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The impact of Netflix on the Restructuring of the Albanian Audiovisual Market

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Abstract

In recent years, the Albanian audiovisual market was marked by an increase in audiovisual services offered by digital online broadcasting platforms such as IPTV, OTT, etc. Under these conditions, the purpose of the study is to analyze whether the entry of new international competitors, with innovative and successful profiles such as the case of Netflix, can lead to a kind of market restructuring and what consequences it can have in the national television industry. Some of the main research questions that are intended to be answered are: Do Albanian media operators feel threatened by competition, and do they have strategies to withstand the pressure of operators that offer global paid TV services on the Internet such as Netflix, HBO, Amazon, etc.,? If so, what are they? How much space does the American giant Netflix have in the Albanian market? For the realization of the study, we relied on quantitative data obtained from surveys conducted at the national level on the behavior of audiences in relation to the media market, as well as on qualitative data obtained from interviews with owners, media managers, journalists, etc.

Keywords: Netflix, digital platforms, audiovisual media, market, restructuring.

1. Introduction

The television industry is becoming increasingly complex, facing significant structural changes all over the world, where expansion and continuous change are the key words. In the field of audiovisual media, as in any other industry, economic aspects influence the form and quality of the product/service offered. Television is characterized by economies of scale more than other traditional media; high fixed costs and low variable costs that are inclined to zero. Under these conditions, growth strategies aim at controlling all stages of production, starting from ideation, conception, production, packaging, and distribution. Vertical integration allows manufacturers, packers, and distributors to become a single agent. This occurs because the benefits are numerous: access to raw materials, cost control of key resources, protection of marketing channels and differentiation of these channels for better product use. Since it operates in an oligopolistic market structure, the media industry is characterized by high entry barriers and a high degree of concentration in which a few powerful operators set the rules of the game, making it difficult for new competitors to enter. As a result, media operators offer similar or identical products.

Being open to innovation and highly influenced by technology, the television industry is characterized by improvements in the quality of distribution and consumption of the media offer. For media researcher R. Pickard (2017) “online audiovisual services have challenged existing media companies and have led to several paradigm shifts in traditional business models...current technology offers innovations in revenue streams as well as opportunities for systems custom monetization”. Meanwhile, the rapid advancement in the technology of television broadcasts constantly requires technological investments, not always affordable considering the characteristics of the Albanian market, small population and low per capita income compared to the European Union countries. For researchers of the field, being a small market is interpreted as a hindering factor for the development of the media industry. In this context, the purpose of this study is to analyze whether the entry of new international competitors, with innovative and successful profiles such as the case of Netflix, can lead to a kind of market restructuring and what consequences it can have in the national television industry. Some of the main research questions that are intended to be answered are: Do Albanian media operators feel threatened by competition, and do they have strategies to withstand the pressure of operators that offer global paid TV services on the Internet such as Netflix, HBO, Amazon, etc.? If so, what are they? How much space does the American giant Netflix have in the Albanian market?

2. Methodology

The method of the study is based on combining quantitative and qualitative data. The intersection of the data published by the Albanian Media Authority (AMA), the World Bank, and the Institute of Statistics in Albania (INSTAT) served to create a more complete panorama of developments in the Albanian market, specifically in the media market. To fulfill the objectives of this study, there were included as well empirical data obtained from surveys conducted at the national level by the Department of Journalism and Communication, Tirana University (TU), during 2017-2023 on the behavior of audiences, as well as in-depth interviews conducted with managers, media, journalists, etc. Likewise, for the realization of the study, were included also the data from previous studies carried out in this field were, while the theoretical framework is based on the most famous authors in the field.

3. Expansion of the television offer and M. Porter's five forces theory

One of the most important developments in the media industry is the expansion of the television offer. In Australia the arrival of Netflix in 2015 was a *game-changer*; as a telecommunications service it was not subject to media regulations and thus became the first major transnational media company in the Australian market (Turner, 2018). As Turner's article further argues, the arrival of Netflix proved to be an important catalyst for a series of changes that turned history on his side. Subscription-based television has challenged the traditional advertising-based model of television, and consumers are inclined toward international broadcast services that offer greater choice, but at the same time have no regulatory obligation to address national audiences. At the level of regulation and control, this is the first time a transnational intervention in the Australian television market occurring without going through specific frameworks established to regulate it in the national interest.

The expansion of digital advertising has threatened the business models of all mass commercial media and the high accessibility of social networks, YouTube, etc. has influenced the change in consumption habits, especially among young audiences. Netflix's rapid entry and expansion changed household consumption patterns and the shape of the local media economy at all levels—production, distribution, and consumption.

Meanwhile, to cope with the influx of TV content coming through the SVOD (Subscription Video on Demand) service offered by Internet TV operators, the entire TV production and linear TV content broadcasting industry has been forced to undergo important internal restructuring. On the one hand, there is an attempt for TV broadcasting operators to implement the principle of vertical economy by integrating large TV production studios within them, and on the other hand, these TV studios have often tended to be integrated within the same television broadcast production network (Fuga, A & Marku, M, p. 26, 2017).

Albania has a rich media landscape. Currently there are four national TV broadcasters, three commercial broadcasters and one public (includes 16 regional and thematic TV channels). There are also 21 cable/IPTV/OTT channels and 37 local television stations (AMA, 2023). But what impact does the introduction of audiovisual services offered by digital online streaming platforms, especially Netflix, have on the Albanian market? Can we talk about some kind of restructuring of the media market? To provide a theoretical explanation, we will rely on the five forces model of M. Porter (2008). This is a model that identifies and analyzes the five competitive forces that shape any industry and helps determine the industry's strengths/advantages and weaknesses/disadvantages. This model is often used to identify an industry structure as well as to define corporate/business strategy and can be applied to any sector of the economy. In summary, the five competitive forces are: threat of new entry, competitive rivalry, supplier power, buyer power, threat of substitution.



Figure 1: Porter's Five Forces Model

According to Porter, the threat of new entrants shapes the competitive structure of an industry. New entrants to an industry bring new capacity and a desire to capture market share, putting pressure on prices, costs and the scale of investment needed to compete. In this context, there are several factors that determine the difficulty & degree of threat of new competitors' entry in an industry, some of which are classified as market entry barriers, such as high fixed costs and almost zero marginal costs of the television industry, which are not only related to content production, but also to broadcasting infrastructures; legal, technical, human capital obstacles, etc.

4. Research Results and Findings

Netflix, the largest network of Internet television services, has been present in Albania since 2016. Subscribers can watch their favorite programs, as much, when and where they want if an Internet connection is adequate, with relatively competitive prices. It seems that to permeate in the Albanian market, access to the Internet is not a serious obstacle. Roughly 96.5 % of Albania's population of 2.8 million inhabitants has access to the internet through fixed broadband and 99.2 % of households have internet through mobile broadband connection (Media Ownership Monitor, Albania, 2023). The data published by the Institute of Statistics in Albania (INSTAT) show that there is an increase in the use of Information and Communication Technology from year to year, although there are important differences from a demographic point of view. Based on the results of the Information Technology Family Use Survey in 2023, it results that from the 16-74 age group, 83.1% of the population use the Internet, of which 96.2% use it several times during the day. These figures show an increase of approximately 1% in the use of the Internet compared to a year ago (INSTAT, 2023). Regarding the devices used to access the Internet, 98.8% of the respondents use a mobile phone/smart phone.

Table 1: Main devices used to access internet 2018-2023, in % (INSTAT, 2023)

Device	2018		*2019		*2020		2021		2022		2023	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Mobile phone/Smart phone	93.6	6.4	98.6	1.4	98.8	1.2	98.7	1.3	99.9	0.1	99.8	0.2
Laptop	15.2	84.8	23.7	76.3	24.4	75.6	22.8	77.2	23.5	76.5	28.2	71.8
Tablet	5.7	94.3	6.8	93.2	7.2	92.8	8.8	91.2	13.1	86.9	19.1	80.9
Other devices	1.8	98.2	2.5	97.5	3.0	97.0	3.9	96.1	4.1	95.9	16.6	83.4
Computer/desktop*	29.0	71.0					17.7	82.3	20.8	79.2	27.4	62.6

*In 2019 and 2020, internet usage module has changed and in 2021 the category is included again "computer/desktop".

Although it has been present in the Albanian market for more than seven years, there is still no official number of Netflix subscribers. According to a study carried out by the Department of Journalism and Communication in 2019, it was found that only 6.8 percent of respondents follow Netflix as a priority, a small number compared to subscribers of digital broadcast platforms such as Digitalb or Tring. According to the survey data, most of the followers of these platforms are men, mainly from urban areas. They belong to the 35-49, 26-34 and 18-25 age groups, with university and secondary education. The income level of Netflix subscribers is above average, ranging from 82,000-100,000 and 100,000-200,000 ALL. (DJC, 2019). Meanwhile, Albanian media companies do not feel threatened by the pressure of operators offering global pay TV services on the Internet as 35% of media owners and managers do not see them as potential competitors at least for the next 5 or 10 years.

In the Albanian market audience and revenues remain highly concentrated in the hands of a few, family-owned groups, which dominate the media market (Media Ownership Monitor, Albania, 2023). From a consumer perspective, the biggest challenge remains content. In a highly concentrated market such as the Albanian audiovisual market, content should be a key factor in the actors' strategy to attract the consumer's attention and differentiate it. The lack of subtitles in Albanian on the Netflix platform (in December 2021, the first movie in the Albanian language, "Arbëria" began to be broadcasted) as well as the development of piracy practices are disadvantages of Netflix in relation to Albanian competitors in audiovisual services.

Other factors that influence the slow growth of Netflix in Albania are being a small market (population 2.8 million inhabitants) and with a relatively low per capita income (GDP per capita for 2022 was 6,810 US dollars according to the World Bank). The Albanian audience seems to be more oriented towards the consumption of free media content. Recent studies show that there is a shift in audiences from traditional media to social media. Facebook is the most used social media platform in Albania with 88.37% of the population followed by Instagram with 5.63% (Statcounter.com, January 2024).

5. Conclusion

Based on the data on the audience's behavior towards online digital TV broadcasting platforms, we come to the conclusion that the impact of the Netflix platform on the media market is almost negligible. Currently, there are several factors that limit the success of Netflix in Albania, such as: the relatively high price package compared to the income level; lack of subtitles in Albanian, piracy practices; habits in the behavior of the audience, etc.

Albanian media companies do not yet feel threatened by the pressure of operators that offer global pay television services on the Internet such as Netflix, HBO, Amazon, etc. However, Albanian televisions need clear strategies to face the growing foreign competition, which is attracting not only the attention of the audience but also the finances.

