. Although social science research does not make a strict distinction between methods for examining normally distributed and non-normally distributed data, we also felt it was important to verify this type of data.

Table 2: Normality test - example

Statistics

Please enter your income related to the logistics service provided to companies operating in Hungary in HUF

N	Valid	106
	Missing	0
Mean		3961572009,43
Median		1500000000,00
Mode		600000000
Std. Deviation		6799244391,509
Skewness		3,366
Std. Error of Skewness		,235
Kurtosis		13,729
Std. Error of Kurtosis		,465
Minimum		10000000
Maximum		44000000000

Statistics

Please enter the number of customers you serve

N	Valid	106
	Missing	0
Mean		9697,358
Median		29,500
Mode		20,0
Std. Deviation		97108,6253
Skewness		10,294
Std. Error of Skewness		,235
Kurtosis		105,974
Std. Error of Kurtosis		,465
Minimum		1,0
Maximum		1000000,0

Source: own research

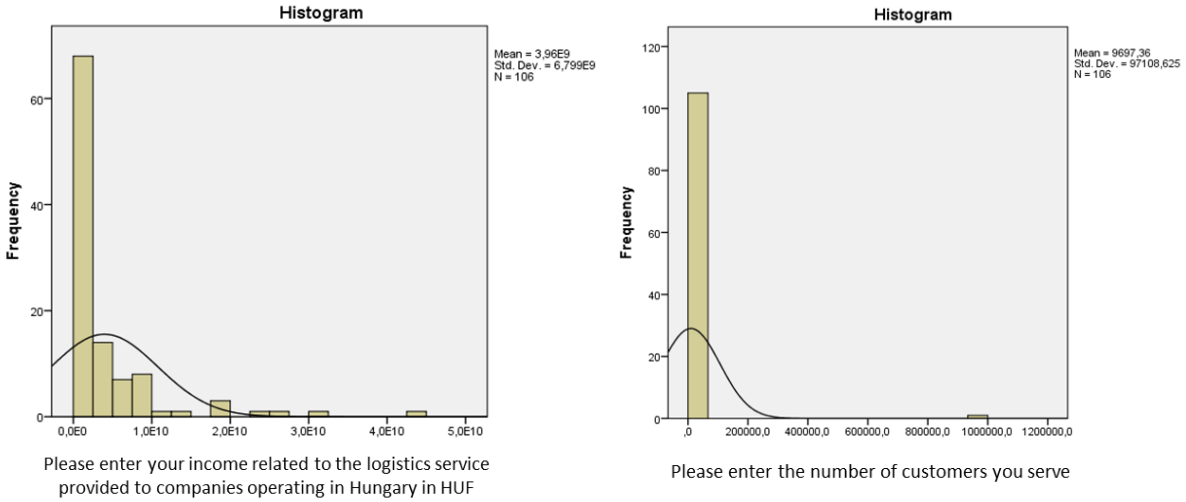

Figure 2: Distribution test – example

Source: own research

Both the data in the Table 2 and the Figure 2 show well that our data do not fit the normal distribution curve relative to normality. The skewness takes on a positive value in both cases, i.e. the data set shifts to the right in relation to the normal distribution in the two examined questions. This means that the values of the data appearing in the two studied areas are above average. In addition, the results of the Kolmogorov-Smirnov and Shapiro-Wilk tests showed significant values in both cases. For this reason, some methods cannot be applied to the studied variables, or only with reservations. By increasing the number of items, these errors can be reduced, but since we do not know the population, we do not know whether the logistics service providers show a normal distribution in the examined issue.

Examination of Hungarian logistics service providers

The examination and grouping of the examined logistics service providers by enterprise size category is a difficult task, as since January 1, 2005 the European Union definitions have been applicable in Hungary as well, which basically categorizes SMEs according to the number of employees and turnover. However, the number of employees required for operation varies from industry to industry. However, in addition to the number of employees, the annual turnover or the categorization according to the annual balance sheet total can also be used (see Table 3), but the latter is not used by the statistical office.

Table 3: User guide for the definition of SMEs

Company category (size)	Nr. of employees (FTEs)	Annual revenue (million EUR)		Annual balance sheet total (million EUR)
Medium-sized company	< 250	≤ 50	**OR**	≤ 43
Small company	< 50	≤ 10	**OR**	≤ 10
Micro size company	< 10	≤ 2	**OR**	≤ 2

Source: EC (2003)

We did not ask for it in the questionnaire for the employees, therefore, based on the annual turnover, the respondents can be classified into the categories according to Table 4.

Table 4: Company categories of respondents to the questionnaire survey by annual revenue

Company category (size)	Annual revenue > 50 million EUR	Annual revenue < 50 million EUR	Annual revenue < 10 million EUR	Annual revenue < 2 million EUR
Large company	**8**			
Medium-sized company		**28**		
Small company			**31**	
Micro size company				**39**

Source: own editing

Among the respondents, there were 8 companies whose annual sales exceeded the sales category of medium-sized companies therefore these companies were classified into the category of large companies. According to the categorization based on sales revenues, it can be stated that an adequate number of responses were received from all company categories, so the survey can also be used by company size categories.

