



INTERNATIONAL ACADEMIC INSTITUTE

# INTERNATIONAL ACADEMIC JOURNAL

**Vol. 4 Issue 2. Year 2023**

**INTERNATIONAL ACADEMIC JOURNAL**

**Editor:**

Hristina Ruceva Tasev, Dr. Sci, Ss. Cyril and Methodius University, Skopje, Republic of N. Macedonia

**Editorial Board:**

Milena Apostolovska-Stepanoska, Dr. Sci, Ss. Cyril and Methodius University, Skopje, Republic of N. Macedonia

Vasko Naumovski, Dr. Sci, Ss. Cyril and Methodius University, Skopje, Republic of N. Macedonia

Meic Pearse, Dr. Sci, Houghton College NY, USA

Elif Uckan Dagdemir, Dr. Sci, Anadoly University, Turkey

Mary Mares-Awe, MA, Fulbright Association, Chicago, USA

Prof. Massimo Introzzi, Bococca University – Milan, Italy

Dr. Zahida Chebchoub, UAE University, Al-Ain

Dr. Benal Dikmen, Associate Professor, T.C. İstanbul Yeni Yüzyıl University

Ass. Prof. Arthur Pantelides, American University, Bulgaria

Marija Boban, Dr. Sci, Faculty of Law, University of Split, Croatia

Gergana Radoykova, Dr. Sci Sofia University St. Kliment Ohridski, Bulgaria

Anthon Mark Jay Alguno Rivas, MA, Taguig City University, Philippines

Snezana Knezevic, Dr. Sci Faculty of Organizational Sciences, Belgrade, Serbia

Eva Pocher, Ph.D., University of Glasgow

Ass. Prof. Mariam A. Abu Alim, Yarmouk University, Jordan

Ass. Prof Aleksandra Mitrović, University in Kragujevac, Serbia

Dr. Dorjana Klosi, University of “Ismail Qemali”, Vlore, Albania

Ass. Prof. Aneta Stojanovska-Stefanova, PhD, Goce Delchev University, Republic of N. Macedonia

Stefan Milojević, PhD, CFO, CFE, Belgrade, Serbia

Ionuț – Bogdan Berceanu, Senior lecturer, PhD, National University of Political Studies and Public Administration, Faculty of Public Administration, Romania

**Secretary and editing:**

Filip Stojkovski

International Academic Institute

Ul. Todor Aleksandrov br 85-4

Skopje, Republic of N. Macedonia

**ISSN 2671-3748**

## **TABLE OF CONTENTS**

### **THE LEGISLATION ON TRANSPORT OF DANGEROUS GOODS**

**Claudio D'Alonzo 4**

### **CHANGING OF THE ROLES AND BEHAVIOUR OF EMPLOYEES FROM THE ASPECTS OF CHRISTIAN SPIRITUALITY AND ETHICAL LEADERSHIP - FROM PEOPLE THROUGH HUMAN RESOURCES TO CYBORG**

**Milan Resimić 8**

### **SEAMANSHIP TERMINOLOGY IN GEORGIAN MATERIAL AND CULTURAL DIALECTOLOGICAL VOCABULARY**

**Nargiz Akhvlediani, Diana Akhvlediani, Tsiala Narakidze, Teona Dzneladze 15**

### **VISUAL COMMUNICATION AND CULTURAL DIVERSITY IN INTERNATIONAL ADVERTISING**

**Mirdaim Axhami, Loreta Axhami 18**

### **IFRS 17'S IMPACT ON PRICING AND PROFITABILITY: A COMPARATIVE ANALYSIS IN LIFE INSURANCE**

**Esmeralda Yryku, Diana Lamani 25**

### **UNEMPLOYMENT – A BALANCING FACTOR OF EMPLOYEE TURNOVER INTENTION IN NORTH MACEDONIA**

**Marijana Cvetanoska Mitev, Andrijana Ristovska, Predrag Trpeski 36**

### **USING CHATGPT AS A TOOL FOR DETERMINING THE DERIVATIVE OF FUNCTION**

**Bojana Ćendić, Tatjana Stanković 45**

### **THE ROLE OF THE COMMISSION FOR THE PROTECTION OF COMPETITION IN THE REPUBLIC OF NORTH MACEDONIA**

**Ljuben Kocev 53**

# **The legislation on transport of dangerous goods**

**Claudio D'Alonzo**

*Faculty of Economic, Political and Social Sciences, Catholic University Our Lady of Good Counsel Country, Albania*

*\*Corresponding Author: e-mail: c.dalonzo@unizkm.al*

---

## **Abstract**

The description of the cargo for transport is an important feature of the negotiation between the parties to any contract; transport law, and particularly the rules of private law which form part of transport law, are among those areas in which the need for security and unification of law is felt more strongly. Road transport of dangerous goods is a risky business that can cause serious troubles if the vehicles on which this type of things are loaded are involved in an accident. However, the contrast between the private interest in carrying out a business and the public interest that aims to safeguard human life and the environment leads to believe that this kind of transport is fully lawful, even though it requires the adoption of special measures for prevention and intervention in the event of an accident. The first step to be taken is the identification of the legal sources and the definition of dangerous goods. The subject is ruled by many laws and regulations both national and EU; some of them deal with liability, while others impose technical prescriptions regarding the rules to comply with and the precautions to be taken during transport. They all represent specific duties for all the people involved in this kind of transport. However, it must be underlined that different regulations in so many countries would seriously hinder, if not make impossible and unsafe, the international transport of dangerous goods, including chemical, radioactive and certain types of waste. Furthermore, dangerous goods are also subject to other regulations, such as those concerning safety at work, consumer protection, storage regulations and environmental protection. As a matter of fact, this kind of transport can cause considerable prejudice to people and to the environment; that is why a specific regulation is necessary.

*Keywords:* transport; dangerous goods; law; accident.

---

## **1. Introduction**

The description of the cargo for transport is an important feature of the negotiation between the parties to any contract; transport law, and particularly the rules of private law which form part of transport law, are among those areas in which the need for security and unification of law is felt more strongly.

Road transport of dangerous goods is a risky business that can cause serious troubles if the vehicles on which this type of things are loaded are involved in an accident. However, the contrast between the private interest in carrying out a business and the public interest that aims to safeguard human life and the environment leads to believe that this kind of transport is fully lawful, even though it requires the adoption of special measures for prevention and intervention when an accident does occur (Miccichè, 2010).

The first step to be taken is the identification of the legal sources and the definition of dangerous goods. The subject is ruled by many laws and regulations both national and European; some of them deal with liability, while others impose technical prescriptions regarding the rules to comply with and the precautions to be taken during transport. They contain specific duties for all the people involved in this kind of transportation. However, it must be underlined that different regulations in so many countries would seriously hinder, if not make impossible and unsafe, the international transport of dangerous goods, including chemical, radioactive and certain types of waste. Furthermore, dangerous goods are also subject to other regulations, such as those concerning safety at work, consumer protection, storage regulations and environmental protection. As a matter of fact, this kind of transport can cause considerable prejudice to people and to the environment. This is why specific regulation relating to them is necessary over and above these more generally applicable laws.

Over the years the UN has developed mechanisms which aim to harmonise the criteria for classifying risks and means of communication of danger, as well as for transport conditions. In this context, a role of primary importance is played by the UNECE (United Nations Economic Commission for Europe), a commission within UN which aims to promote economic integration in Europe through dialogue and cooperation between countries; furthermore, UNECE administers regional agreements that ensure the effective implementation of these mechanisms as far as transport of dangerous goods by road, rail and inland waterways. The need for a single regulatory framework on this form of transport has led to the creation of specific study commissions within the UN, from whose work ADR legislation came into existence.

On international grounds, all activities related to the transport of dangerous goods are coordinated by the United Nations Economic and Social Council (ECOSOC) and the Committee of Experts on the Transport of Dangerous Goods (TDG) and on the General Harmonized System of Classification and Labelling (GHS), which are in charge of drafting the "UN Recommendations

for the transport of dangerous goods”, also known under the name of “Orange Book”. These recommendations, published for the first time in 1957 and periodically updated, are the international reference point for classification and analysis of dangerous goods.

The Orange book addresses both nation States which promulgate laws regarding the transport of dangerous goods and international organisations which issue regulations and agreements in this field. The Orange book contains all the basic rules concerning safety for the transport of dangerous goods and it aims to make this kind of carriage easier and less risky (De Laurentiis, 2015).