Although in recent years there has been an increase in audiovisual services offered by digital online broadcasting platforms, they have not yet turned into potential competitors, therefore they cannot bring about a restructuring of the Albanian media market, at least in the near future

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Inflation Study: Network Analysis and Complex Networks Implementation

Research Article

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Abstract

This research paper has introduced a new way of analyzing inflation based on network analysis and complex networks, which is quite a new paradigm compared to traditional economic models. This research has presented that complex network theory can accurately predict inflation dynamics in financial systems. Also, the theory of complex networks accounts for the interdependencies and nonlinear interactions of the players in the economy. We use quantitative analysis of the data and network visualization to build and study a sequence of inflation networks using data in several economies for the last ten years. Here, the way will be to choose pertinent economic variables, align them with a network framework, and use network centrality metrics to find the prime factors governing inflation. The results show the patterns in the inflation network and point to clusters in the model structure that shape inflation as an outcome of the model structure and all the interactions that result. This paper extends the existing knowledge of inflation by offering the practicality and significance of network analysis in financial research. The study provides a fresh perspective on structural changes underlying inflation. Moreover, it opens up an innovative analytical approach that policymakers may use to help formulate more efficient means to control inflation. Possible extensions could involve network analysis, including new data in the future, and exploring the ability of networks of high sophistication to predict inflation patterns.

Keywords: Inflation, Network Analysis, Complex Networks, Economic Policy, Data Visualization.

1. Introduction

Macroeconomic analysis uses macro-financial models to investigate economic systems, especially for short- to medium-term projections. The Angelini et al. (2019) study supports this idea. These models go beyond predicting by allowing hypothetical scenarios to evaluate policy actions. Brázdko et al. (2020) and the European Central Bank (2021) show that central banks use these models to make monetary policy choices.

A macro-financial model tailored to Albania is shown here. This model uses neoclassical growth theory for small, open economies. Albania, an emerging economy in Southeastern Europe, is fascinating due to its unique characteristics. The country has a small but accessible uncontrolled market economy with solid macroeconomic ties to Western Europe, notably the euro area. The Albanian economy boasts independent monetary and fiscal policies, a flexible exchange rate mechanism, a stable banking sector, and unrestricted financial transactions (Skufi and Geršl, 2023). Our comprehensive macro-financial model accurately distinguishes between exogenous factors (such as a decline in global demand and tourism, variations in foreign interest rates, and exchange rate fluctuations due to market sentiment) and endogenous disruptions. This setting allows economic events to unfold organically.

We used 1995–2023 data and a model that predicts policy outcomes to build scenarios. This forecasting method uses exogenous elements like eurozone GDP and foreign interest rates. Policy intervention delays are accounted for in the model equations. The "quasi-real" forecasting method tests the model's ability to predict outcomes despite major economic disruptions. A Central Bank must accurately measure and anticipate inflation to maintain price stability. Therefore, modern financial authorities invest heavily in inflation analysis and forecasting. This project has relied on classical econometric analysis.

Due to the complexity of current financial and economic systems, its constituent parts often outweigh their whole. Complex networks help illustrate system connections and reveal trends. They enable a comprehensive network-to-agent analysis. Network theory can be used to understand the economy because the inflation index's components and relationships are complicated.

The origins of network analysis, also known as Graph Theory, can be traced back to the 18th century. Euler (1741) first utilized this method to address path-routing problems in 1741. Later on, it was used in several scientific fields, such as biological networks (Guimerà and Amaral, 2005), social sciences (Eubank et al., 2004), and the Internet (Barabási et al., 2000), among others. The field of economics now incorporates network analysis. Rosario Mantegna introduced the pioneering study on utilizing network analysis in intricate economic systems in 1999 (Mantegna, 1999). There has been a significant and growing amount of literature that uses complex networks in the field of macroeconomics (Garlaschelli et al., 2007; Schiavo et al., 2010; Acemoglu et al., 2012;

Papadimitriou et al., 2013) and financial economics (Allen and Gale, 2000; Gai and Kapadia, 2010; Tumminello et al., 2010). This method gives valuable data to examine if a financial institution's network position affects market liquidity inflation.

Our research contributes to the current corpus of literature that integrates networks and econometric models, as Ductor et al. (2014) exemplified. This enhances comprehension of these notable marketplaces by providing supplementary analytical instruments. Econometric and network models are essential in policy decision-making to attain financial stability, ensure effective monetary policy transmission, and establish stress-testing frameworks.

We examine Albania's structural characteristics and inflation spreads using financial networks. This study examines centrality metrics to understand lender-borrower structural interactions. Inflation is crucial for assessing Albania's interbank market systemic risk and economic stability.

Financial network indicators are calculated using monthly aggregated data. The matrices are based on data from INSTAT 2022, BoA 2022, MoF 2022, and Eurostat 2022. This database helps gather inflation data.

We study several variables, including financial network structural components and each institution's participation.

In this study, graph theory approaches are used to investigate inflation. We start by calculating standard network metrics to analyze the network's topology and evolution. Clustering is used to find inflation categories with similar characteristics. The perspectives are intriguing and unique.

Paper structure: Section 2 describes the study's materials and procedures. This covers data sources and preprocessing methods. It also covers network design, centrality measurement, and implementation. Section 3 shows network analysis results that show key macroeconomic drivers causing inflation. Section 4 addresses restrictions, repercussions, prospective future research directions, key findings from this study, and a methodology for examining several avenues of investigation.

2. Materials and Methods

2.1 Data Sources and Preprocessing

Our dataset includes INSTAT 2022, BoA 2022, MoF 2022, and Eurostat 2022.

Quarterly frequency data from 1995 to 2023 is included. Most data was initially sent at this frequency, but some were received monthly or annually. Thus, unique frequency conversion processes were used:

- 1) The Average-of-observations approach analyzes monthly flow rate indicators like exchange and inflation rates.
- 2) The sum-of-observations method examines monthly indicators like employment remuneration and fiscal expenditures.
- 3) The last observation method examines monthly indicators like credit stock and nonperforming loans.
- 4) The Denton technique (Chollette 1984) converted annual observations to quarterly frequency for population data.

The Tramo/Seats method adjusted data seasonally. Formulas that use seasonally adjusted data indirectly account for seasonal indicator fluctuations. Seasonal changes are automatically applied to discretionary income. The system components are initially adjusted to allow for seasonal changes. Seasonally adjusted variables remove seasonal patterns and swings from data inputs. Personalizing each variable before building the discretionary income series accounts for seasonal changes.

2.2 The construction of the network

A complicated economic system is depicted as a network or graph (G) with macroeconomic components as nodes (N) and edges (E) that describe their similarity based on a chosen variable. Mathematically, $G = (N, E)$. The network nodes represent the macroeconomic components of the examined system, while the edges show their interaction as quantified by a variable. This study links each network node to a macroeconomic factor. The edges linking the nodes show bilateral relationships between macroeconomic inflation rates. Equation 1 calculates correlations using Pearson's coefficient:

$$r_{ij} = r_{ij} \triangleq \frac{cov(D_i, D_j)}{\sqrt{var(D_i)var(D_j)}} \quad (1)$$

where D stands for the data of the macroeconomic elements.

The correlation coefficient ranges from -1 to 1: values near -1 imply a significant negative connection, while values around 1 suggest a high positive association. A r value of 0 indicates no association.

The definition of a network is a synonym of the mathematical description of a graph where macroeconomic elements and edges represent the nodes and the relations between them (Estrada 2011). Linked lists or adjacency matrices represent the networks. The adjacency matrix of an undirected network is defined by (2) if the network is unweighted and (3) if the network is weighted.

$$A: a_{ij} = \begin{cases} 1 & \text{exist edge (i,j)} \\ 0 & \text{otherwise} \end{cases} \quad (2)$$

$$A: a_{ij} = \begin{cases} w_{ij} & \text{if exit edge (i,j)} \\ 0 & \text{otherwise} \end{cases} \quad (3)$$

where $w: A \rightarrow R$ is the weight function.

2.3 Metrics for measuring centrality in the graph

Centrality measures in complex networks reveal node importance and impact. In macroeconomic analysis, these nodes can represent inflation indices like CPI, PPI, and interest rates. These nodes are key to understanding how various economic indicators affect policy formation and economic forecasts inside the financial network (Newman, M. E. J. (2010)).

Centrality Measures and Implementation:

- Degree Centrality indicates a node's immediate influence by counting its direct connections. The prominence of inflation indicators in macroeconomic networks may suggest its widespread impact on numerous economic sectors (Jackson, M. O. (2008)).
- Closeness Centrality measures the average distance between network nodes. This may highlight the speed and scope of inflationary economic effects (Borgatti et al., 2009).
- Betweenness Centrality indicates a node's role as a mediator by measuring its position on the shortest paths connecting other nodes. An inflation indicator with high betweenness centrality helps spread inflationary pressures across economic sectors (Freeman, L. C. (1977)).
- PageRank Centrality assesses node importance using network topology analysis. It can compare inflation indices based on worldwide economic relationships (Brin & Page, 1998).
- Eigenvector Centrality improves degree centrality by evaluating the amount and quality of node-connected links. The centrality of a node is likely influenced by its connections to other highly connected nodes. This metric may identify key inflation indicators closely connected with other economic indices (Bonacich, P. (1987)).

These centrality measures on inflation-related macroeconomic variables help explain the complex relationship between inflation dynamics and the economy. The network of macroeconomic variables can reveal inflation drivers, spreads, and exogenous shocks (Hua et al., 2018).

Hua et al. (2018) and Zreika et al. (2018) demonstrate graph centrality in economic data analysis. Zreika, A. et al. (2018) and Kazemilari, M. et al. (2017) noted that these investigations illuminate macroeconomic variables' effects on inflation. Kazemilari et al. (2017) demonstrate the predictive power of centrality indicators in economic network analysis (Bloch, F. (2017)).

Centrality measures in macroeconomic inflation indicators help understand the economy's various interconnections. This method shows the direct and indirect effects of economic variables. Financial models anticipate better, enabling better government choices and academic research.

3. Results

Complex inflation-related macroeconomic networks are created in MatLab.

We observe the topological properties and temporal fluctuations of a network comprising 23 macroeconomic components during preliminary analysis. Based on the original network, the Pearson correlation coefficient and adjacency matrix are calculated. The remaining measurements are calculated once the threshold is applied to the original network. The macroeconomic network's fundamental indicators are shown in Figure 1.

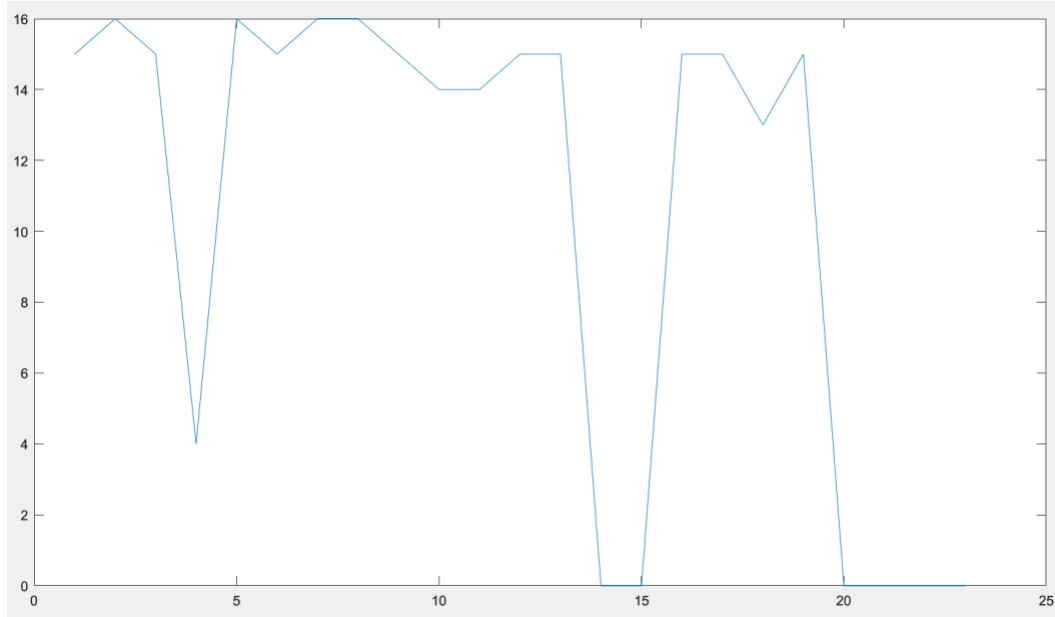


Figure 1. Basic network metrics

Table 1 presents the values of five centrality metrics for 23 macroeconomic components.