Areas of activity of Hungarian logistics service providers

A summary of the responses to the activities of logistics service providers shown in Figure 3.

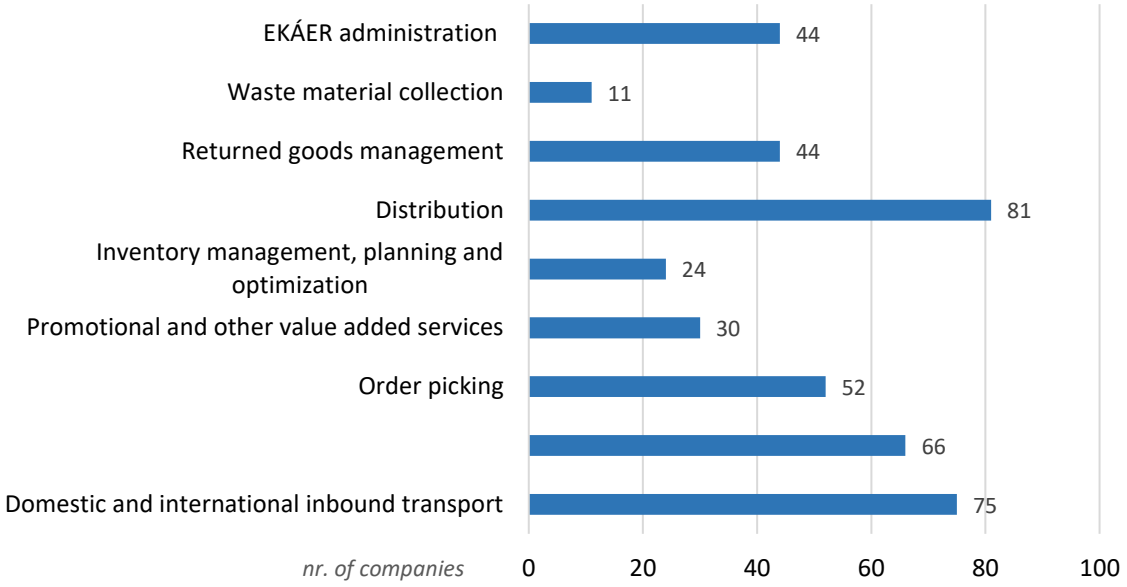

Figure 3: Services of logistics providers in Hungary
Source: own research

From the data obtained and their aggregation, we concluded that the surveyed service providers significantly provide the classic basic services to their customers. Within these, the range of transport-related services is dominant, averaging around 75% and more than 80% of service providers perform domestic distribution. Considering the composition of the respondents, the rate of 80% is considered realistic. Based on this, however, we conclude that there are a relatively large number of service providers focusing on certain tasks, for example, dealing only with international forwarding, warehousing, or only with delivery to a central warehouse, such as manufacturing plants. We also examined the industry distribution of respondents. Because the responses for the industry were very diverse, we grouped them into 3 groups, the results of which are shown in Figure 4.

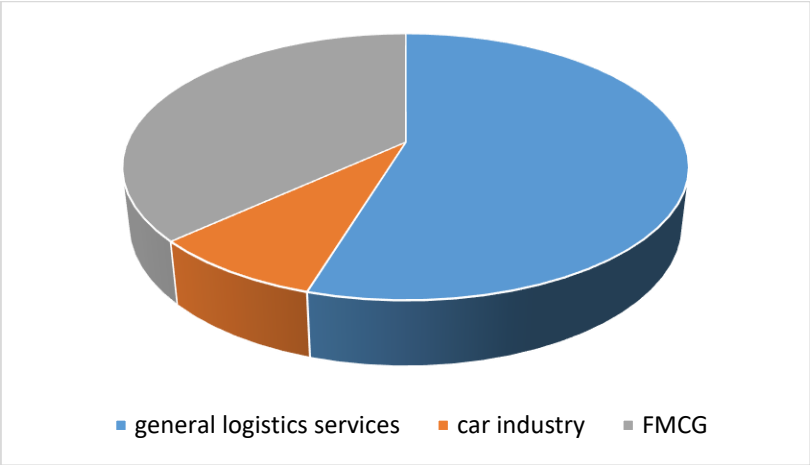

Figure 4: Logistics providers by industry grouping
Source: own research

Service providers were ranked in the most typical category according to the industry indicated by respondents as their main activity. Grouped according to the industry categories we defined in this way, it can be seen that service providers classified in the general category account for 54.7% of all respondents. Based on the responses, we found that the main reason for this is that there are many service providers who are not closely related to one industry and / or product range and typically several industries have been named as their areas of activity. There are several service providers that are active in FMCG, but also have customers in the automotive and machinery industries.

FMCG is represented by more than a third of respondents (36.8%). In addition, there are also service providers in the general category who work in the field of FMCG, but their scale of activity is not specific.

Automotive and machinery providers account for 8.5%. This ratio is close to the industry's share of GDP of around 10%. We assume that automotive and machinery service providers are more specialized, so their numerical ratio is also lower compared to other industry categories.

Services for logistics companies

Examining the services provided by industry (Figure 5), it is clear that promotional and other value-added services are typically provided mostly by service providers operating in the FMCG and the general industry category.