Attention to the transport of dangerous goods has been paid by EU laws too, which have tried to fulfil sustainability in this field. These targets are to be found in the White Book 2001, which shows how dangerous goods have to be transported.

The existing regulatory framework has led to the creation of agreements that regulate the field of transport and in particular that of dangerous goods.

A particular regulatory regime is that pertaining to waste. As a matter of fact, it may happen that waste considered as dangerous has to be transported, and in this case it is necessary to comply with the existing legislation.

As likely as it happens for dangerous goods, it is fundamental to understand which the sources are. Over the last 30 years the EU legislator has shown great interest to this field. The first law is the directive 72/442/CE, which stated that waste disposal involved transport too; that directive was replaced by the subsequent 2006/12/EC, which was repealed by Directive 2008/98/EC. The main target of the EU law is to avoid waste transport, in order to protect the environment. The criteria that inspire the European legislation are general principles that are a point of reference both in the search for a specific legislation, and for the identification of special rules for particular types of waste (Iacoviello, 2007).

These principles are inspired by the duty of prevention, of paying the consequences which come from environmental pollution and of precaution; they influence the circulation and management of waste both at an European and national level.

## **2. ADR**

ADR is the regulation that comes to mind referring to road transport of dangerous goods in Europe. ADR stands for a summary of “Accord européen relatif au transport international des marchandises dangereuses par route”, ie the European agreement on the transport of dangerous goods by road. This regulation is considered the most important source in this field and it is a point of reference for other legislation (Balduino, 2004); it is so important that the number of contracting countries keeps increasing.

ADR specifies the goods which can be transported by road, the way the transport must be carried out, the precautions to be taken during the transport and the behaviour of drivers. Its targets are to make this kind of transport safer and to level the rules regarding international transport of dangerous goods by road (Di Lembo, 2007). Not only this regulation is applicable to road transports, but to those a part of which is carried out by road too (intermodal transports).

ADR was signed in Geneva in 1957 and came into force on 29 January 1968. At the beginning it was not the consequence of the Orange book, but it was based on the laws regarding transport by rail; however, those differences have been levelled over the years.

ADR gives rules of conduct and of technical nature regarding transport safety, such as those relating to panels to be applied to vehicles as well as to technical and professional skills of operators; however, it says nothing about the consequences deriving from the violation of these duties.

Beyond ADR, it must be taken into consideration the remaining legislation, both internal and international. In this research CRTD comes to mind, which aims to regulate the damage deriving from the transport of dangerous goods; furthermore, the international uniform rules regarding international transport are gaining importance, as well as those of the civil code for internal transport only.

ADR is made of only 17 articles and a memorandum of understanding on the effectiveness of the rules, the reservations granted to the contracting States for national regulation and the procedures for amendments and signatures. Among these rules, the most significant article is the second which states that, with the exception of some excessively dangerous substances, other dangerous goods may be transported on vehicles which comply with the conditions set out in Annex A, in particular for what it concerns their packaging and labelling, and also in compliance with the conditions in Annex B regarding the construction, equipment and operation of vehicles transporting the goods in question (Protospataro, 2007).

These annexes contain all the provisions concerning the transport of dangerous goods. Annex A makes a list of the general requirements and those concerning dangerous goods and objects, while Annex B specifies the prescriptions concerning the means and the modalities of transport. The ADR groups dangerous goods into nine large classes, which are in turn divided into limiting and non-limiting classes and each substance is identified by the so-called Kemler number consisting of two or three digits indicating the type of danger associated with it, and the UN number concerning the single substance.

According to ADR each information regarding transport must be written in the official language of the country of delivery; if it is not English, French, or German a translation in one of those languages is also necessary.

The unceasing regulatory evolution in terms of safety and environmental protection and continuous technological progress make it necessary to constantly update the ADR. This is why it is updated every two years by European directives. These directives are subsequently implemented by the individual States through national legislation.

### 3. CRTD and CMR

Apart from ADR, another legal source is the Convention on Civil Liability for Damage Cause during Carriage of Dangerous Goods by Road, Rail and Inland Navigation Vessels (CRTD), applicable to accidents which happen within one of the contracting States and to measures taken in order to prevent or minimize damage.

This agreement has its origin in a request made to Unidroit by the Dutch Government and UNECE at the beginning of the 1970s to draw up a Convention on civil liability for damage caused during the transport of dangerous substances (Rodinò, 1995). The convention was drafted by the International Institute for the Unification of Private Law in 1989 and was ready for ratification from 1990. In the drafting, the Institute used as a reference the International Convention on Civil Liability for Oil Pollution Damage (CLC) of 1969. Unlike the CLC, the CRTD deals with liability and financial compensation from damage which may arise from the transport of a huge number of hazardous substances.

The CRTD does not conflict with the ADR, since they both deal with different aspects of the same activity: the CRTD regulates the liability towards third parties for damage deriving from the transport of dangerous goods, while the ADR mainly concerns the technical prescriptions to be observed when a transport of this type is carried out (Busti, 2007).

At an international level, transport by road is ruled by the Convention on the Contract for the International Carriage of Goods by Road (CMR) signed on 19 May 1956, ratified in Italy in 1969 and subsequently amended with the Protocol of Geneva 5 July 1978.

The CMR has brought legal order into road international transports, regulating relations between the carrier and the sender at an international level (Blasche, 1975). This convention is applicable only if transport: is for reward; concerns material entities; is carried out by road.

Pursuant to Article 1, the CMR is applicable when the place of departure and the place of destination are situated in two different countries, of which at least one is a Contracting State (Buonocore, 2003). The length of the journey between the place of departure and the frontier, or between the frontier and the place of destination is of no importance. So, the territorial scope of CMR is relatively wide, since it is sufficient for the place of taking over of the goods and the place designated for delivery to be situated in two different countries, at least one of which is a Contracting State. Thus, purely domestic carriage is never subject to CMR.

Article 6(1)(f) of CMR requires the description and nature of goods and the methods of packing, and in the case of dangerous goods, their generally recognised description. In practice this will require careful adherence to the provisions of ADR as to the classification and description of goods laid down therein. If the shipment is to be carried subject to a combined transport shipment, it would seem that the requirements for the carriage of dangerous goods by other modes of transport should also be satisfied (Hill et al. 2000). The description of dangerous goods may be any description which is generally known and understood in the country of departure.

### 4. Conclusion

From what has been exposed so far, it is clear that road transport of dangerous goods is made of a complex system of regulatory sources. The presence of an extremely fragmentary discipline raises the problem of analysing a legislative system composed of several layers. Another problem is to understand when goods can be considered hazardous.

To start with is necessary to have a look at the international legislation, which plays an important role in this area, aiming to create a sustainable development.

The problem of identifying the real meaning of the word “dangerous” has been faced at first in the field of the law relating to navigation. In this area, scholars said that dangerous goods cannot be classified within detailed and immutable limits, but it is necessary to follow general criteria (Righetti et al., 1973). Italian courts have scarcely dwelled on the concept of dangerousness of goods and so common law rulings may be helpful. An important U.K. judgment assigned a broad meaning to the word “dangerous” (House of Lords, 22 January 1998, *Effort Shipping Co. Ltd. V. Linden Management S.A.*). According to the House of Lords, not only does the definition of dangerous goods refer to inflammable or explosive ones, but it concerns all other goods which may be harmful to a ship or even just to the other cargo, and the dangerousness of them must be verified time to time. The application of this definition to all transport law would lead to the inevitable consequence that dangerous goods would be all those that by their nature and the conditions in which they make the journey may cause damage to the means of transportation, to persons on board and to other goods carried (Berlingieri, 2009).

The CMR does not define what should be understood as “dangerous goods”, nor it explains the features goods must have to be considered dangerous. The definition of dangerous goods might be construed *a contrario* from art. 22.2 of CMR, according to which “*Goods of a dangerous nature which, in the circumstance referred to in paragraph 1 of this article, the carrier did not know were dangerous, may, at any time or place, be unloaded, destroyed or rendered harmless by the carrier without compensation*”. Thus, dangerous goods are those the carrier has identified and refused to load (De Gottrau, 1987). Paragraph 2 bestows on the carrier a right which, if exercised, may have serious economic consequence for the person entitled to dispose of the goods. Of course, it would be wrong to expect too much of the carrier’s knowledge in this regard. If the carrier believes in good faith that the goods are more dangerous than they really are, no complaint can be laid against them: the rule will still be applied.