Table 1: Five centrality measurements for 23 macroeconomic factors.

Acronym	Betweenness	Closeness	Degree	Eigenvector	PageRank
GDP	0.153846154	0.0311133	15	0.045871622	0.05769222
GDP_N	3.153846154	0.0330579	16	0.046665838	0.06226666
P_GDP	0.153846154	0.0311133	15	0.045871622	0.05769222
GDP_CONGOV	0	0.0188902	4	0.012579418	0.021627
GDP_CONGOV_N	3.153846154	0.0330579	16	0.046665838	0.06226666
P_CONGOV	0.153846154	0.0311133	15	0.045871622	0.05769222
GDP_CONHH	3.153846154	0.0330579	16	0.046665838	0.06226666
GDP_CONHH_N	3.153846154	0.0330579	16	0.046665838	0.06226666
P_CONHH	0.153846154	0.0311133	15	0.045871622	0.05769222
GDP_GFCF	0	0.0293848	14	0.043320834	0.05432696
GDP_GFCF_N	0	0.0293848	14	0.043320834	0.05432696
P_GFCF	0.153846154	0.0311133	15	0.045871622	0.05769222
GDP_EXP	0.153846154	0.0311133	15	0.045871622	0.05769222
GDP_EXP_N	0	0	0	0.043478261	0.0083987
P_EXP	0	0	0	0.043478261	0.0083987
GDP_IMP	0.153846154	0.0311133	15	0.045871622	0.05769222
GDP_IMP_N	0.153846154	0.0311133	15	0.045871622	0.05769222
P_IMP	0	0.0278382	13	0.040401402	0.05103022
P_CPI	0.153846154	0.0311133	15	0.045871622	0.05769222
P_INF	0	0	0	0.043478261	0.0083987
L_D	0	0	0	0.043478261	0.0083987
I_REPO_N	0	0	0	0.043478261	0.0083987
P_ALL_EUR	0	0	0	0.043478261	0.0083987

Betweenness Centrality measures network node importance. The method calculates the frequency at which an acronym-defined node bridges the shortest path between two nodes. GDP, P_GDP, P_CONGOV, P_CONHH, P_GFCF, GDP_EXP, GDP_IMP, GDP_IMP_N, and P_CPI moderate the network's relevance with a coefficient of 0.153846. GDP_N, GDP_CONGOV_N, GDP_CONHH, and GDP_CONHH_N have a much higher significance value of 3.153846, demonstrating their importance as frequent network links. GDP_CONGOV, GDP_GFCF, GDP_GFCF_N, GDP_EXP_N, P_EXP, P_IMP, P_INF, L_D, I_REPO_N, and P_ALL_EUR, all 0.0, are not network linking links. Since GDP_N and GDP_CONGOV_N establish node connections, the research suggests that these factors mostly determine network connectivity. GDP_CONGOV is peripheral and has little impact on network connection topology.

In network analysis, Closeness Centrality measures the average distance between a node and all others in the graph. It shows how close a node is to all others in the network. Nodes with higher Closeness Centrality scores are more central, allowing them to spread information across the network efficiently. GDP_N, GDP_CONGOV_N, GDP_CONHH, and GDP_CONHH_N have a higher measure of 0.033058, showing they are more centrally situated in their network. GDP_EXP_N, P_EXP, P_INF, L_D, I_REPO_N, and P_ALL_EUR have Closeness Centrality measures of 0, indicating complete network disconnection. No direct or indirect connections connect this node to other network nodes. Several factors may cause this: The node has no edges and is part of a different subgraph from the network's major interconnected components. This analysis can help explain acronyms' relative value in networks or systems.

Degree Centrality counts an acronym's network direct linkages. A greater Degree of Centrality score indicates that the abbreviation is more central and pivotal in the network, having more node connections. GDP_N, GDP_CONGOV_N, GDP_CONHH, and GDP_CONHH_N have a Degree Centrality of 16, demonstrating their relevance in this context. This suggests they are linked to several acronyms or concepts. GDP_EXP_N, P_EXP, P_INF, L_D, I_REPO_N, and P_ALL_EUR have no direct network connections. Thus, their Degree Centrality statistic is 0. This suggests that acronyms may be isolated or irrelevant in the analyzed network. They do not interact with other acronyms in the sample. Possible causes include the abbreviation being highly specialized and rarely used in data. Missing or partial data is another possibility. This research shows the relative relevance of acronyms in the network based on their connections.

Eigenvector Centrality measures a node's impact on a network. It considers a node's edge count and relevance. A node with a high Eigenvector Centrality is related to many other high-scoring nodes. Acronyms are nodes in a network in the data, and their Eigenvector Centrality values show their relevance. GDP_N has a slightly higher centrality value than GDP, suggesting it is more centrally located in the network or connects to more influential nodes. GDP_CONGOV_N, GDP_CONHH, and GDP_CONHH_N have the same centrality metric as GDP_N, showing similar network impact.

PageRank Centrality quantifies a network node's importance. Network nodes with high centrality values are considered more important. This helps determine the relative relevance of network components like publications, websites, or, in this case, field-specific acronyms. GDP_CONGOV_N, GDP_CONHH, and GDP_CONHH_N have a centrality metric of 0.062267, indicating high network centrality or indispensability. This analysis may influence decision-making or allow a more profound knowledge of a network's structure and dynamics by revealing the relative relevance of acronyms (or the concepts they represent).

Table 2 displays macroeconomic elements ranked based on the five centrality measures.

Table 2: Macroeconomic elements sorted regarding five centrality measures.

Betweenness	Closeness	Degree	Eigenvector	PageRank
GDP_N	GDP_N	GDP_N	GDP_N	GDP_N
GDP_CONGOV_N	GDP_CONGOV_N	GDP_CONGOV_N	GDP_CONGOV_N	GDP_CONGOV_N
GDP_CONHH	GDP_CONHH	GDP_CONHH	GDP_CONHH	GDP_CONHH
GDP_CONHH_N	GDP_CONHH_N	GDP_CONHH_N	GDP_CONHH_N	GDP_CONHH_N
GDP	GDP	GDP	GDP	GDP
P_GDP	P_GDP	P_GDP	P_GDP	P_GDP
P_CONGOV	P_CONGOV	P_CONGOV	P_CONGOV	P_CONGOV
P_CONHH	P_CONHH	P_CONHH	P_CONHH	P_CONHH
P_GFCF	P_GFCF	P_GFCF	P_GFCF	P_GFCF
GDP_EXP	GDP_EXP	GDP_EXP	GDP_EXP	GDP_EXP
GDP_IMP	GDP_IMP	GDP_IMP	GDP_IMP	GDP_IMP
GDP_IMP_N	GDP_IMP_N	GDP_IMP_N	GDP_IMP_N	GDP_IMP_N
P_CPI	P_CPI	P_CPI	P_CPI	P_CPI

GDP_CONGOV	GDP_GFCF	GDP_GFCF	GDP_EXP_N	GDP_GFCF
GDP_GFCF	GDP_GFCF_N	GDP_GFCF_N	P_EXP	GDP_GFCF_N
GDP_GFCF_N	P_IMP	P_IMP	P_INF	P_IMP
GDP_EXP_N	GDP_CONGOV	GDP_CONGOV	L_D	GDP_CONGOV
P_EXP	GDP_EXP_N	GDP_EXP_N	I_REPO_N	GDP_EXP_N
P_IMP	P_EXP	P_EXP	P_ALL_EUR	P_EXP
P_INF	P_INF	P_INF	GDP_GFCF	P_INF
L_D	L_D	L_D	GDP_GFCF_N	L_D
I_REPO_N	I_REPO_N	I_REPO_N	P_IMP	I_REPO_N
P_ALL_EUR	P_ALL_EUR	P_ALL_EUR	GDP_CONGOV	P_ALL_EUR

GDP_N, GDP_CONGOV_N, GDP_CONHH, and GDP_CONHH_N consistently had the highest betweenness centrality, proximity, degree, and eigenvector. Nodes' constant ranking underlines their importance in network structure and information flow. These nodes link network components, according to betweenness centrality analysis. They had much higher measurements than others. There was little association between vital parameters. This signal shows multiple network impacts. This study analyzes economic variable relationships and suggests macroeconomic prioritization.

Figure 1 provides a comprehensive overview of the full network of macroeconomic elements, consisting of 23 elements and 122 linkages between them.

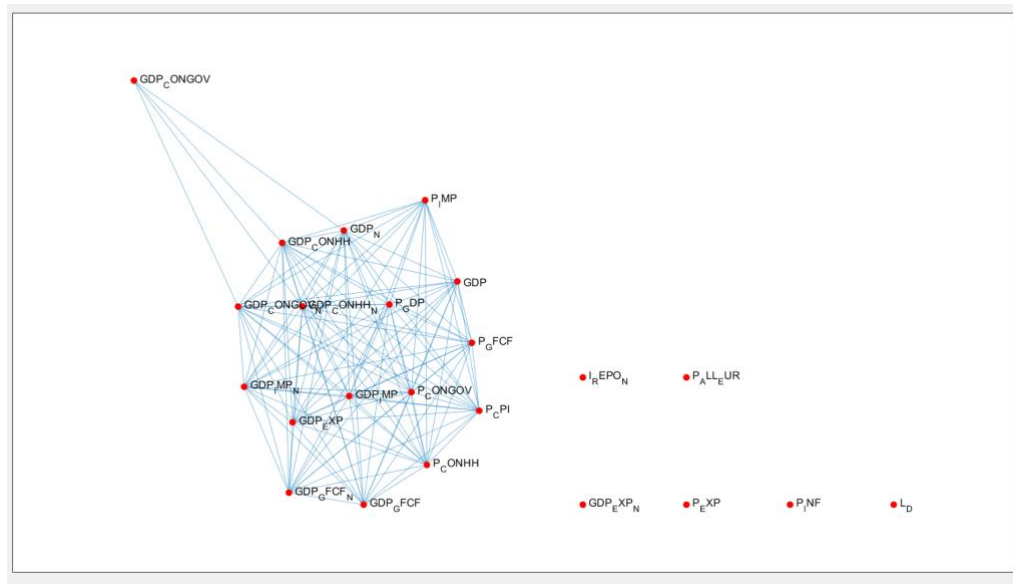


Figure 2: The network of macroeconomic elements

To see how these centrality measures correlate with each other, we have performed a cross-correlation evaluation for these measures, as shown below in Table 3 and Figure 3.