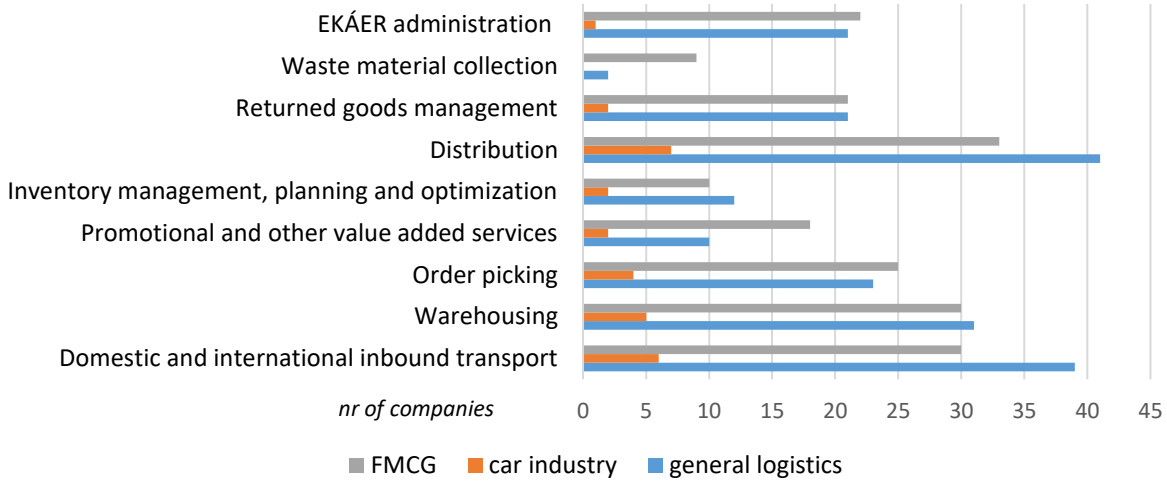

Figure 5: Services by industry among respondents
Source: own research

Among the value-added services, promotional and other value-added services and waste collection are also worth highlighting. These are services that take a significant burden off the client, but their percentage is not yet significant, but will hopefully increase further in the next period and we believe that these are typically activities that provide growth opportunities for providers and strengthen client-to-provider relationships. partnership and trust.

Based on the given answers, we examined whether there is a difference in the provision of value-added services in terms of the size of the service companies. However, based on Table 5 and Figure 6, we found that, at least for us, surprisingly, the large enterprise category provides a relatively low percentage of promotional services. However, the analysis does not

show a significant correlation when examining all company categories, i.e. the size of the company does not influence the appearance of value-adding activity.

Table 5: Provision of promotional and other value-added services (yes / no) by company size categories

Company size	no	yes
Micro size company	42,7%	23,3%
Small company	26,7%	36,7%
Medium-sized company	25,3%	30,0%
Large company	5,3%	10,0%

Source: own research

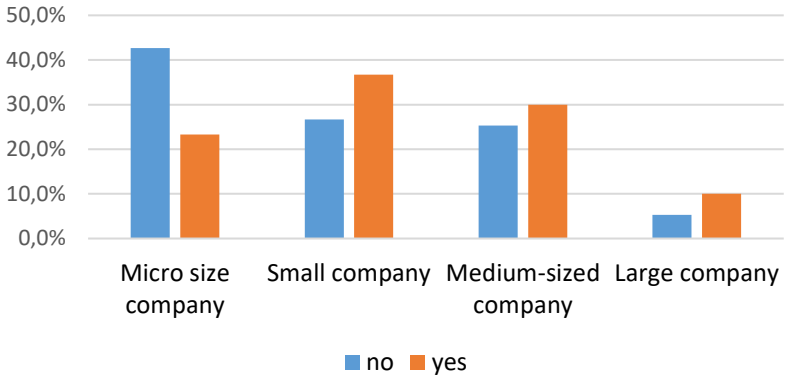

Figure 6: Provision of promotional and other value-added services (yes / no) by company size categories
Source: own research

There is also no significant correlation in inventory level planning, management and optimization in the analysis by company size, but here almost 43% of large companies provide this service, which we consider significant, exemplary, especially in terms of the fact that this service already takes a significant burden off the shoulders of clients.

Inventory planning, management, and optimization activity by company size is illustrated in Table 6 and Figure 7.

Table 6: Inventory planning, management, and optimization activity by company size

Company size	no	yes
Micro size company	84,6%	15,4%
Small company	74,2%	25,8%
Medium-sized company	75,0%	25,0%
Large company	57,1%	42,9%

Source: own research

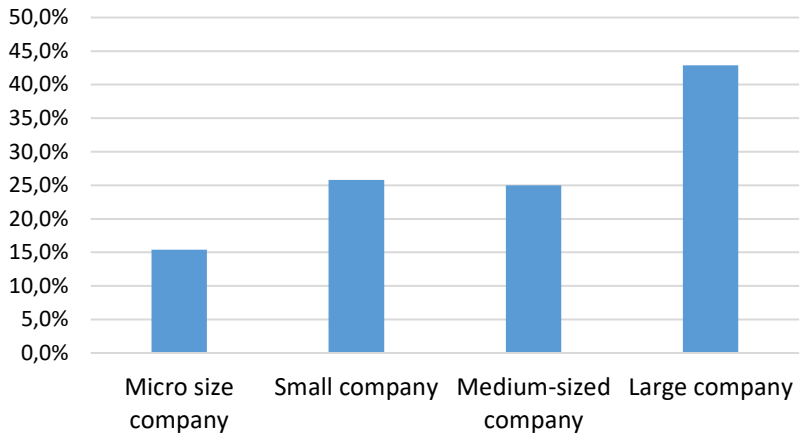

Figure 7: Inventory planning, management, and optimization activity by company size
Source: own research