This situation has led researchers to give a definition of dangerous goods suitable to every possible situation. In this regard, it was stated that “*all goods are to be considered as dangerous if, in a normal road transport, they present an immediate risk*” (Silingardi et al., 1994).

Currently, it seems that the only workable definition of dangerous goods is the provided by the European agreement on transport of dangerous goods by road (ADR). According to the ADR, dangerous goods are those goods whose transport is prohibited by the regulation itself or authorized under the conditions specified therein. Dangerous goods are those which may compromise transport safety and cause damage to: persons who come into contact with it (both in the execution of the transport contract, and third parties in general); the vehicle which transports them; and the environment. Of course, the severity of such damage depends on the type and on the quantity of the substance being transported, and on the place where the harmful event occurred.

A definition of dangerous goods can be found in CRTD too, which refers to ADR. This reference makes possible to identify dangerous goods in a specific way and to use a list of goods already known to those who carry out transports over Europe.

On the basis of what has been described so far, it can be observed that the definition of dangerous goods not only includes those particular substances whose dangerousness is evident and undeniable (such as, for example, toxic gases, explosive material, radioactive substances, etc.), but also products for everyday use, such as paints, adhesives and sprays. Furthermore, the list of dangerous goods is not closed, but can be constantly modified due to the continuous legislative evolution, to scientific discoveries which occur over time and to the accidental events causing damage (Berlingieri, 2000).

## **References**

- Balduino S., *Il trasporto di merci pericolose*, 2004.
- Berlingieri F., *Le convenzioni internazionali di diritto romano e il codice della navigazione*, 2009.
- Berlingieri F., *Il trasporto di merci pericolose nel regime dell’Aja-Visby e nel regime di Amburgo*, *Il diritto marittimo*, 2000.
- Blasche G., *Convention on the Contract for the International Carriage of Goods by Road – CMR: An Introduction*, *International Business Lawyer*, 1975.
- Buonocore V., *I contratti di trasporto e di viaggio*, *Trattato di diritto commerciale*, diretto da V. Buonocore, 2003.
- Busti S., *Contratto di trasporto terrestre*, *Trattato di diritto civile e commerciale*, diretto da A. Cicu, F. Messineo, L. Mengoni, P. Schlesinger, 2007.
- De Gottrau M. M., *Liability in dangerous goods*, *International Carriage of goods by road (CMR)*, 1987.
- De Laurentiis R., *Il trasporto di merci pericolose. Quadro normativo e profili della responsabilità*, *Resp. civ.*, 2005.
- Di Lembo V., *Il trasporto stradale di merci pericolose. Gli esplosivi*, *Il nuovo diritto*, 2007.
- Effort Shipping Company Ltd v Linden Management SA and others [1998] UKHL 1; [1998] AC 605; [1998] 2 WLR 206, *Il diritto marittimo*, 2000, II, p. 1500
- Iacoviello A., *La disciplina della circolazione dei rifiuti nella recente giurisprudenza della Corte costituzionale*, *Riv. giur. edilizia*, 2007
- Miccichè L., *Note in tema di trasporto aereo di merci pericolose e di condizioni generali applicabili*, *Riv. dir. econ., trasp. e amb.*, 2010.
- Protospataro G., *Prontuario del trasporto delle merci pericolose*, 2007.
- Righetti G. e Dani A., *Trasporto di merci pericolose*, *Novissimo digesto italiano*, 1973.
- Rodinò W., *Brevi note sulla convenzione sulla responsabilità civile per danni causati nel corso di trasporto di merci pericolose per strada, per ferrovia e su battelli di navigazione interna (CRTD)*, *Studi in onore di A. Lefebvre D’Ovidio*, a cura di E. Turco Bulgherini, 1995.
- Silingardi G., Corrado A., Meotti A., Morandi F., *La disciplina uniforme del contratto di trasporto di cose su strada*, 1994.

# Changing of the Roles and Behaviour of Employees from the Aspects of Christian Spirituality and Ethical Leadership - From People Through Human Resources to Cyborg

Milan Resimić

University of Belgrade, Faculty of organizational sciences, Belgrade, Republic of Serbia

\*Corresponding Author: [apostolcentar@gmail.com](mailto:apostolcentar@gmail.com)

---

## Abstract

Abstract: Due to the spiritual and systemic crisis, solving things through people has become human resource management, and the next phase is transhumanism and cyborgization. From the standpoint of Christian work ethic, there are elements that are unacceptable as the basis of moral business. Leadership encompasses change, role-playing, taking responsibility and behaviour within groups, and transhumanism affects each of them. Human resource managers, leaders and ethics experts face a great challenge in finding compromise solutions in line with Christian values. It is necessary to animate the professional public in that direction.

*Keywords:* people, resources, Christian ethics, leadership, transhumanism, behaviour, role, crisis, groups.

---

## 1. Introduction

The interaction of management, spirituality, and religion has become an important topic among popular writers and scholars, and Christian spirituality and religion are relevant to the study of a wide range of topics, including management (Steingard, 2005). A scientist who has Christian morals would not allow the abuse of his invention at any cost. It is a betrayal of the Creator who is the giver of all knowledge. The great theologian, anthropologist and philosopher, Saint Justin Popović taught that science without religion is a devil (Mrakić, 2011). Tesla, on the other hand, emphasized that he was only a conductor of knowledge from a higher centre of hope, love and compassion, and Pupin emphasized that of all knowledge, the only true value is knowledge of God (Great Scientists on God, 2017). The deficit of ethics in all areas, even in the management of human resources, is a consequence of the decline in public morality, all due to apostasy. Dostoevsky said: "If there is no God, everything is allowed" (Dimitrijević, 2008) In his pride, Satan wanted to take the throne of God, and as an evil intelligence, he only imitates, mimics the true divine intelligence. Likewise, artificial intelligence will strive to defeat human intelligence that has a broader spiritual context. After the great schism and separation of Roman Catholics from Orthodoxy (Lukić, 2012). Christianity has begun to be reduced to humanism; the God-man Christ has been reduced to an infallible man-pope. This is the beginning of the moral decline of western man, sinful behaviour began to be redeemed with money (Djurak, 2013). The culmination of the hypocrisy of changing roles according to Dostoevsky will be when in the end the pope stands among the poor (maybe even among robots who do not need money, M.R) and says that he is one of them. This is important for the broader context of management as a science coming from the West.

One of the consequences of the spiritual crisis is that working with or through people has over time become human resource management which is a sufficient ethical challenge. Following such a trend, transhumanism through cyborgization (Đorđević, 2007) is inevitable as the next phase (Ivanovic, 2018) and it cannot avoid criticism of Christian work ethic because a Christian is a "little god" and as a God-man person he cannot be reduced to dead capital-resource (Popović, 2011) The author otherwise deals theoretically and practically with Orthodox leadership, which is the process of bringing about positive changes, meeting needs, setting examples, performing roles, taking responsibility, gaining authority, gaining power, behaviour, fighting and influencing groups of followers (Resimić, 2021). The emphasis here is on the direct consequences of the impact of the spiritual crisis on HRM, such as lower morale in behaviour, high stress in the organizational role, lower level of employee engagement and lower level of mutual trust and respect (Naval Garg, Shiv Pratap Nagar, Ambala Can't, 2017). It is necessary to consider the possibilities of the reverse positive influence of the Christian religion and ethics in the field of transhumanism. (Ivanovic, On the post-secular paradigm and the question of the influence of religion in the field of new medical biotechnologies - a few introductory remarks, 2018)

The interaction of management, spirituality, and religion has become an important topic among popular writers and scholars, and Christian spirituality and religion are relevant to the study of a wide range of topics, including management (Steingard, 2005). A scientist who has Christian morals would not allow the abuse of his invention at any cost. It is a betrayal of the Creator who is the giver of all knowledge. The great theologian, anthropologist and philosopher, Saint Justin Popović taught that science without religion is a devil (Mrakić, 2011). Tesla, on the other hand, emphasized that he was only a conductor of knowledge from a higher centre of hope, love and compassion, and Pupin emphasized that of all knowledge, the only true value is knowledge of God (Great Scientists on God, 2017). The deficit of ethics in all areas, even in the management of human resources, is a consequence of the

decline in public morality, all due to apostasy. Dostoevsky said: "If there is no God, everything is allowed" (Dimitrijević, 2008) In his pride, Satan wanted to take the throne of God, and as an evil intelligence, he only imitates, mimics the true divine intelligence. Likewise, artificial intelligence will strive to defeat human intelligence that has a broader spiritual context. After the great schism and separation of Roman Catholics from Orthodoxy (Lukić, 2012). Christianity has begun to be reduced to humanism; the God-man Christ has been reduced to an infallible man-pope. This is the beginning of the moral decline of western man, sinful behaviour began to be redeemed with money (Djurak, 2013). The culmination of the hypocrisy of changing roles according to Dostoevsky will be when in the end the pope stands among the poor (maybe even among robots who do not need money, M.R) and says that he is one of them. This is important for the broader context of management as a science coming from the West.