Table 3: Cross-correlations of the centrality measures

	Degree	Betweenness	Closeness	Eigenvector	PageRank
Degree	1	0.410002113	0.9879278	0.34301144	0.9997844
Betweenness	0.410002113	1	0.3946064	0.23868359	0.42883
Closeness	0.987927817	0.394606438	1	0.19410085	0.987615
Eigenvector	0.343011438	0.238683592	0.1941008	1	0.3443747
PageRank	0.999784427	0.428830046	0.987615	0.34437473	1

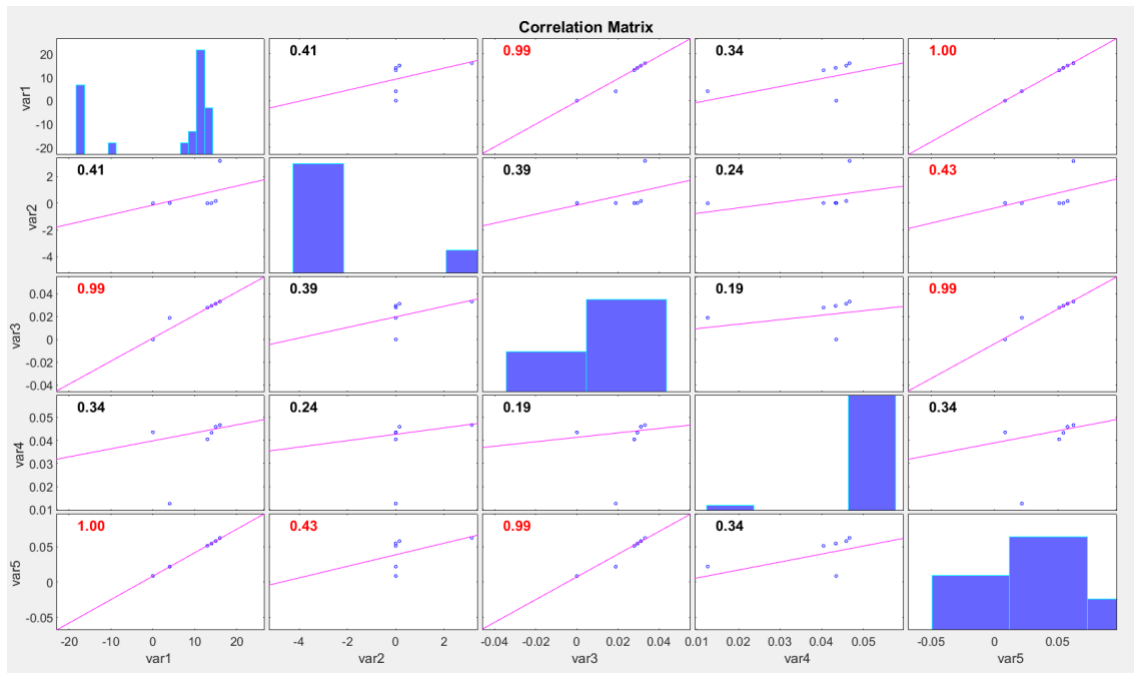


Figure 3: Visual illustration of cross-correlations of the centrality measures.

Degree centrality and PageRank centrality have a strong correlation of 99%. This indicates that these two metrics may effectively identify macroeconomic pieces that are strongly connected and likely to have essential functions in the network. Therefore, it can be inferred that macroeconomic elements with numerous linkages with other macroeconomic elements also have a high level of PageRank centrality, indicating their significant relevance. This observation is evident in Table 3.

A 99% correlation between PageRank and closeness centrality indicates a robust and positive association between both metrics in the macroeconomic components network.

The substantial association indicates that the network's structure, as assessed by degree centrality, significantly impacts the importance or centrality of macroeconomic items in the network, as evaluated by PageRank centrality. This discovery implies that macroeconomic elements that have numerous links with other macroeconomic elements also significantly influence the overall dynamics or function of the network.

4. Discussions and Conclusions

4.1 Discussion

This study used network analysis and complex networks to examine inflation dynamics novelly. Our research has found complicated patterns and groups inside inflation networks, unlike standard economic models, which overlook financial system interdependencies and non-linear interactions. These findings show how complex monetary systems are and how economic issues affect inflation, as seen by their crucial involvement in the network.

4.2 Limitations

It's important to acknowledge this study's limitations. Although exhaustive, the economic aspects may still skew the network's structure and conclusions. Data quality and accessibility vary between economies, which may limit the application of our findings. Future studies should include more parameters and verify data sources to address these limits.

4.3 Implications

Research has several effects. Future research should focus on integrating more dynamic and real-time data sources to improve network analysis's predictive power in economic modeling. Our findings suggest that monetary strategies should use network information to understand inflation better. Strategically placing critical variables in the inflation network allows for more targeted economic interventions.

Our approach lays the framework for network analysis of inflation. Additionally, it has highlighted many research opportunities. The intricate interaction of economic variables inside a network provides deep insights into inflation dynamics and new perspectives for policymakers and researchers.

4.4 Conclusions

In contrast to economic modeling, network analysis, and complex networks study inflation dynamics. Complex non-linear interactions exist between financial systems. Thus, network theory predicts inflation well.

We expand and depart from current research on complex network theory for economic analysis. Traditional models oversimplify financial factors, but our method better describes structural inflation changes. We improve monetary economics' underpinnings. This unique study identifies economic variables that affect inflation using network centrality metrics.

Quantitative research and network visualization have shown inflation network patterns and clusters that help us understand inflation dynamics. Those above should improve the theory and advise policymakers. Our research demonstrates that network analysis is promising for economic modeling, notably inflation investigations. The present analysis indicates complicated financial variable interactions; therefore, well-informed policymaking can inform future research.

Studying complex economic networks and applying interdisciplinary methods helps explain modern financial systems.

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The Theoretical Foundations of Teaching the Slavic Verbal Aspect

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Abstract

The present paper focuses on some problems related to the teaching of the Slavic verbal aspect. In addition, it provides the theoretical linguistic background to the description of the aspect category in Slavic. The paper examines the category of the Slavic verbal aspect in terms of two possible approaches: cognitive linguistics and functional grammar. According to the author, the first is suitable for presenting how this segment of language resides in the minds of native speakers, how they use language, while the second provides a coherent theoretical framework for teaching the category of aspect in Slavic. Since the process of language acquisition is fundamentally different from language learning in many respects, the latter being a conscious process, formalizing the language and presenting it as a system is essential for those learning Slavic languages as foreign ones. It seems necessary for foreign language learners to rationalize the language and its categories, to describe the functioning of language categories based on strict rules. The description of the Slavic aspect category in the framework of the functional semantic field theory in the paper creates the basis for comparing aspect with similar categories of other, non-Slavic languages, such as English, German, and Hungarian. However, in order to carry out rationalization and comparison, the linguistic material must be available. This is why in the last part of his paper, the author emphasizes the importance of teaching aids, a structural aspect dictionary of the Slavic verb and teaching manuals presenting the theories about the Slavic verbal aspect, in addition to the teachers' preparation on the subject.

Keywords: Slavic verbal aspect, aspect theories, cognitive linguistics, functional grammar, functional semantic fields, structural aspect dictionaries

Introduction

The main topic that I propose to discuss in this paper is some theoretical foundations of teaching the Slavic verbal aspect to foreign language learners¹. To do this, it is first necessary to clarify how language and its categories, such as aspect and tense, reside in the minds of native speakers in general, how the language is used by native speakers in their natural environment, for which the cognitive approach seems to be the most suitable. In the course of explaining the topic, I shall convincingly prove and support with quotations and examples that language and the rules governing language use do not exist consciously in native speakers, but intuitively. According to the cognitive approach, language is not some kind of tool or system of rules existing outside of man, but is part of man's cognitive abilities. This approach also rejects the interpretation of language as a hierarchical system and makes the communication fragment the basic unit of language usage. When using language, native speakers do not use a generative, but a reproductive strategy. One should not forget that recalling and formulating language rules requires a certain amount of intellectual effort and time from average native speakers. Be reminded furthermore that the language acquisition of native speakers cannot be compared to the language learning of foreign language learners in terms of exposure. The difference between these two processes is also important from the viewpoint of choosing the appropriate language teaching strategy. Since the process of language acquisition cannot be effectively modeled in the course of language learning, if only for the aforesaid reason, for foreign language learners, the rationalization of language and its description as a formal system seems to be a more feasible way. In other words, in order to present and understand the phenomenon and functioning of the aspect, it is necessary to rationalize it and describe it as a formal linguistic category. However, the cognitive model describing the functioning of the language ability of native language users seems less suitable for this. Instead, functional grammar and semantic field theory can provide a suitable theoretical framework for the rational description of linguistic categories. The semantic field theory allows us to talk about the category of aspect even in the case of languages in which it is not expressed morphologically, but by other means, such as syntactic or lexical. With the help of this theory, it is possible to classify and compare languages from an aspectual point of view, to take into account the similarities and differences

¹ I have dealt with similar issues in several studies [cf. Pátrovics 2001: 57-64, 2015: 212-218].

between them, which creates a firm theoretical basis for the teaching of the Slavic aspect category. In the present paper, I shall argue that the essential prerequisite for the aspectual comparison of languages is the lexicographic analysis and processing of the verbal lexis in the form of functional aspect dictionaries. So the processed language material can be available for linguistic theoretical research forming the foundations of an effective language teaching and learning.

Describing Verbal Aspect in Slavic. Two Approaches

It is a fact generally acknowledged that human languages often use different means to convey similar content, and many of them do not possess grammatical means to express certain meanings. This is one of the main reasons that makes it difficult to understand the functioning of the aspect category for those whose native language has no grammatical category like that. First of all, however, since the subject of the present paper is the teaching of the Slavic verbal aspect, I have to describe some of the defining characteristics of aspect itself. I propose here a rather general definition of it which, however, needs to be explained in more detail below. According to this, aspect is information about the course and/or degree of completion of an action in an utterance. This information may be encoded at different language levels, such as morphological, syntactic or textual. For example, aspectual information is expressed at morphological level in Slavic languages, while in Hungarian it occurs predominantly at syntactic level [cf. Jászay-Tóth 1987: 14, Kiefer 2006: 26, Pátrovics 2018: 47]. With regard to the aforesaid definition, it should also be pointed out that aspect is considered a universal linguistic category.

Most languages express in some way whether an action is in progress or it is completed at the moment of speech. A continuous action in contrast with a completed one can be stopped, interrupted and then restarted at any stage of its development whereas a completed action constitutes an indivisible whole. Consequently, it can be stated that the time structure of an imperfective verb can, but that of a perfective verb cannot be divided into discrete units. An imperfective verb presents the inner structure of a situation independently of its bounds whereas a perfective verb presents the situation with one or two bounds, that is in its initial phase, in its final phase or as a completed whole. Be reminded furthermore that boundedness is the presence of at least one bound in the interval structure of an atemporally viewed situation or of an initial and final bound in a temporal interval. Temporal boundedness is the realization of a situation within a closed interval along the axis of deictic time. The imperfective form of telic verbs, for instance, present situations in their middle phase, directed towards attaining an inner bound whereas the perfective forms of telic verbs present situations after the inner bound has been attained.