Waste collection in the automotive and machinery industries is typically not addressed by service providers (0%). In contrast, 3% of universal service providers and 23% of service providers in the FMCG sector do so (see Table 7 and Figure 8).

The analysis by firm size, similar to previous size analyzes, does not show a significant correlation.

Table 7: Analysis of waste collection service by company size

Company size	no	yes
Micro size company	94,9%	5,1%
Small company	80,6%	19,4%
Medium-sized company	92,9%	7,1%
Large company	85,7%	14,3%

Source: own research

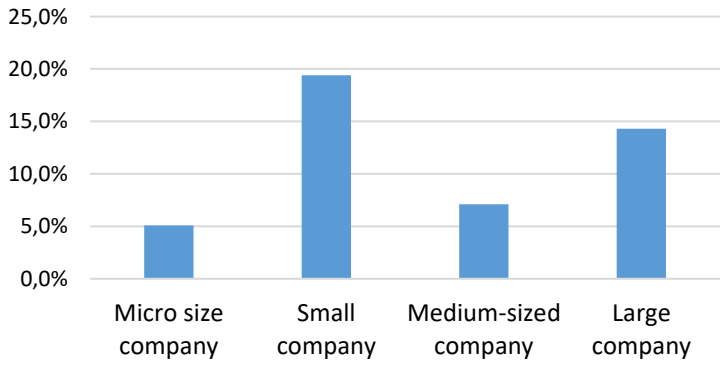

Figure 8: Analysis of waste collection service by company size
Source: own research

Unfortunately, waste collection is still very little present in business in Hungary. This is typically due to the difficulties of waste selection and the current system and opportunities for waste processing, but significant positive progress in this area is expected in the coming

years, which represents another important and significant development opportunity for service providers. The 23% activity in FMCG is encouraging in this area.

Customer relations of Hungarian logistics service providers

The cooperation of the interviewed logistics service providers and their clients was examined from two aspects.

In terms of the length of existing collaborations, the 1-year, or even shorter are typical for 34.3% of all relationships, is strikingly dominant (see Figure 9).

In the case of such short-term assignments, a partnership based on trust cannot be established, which could be the basis for long-term and even joint developments. In these cases, most likely, the principal's primary goal is to achieve the lowest cost, resulting in a regular change of service providers.

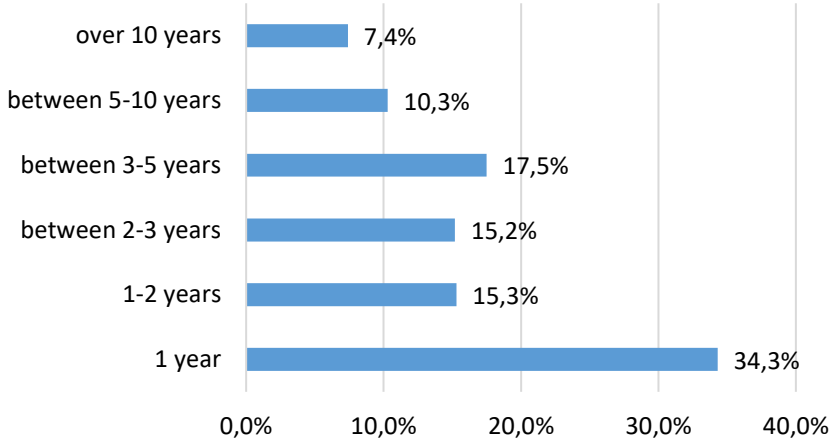

Figure 9: Average duration of client-provider collaborations
Source: own research

In terms of the length of the collaborations, we find it remarkable that the proportion of 5-10 year collaborations reaches 10.3%, while collaborations longer than 10 years account for 7.4% of all collaborations. These two categories together account for 17.7% and among the 106 responding service providers, there are 57 service providers with a minimum of 5 years of client-service provider relationship and 40 service providers have a customer relationship that is longer than 10 years. The proportion of long-term business relationships of 17.7% is therefore not yet considered high, but it is an encouraging sign that there is a relatively large number of service providers who have been providing services to certain customers for a long time (minimum 5 years). These two categories, examined on the basis of the length of the cooperation - for which the reason for the long cooperation is most likely the satisfaction of the clients - and such relationships can already be a good basis for taking over more functions from the clients in order to allow the clients to focus more on their core business and in order to develop a more efficient supply chain.

Even in the case of collaborations longer than 5 years, we can assume that the client is satisfied with the cost and quality of the service provided, taking into account its quality and flexibility. This is already a good basis for focusing on the main activity, and based on this, the partners are potentially able to formulate longer-term development goals together. Service providers in this category of cooperation are able to set a good example to their competitors and actively promote the further development of logistics services.