One of the consequences of the spiritual crisis is that working with or through people has over time become human resource management which is a sufficient ethical challenge. Following such a trend, transhumanism through cyborgization (Đorđević, 2007) is inevitable as the next phase (Ivanovic, 2018) and it cannot avoid criticism of Christian work ethic because a Christian is a "little god" and as a God-man person he cannot be reduced to dead capital-resource (Popović, 2011) The author otherwise deals theoretically and practically with Orthodox leadership, which is the process of bringing about positive changes, meeting needs, setting examples, performing roles, taking responsibility, gaining authority, gaining power, behaviour, fighting and influencing groups of followers (Resimić, 2021). The emphasis here is on the direct consequences of the impact of the spiritual crisis on HRM, such as lower morale in behaviour, high stress in the organizational role, lower level of employee engagement and lower level of mutual trust and respect (Naval Garg, Shiv Pratap Nagar, Ambala Can't, 2017). It is necessary to consider the possibilities of the reverse positive influence of the Christian religion and ethics in the field of transhumanism. (Ivanovic, On the post-secular paradigm and the question of the influence of religion in the field of new medical biotechnologies - a few introductory remarks, 2018)

## 2. Methodology

The methodology of the paper includes theoretical analysis of available literature and data. Our hypothesis is that the negative impact of transhumanism on human resource management and business leadership would be smaller if Christian ethics and employee morale were improved. In this sense, we connect several scientific disciplines: human resources, leadership, ethics, sociology of religion and anthropology. The central research question was whether human resource management would be better if it were based more on Christian ethics and whether this would reduce the negative consequences of the coming transhumanism. That is why we have connected leadership and human resource management on the one hand with ethics and Christianity on the other through several categories of leadership science such as change, role, responsibility, struggle and groups, and included them all in the analysis of the phenomenon of transhumanism and cyborgization. The aim of the research is to provide high quality insights for the academic, public and private sectors, as well as for human resource management students and to open a new horizon of theoretical knowledge of human resource management in the context of Christian ethics, leadership and transhumanism. A systematic review of existing literature on Christian ethics, business ethics, human resource management, and ethical leadership was conducted.

## 4. Basic research

Human resources are inseparable from leadership, so in the context of the broader scientific interest of the authors, we will treat the issue of their relationship with ethics and the trend of transhumanism through some of the categories of this multidisciplinary science.

Thesis: The lack of Christian ethics affects negative changes in work roles, from people through human resources to humanoids and cyborgs. Due to the increase of immoral and unprofessional behaviour, avoiding the responsibility of employees by groups and organizations, it is necessary to improve ethical leadership based on the Christian religion.

*The change:* Business ethics has changed over time, but its basis, the basic ethics put forward by Aristotle and Kant, has never changed. This means that values such as duty and rights presented by Kant, the consequences of actions presented by utilitarians, the placement of virtues in the business world presented by Aristotle, are universal and eternal. „ Business ethics has evolved and expanded as business has evolved and expanded” (De George, 2010) Ethical solutions can be old and at the same time adapted to new circumstances, and in such a changed form they can be applied very successfully and give a completely new perception of modern business, which includes transhumanism. (Jaksic, 2016) Transhumanism (or H +) is a movement that has its official beginnings in the 1930s. The term comes from Julian Huxley, who used it to explain the process in which man transcends himself, primarily through technological upgrades. He is the brother of Aldous Huxley, the famous author of *"The Brave New World"*, which could be said to be a perfect example of conditioning society to accept the following, exclusively alchemical practices packed in scientific spirit: test tube children, genetic manipulation to control societies, moral reprogramming through subliminal, etc. (Nujić, 2019) Huxley says that "man remains a man, but transcends himself, realizing new possibilities of his human nature and for his human nature", so posthumanism is no longer affected by humanism either (Krstic, 2012). We recall that tradition - especially religious tradition - is a good antidote to fragmentation and the lack of coherence brought about by post-modernity (MacIntyre, 1988). Even before transhumanism, the institutional ethical vacuum or "moral hole" was created by changes in labour

relations. The "social glue" provided by pluralistic traditions and structures in labour relations is disappearing in a time of rapid changes. In the British literature on ethics and human resource management, a clear character is developing which includes the promotion of ethics for reasons of social justice (deontological), and not only for business, material motives (utilitarian) (Bartels, L.K., Harrick, E., Martell, K. and Strickland, 1998). Every leadership, even within the HRM, seeks positive changes and machines become more capable, going deeper into the tasks performed by man, and at some point, that balance goes in favour of machines, not people. The growing technological revolution is creating a different kind of business. In the society of the New Information Age, personnel are no longer classified according to physical strength and formally acquired education. They are classified according to applied knowledge and creative ideas, whose practical application can encourage and implement the necessary innovations and, on that basis, improve business and accelerate the development of the company (Bećir Kalač, Elma Elfić, Olivera Martinović). The connection with leadership is that one "star of business" through the creative application of technology can bring benefits to more than thousands of "ordinary" employees. Numerous tasks, which once required human intelligence, such as connecting and drawing conclusions, recognizing models, and tracking the implications of complex events, are currently best solved using artificial intelligence applications. Artificial intelligence and automation have obvious implications for recruitment, but they will also affect the human mind. Technological advances will change people's individual capacities and enable employees to intuitively and empathetically create solutions to complex service delivery challenges (Cyborgs as front-line service employees: research, 2018). Things of the future, most of which are in the service sector, will require other types of skills, especially interpersonal ones, which even robotic applications will not be able to provide. The ability to perform complex calculations or sophisticated analyses will be less important. Anxiety about automation, which has been spreading lately, fears that in the future, many things will be done by machines, not people, given the remarkable achievements that are happening in artificial intelligence and robotics. It is clear that, of course, there will be significant changes. Companies strive to establish strong corporate cultures based on values and keep them in the minds of their employees, confident that this will improve their ability to cope with the future and accept changes (Campbell, 2008). What is less clear is what these changes will look like. The threat of technological unemployment is real. It seems that in the next phase of development, we will be required to deny independent thinking and judgment (Kafedžiska, 2018). Transhumanism thus undermines the very anthropological foundations of the science of management and leadership as solving things through people. On the other hand, the Christian views death as a positive change, the next stage of spiritual development, (Kruger, 2010) because he awaits the Resurrection of the dead and the life of the age to come, and he does not need transhumanism as "salvation" by prolonging this earthly life. The basic metaphysical-eschatological thought of transhumanism consists in improving (physical, cognitive, emotional, moral) man through scientific and technical achievements, on the one hand, and on the other hand, to enable his immortality through the victory of aging and all that is lacking in man (Singbo, 2020). In that sense, the desire to regain youth or, more generally, overcome the natural limitations of the human body could indeed be considered "the oldest hope of humanity" and a cross-cultural and panhistoric motif that is only directed in modernity as a scientific project of, for example, human genome discovery. However, the antiquity and representation of this motif does not necessarily mean its moral justification and social desirability (Michael, 2007).

*The roles:* Let us be human (Pavle, 2014) and not resources (Resimić, Main aspects of Serbian show business leadership, 2019). HRM experts can communicate to key executives the financial consequences of a lack of a strong ethical stance and the consequences for customers, employees and shareholders. According to Michael Hoffman, executive director of the Centre for Business Ethics at Bentley College, Ethics Initiatives is driven by HRM (What role should HR play in corporate ethics? 2004). Transhumanism also brings a change of work roles according to the principle that every machine is a good servant but an evil master. "Let's not forget that the automatic machine is the exact equivalent of slave labour. Every labour force that competes with the slave must accept the economic conditions of the slave labour force" (Wiener, The Human Use of Human Beings: Cybernetics and Society, 1967, p. 220). In an attempt to understand and structure the interaction and characteristics of the interface, Bowen (2016) identifies four key roles of FLE in the context of modern services: differentiator, enabler, coordinator and innovator. The role of differential front live service employees is crucial in adapting the service to individual needs, and thus improving the user experience (Motamarri, S., Akter, S., Yanamandram, V., 2017). However, reducing costs to achieve process efficiency is increasingly moving many service firms towards a commodity-based service delivery model with associated implications for customer experience. In such environments the devil lying in the small details can have a significant impact (Bolton, R., Gustafsson, A., McColl-Kennedy, J., Sirianni, N. and Tse, D.K., 2014). Namely, employees are stakeholders closest to the organization (Greenwood, 2009) and without them there is no organization. A corporation that strives to be a moral community must transcend thinking of employees as costs that should be minimized and rather take responsibility for negative impacts in order to avoid harm to employees and affirm positive duties for the good of employees.