The essence of the semantic definition of the Slavic verbal aspect lies in the lexical identity of the imperfective verb and its perfective correlate². Independently of syntactic indicators, a Slavic verb can present a situation in its development (imperfective aspect) or in its totality (perfective aspect); in its initial, middle or final phase; as single (perfective aspect) or repetitive (both aspects, that is perfective and imperfective).

The perfective and imperfective aspects, often tightly interrelated with the category of tense³ and the manners of action⁴, are the two basic aspectual categories which are to be found in the most languages of the world.

Be also reminded that a grammeme primarily described as a tense suffix can often have many additional meanings, such as modal and/or evidential. It is no coincidence that the TAM (tense-aspect-modality) concept, which is well-known in the linguistic literature, comes from the English-speaking world [Trask 2007: 295]. In aspect education it is particularly important to draw the attention of language learners to the aforementioned additional meanings.

One should not forget that diachronically there are mutual connections between the complexity of the tense system and the aspect system of a given language. In the languages in which the once complex tense system is eroded, its role is partly or entirely taken over by an emerging aspect category or, on the contrary, the weakening of a strong aspect category often opens the way to the

² This explains why it is not possible to consider Polish verbs, such as *szukać* 'look for' and *znaleźć* 'find' or *żyć* 'live' and *umrzeć* 'die' as aspectual pairs [cf. Jászay 2013: 383].

³ Slavic languages, not only Bulgarian [cf. Stambolieva 2008] and Macedonian but, to a lesser degree, also Croatian, Russian or Polish, are fairly good examples of the intertwining of aspects and tenses. English continuous forms are aspect and tense forms at the same time, in fact, they are the different tense forms of progressive aspect [Brisard 65-82, 2005: Pátrovics 2004/a: 133]. Vater [2000: 87-107] raises the question in his study on German Perfekt tense, whether this tense in German is only a tense, an aspect or a mixture of the two?

⁴ The majority of Slavists view manners of action (also known as *Aktionsarten*) as a category of word-formation and use the term for prefixed (and suffixed) verbs only, while other linguists view them as a semantic category and apply the term *actionality* and/or *actional classes of verbs* to the study of the entire verbal system. The followers of the latter concept often use the term „event aspect” rather than action mode or manners of action.

development of a more complex tense system. Modern Slavic languages (e.g. Russian, Polish or Czech) and Old Church Slavonic can be a good example of the former, while the latter is typical of Gothic and modern German [cf. Pátrovics 2000: 69-86].⁵

Furthermore, from linguistic observations it also follows that an aspectual opposition (which is relevant in a given language), has to have a morphologically marked member. This is especially true of languages where the aspect is not compositional, which means that the aspectual value of the verb determines the aspectual value of the whole sentence. In English, for instance, the progressive verb forms, while in the Slavic aspect opposition, the perfective counterparts of the imperfective forms are often marked.⁶

A particular language or its sub-system can be described within the framework of different linguistic models or linguistic paradigms. The cognitive model is one of them. This does not consider the language to be a stable and rational system based on strict and absolute rules. Indeed, Bańcerowski might be right when he affirms that the rationalization of our whole linguistic activity (namely the aspectual usage) is secondary, it is the product of a preceding state and in reality this activity is based on other principles [Bańcerowski 2008: 28]. Probably the linguistic and aspect models we form through our explicit knowledge based on the analysis of ready-made linguistic products do not reflect the functioning of language (and the aspect category). They also do not reflect the way native speakers create and use language and aspect during their everyday communication. According to the cognitive model the human language could rather be described like a „continuous activity”, which does not dispose of a rigid structure. On the contrary, it is constantly changing, offering place for countless irregularities and abnormalities. It is relatively easy to admit that one can only operate a linguistic corpus containing an X unit successfully, if one memorizes each of its segment separately so that in case of emergency one can retrieve these from their memory. This strategy, which also means the ignorance of linguistic rules, was called reproductive by Bańcerowski [Bańcerowski 2008: 31, see also Bárdos 2000: 69-72]. He is of the opinion that:

“If we consider language on a longer term as a condition which secures its existence, and if we try not to imagine language as an ‘abstract object’ but as an ‘existence’, reproductivity - even though it sometimes seems disordered and illogical - will be more economic and sensible than generative strategy. More precisely, this is the only possible way to comprehend the endless, gigantic and extremely complex phenomenon called language, which represents speakers throughout their whole life in their linguistic existence” [Bańcerowski 2008: 31. My translation – P. P.]

Based on cognitive research data, it can be stated that the communication fragment (CF) can be considered the fundamental unit of language usage. This fragment is:

“... the constant and differently shaped speech segment of the linguistic memory stored in the human brain, which is used by the speaker for making and interpreting statements” [Bańcerowski 2010: 35-36. My translation – P. P., see also Bańcerowski 2008: 36 and 2017: 29-41).

It is also worth mentioning that not only in Hungarian but also in most Slavic languages there are certain verbal prefixes (besides their function of forming the perfective aspect) to evoke particular schemes and scenarios. Also, pre-made units bigger than words called discourse chunks and their positional interpretations are stored together with their context of meanings in our memory [cf. Cseresnyési 2004: 26].⁷ Because cognitivists believe that the fundamental units of language consist of these pre-made and completely equal communication fragments, they refuse the thought of a hierarchical structure of language systems. The aspectual usage of a given language is mainly influenced by what structures are defined as ‘situation adequate’ by a given language community when describing a specific situation⁸ and also by the compatibility of certain CFs. Both cases depend on how certain structures manage to reach a level of conventionality based on certain situations (‘situation potential’) and compared to each other (‘merger potential/compatibility’) in a given language community. For instance, in the case of Russian and Polish languages the difference in aspectual usage may be due to the different situation potential of CFs, as these two languages have undergone dissimilar conventionalization throughout their history. The result was that, on the one hand, despite the significant number of similarities in the aspectual usage of these two languages, there are cases when different CFs are considered situation adequate by both languages for describing the same situation, while, on the other, some structurally similar constructions are compatible in Russian (so they can merge), but not in Polish.

⁵ Although Jászay accepted to some extent the possibility of inverse proportionality between the developed aspect system and the tense system of a given language, he also made some critical comments on my findings [cf. Krékits-Jászay 2008: 163]. In this regard, it must be noted that the development of the aspect systems and tense systems of modern Slavic and Germanic languages was a rather complex process that has not yet been explored in all its details.

⁶ To be more precise, the aspectual opposition in Slavic languages is most often marked by the prefixed perfective or the suffixed imperfective member of the aspectual pair.

⁷ This previously recognized yet explicitly for a long time unspoken fact was also used in language teaching methods - e.g. in the so-called Army Method and in the Graded Direct Method, among others [Bárdos 1988: 67-69].

⁸ In Polish, for example, one usually uses CFs containing a perfective verb to describe sudden events, or completed actions with a result, while one uses CFs containing an imperfective verb to express habits.

Considering all these, the linguistic rules governing aspectual usage and described by grammar scientists in the eyes of cognitivists seem to be rather sophisticated, posterior explanations. For describing perfective or imperfective actions, native speakers in their full communicative competence use the situation adequate CFs which are in accordance with the traditions of the specific language community and which are well-formed by *intuition*, without realizing what the meaning of „aspectuality”, „boundedness” or „telicity” is. Thus, speakers manage to reach from a theoretical field to the practical field of a particular realization not by applying abstract rules, but retrieving and using the particular CFs stored in their memories as starting points. Therefore, they choose the proper CFs to establish a fusion based on their conventionalized and internalized situation potential, as well as on their compatibility schemes.

As it is apparent from the above, the cognitive model adequately reflects the way this segment of language (i.e. the aspect) resides in the minds of the native speakers of a language, but is less suitable for presenting this segment as a category governed by rules which can be used in foreign language teaching, and are accessible and understandable for foreign language learners. Perhaps this could explain, why Cseresnyési following up on Hjelmslev and Chomsky emphasizes that

„there is a real pondering to justify the reason why structural linguistics makes every effort to define language ... as a formal system” [Cseresnyési 2004: 8. My translation – P. P.]. Bańcerowski also mentions that there are certain cases when it is necessary to follow this approach [Bańcerowski 2008: 28].

In agreement with the aforementioned opinions, it should be pointed out that foreign language teaching, for instance, can be a case when it is necessary to describe the language as a formal system. The foreign language learner follows a very different path in the course of language learning than the native speaker during language acquisition. The two different processes are not even comparable in terms of exposure. Therefore, modeling language acquisition in a foreign language lesson can only be a failed attempt. The foreign language learner needs clear rules for the accepted usage of language (and aspect). Linguistic models describing language as a hierarchical system are the basis for exploring the functioning of language categories and formulating rules for them. The theory of functional grammar being one of these models is a different way of describing language and one of its categories, the aspect than the cognitive approach.

This model offers a flexible theoretical framework for representing different language structures. According to this theory several categories can be set up which are called functional semantic fields in linguistic terminology. These are meant to be broader than the categories themselves. The Slavic opposition of aspect, too, can be understood as the central part of the semantic field, that is the functional and semantic supercategory of aspectuality, the peripheries of which are formed by non-grammaticalized (non separated out morphologically) manners of action. In contrast to this marginal area, in Slavic languages there is a semantic kernel, a centre of aspectuality based on the opposition of two series of grammatical forms: the perfective and the imperfective marked by means of a set of grammatical features.⁹ The idea of field-likeness of grammatical categories is the basis of the theory outlined below [cf. Bondarko 1983: 76-115, Jászay 1993: 7-9]. Ultimately, it originates from the Prague Linguistic Circle's concept. This view holds that the language system is a space of uneven density which can be described on the principle of centre - periphery - transition. Languages can be divided into particular groups depending on the degree of grammaticalization of aspect [cf. Jászay 1993: 64-69, Pátrovics 2004/b: 54-77]. According to this theory, at least three basic groups can be set up: (A) - the aspect is a grammaticalized verbal category that is expressed at the morphological level of a given language (e.g. Slavic languages belong to this group); (B) - the aspect is rather a syntactic category. It is less grammaticalized, that is no aspectual pairs (perfective vs. imperfective) exist, only one, for example the progressive aspect is morphologically marked (e.g. English and, to some extent, Hungarian belong to this group); (C) - The aspect is rather a conceptual - semantic category having no grammatical markers. The aspectual value can only be determined on the basis of the whole utterance (e.g. German, Dutch, Swedish and, to some extent, Hungarian belong to this group).