A significant difficulty in examining the length of collaborations by company size is the 6 response categories given in the questionnaire, which cannot be compared to company

size in a cross-tabulation. Analysis of variance could be used for this, but it can only be used for a normal distribution because it is very sensitive to deviation from the mean and we know that the length of the collaborations does not show a normal distribution.

However, it may be an interesting observation that micro, small and medium-sized companies have remarkably many short-term assignments and customer relationships (1 year or less). However, in the case of longer collaborations, large companies typically have more customers behind them, but we do not consider it reasonable to draw far-reaching conclusions based on these data (Figure 10).

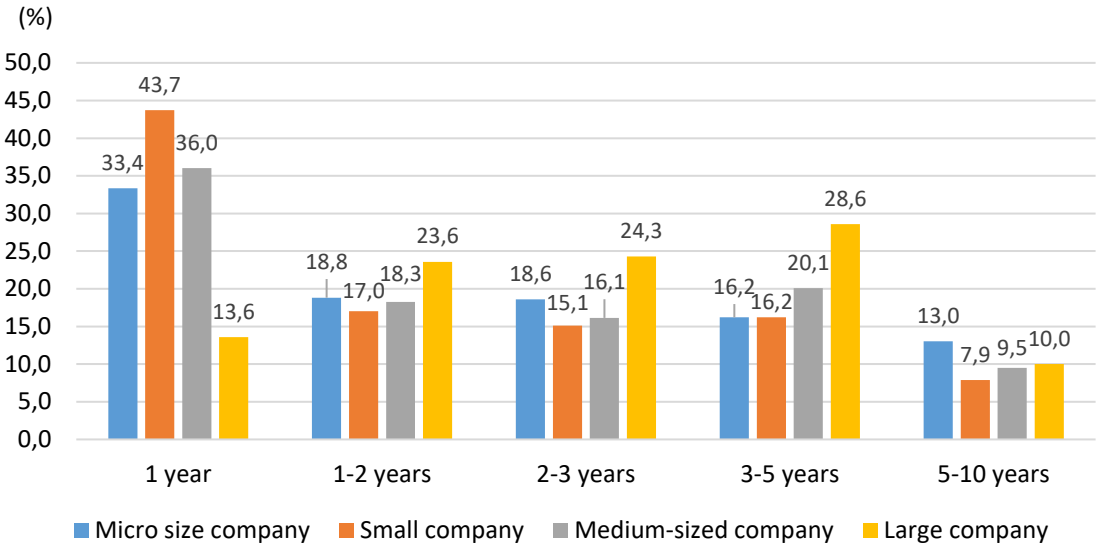

Figure 10: Length of collaborations by size categories of service companies
Source: own research

Examining the collaborations further, we asked about the tendering habits of the clients and the frequency of the tenders (Figure 11).

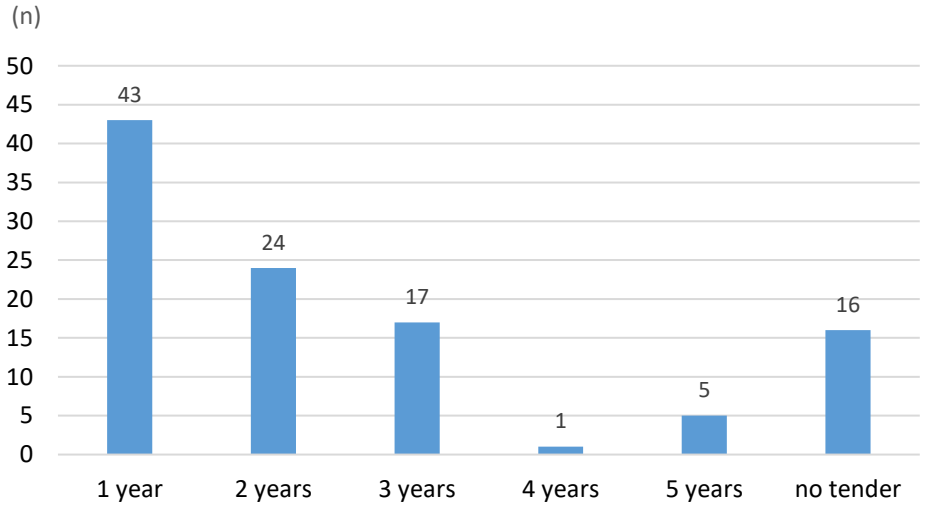

Figure 11: Frequency of logistics tenders in Hungary
Source: own research

It can be read from the data that the clients typically tender every year (for 43 service providers) or every 2-3 years (for 24 service providers). These two categories represent 40.5%

+ 22.6%, for a total of 63.2% among respondents, which is significant, nearly 2/3 of the responding service providers.

If we examine the two previous statements, it can also be seen that there are most likely client-provider relationships that can already be said to be long-term, yet the client regularly tenders for the task. In my experience, the most likely reason for this is the continuous control of costs (benchmarking), but since there is no change of service provider in some tenders, we can also assume that the client is satisfied with the quality of the service.