*The responsibility:* We consider it irresponsible not to include Christian spirituality in the analysis and solution of the challenges posed by the cyborgization of business. Wiener warns that the attempt to create artificial intelligence is a departure from the urgent task of establishing social justice and global peace (Wiener, God & Golem, Inc.: a comment on certain points where cybernetics impinges on religion, 1966). This is also a violation of the spiritual order: "Peace I leave with you, my peace I give unto you ..." (John, 14, 27.) From a deontological perspective, human resource managers as leaders and decision makers consider whether a decision involves respect for human dignity. The moral obligation of a company is to adhere to its moral and ethical principles and to follow the main events on which its success and identity depend. The growing unethical behaviour of employees in business organizations and its negative impact on the organization, economy and society has become a global concern over the last two

decades. (Viruli de Silva, Nenaradh N.D.N.P. Opatha, 2015) Transhumanism can only increase the scale of unethical behaviour. A cyborg can be defined as a modified (augmented) person who integrates technologies in the body through mechanical and/or technological "essential components". In a recent report by the Royal Society (2019) emphasizes the urgency with which to consider issues related to the adoption and use of such technologies in enterprises, stating that "the opportunities are unprecedented and enormous - as are the challenges". Such interfaces offer unimaginable benefits, but also pose risks, such as privacy and human rights issues, and social inequalities (Haraway, 1985). Today's business climate brings many challenges to an organization's ethical practice. Protecting company morale is the job of HRM (Driscoll Dawn Marie, Hofman W. Michael, 1998). Applying artificial intelligence to human resource problems brings various challenges. They range from practical to conceptual, including the fact that data science analyses - when applied to human decisions - can create serious conflicts with what society considers important for deciding on people. To illustrate, consider using a prediction algorithm who to hire. Applying machine learning techniques would create an algorithm based on employee attributes and the relationship between those attributes and job performance. If we found a cause-and-effect relationship between attributes (such as gender and performance), we might not believe the algorithm that says more white men should be hired (Prasanna Tamba<sup>1</sup>, Peter Cappelli<sup>2</sup>, and Valery Yakubovich<sup>3</sup>, 2019). Further, religious and philosophical beliefs shape the way we do business. "The upcoming challenge for me is convincing employees around the world that ethical issues are not a passing fad. You simply cannot be successful in resolving intercultural issues without a solid team of human resources and ethics functions, said William Wise, a lawyer and member of the Waltham Civil Service Ethics Committee. (Why global ethics count and how hr can help, 2008).

*The behaviour:* Religion provides a good moral basis for the adoption of codes of ethics. The contractual nature implied in the Ten Commandments, along with the emphasis on acceptable conduct, honesty, loyalty, and respect for authority, are important business and management mechanisms (Ali, 1998). Instead of discovering or creating a new ethic of the employer-employee relationship, we strive to interpret and improve the established. The kingdom of God is within you, the Holy Scripture teach us ("The New Testament", 2008), (Luke 17, 21). In the spirit of sustainability, instead of plundering new ones, we recreate from existing resources. Religion is not losing its influence but is becoming more important as a social and cultural force in many countries, including the industrialized and (cyborgized M.R.) world (Micklethwait, J., Wooldridge, A., 2009). A strong and positive correlation between human resources and a code of ethics is needed in any successful organization. The written code of ethics initiates collegial behaviour, cooperation, teamwork, uniqueness, mutual support and loyalty, as essential ethical virtues. Business ethics also promotes tolerance, leadership, mentoring, unity, knowledge, good experience, etc. (Jaksic, 2016). We believe that the codes of successful organizations should encourage Christian spirituality, and from that point of view, they should be determined according to the coming transhumanism. An employee as an Orthodox believer must make contact with God in the silence of his heart and has the right to the intimacy of the spiritual life, which according to Dr. Oliver Subotić is endangered by modern technologies of supervised society (Subotić, 2011). Excessive monitoring of employees can reduce commitment, morale and damage trust between employers and employees. Further, while employers may want to monitor and then modify employee behaviour for a variety of reasons (maximizing productivity, reducing health care costs), employees should have some parts of their lives that are beyond the reach of employers. Torah-oriented employee privacy analysis will reveal that employees have a personal privacy zone that employers cannot violate. (Friedman, B. A., Reed, L. J., 2007)

Today's business climate brings many challenges to the ethical practice of the organization, transhumanism is just one of them. That is why a firm ethical stance must be taken. HRM has a leadership role in creating an ethical culture of behaviour. To be successful, a corporate ethics manager must honestly answer the following questions, which have been adapted based on the recommendations of former NINEX Ethics Officer Graydon Wood: 1. Do I occupy a sufficiently influential position in the company? 2. Do I have, or can I have unrestricted access to the CEO and board? 3. Do I have a high level of trust and respect for my senior management team and employees? 4. Can I gather resources to make internal procedural changes and conduct investigations? 5. Do I have, or can I access information and support mechanisms that will provide monitoring, measurement, early warning and detection? 6. Can I be sure that I will be rewarded for proactively performing the roles of ethics/compliance? 7. Do I have the skills to work effectively with the press, public forums and legal proceedings? (Driscoll Dawn Marie, Hofman W. Michael, 1998).

*The struggle:* Leadership and HRM can also be seen as a struggle with one's ex through "improvement", "enhancement" and the like. There are different methods by which the desired goal is achieved: whether it is conventional, "natural", through education, training, diet, exercises, inventing handy and "external" tools or, on the other hand, unconventional, which mostly relies on "artificial" means and tools that, now as "internal", i.e., literally incorporated, integrated into our bodies, lead to better human abilities (Bostrom Nick, Rebecca Roache, 2008). Human resource management in the future will also mean the struggle of analogue and digital man, people and humanoids. "The world of the future will be an increasingly demanding struggle against the limitations of our own intelligence, rather than a comfortable lounge on which we can stretch out to be served by our slave-robots" (Wiener, 1966).

*The groups:* Transhumanism is presented as the improvement of man and society. Improving or repairing the world, has a modern interpretation that evokes the ethical responsibilities held in the community. Fulfilling ethical precepts creates a model of society that will in turn affect the rest of the world, creating individual and collective transformation. (M.L., 1998) An ethical decision must be morally acceptable to the wider community and the code carefully formulated, never offensive to any ethnic, religious or racial group. The big question is how cyborgs as digital transhumans endanger "analogue" people (Jones T.M., 1991) noted that

where freely performed actions harm or benefit others, a moral question must arise and the decision-maker must make a choice, because the action or decision has an impact on others. However, hypocrisy is a barrier to ethical human resource management and ethical leadership. Ever since the Hammurabi Code, the "eye for an eye" rule applied only to victims belonging to the patrician class, and the ordinary population was fined in the amount of silver. Class relations played a role in early ethics, just as they do today. Such is the management of human resources in organizations from small and medium enterprises to large multinational food corporations such as Nestle, Unilever, McDonald's, etc. They do not share their "bread with the hungry." Every day about a billion hungry people go to bed, while a similar number are obese (Klikauer, 2014). Nihilistic materialism is at the root of transhumanism. Since goods were exchanged for other goods of the same value, this new form of class rule was very different from the one that preceded it. Direct rule has been replaced by indirect exploitation. And, above all, the fate of individuals was now determined by the impersonal movement of the market. The world is no longer ruled by people, but by things. "This means that the mystery of the form of goods consists simply in the fact that it reflects to people the social characters of their own work as characters that objectively belong to the products of labour themselves, as social characteristics that these things have by nature, and hence the social attitude of the producer towards the entire work is reflected in them. From the standpoint of Christian ethics, dead things can only be worshiped by resources, not people. Christian business leaders need to have a firm stance on the influence of other religious groups in creating a new "business normality". Mormons keep some of the secrets of transhumanism (Bialecki, 2020).