As far as Hungarian is concerned, it can be assigned to both group B and C. Although the morphological kernel of aspectuality is missing in Hungarian causing many problems for Hungarians studying Slavic languages, there are some linguistic means that can express aspectual meanings: e.g. a) in many cases, the meanings of Slavic aspectual pairs formed by prefixation can be rendered by their Hungarian prefixed equivalents; e.g. the Hungarian prefix *meg-* usually indicates a perfective action; b) the definite object in Hungarian also promotes perfectivity; c) if the verbal prefix in Hungarian occurs in post position (i. e. if it is placed after the verb), it often expresses a progressive action.¹⁰ However, it should be pointed out that these means are not regular in Hungarian, and that

⁹ a) Some Polish verbal lexemes have at their disposal three temporary paradigms (praeteritum – praesens – futurum e.g. *pisał, piszę, będę pisał* 'he wrote, writes, will write', while the others have two tenses only (praeteritum and non-praeteritum e.g. *napisał, napiszę* 'he wrote/has written, will have written'), where non-praeterital forms reveal the formal features of praesens, but the semantic function of futurum (i.e. futurum perfectum); b) perfectives cannot function along with phase verbs (*skończył czytać te gazety* but not **skończył przeczytać te gazety* 'he stopped reading these newspapers'); c) the third feature is manifested by certain limitations in formation of participles (their detailed explanation is available in every Polish grammar handbook)

¹⁰ A small comparison between Polish and Hungarian illustrates the functioning of these means indicated with bold: 1) *Gotował kaszę.* - *Főzte a kását.* *ipf.* (He was cooking the porridge.): *Ugotował kaszę.* - *Megfőzte a kását.* *pf.* (He has cooked the porridge.); 2) *Písal list.* - *Levelet írt.* *ipf.* (He was writing a letter.): *Napísal list.* - *Írt egy levelet.* *pf.* (He wrote/he has written a letter.); 3) *Alpiniści wspináli się na górę.* - *A hegyászok másztak fel a hegyre.* *ipf.* (The alpinists were climbing to the peak.): *Alpiniści wspięli się na górę.* - *A hegyászok felmásztak a hegyre.* *pf.* (The alpinists have climbed to the peak).

in some cases Hungarian remains neutral towards aspect.¹¹ Based upon the aforementioned characteristics, Hungarian seems to be rather heterogenous from the aspectological point of view. The fact that the Hungarian language is not part of the A group and its heterogenous aspectual nature makes it extremely difficult for Hungarian native speakers to master the rules of accepted aspectual usage in Slavic. The authors of *Structural Aspect Dictionary of the Polish Verb* Waław Cockiewicz and Anna Matlak note in the introduction to their work that:

"...both learning and teaching verbal vocabulary in general pose difficulties that do not occur outside this section of lexis [...] It is connected, first of all, with the character of verbal derivation. A single verbal root (simplicium) is a base for creating a larger number of verbal lexemes, while the former exponents of the derivation in question are not regular, irrespective whether they are morphological [...] or syntactic" [Cockiewicz – Matlak 1995: 15].

They continue as follows:

"In Slavonic languages, however, the issue is more complicated because of the mutual connections between verbal morphology and the grammatical category of aspect. In practice it means that the learner has to master the ability to distinguish which among many derivatives of a single verbal base [...] is an aspectual partner of the initial simplicium, and which, on the other hand, shows changes of lexical meanings" [Cockiewicz – Matlak op. cit. ibid.].

In addition to the above, it should be noted that in the case of Slavic languages, the hardly discrete differentiation between aspect derivation and lexical derivation and an extremely developed homonymy also complicate the situation of the foreign language learner. Regarding the aspectual homonymy in the Polish language see [Cockiewicz – Matlak 1995: 16-17, Pátrovics 2018: 69-92, Saloni 1996: 4-5].

All the aforesaid statements seem to support the thought that besides the enumeration of the basic meanings of perfective and imperfective aspects and the description of the basic rules of aspectual usage in Slavic attributable to these, a systematized and clear-cut structural presentation of the word-formation system of the Slavic verb in the form of derivation clusters seem to be necessary. The authors, Waław Cockiewicz and Anna Matlak, who have already been referred to above several times, warn of the possible consequences of the lack of such a systematization with the following words:

"The absence of such a systematization causes endless uncertainty on the part of the learner as to the choice of the verb form and is responsible for the fact that the whole verbal lexis of the [...] Slavic language makes an impression of being a disorganized, impossible to grasp set of elements" (Cockiewicz-Matlak op. cit.: 18).

Although the position of the Russian language is exceptionally good from the viewpoint of aspectual education¹², other Slavic languages often lack the appropriate teaching material, such as textbooks and aspectual dictionaries¹³. The teachers of minor Slavic languages are often inexperienced in teaching the Slavic verbal aspect and their lack of knowledge of the linguistic background of aspectuality leads to the situation that this issue rarely occurs in language seminars and the teaching of this important language category is not always done at the right level. The negative consequences of the above facts are also significantly reflected in the relatively low level of the students' language skills which is especially true of their aspectual usage.

Therefore, I conclude the present paper with the suggestion that there is an urgent need for an elaborate systematization and presentation of the Slavic verb derivation in the form of a structural aspect dictionary¹⁴ which in many Slavic languages would fill a lacuna and could be an essential aid to teaching the Slavic verbal system.

¹¹ A comparison between Polish and Hungarian shows this: 4) *Amikor elementem hazulról, eszembe jutott, hogy nincs nálam az útlevelem. - Kiedy wychodziłem/wyszedłem z domu, zauważyłem, że nie mam przy sobie pieniędzy.* The Hungarian verb *elementem* can be interpreted here both as perfective or as imperfective, cf. *When I was leaving/After I had left, I realized that I didn't have any money on me.*

¹² In addition to the aforementioned works, I refer here only to some books on the subject [Jászay 2019, Krékits 1997, Zalizniak-Shmelev 1997, Lehmann 1997]. About V. Lehman's aspectual dictionary project in some detail see Pátrovics 2018: 114-115].

¹³ One should not forget that there already exist several language books on verbal categories not only in Russian, but also in Polish and Slovak relations, cf. Garncarek 2001, Králik 1997.

¹⁴ Aspectual dictionaries already exist e.g. in Polish – German, Polish – English or Polish – Hungarian relation. The latter was published as an appendix to my habilitation thesis (see Pátrovics 2018). The linguistic material included in it could form the basis of the verbal vocabulary of an unabridged Hungarian – Polish / Polish – Hungarian unabridged dictionary.

Conclusions

In this paper I examine two possible ways of describing verbal aspect, one of the most important and most difficult category of Slavic languages. One is the cognitive approach providing an authentic image of how this segment of language resides in the minds of native speakers, the other is offered by functional grammar and semantic field theory. The latter, which implements the description of language and its categories as a formal system, seems more suitable to serve as the linguistic theoretical basis for teaching the Slavic aspect category. In the paper, starting from Jászay's theory, I also raise the idea of classifying languages according to aspect, which creates an opportunity to compare languages with significantly different structures from an aspectual perspective. In addition to listing the most common means of expression of the aspect in Slavic and some of their functional equivalents in Hungarian, I draw attention to the important role of functional aspect dictionaries in aspect teaching. Among other things, the paper highlights that teaching the Slavic verbal aspect cannot be effective without appropriate language aids and adequate preparation in theoretical linguistics.

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Management challenges in healthcare organizations: financial matters

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Abstract

Healthcare management is a burning issue at the moment. A particularly important topic is rationalization in healthcare from the point of view of efficient cost management. New solutions are needed to improve the performance of healthcare organizations. In modern healthcare, where financial aspects play a key role in the business decision-making process, managers at all hierarchical levels must deeply understand basic financial concepts in the context of healthcare delivery. A manager's understanding of these concepts is necessary for the effective use of financial strategies and the improvement of the economic well-being of the organization. This paper aims to indicate the key challenges in the management of healthcare organizations in the financial field. The new generation of managers of healthcare organizations should be knowledgeable about a wide range of financial issues, which requires them to be financially literate.

Keywords: healthcare organizations, challenges, management, financial matters.

1. Introduction

The World Health Organization defines health as complete physical, mental and social well-being, not merely the absence of disease and injury (Parekh, 2003). The concept of healthcare encompasses a broad spectrum, spanning from promoting wellness and lifestyle practices to providing treatment for acute medical conditions (Garge et al., 2017). A country's health system encompasses all the organizations, institutions, and resources devoted to providing healthcare services (Gupta, 2007).

Health professionals found themselves lacking in management-related competencies, while managers had a limited understanding of health systems (Gupta, 2022). Understanding financial management decisions for healthcare professionals is important for overall decision-making and sustainable growth of organizations. To ensure the good financial health of healthcare firms, the role of financial management is important at both the primary and secondary levels. The key responsibility of a financial manager in healthcare organizations is not only limited to raising and investing money to maximize stakeholder wealth, but they are also responsible for periodically making financial outcomes available to various stakeholders to ensure timely and effective financial management decisions.

Financial information plays a crucial role in evaluating a company's capacity to fulfil its obligations, enhance capacity, and secure funding. It aids in assessing the sustainability of future earnings and cash flows, thereby contributing to an understanding of the company's overall performance and financial health (Widia Asmaraningtyas et al., 2023).

For healthcare organizations to achieve success and provide a high level of healthcare for their patients, their management and finance teams must operate effectively to achieve profitability-oriented goals (Eisenstein, 2020). Senior executives rely on finance experts to obtain relevant accounting and other financial information. This information helps them make wise decisions and monitor internal and external spending. Healthcare financial management plays a key role in developing and implementing strategies to ensure sufficient revenue to cover costs and plan for future development.

The paper is structured as follows. After the introductory part, the second chapter indicates the specifics of financial management in healthcare organizations, where the achievement of goals is at the centre of attention. The third chapter provides insight into the importance of financial information for business decision-making, after which the paper deals with the financial literacy of managers of healthcare organizations. The following are concluding considerations at the end of the paper.

2. Financial management in healthcare organizations and achieving goals

Effective financial management plans and systems are essential to ensure that organizations achieve profitability. This is particularly important in the context of healthcare services, where financial managers play a key role in achieving a balance between providing superior healthcare and maintaining a sustainable financial situation. To ensure sound financial health of healthcare organizations the role of financial management is important at both primary and secondary levels (Sharma, 2022).

The following is a presentation of several goals of financial management in healthcare, although the list is certainly much broader: careful evaluation and planning, generating income, protecting tax status, monitoring internal spending, influencing third-party payers, long-term and short-term investment, and financing (Einstein, 2020; Paterson, 2014).

Financial managers have a key role in assessing the organization's effectiveness and overall financial health. Their careful planning makes it possible to predict the future. For example, let's imagine that a downtown health clinic is losing patients because of the outdated and slow technology they use, which is located on the other side of town. Through thorough evaluation and planning, financial managers can identify these challenges and develop strategies for improvement. Despite previous earnest attempts to elucidate its numerous dimensions and interpretations, access to healthcare continues to be a challenging concept, impeding the efforts of healthcare policymakers and professionals in pursuing substantial healthcare reform (Khan & Bhardwaj, 1994). All of this affects the evaluation and planning processes on a micro level.

There are various definitions of financial indicators, and one of them is that "financial indicators are those that show how good a company's financial situation or the situation of a financial market is" (Cambridge Dictionaries, 2011). Financial measures can be standardized or non-standardized. Another goal of financial management is investing in assets to ensure financial sustainability. Performance represents the outcome of ongoing management decisions aimed at effectively and efficiently achieving specific goals aligned with desired accomplishments. It encompasses both individual and organizational achievements. To generate revenue and keep the organization competitive, financial managers regularly review healthcare prices to reflect market rates. In addition, they evaluate the efficiency of different departments in hospitals.