The aim is also to establish a relationship of trust and a market information channel for such business relationships, the existence of which does not require tenders if the client is satisfied with the services he has purchased.

Failure to tender will, on the one hand, lead to cost reductions and, on the other hand, will help and encourage both partners to formulate and implement long-term plans, ie not only to formulate their strategic plans until the next tender.

IT systems of Hungarian logistics service providers

As part of the research, we also examined the IT systems used by logistics service providers.

90.6% of respondents use integrated corporate governance software. On the one hand, this is a positive result, and on the other hand, it is justified, as the Hungarian legislation practically requires it. The average annual turnover of the respondents is almost HUF 4 billion, which presupposes more complex business management and the use of the integrated corporate governance system may be justified in this respect as well.

Among the respondents, 14 service providers (13%) use 2 integrated corporate governance systems, one purchased and one self-developed software. The probable reason for this can be explained by the special task.

41.5% of service providers use WMS inventory management software. In terms of services, however, 66 service providers (62%) answered that they provide warehousing services (also) to their customers and 52 service providers (49%) perform commissioning tasks.

Given these data, it is surprising that 22 of the storage service providers (also) do not have a WMS system.

It is also considered important to examine the existence and use of supply chain optimization software for the use of other software. According to our survey, out of the 106 service providers surveyed, only 8 service providers use optimization software, which is only 7.5% of the service providers.

The average annual sales revenue of these service providers is almost HUF 5 billion.

However, in addition to these 8 service providers, there are 20 other service providers (19%) whose annual sales exceed HUF 5 billion. Defining the boundaries of such an examination and conclusion is, of course, subjective, but based on our experience, the size and complexity of the task already justify the use of software that can be used to find optimal solutions.

Based on all this, we consider the rate of use of optimization software to be low, and development in this area would be necessary and expedient.

A summary of the IT systems used by service providers is provided in Figure 12.

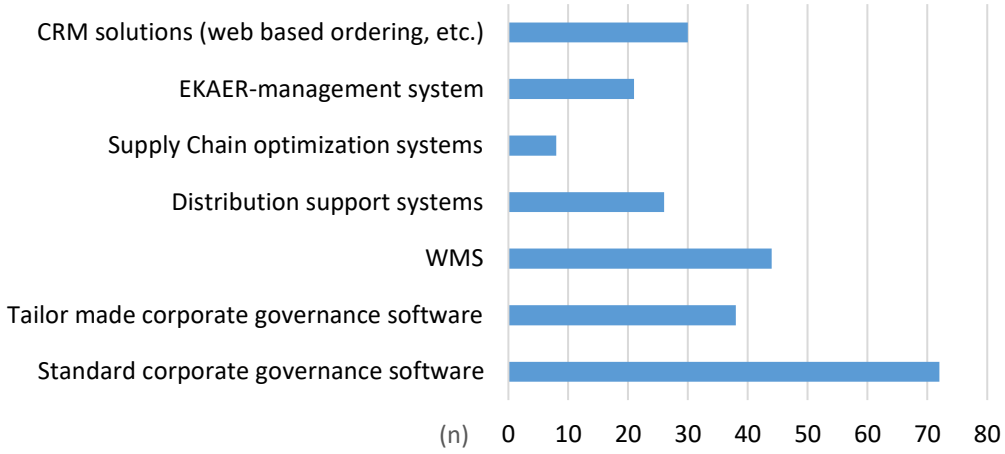

Figure 12: IT systems used by logistics service providers
Source: own research

In terms of various IT solutions, electronic data interchange (EDI) was found at 77 service providers, representing 72.6%. Examining the composition of service providers and their activities, we can state that this is a good percentage. Today, almost every client expects electronic data transmission from their service provider. In this respect, we therefore consider the preparedness of logistics service providers to be good.

The average annual sales revenue of the 77 service providers who answered yes is 5 billion HUF, which is almost 30% higher than the average of the entire sample. Significant differences between the responses of the two groups of respondents could not be examined for methodological reasons. The condition of the square test for nominal variables is that each cell of the table contains a respondent and the value of each cell in the expected table also exceeds 5. However, we already found a cell in the measured table that did not contain an answer (for large companies, the "no" answer was 0). Therefore, although a significant result was obtained ($p = 0.00129$) when running the study, based on which it could be concluded that the company size has an effect on the appearance of electronic data exchange with the client (the larger the company size, the more likely it is to use this IT solution), this result can only be accepted with reservations. Although our professional experience supports this result, a larger number of items in the sample would be required to interpret and accept the correct result of the study.

Tracking & tracing is used by 60 providers, which is 56.6% of respondents. Comparing this data with a previous statement that 66 of the responding service providers are engaged in warehousing, it can be seen that 31.8% (21 service providers) engaged in warehousing (also) do not have a tracking system. This data is underestimated even if we assume that some (eg excel-based) tracking solution is used by these providers, as reliable tracking of products is also a strict legal requirement for all actors in the supply chain.

Four of the respondents have chip-based authentication. This is a very low number at first glance, but it would only be realistic to judge this in the light of the products being treated. However, these providers can also serve as a positive example for others.

The paperless warehouse concept was implemented by 13 people, which is 12.3% of the respondents. This result could be considered a good initial condition.