## **Conclusions**

Over time, the role and importance of the HRM function has changed under the influence of changes in technology that sets the framework (Bostrom Nick, Rebecca Roache, 2008; Mirčetić et al., 2021) for business processes and activities. In recent times, this function has gained a very powerful ally for its development in the form of IT and electronic systems. When the collective intelligence of humanity gathered at new heights, the dream of human progress appeared. It can be shown that the level of intellectual achievements, which was a consequence of the industrial revolution, is actually the peak. We may not have gone the whole "way" yet because we are not there yet, but our direction of travel is very disturbing. Therefore, it is time to develop new technologies to motivate and develop employees. In this way, employees will be protected from losing their jobs as a result of the robot economy. Robots and cyborgs cannot show curiosity, a wide range of interests, creativity, lucidity and explore new experiences. We reminded that the Christian religious (re legare, reconnection, M.R.) tradition offers great opportunities in overcoming the negative effects of fragmentation and lack of coherence due to frequent changes in post-modernity. From this it can be concluded that lifelong learning and perfecting the spirit and mind will be the only way to survive. We have justifiably criticized transhumanism and cyborgization from the standpoint of Christian work ethic. The Holy Spirit does not descend on robots! We have more explicitly expanded the relationship between HRM and ethics to the level of the spiritual, social and cultural reality of organizations and their employees. Ethics separates the good from the bad which is important for distinguishing leadership and leadership in HRM as bringing about positive or negative changes. For example, Hitler was a great headman, but he did not bring about positive changes, he was not a leader.

By comparing with the hypothesis, we managed to scientifically and logically justify the necessity of developing Christian ethical human resource management. We explained that in the conditions of systemic crisis, it is possible and necessary to connect relevant and consistent concepts within human resource management, leadership, sociology, ethics and Christian religion and offer answers to the upcoming challenges of transhumanism. We respected the scientific legality of the cause-and-effect relationship of observed phenomena. For the analysis of the content according to the described methodology, we used data obtained mainly from archival research. However, no matter how far they reach in theory, there are no ready-made recipes for the ethics of human resource management, because the transhumanist future will require concrete case studies to reduce the gap between words and deeds, which is a Christian apostolic imperative. The problem is complex, and the given methodology can help interdisciplinary experts in finding answers in the future.

## **Recommendations**

Over time, the role and importance of the HRM function has changed under the influence of changes in technology that sets the framework (Bostrom Nick, Rebecca Roache, 2008) for business processes and activities. In recent times, this function has gained a very powerful ally for its development in the form of IT and electronic systems. When the collective intelligence of humanity gathered at new heights, the dream of human progress appeared. It can be shown that the level of intellectual achievements, which was a consequence of the industrial revolution, is actually the peak. We may not have gone the whole "way" yet because we are not there yet, but our direction of travel is very disturbing. Therefore, it is time to develop new technologies to motivate and develop employees. In this way, employees will be protected from losing their jobs as a result of the robot economy. Robots and cyborgs cannot show curiosity, a wide range of interests, creativity, lucidity and explore new experiences. We reminded that the

Christian religious (re legare, reconnection, M.R.) tradition offers great opportunities in overcoming the negative effects of fragmentation and lack of coherence due to frequent changes in post-modernity. From this it can be concluded that lifelong learning and perfecting the spirit and mind will be the only way to survive. We have justifiably criticized transhumanism and cyborgization from the standpoint of Christian work ethic. The Holy Spirit does not descend on robots! We have more explicitly expanded the relationship between HRM and ethics to the level of the spiritual, social and cultural reality of organizations and their employees. Ethics separates the good from the bad which is important for distinguishing leadership and leadership in HRM as bringing about positive or negative changes. For example, Hitler was a great headman, but he did not bring about positive changes, he was not a leader.

By comparing with the hypothesis, we managed to scientifically and logically justify the necessity of developing Christian ethical human resource management. We explained that in the conditions of systemic crisis, it is possible and necessary to connect relevant and consistent concepts within human resource management, leadership, sociology, ethics and Christian religion and offer answers to the upcoming challenges of transhumanism. We respected the scientific legality of the cause-and-effect relationship of observed phenomena. For the analysis of the content according to the described methodology, we used data obtained mainly from archival research. However, no matter how far they reach in theory, there are no ready-made recipes for the ethics of human resource management, because the transhumanist future will require concrete case studies to reduce the gap between words and deeds, which is a Christian apostolic imperative. The problem is complex, and the given methodology can help interdisciplinary experts in finding answers in the future.

## References

### Books:

- "New Testament", (2008), Belgrade: Serbian Orthodox Church Publishing Fund.
- Subotić, D. O. (2011), *"Information Controlled Society"*, revised doctoral dissertation. Belgrade: Bernard.
- Micklethwait, J., Wooldridge, A. (2009.), *God is back: How the global revival of faith is changing the world*. New York: Penguin press.
- Opatha, H. (2009), *Human Resource Management*. Sri Lanka: author publication.
- Karl, M. (1976), *Capital Volume 1: a critique of political economy*. London: Penguin.
- Klikauer, T. (2014), *Seven moralities of human resource management*. London: Palgrave Macmillan.
- Resimić, M. M. (2021), *Introduction to Orthodox Leadership-Vertical*, monograph, Belgrade: Apostol Center of Orthodox Leadership.
- Dimitrijević, B. (2008), If there is no God, everything is allowed. Čačak: Legend.
- Pavle, P. (2014), *Let's be people*. Pirot: Monastery of St. Demetrius.
- Popović, J. (2011), *Anthropology of the Venerable Justin of New Celije*. On S. Mrakić. Valjevo: Diocese of Valjevo.
- Resimić, M. M. (2019), *Main aspects of the leadership of Serbian show business*, monograph, Belgrade: Andrejević Endowment.

### Paper:

- Ali, A. J. (1998), Foundation of business ethics in contemporary religious thought: The ten-commandment perspective. *International Journal of Social Economics*, 25(10), 1552–1564.
- Amstrong, M., Taylor, A. (2012), *Armstrong's handbook of human resource management practice*. India: Kogan.
- Ana, L. (2012), The Great Church Schism of 1054. *Josip Juraj Strossmayer University*.
- Arurlajh, A. (2015), Contribution of human resource management in creating and sustaining ethical climate in the organizations. *Sri Lankan journal of human resource management*, 5(1), 31-44.
- Barbuk, R. (n.d.), New York Prophecies, Imaginary Future of Artificial Intelligence.
- Bartels, L.K., Harrick, E., Martell, K. and Strickland. (1998), 'The relationship between ethical climate and ethical problems within human resource management'. *Journal of business ethics*, 17, 799.-804.
- Bećir K., Elfić, E., Martinović, O. (n.d.), A New Paradigm of Human Resources. *Economic challenges*, 29-39.
- Bialecki, J. (2020), Kolob Runs on domo: Mormon secrets and transhumanist code. *Journal of anthropology*.
- Bolton, R., Gustafsson, A., McColl-Kennedy, J., Sirianni, N. and Tse, D.K. (2014), Details that make big differences: a radical approach to consumption experience as affirm's differentiation strategy, *Journal of service management*, Vol. 25, 253-274.
- Bostrom, N. and Rebecca, R. (2008), Ethical issues in human enhancement, *New waves in applied ethics*, 120-152.
- Campbell, J. (2008), The exodus and strategic quality management of temples and skyscrapers. *Paper presented at academy of management annual meeting*.
- Cyborgs as front-line service employees: research, (2018.), *Journal of service theory and practice*.
- Foot, D. and Lamb, K. (2002), Business ethics, *A european review*.
- De George, R. T. (2010), A history of business ethics in values and ethics for the 21st century. *Openmind BBVA*, 337-359.
- Djurak, M. (2013), Papinstvo i reformacija od 1517. do 1563., *Publisher, Zagreb*, 119-145.
- Đorđević, Đ. (2007), Film dystopia and transhumanism: cyborg - from film myth to reality, *Faculty of Philosophy, University of Nis*, 26-40.