Federal and state governments are constantly looking for ways to provide additional funding. Healthcare management teams must focus on compliance with tax-exempt laws and regulations. One strategy that healthcare organizations use to maintain their nonprofit status is to limit fees for low-income patients. Another approach involves building nursing schools in communities that have limited access to educational institutions, charging affordable tuition. This approach helps build a qualified nursing workforce and contributes to the long-term strengthening of the health system.

Effective financial management should offer stability to companies while enabling them to invest, innovate, and seize opportunities. It must prioritize transparency to facilitate accountability and ensure efficient resource allocation aligned with the company's strategic objectives.

Healthcare financial managers actively monitor spending to identify possible cases of fraud and abuse of funds, with physicians playing a key role in overall spending. Internal control is particularly important for risk management. The definition of internal control includes financial internal control and non-financial (administrative) internal control. Financial internal control refers to activities related to finance, such as controlling cash flows and managing income and expenses. Non-financial internal control includes activities that are indirectly related to finances, such as control of the personnel department, management of fixed assets and implementation of prescribed procedures. A clear internal control system helps the organization prevent fraud, and errors and reduce losses. It strengthens the protection of assets, provides security in the reliability of accounting data, eliminates unnecessary doubts and facilitates the keeping of adequate and reliable accounting records. Large companies typically prioritize strong internal controls, whereas small businesses, SMEs, and franchise-based companies often overlook the significance of internal control measures (Listya et al., 2022). Small and medium-sized enterprises encounter numerous challenges, with issues stemming from "inadequate financial management" often cited as a primary cause of business failures within this sector (Karadag, 2015). There are situations in which doctors may issue orders for drugs or equipment that do not meet the patient's actual needs, exposing the organization to potential legal liability. To reduce the risk of fraud and misuse of funds, financial managers often establish special committees that conduct monthly audits of all drug and equipment purchases. These initiatives are aimed at preventing irregularities and ensuring transparency in the management of funds. If fraud is discovered, the healthcare organization may take disciplinary action against the doctors following internal policies, initiate an investigation, or take steps according to federal fraud and abuse laws. This approach helps preserve the integrity of the healthcare organization's financial system.

Insurance companies and other third-party entities often cover some or all of patients' medical expenses. Since insurance companies are profit-oriented, it is common for them to ask for discounts when insuring a large number of people. The development of artificial intelligence will have an impact on calculating insurance premiums. Healthcare finance managers are tasked with negotiating fair prices - retaining as many patients as possible and ensuring adequate compensation for the healthcare services provided. Healthcare financial management teams develop strategies to help facilities mitigate the financial risks associated with third-party contracting. Their goal is to negotiate the most favourable contracts possible to preserve financial stability and ensure the sustainability of the provision of high-quality health care.

Long-term investment decisions play a key role in shaping the future of organizations. Short-term financial decisions adhere to the same principles as long-term financial decisions, yet with a shorter time horizon typically spanning days, weeks, and months instead of years. Finance teams often take the lead in the process of making significant investment decisions, with managers at all levels contributing to the decisions. With their expertise, finance teams assess how various investments can positively or negatively impact the organization's financial future. For example, if a technology update is being considered, the finance team will analyze the costs of the technology update and assess how it might contribute to attracting more patients or bring savings in other ways. These assessments help the organization make informed decisions that support its long-term financial success.

Finance managers also have to raise funds to meet their expenditures. The COVID-19 pandemic posed unprecedented challenges to financial management, especially regarding cash flow. To cope with this disruption, many businesses opted to defer payments on their current liabilities.

The accountant's main responsibilities include developing and reporting data to measure the firm's performance, assessing its financial position, complying with regulatory reporting requirements, and managing tax reports. Following generally accepted

accounting principles, accountants prepare financial statements using the accrual basis, recognizing revenue at the point of sale and expenses when incurred. On the other hand, the financial manager focuses on cash flows, managing the inflow and outflow of cash. Their priority is to maintain the firm's solvency by planning cash flows to meet obligations and acquire necessary assets. Regardless of profit or loss, sufficient cash flow is essential for meeting obligations as they arise. (Zutter, 2019).

The remainder of this paper is organized into four sections. The second section deals with the use of financial information in business decision-making. Financial literacy of management is the subject of discussion in the third section. This is followed by concluding remarks and a literature review.

2. Using financial information in business decision-making

Quantitative and qualitative information is important for making business decisions. When it comes to major investment decisions, it is important to consider, in addition to non-financial factors, other types of information that come from various spheres of performance, such as perceptions of the company's strategic vision, ability to face challenges, credibility of management, prospects for innovation, ability to attract talented individuals etc. (Low & Siesfeld, 1998).

Traditionally, accounting-based figures have been widely used in for-profit healthcare organizations to measure financial performance. Sales returns and sales growth are often seen as accessible, and accurate measures of effectiveness aligned with various frameworks for conceptualizing organizational effectiveness. Profitability, and growth, also a commonly used measure of productivity, are considered performance measures to evaluate the performance of healthcare organizations. Regardless, there is a critical view when it comes to the appropriateness of these measures and calibration. Finally, if the measure is taken as e.g. an arithmetic average of 3 or 5 years of growth periods may be ineffective compared to calculating a geometric measure of growth over the same period (McKiernan & Morris, 1994). The question arises as to whether accounting-based measures accurately measure organizational effectiveness or overall performance. Namely, financial statistics serve to measure only financial performance. Therefore, it is necessary to use a multidimensional set of measures, not only financial measures.

When specifically applied to organizations, this concept is used to refer to those measures included in various accounting and financial statements or to any ratio calculated from them. On the one hand, there are some financial measures, such as actual total costs and revenues, which are obtained from the financial statements issued by each institution following external accounting rules and formats. On the other hand, there are indicators such as profit margins per unit or standard costs and revenues, which are provided by management accounting reports prepared to support internal decisions. "Net patient service revenues, costs of medical supplies and patient accounts receivable are examples of the former; while the contribution margin per MRI scan, the average daily cost per inmate and the estimated costs of future malpractice claims are instances of the latter" (Sedevich-Fons, 2014).

Estimated financial information is a key factor in choosing between different quality projects, especially in those cases where the options have similar short-term effects on patients. Furthermore, since monetary measures are more important than physical measures for financial managers, reports on expected costs and revenues can contribute to the rapid approval of improvement actions. In addition, indicators of the financial performance of past quality projects allow the detection of budget deviations caused by changes in unit costs of resources or prices of services. There is a different impact on the financial items of the balance sheet and income statement (Table 1).

Table 1. Factors and financial items

Operating revenues are affected by factors such as:	Total assets are affected by factors such as:
Contractual service agreements	Age of the asset base
Payer mix	Technology intensity of the practice (required investment in technology)
Expense management and budgeting	Decisions regarding ownership versus leasing of major assets, inventory management, and cash management
Provider productivity (RVU/provider)	Capital budgeting and acquisition management strategies
Patient satisfaction	
Market competition	
External environmental factors	

Source: Paterson, M.A. (2014). *Healthcare finance and financial management: Essentials for advanced practice nurses and interdisciplinary care teams*. DEStech Publications, Inc. (p. 148)

Financial ratio analysis of hospitals needs to be better understood for a variety of reasons. First, the sheer size of the hospital industry makes proper financial assessment important to the nation's economy. Financial ratio analysis is an accepted approach to

hospital performance evaluation. Hospital administrators, governing boards and public policy groups utilize financial ratios to benchmark the financial health of a hospital or a group of hospitals (Glandon et al. 1987, p. 440). Ratios play a role, for instance, in profitability analysis, liquidity evaluation, future profit, estimation, competitor analysis and prediction of corporate failure. In utilizing ratios, the practitioner or researcher typically draws meaningful insight based on a select group of financial ratios (Zeller et al., 1996). Hospital administrators must have timely, valid, and interpretable financial information that allows them to make operational decisions in response to the threats of the changing healthcare environment. Aggregate indexes that reflect dimensions of hospital financial performance and simplify the information in financial ratios are needed to aid in decision-making. This article reviews the development and use of hospital financial performance measures and lays the groundwork for research into deriving a multidimensional measure (Glandon et al., 1987).

There is a statistically significant relationship between hospital financial performance and quality of care (Dong, 2015). Hospital profitability, financial leverage, asset liquidity, operating efficiency, and costs appear to be important factors of healthcare quality. The results suggest that, if a hospital made more profit, had the capacity to finance investment using debt, and paid higher wages presumably to attract more skilled nurses, its quality of care would generally improve. While the pursuit of profit induces hospitals to enhance both the quantity and quality of services they offer, the lack of financial strength may result in a lower standard of healthcare services, implying the importance of monitoring the quality of care among those hospitals with poor financial health.

Leading healthcare provider organizations now use a “balanced scorecard” of performance measures, expanding information reviewed at the governance level to include financial, customer, and internal performance information, as well as providing an opportunity to learn and grow to provide better strategic guidance. The approach, successfully used by other industries, uses competitor data and benchmarks to identify opportunities for improved mission achievement. This article evaluates one set of nine multidimensional hospital performance measures derived from Medicare reports (cash flow, asset turnover, mortality, complications, length of inpatient stay, cost per case, occupancy, change in occupancy, and percent of revenue from outpatient care) (Griffith et al., 2002).

3. Financial literacy and management

Financial literacy has become a key topic in recent years, sparking the interest of educators, communities, businesses, government agencies, organizations and policymakers. Financial literacy (or financial knowledge) is typically an input to model the need for financial education and explain variation in financial outcomes. The financial knowledge, skills, and competencies of decision-makers and health policymakers are gaining greater significance (Gačić et al., 2023). Defining and appropriately measuring financial literacy is essential to understanding educational impact as well as barriers to effective financial choice.

The terms financial literacy, financial knowledge and financial education often are used interchangeably in literature and popular media. Few scholars have attempted to define or differentiate these terms. Unlike health literacy, which is typically measured using one of the three standardized tests, there currently are no standardized instruments to measure financial literacy (Huston, 2010).

Accounting literacy, particularly in record-keeping, is crucial as it significantly influences the success or failure of a business. Record-keeping serves as a fundamental skill for business owners, as accounting information is indispensable for informed decision-making. Accounting inherently possesses a degree of flexibility, influenced by various interpretations and understandings, which permits choices, options, and even policy. Earnings management is often driven by management's opportunism or their intention to convey information regarding the company's future performance, aiming for efficiency (Chtaoui et al., 2024). Therefore, financial literacy is important to view through an accounting lens. Accounting knowledge is essential to all types of businesses in order to plan and manage financial matters effectively (Roslan et al., 2018). According to Trombetta (2023), a high level of basic financial (accounting) literacy indicates an awareness of risk. In addition, it implies how it can be mitigated through risk diversification and how it can be mitigated through risk diversification.

4. Conclusions

Effective financial management is crucial for leadership and management within healthcare organizations. Implementing effective internal control systems can contribute to enhanced financial performance. Management encounters significant challenges in healthcare organizations, especially concerning financial matters. These organizations often operate within constrained budgets, necessitating adept financial management to allocate resources efficiently while upholding quality patient care standards. Rising healthcare costs, spanning labour, supplies, and technology, further strain financial resources, prompting the implementation of cost containment measures. In order for healthcare organizations to survive in a turbulent environment, strong financial leadership and informed decision-making are needed. In addition, adequate financial literacy of managers contributes to this process to a large extent.