17 service providers (16%) have other solutions. These solutions were not always detailed by the respondents, so we do not evaluate other solutions.

A summary of the IT solutions used by logistics providers is provided in Figure 13.

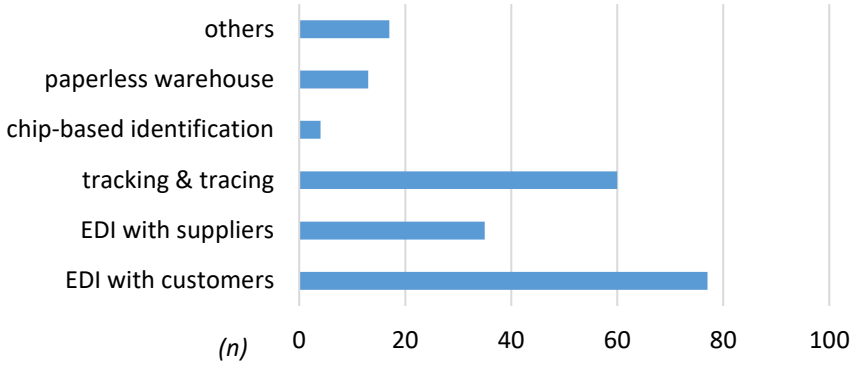

Figure 13: IT solutions among logistics service providers
Source: own research

Examining the IT systems and IT solutions used by logistics service providers, we can conclude that there are good and advanced IT tools and solutions among Hungarian logistics service providers, which provide an opportunity to operate an efficient supply chain, but the spread of these tools and solutions is among service providers is still very low.

Rapid and efficient progress in this area would be needed to increase efficiency and potential data sharing.

Vision and evaluation of logistics services in Hungary from the point of view of LLP

Examining the role of logistics service providers in the supply chain, we consider it to be of paramount importance:

- value chain integration with partners, and
- efficient and useful management of databases.

There are two groups of partners for logistics providers for each logistics function. If we examine these groups from the point of view of the service provider in terms of "input" and "output", it can be said that while manufacturers and suppliers are the input side in terms of material and product flow, the service provider is the customer on the output side in terms of data and information.

The task of the logistics service provider is to effectively coordinate and direct the flow of material and information. These tasks require well-trained and motivated professionals, state-of-the-art and efficient tools served by an advanced and reliable IT system(s).

The task of the logistics service provider is to continuously optimize the individual and comprehensive processes of the supply chain through innovative developments, using the most up-to-date and efficient IT solutions.

If this task is achieved, we can already talk about an LLP service provider, Lead Logistics Provider.

An important goal for the next period should be to increase the number of LLPs as quickly as possible. However, this growth is not expected to be rapid in Hungary, despite the fact that there are already good foreign and domestic examples in this area.

Examining the logistics service providers in Hungary and their situation, we came to the following conclusions:

- the small number of providers of truly complex logistics services,
- the use of advanced and available IT systems and solutions is not widespread enough,
- the established customer relationships have largely not yet reached the level of a real partnership.

The details of our analysis show that this general picture is not, of course, typical of all logistics providers. Focusing on advanced and leading logistics providers, we can say that some are already present in Hungary.

In our questionnaire research, we asked the opinions of logistics service providers for the next 5-10 years (Figure 14). The answers show that the service providers operating in Hungary expect a kind of market concentration, content and quality development and are - probably - prepared. This finding is confirmed by the fact that only 7.5% of the respondents think that new Hungarian service providers will appear on the market and only 9 (8.5%) predict the emergence of new international service providers. In addition, 39 (36.8%) service providers believe that the number of service providers will decrease in the next 5-10 years.

38.8% of the respondents (41 service providers) trust in the strengthening of the client-service provider relationship.

We also consider it good and hopeful that 65 service providers (61.3%) hope that the importance of new IT services and developments will increase in the future. In addition, however, we are not really optimistic that only 38 service providers (35.8%) believe that their responsibilities will be broadened and that they will have larger supply chain integrator tasks.

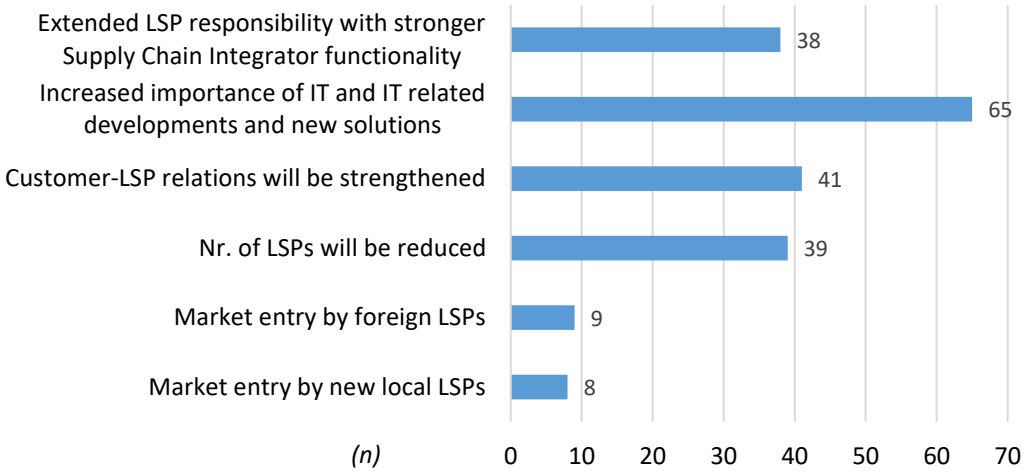

Figure 14: What processes are expected in terms of changes in the logistics service market in the next 5-10 years?
Source: own research

We also feel cautious hope based on our other question, which maps expectations for the future (Figure 15). Every service provider gave some answer to this question. Providers are basically expecting growth from the next period.