- Driscoll, D. M. and Hofman, W. M. (1998), HR plays a central role in ethics programs. *Workforce*, Vol. 77.
- Friedman, B. A., Reed, L. J. (2007), Workplace privacy: Employee relations and legal implications of monitoring employee e-mail. *Employee responsibilities and rights journal*, 19(2), 75-83.
- Greenwood, M. A. (2009), I used to be an employee but now I am a stakeholder. *Asia Pacific Human Resource Journal*, 47(2), 186-200.
- Haraway, D. (1985), A manifesto for cyborgs: science, technology, and socialist feminism in the 1980s. *Socialist review*, 80, 65-107.
- Ivanovic, Z. (2018), On the post-secular paradigm and the issue of the influence of religion in the field of new medical biotechnologies - a few introductory remarks, *Ethno-anthropological problems*, 841-870.
- Jaksic, M. (2016), Human Resources and Code of Ethics, *Economics & Economy*, Vol. 4, No. 7 - 8, 95-105.
- Krstic, P. (2012), Limits of Improvement: Three Characters of a Better (Than) Man. *Philosophy and society* 23, (2), 124-138.
- Kruger, O. (2010), Perfecting Man - Death and Immortality in Posthumanism and Transhumanism. *Croatian Writers' Association*.
- Legge, K, Mabey, I. (1998.), The morality of HRM. *Experiencing human resource management*, 15-30.
- M. Hartog, D. Winstanley. (2002.), Ethics and human resource management, professional development and practice. *Business & Professional Ethics Journal*.
- MacIntyre, A. (1988), Whose justice? Which rationality? *Notre Dame IN*.
- Michael, S. (2007), The case against perfection: ethics in the age of genetic engineering. *Cambridge, MASS: Belknap Press*.
- Mirčetić, V., Ivanović, T., Knežević, S., Arsić Bogojević, V., Obradović, T., Karabašević, D., Vukotić, S., Brzaković, T., Adamović, M., Milojević, S., Milašinović, M., Mitrović, A., Špiler, M. (2022), The Innovative Human Resource Management Framework: Impact of Green Competencies on Organisational Performance. *Sustainability*, 14, 2713. <https://doi.org/10.3390/su14052713>.
- Motamarri, S., Akter, S., Yanamandram, V. (2017), Does big data analytics influence frontline employees in services marketing? *Business process management journal*, 623-644.
- Mrakić, S. (2011), Anthropology of Saint Justin the New of Celije. Valjevo: Diocese of Valjevo.
- Garg, N., Nagar, S. P., Cant, A. (2017), Workplace spirituality – an effective HRM strategy for indian insurance industry, *Journal of insurance*, 3.
- Cornelius, N. and Gagnon, S. (1999), From ethics 'by proxy' to ethics in action: new approaches to understanding HRM and ethics. *Blackwell publisher*, 225-235.
- Njuć, V. (2019), *New Age Philosophy-Old Occultism in a New Movement*. Author's edition.
- Pava, M. L. (1998), The substance of Jewish business ethics. *Journal of business ethics*, 603-617.
- Prasanna Tamba<sup>1</sup>, Peter Cappelli<sup>2</sup>, and Valery Yakubovich<sup>3</sup>. (2019.), Artificial intelligence in human resources management, challenges and a path forward, *California management review*, 15-42.
- Singbo, O. (2020), The Postmortal State: Metaphysical-Eschatological Ambitions of
- Steingard, D. S. (2005), Spiritually-informed management theory toward profound possibilities for inquiry and transformation, *Journal of Management Inquiry*, 14(3), 227-241.
- Jones, T.M. (1991), Ethical decision making by individuals in organizations: an issue contingent. *Academy of management review*, 16(2), 366-395.
- Transhumanism. *Philosophical Research*, 251-267.
- Trevino, L., G., Weaver, D. G., and Toffler, B. (1999), Managing ethics and legal compliance: what works and what hurts. *California Management Review* 41, no. 2, 131-151.
- Viruli de Silva, N. N. D. N. P. Opatha (2015), Role of ethical orientation of HRM in establishing an ethical organizational culture: a literature review and implications. *Proceedings of 12th International conference on business management*.
- What role should HR play in corporate ethics? (2004), *HR focus*.
- Why Global ethics count and how hrm can help. (2008), *HR focus*.
- Wiener, N. (1966), God & Golem, Inc.: a comment of certain points where cybernetics impinges on religion. *Cambridge Mass*.
- Wiener, N. (1967), *The Human Use of Human Beings: cybernetics and society*. New York: Avon books.
- Kafedžiska, D. V. (2018), Artificial intelligence - a threat to jobs or a condition for acquiring new skills. *International Journal for Science and Arts - "IDEA"*, 75-84.

#### **The Internet:**

*Great scientists about God* (2017, 07 30). Retrieved from <https://mojemisli.rs/2017/07/30/116/>.

# Seamanship terminology in Georgian material and cultural dialectological vocabulary

Nargiz Akhvlediani<sup>1</sup>, Diana Akhvlediani<sup>2</sup>, Tsiala Narakidze<sup>3</sup>, Teona Dzneladze<sup>4</sup>

<sup>1\*</sup> Department of Folklore, Dialectology and Emigrant Literature Research of the Niko Berdzenishvili Institute of Batumi State University, Ph.D., doctor of Philological Science, Georgia

<sup>2</sup> Department of Education, Faculty of Faculty of Exact Sciences and Education of Shota Rustaveli State University, Ph.D., doctor of Philological Science, Georgia

<sup>3</sup> Department of Folklore, Dialectology and Emigrant Literature Research of the Niko Berdzenishvili Institute of Batumi State University, Georgia

<sup>4</sup> Department of Navigation, Faculty of Navigation of Batumi State Maritime Academy, Georgia

\*Corresponding Author: e-mail: [nargiz.akhvlediani@bsu.edu.ge](mailto:nargiz.akhvlediani@bsu.edu.ge)

---

## Abstract

Every nation is doing its best to find its place among world's great civilizations. If country has ambition of being considered as a nation of big cultural heritage, it should be known not only with modern achievements, but with its heritage, traditions, customs. It is natural that nations representing antient civilizations, among which Georgia takes its rightful place, agricultural diversity led to terminological diversity. From this point of view Georgia's ethnoculture, which is a created by people from all sides of the country, is extremely diverse. The necessity of recording and description of lost or forgotten words and terminology is dictated by processes of modern globalization and integration.

In this article we will present you several lexical unites related to catching of fish and bird with nets, there connection to micro-toponyms, geographical names. For example: "Ojinji" – (name of place, Makhinjauri, Khelvachauri municipality), "Sasirekeli" – (bird trap on the hill, Makhinjauri, Khelvachauri municipality), "qvaomkhazi" – (place for catching the fish in Sarpi, Khelvachauri municipality), "Qvagodzgo" – (place for catching the fish in Sarpi, Khelvachauri municipality), "Qvaospao" – (place for catching the fish in Sarpi, Khelvachauri municipality), "Qvaotsude" – (place for catching the fish in Sarpi, Khelvachauri municipality), etc.

*Keywords:* Linguistics, toponyms, micro-toponyms, terminology, etymology, etiology.

---

## 1. Introduction

Rapid development in human life, science and technology has made many words actively used by our ancestors useless and even forgotten. However, we can still find such pearls and give them second life. From the linguistic point of view (and not only – emphasis is ours - N.A.), it is very important to list the certain lexemes related to different fields. Who knows when these or that lexemes (resp. terms) will be needed in language for motivation of different names?

Fishing-sailing was the main economic activity for Laz (Laz – the name of one of the Qartvelic tribes in Western Georgia – emphasis in ours -N.A.) people (Tandilava, Z. 1972:78)<sup>1</sup>.

In this research our aim is to define some terms of fishing and bird catching, reflect these terms in local toponyms and give them a new life.

## 2. Main part

Bird hunting was considered as form of aristocratic hunting (A.Robakidze, Falcon hunting in Guria, 1949:24<sup>2</sup>) and was rather difficult, required special knowledge and experience, was related to certain expenses, which was not affordable for simple people. (A. Akhvlediani, 1991:4, Falcon on "Sasirekeli"<sup>3</sup>) We can find a lot of information about birds in researches of I-II centuries, among them the most important is "History of Nature" by Gaius Plinius Secundus. In the Middle Ages, Frederick II the Great wrote about birds in his works.

In XVI-XVII centuries several works were published by Carl Linnaeus "Systema Naturae", 1735 and George Buffon "The Natural History of birds" in 10 volumes (1770-1778). Iliia Chavchavadze, as he himself used to say "surprisingly" loved nature and cherished inanimate and animate nature of forest: I am, as they would say, real big lover of hunting. Surprisingly I love to sit under a tree in a foggy, soundless forest with lowest heartbeat and wait for the prey. Every soul is born of God and has equal right

---

<sup>1</sup> Tandilava, Z. 1972- Z.Tandilava „Laz folk poetry“, Batumi.