Healthcare financial managers should provide adequate sources of financing technological innovations. Permanent professional education in healthcare services is a requirement for efficient management of the organization's resources. To meet the needs of healthcare in the twenty-first century, competent managers will be increasingly important across all health professions.

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WOMEN ON THE SOCCER FIELD - ADULT HUNGARIAN SOCCER AND FUTSAL PLAYERS' FEELINGS AND THOUGHTS ABOUT THEIR OWN SPORT

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Abstract

Women's football has become popular, with a growing number of players being signed and a wider range of football-related opportunities. With this quantitative change has come an increase in quality, which has also been reflected in attendances. From a scientific point of view, however, despite its dynamic development, women's football is still an untapped area.

Our research focused on the thoughts and motivations of Hungarian women football and futsal players in relation to their own sport. Participants were asked to fill in an online questionnaire, which included demographic data, questions about their sport, and motivations (H-SMS). We looked at the players' feelings about their sport and their position, such as "what football means to them", their experience of winning and losing matches, pre-match anxiety, and handling difficult periods.

The majority of the 175 respondents were aged between 18 and 35, with a roughly equal proportion playing in the first, second and regional leagues. 60% were footballers, nearly a third played both disciplines, while 13% played only futsal. More than half of the players could not imagine their lives without football and 90% felt supported by the community in which they played. Players tended to be more anxious before high-priority matches, and as for the handling of winning or losing matches, slightly more than half of the respondents were able to handle it objectively.

Keywords: women's football, performance anxiety, motivation, sport engagement

A. Introduction

The 2022/2023 season has been an outstanding one for women's football. Two major world events, record attendances, success stories. The 2022 European Championship ended with a victory for England (UEFA, 2022), while the 2023 World Cup final saw Spain take the throne of women soccer (FIFA, 2023).

Football is one of the most popular sports in the world. It is played or followed in one form or another by millions of people around the world, from the youngest to the oldest. The popularity of the sport lies partly in its simplicity, as it requires no special equipment, can be played in any conditions and is flexible. In addition, the joy of cheering, supporting your favourite team and participating in an event brings crowds together. From amateur soccer to professional top-level sport and world football events, it appeals to a wide range of people and provides an opportunity for entertainment and recreation (MLSZ, 2021).

10-15 years ago, if a little girl said she wanted to play soccer, she was likely to be looked at strangely and talked out of it, saying it was for boys. However, the world has changed a lot since then and women's football is not only becoming more accepted but also more popular. Every year, more and more girls are choosing soccer, the number of certificated women players is growing and the range of opportunities available to them is also widening. This growth is reflected even in the increasing number of spectators and followers of women's football (Móczik & Patakiné Bősze, 2023).

Despite this, women soccer is still a little researched area from a scientific point of view, and a deeper understanding of the processes, players and people involved in women soccer is essential for the development of the sport.

The focus of our research was on adult Hungarian female soccer and futsal players, our aim was to get to know their motivations, feelings, and thoughts about their sport. For this purpose, we used a questionnaire available on an online platform, which consisted of two main parts: a questionnaire focusing on thoughts and feelings about their own sport - compiled by us, while sport motivation was assessed through the Hungarian version of the Sport Motivation Scale (H-SMS) developed by Ryan and Deci (2000) (Paic et al, 2018). The results of this research provided a comprehensive picture of an area that has not been investigated before, and the results can be used to improve women's football in Hungary, including a cooperation with the national football federation.

Research, methods

1) The aim of the research

The aim of the research was to find out the motivations of adult Hungarian women's football and futsal players related to their own sport, their feelings and thoughts about their own sport and their positions. The research explores several aspects, of which the

present study focuses on the following areas: the importance of soccer/futsal in the players' lives, pre-match anxiety and the managing match results, and motivation related to their own sport.

2) *Target group*

The target group of the research was adult Hungarian women soccer and futsal players who play in a league ran by the Hungarian Football Federation or one of its organisations. The lower age limit was set at 18 years, while there was no maximum age limit. The players were reached partly through football and futsal clubs and partly through social media.

3) *Questionnaires*

Participants had to fill in a multi-part questionnaire on an online platform. The questionnaires used were approved by the Research Ethics Committee of the Faculty of Pedagogy and Psychology of Eötvös Loránd University with the numbers 2022/45 and 2022/456.

The first part of the questionnaire consisted of questions about demographic data and background information, followed by questions about their own sport and positions. The second part of the questionnaire was the Hungarian version of the Sport Motivation Scale (H-SMS) based on the sport motivation theory of Deci and Ryan (2000) and Pelletier (1995). In this questionnaire, respondents had to decide on a scale of 1 to 7 how true the given statements were for them. The 19 questions all belong to one of the motivational types (intrinsic, extrinsic or amotivation) (Paic et al., 2018).

4) *Hypotheses*

For our research we formulated four hypotheses, three of which are related to pre-match anxiety and the fourth to sport motivation.

H1: *Pre-game anxiety is higher before "high priority" games than before "normal" games.*

H2: *Recreational players tend to be more anxious than professional players before "normal" games.*

H3: *Recreational players tend to be more anxious than professional players before "high priority" games.*

H4: *Intrinsic motivation has a significantly higher level in the target group than extrinsic motivation.*

B. Results and discussion

A total of 216 players filled in the questionnaire, 41 of whom were minors, giving a final sample size of 175. Almost 95% of the respondents were aged between 18 and 35, which roughly corresponds to the length of their active career. However, older players are also present in certain positions or different recreational leagues (Móczik & Patakiné, 2022). In terms of positions, the distribution of players is roughly equal: 30.3% play in attacking positions, 33.7% in defensive positions, while the share of goalkeepers is 36%.

In terms of discipline, the largest percentage of players (around 60%) play professional football, with nearly 30% playing both disciplines, while the percentage of players who play only futsal is 13%. This proportion reflects the situation of women's football in Hungary. Futsal is considered as a complementary sport to high level soccer, it does not really have a strong position as a independent sport and the federation does not pay enough attention to its development (MLSZ, 2018).

Nearly half of the respondents (45%) play in the highest division, which includes both the high soccer and futsal divisions, while the distribution of second division and regional championships is roughly the same (27% and 28%). It is important to note here that, given the characteristics of Hungarian football, first division players represent the competitive category, while second division and lower division players are defined as recreational players.

Among other things, we asked the players if they could imagine their lives without soccer or futsal, and how supportive they consider the community where they play. 65% of respondents could not imagine their lives without soccer or futsal, and a further 21% would feel worse off if football were not in their lives. 95% of respondents consider the environment very or extremely supportive (4 or 5 on a scale of 1 to 5). Answers to the question of what football or futsal means to them were similar in many cases.

Here are some examples:

"More than a hobby."

"Football is my refuge."

"Being part of a team."

"My childhood dream."

"Words cannot describe what futsal means to me."

Overall, it can be concluded that most of the players play sport in a supportive environment and that soccer and futsal play a central and very important role in their lives. In the latter area, the love of the sport itself and the feeling of belonging is the most frequently expressed feeling about football.

Regarding the handling of winning matches, the largest proportion of respondents, 54.1%, said that they try to evaluate the victory depending on the match. The proportion is 59.2% for competitive athletes and 50% for recreational athletes. When it comes to losing matches, 64.5% of respondents said they learn lessons and focus on the next one. The proportion was 68.4% for competitive athletes and 61.5% for recreational athletes. Overall, it can therefore be concluded that a higher proportion of respondents are able to take an objective view of the outcome of matches, without extremes, but it should also be noted that this proportion is higher by the competitive athletes than by the recreational athletes.

For pre-game anxiety, respondents were asked to indicate on a scale of 1 to 5 how anxious they were before "normal" or "high priority" matches. The mean score for "normal" matches was 2.48, while the mean score for "high priority" games was 3.04.

When looking at competitive and recreational levels separately, the means for the former were 2.33 and 2.91, while the latter were 2.59 and 3.15.

Three of our four hypotheses were related to pre-game anxiety. Our first hypothesis was that the perceived anxiety level of players is higher prior to “high priority” matches than for “normal” matches. As the sample was not normally distributed, we conducted a non-parametric test. The result of Wilcoxon test ($p < .001$) proved the hypothesis. Players experience significantly stronger anxiety before high priority matches.

The second and third hypotheses hypothesized significant differences between recreational and competitive athletes for both normal and high-priority games. As the sample was not normally distributed, the Mann-Whitney test was used in both cases. After the correlation tests, both hypotheses were rejected, so no significant difference between the two groups could be found in terms of anxiety. In the light of the results, it can be said that the level of pre-game anxiety is generally not extremely high, ranging between 2.3 and 3.2, but higher before “high priority” matches. On average, the anxiety level of recreational athletes is slightly higher than that of competitive athletes, but the difference is not significant.

For motivational types, the position-averages (on a scale of 1-7) were as follows. The average for intrinsic motivation was 4.5 for players playing in the attack and 5.2 for defensive players and goalkeepers. The average extrinsic motivation was 4.1 for attackers, 4.4 for defenders and 4.5 for goalkeepers. Overall, amotivation was low for all positions. Attacking players had 2.1, while both defenders and goalkeepers had 2.2. Our fourth hypothesis assumed a dominance of intrinsic motivation for the whole sample. The sample distribution was not normal in this case either, so we used the non-parametric Wilcoxon test. In the light of the test results ($p < 0.01$), our hypothesis was confirmed, i.e. the dominance of intrinsic motivation over extrinsic motivation was found to be the case for the whole sample.

We can say that respondents are more intrinsically motivated, and it could have several reasons. Partly the current situation of the sport itself, the lack of support and recognition compared to men's football - hence the lack of external motivating factors. Another reason could be that football is still seen as a male domain, so external factors such as parental choice, environmental influence are less present as motivating factors. The study of specific motivation could be the subject of further research in the future.

C. Conclusion, further directions

Our research focused on a group of Hungarian adult female soccer and futsal players and their feelings and motivations related to their sport - a group that has been little researched so far. Our questionnaire covered a lot of different areas, and in the present study we focused on the role of their sport in their lives, the extent to which they perceive the environment in which they play as supportive, how they experience matches in terms of anxiety and results, and the motivation of the players.

The results showed that football is a priority in the lives of the players and that the environment in which they play is strongly supportive. This last seems to confirm the fact that soccer is a very important part of the players' lives, as they feel comfortable in a supportive environment, and they can unfold on the pitch.

The results of the analysis of motivational types also confirmed this fact, as the sample is characterised by the dominance of intrinsic motivation. It was also evident from the results of the questionnaires that the players were basically objective and free of extremes in their treatment of both pre-game anxiety and the outcome of matches. However, there was a slight difference - although not always significant - in favour of competitive players. Recreational level athletes had higher average of anxiety and lower proportions of objective considering of match results.

Although women soccer is developing rapidly, its scientific study is still in its infancy. A scientific approach is both useful and necessary for understanding and developing women's football, and for exploring the underlying processes at both national and international level. In addition, it would be important to pay attention to the development of women's grassroots (UEFA, 2014), i.e. recreational, amateur football, alongside competitive football.

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