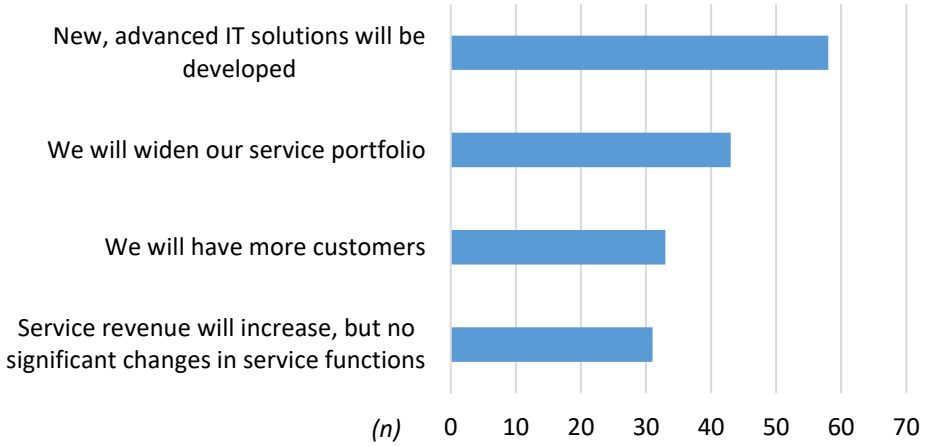

Figure 15: In what areas is the development of service activities expected in the next 5-10 years?
Source: own research

40.5% of service providers believe they can increase their service portfolio. It is likely that the relevant service providers are preparing for this change.

The other category of answers, which in our opinion is important and worth highlighting, is that 54.7% of service providers trust the introduction of new, advanced IT solutions, which is somewhat in line with the answers to the previous question, which 61.3% of service providers believe. that the introduction of new IT services and developments will become increasingly important in the future.

Development could be greatly accelerated if existing knowledge and experience were shared more actively and in more detail by logistics providers. However, this has economic and cultural difficulties, so we believe that the significant spread of LLP will take at least another 10-15 years in Hungary. During this development process, it is expected that current service providers and businesses that will not be able to meet expectations will be integrated into the systems of LLP companies as simple subcontractors.

Conclusions

Based on the results of our research, we made the following findings. Today's Hungarian logistics service providers are typically at the 3PL and / or 4PL level, logistics service providers currently largely provide the classic basic services to their customers (transport / forwarding, warehousing, picking, repackaging, labeling).

Although there are services on the service palette that may already be within the remit of LLP, they only work for a few providers and are typically just a kind of isolated extra service element.

Examining the existing customer-service provider relationships, it can be stated that we cannot typically talk about established real partnerships, which may result in a larger degree of task reallocation to the service provider. This finding is confirmed by the length of collaborations so far and the frequency of tendering by customers.

One of the most important conditions of the LLP is the trust-based partnership between the customer and the service provider and the high level of professionalism of the service provider with the appropriate and advanced IT support.

Achieving a real partnership requires breaking with certain traditions. Such is the case with frequent tendering, which is also confirmed in our survey and is currently widespread. If

the client and the client formulate their goals together, they should both focus on those goals, where regular tendering means unnecessary frustration, unnecessary time and money, which hinders concentration on achieving long-term goals and makes it difficult or even more difficult. the necessary improvements, as in a system full of regular tendering, the business risk of long-term developments and investments also increases significantly.

In addition to the absence of tendering, there is also a need for partners to jointly examine the elements of the supply chain, with a particular focus on the main activities defined by the customer. Tasks that are not included in these main activities or are not professionally closely related to them may potentially be delegated to the service provider.

Examining the range of services and IT preparedness of Hungarian service providers, we can state that the current Hungarian service providers are generally not at the level of IT development that could result in a rapid change of concept towards LLP.

The introduction of the LLP concept also has or can bring additional benefits to both the service provider and the customers. The partnership and good co-operation assumed and expected by LLP is typically accompanied by the so-called The application of a "win-win" concept, which shares the benefits gained (e.g. in the case of a combined flight planning and delivery) with the cooperating partners.

The implementation of the LLP requires a detailed, tactical and / or operational analysis of the jointly formulated and agreed objectives and reallocation as necessary.

Innovative solutions are needed when introducing new processes and tasks. In many cases, this means and assumes that you need to break with the usual methods and tools. This requires not only a wide range of expertise and creative thinking on both sides, but also the openness of partners and a certain level of risk-taking capacity. All of this potentially also represents a kind of cultural change and requires on both sides.

Declaration of Conflicting Interests

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