<sup>2</sup> Robakidze, A. 1949 - A.Robakidze, Falcon hunting in Guria.

<sup>3</sup> Akhvlediani, A. 1991- A. Akhvlediani, Falcon on "Sasirekeli".

to live in this world, but what can you do? Wrote Ilia Chavchavadze in “Glakhis naambobi” (I.Chavchavadze; see ornithological reference from the personal collection of Ilia Chavchavadze <https://wildlife.ge/4834/2022/06/>).

Among other Neolithic monuments almost everywhere you can find net slings. It seems that people of that time often used nets for fishing (M.Salia [https://abkhazology.wordpress.com/2022/12/28/%e1%83%9b%e1%83%90%e1%83%99%e1%83%90-%e1%83%a1%e1%83%90%e1%83%9a%e1%83%98%e1%83%90-%e1%83%9b%e1%83%94%e1%83%97%e1%83%94%e1%83%95%e1%83%96%e1%83%94%e1%83%9d%e1%83%91%e1%83%98%e1%83%a1-%e1%83%9a/?fbclid=IwAR1quDGSypKHUoQhTRcsVTGvYzMKQraI1cUos\\_9BY\\_GScJiq75mTQa2B6ck](https://abkhazology.wordpress.com/2022/12/28/%e1%83%9b%e1%83%90%e1%83%99%e1%83%90-%e1%83%a1%e1%83%90%e1%83%9a%e1%83%98%e1%83%90-%e1%83%9b%e1%83%94%e1%83%97%e1%83%94%e1%83%95%e1%83%96%e1%83%94%e1%83%9d%e1%83%91%e1%83%98%e1%83%a1-%e1%83%9a/?fbclid=IwAR1quDGSypKHUoQhTRcsVTGvYzMKQraI1cUos_9BY_GScJiq75mTQa2B6ck)).

Fishing net held an important place in religious thinking of Georgian people. In Samegrelo ill persons bed and child crib would be covered by net, they used to hang it near bedridden patient. People believed that it was protecting them from evil eye. To illustrate that I will present you several lexical examples related to catching of fish with nets.

In Georgia, namely in Ajara, we know not only famous bird catching locations, such as: ‘Sasirekeli’, ‘Ojinji’ (bird catching location in Makhinjauri, Khelvachauri municipality, Az. Akhvlediani oral information), but also fish catching locations such as: ‘Qvaomkhazi’, ‘Qvagodzgo’, ‘Qvaospao’, ‘Qvaotsude’ (place for catching the fish in village Sarpi, Khelvachauri Municipality). Based on oral information given by Ts. Narakidze the net was used as hunting tool and was called ‘Mosa’.

„Mosa net is appliance for catching the fish” ( Saba, 1991:505)<sup>4</sup>. – translate in modern Georgian

There are several types of fishing nets that are known:

**Apladi** – one of types of the fishing net. This net was used to catch fish near the coast line. The net is 15-20 meters long, it is thrown in the evening and taken out in the morning.

**Mezgiti** – small scale net and used for small size fish

**Molozma** – three sided net, middle net is small scale, the side net is bigger scale and its called ‘Faina’.

**Girgiri** – the biggest net

**Mosa Otkomilushi** – throwing net, the most convenient net for fishing which is widely spread in Georgia and other countries. In Megrelia (Megrelia – one of the regions in Georgia). It is called ‘Otamale’ net.

**Parapati** – a big net. It has a bag-like hollow in the middle. (Lazi – one of the Georgias ethnic groups). Laz people call it ‘Kukuni’.

In his dictionary, Sulxhan-Saba Orbeliani also defines a net for trapping birds: “Bird catching nets: sasire, chitbade, ashriala, ojiji” (Sulxhan-Saba, 1991:88-90).

Below we will list names of some bird catching nets:

**Chitbade** – bird net which is placed on the hill used for catching of woodcock, grouse

**Sasire** – bird catching net. Near Batumi, township Makhinjauri (Batumi – city in Western Georgia)

**Ashriali** – hawk net

**Ojiji** – net in Mingrelian language, round net for catching the hawk (Sulxhan-Saba, 1991:88-90). “Ojiji” is not defined in P.Charaia dictionary. Based on word formation and construction “ojiji” seems to be Mingrelian word. Compare: “jiji” is the same as Georgian “dzir”. Which means the net which should be placed on the bottom. Near Batumi, in Makhinjauri (Makhinjauri is township in Khelvachauri municipality, Western Georgia, note from author – N.A.) you can find the toponym “Ojinji” (now it is called “Gubanovi”, though the first name was “Ojinji”). There is a possibility that letter “N” in the word developed later (N. Akhvlediani, 2017:53)<sup>5</sup> – O-ji[n]-ji. “Jinj” is the root (P.Charaia, 1997:184)<sup>6</sup>. “Ojije” is defined as net in the dictionary of O. Qajaia (O. Qajaia, 2002:472)<sup>7</sup>. Ojinji || Ojiji – type of the net which reaches the bottom of the water (A. Qobalia, 2010:560)<sup>8</sup>.

### 3. Conclusions

This research is describing several types of fishing nets, also presents different kinds of appliances for birds catching and their connection to geographical location with name and micro toponyms, also attempts of explanation of the motivation for the naming of geographical place names.

In the article several examples of birds and fish catching nets and their connection to micro toponyms and name of certain geographical location. For example: “Sasirekeli” – (bird trap on the hill, Makhinjauri, Khelvachauri municipality), “Ojinji” – (name of place, Makhinjauri, Khelvachauri municipality), “Qvaomkhazi” – (place for catching the fish in Sarpi, Khelvachauri municipality), “Qvagodzgo” – (place for catching the fish in Sarpi, Khelvachauri municipality), “Qvaospao” – (place for catching the fish in Sarpi, Khelvachauri municipality), “Qvaotsude” – (place for catching the fish in Sarpi, Khelvachauri municipality).

<sup>4</sup> Saba, 1991 – Sulxhan Saba Orbeliani, Georgian Dictionary, v.I, Tbilisi.

<sup>5</sup> Akhvlediani. N. 2017 - Definition of one geographical name in Makhinjauri, Collection „Georgian Onomastics“, v. VIII, Tbilisi, p. 49-55.

<sup>6</sup> Charaia, P. 1997 - P. Charaia, Mingrelian-Georgian Dictionary, Tbilisi

<sup>7</sup> Qajaia, O. 2002 - O. Qajaia, Mingrelian-Georgian Dictionary, Tbilisi

<sup>8</sup> Qobalia, A. 2010 - Mingrelian Dictionary, Tbilisi

**References:**

1. Akhvlediani, A. 1991-A.Akhvlediani, “Falcon on “Sasirekeli””, „Soviet Ajara“, Batumi, p. 4
2. Akhvlediani. N. 2017 – N. Akhvlediani, Definition of one geographical name in Makhinjauri, Collection „Georgian Onomastics“, v. VIII, Tbilisi, p. 49-55.
3. Tandilava,Z. 1972- Z. Tandilava, „Laz folk poetry“, Batumi.
4. Robaqidze, A. 1949 – A. Robaqidze, Falcon hunting in Guria, Review, Publishing house of Georgian Academy of Science, Tbilisi, p. 24
5. Saba, 1991 – Sul Khan Saba Orbeliani, Georgian Dictionary, v.I, Tbilisi.
6. Salia, M. 2005 - M. Salia, Fishing vocabulary in Zanuri, Tbilisi, 2005  
[https://abkhazology.wordpress.com/2022/12/28/%e1%83%9b%e1%83%90%e1%83%99%e1%83%90-%e1%83%a1%e1%83%90%e1%83%9a%e1%83%98%e1%83%90-%e1%83%9b%e1%83%94%e1%83%97%e1%83%94%e1%83%95%e1%83%96%e1%83%94%e1%83%9d%e1%83%91%e1%83%98%e1%83%a1-%e1%83%9a/?fbclid=IwAR1quDGSypKHUoQhTRcsVTGvYzMKQra1cUos\\_9BY\\_GScJiq75mTQa2B6ck](https://abkhazology.wordpress.com/2022/12/28/%e1%83%9b%e1%83%90%e1%83%99%e1%83%90-%e1%83%a1%e1%83%90%e1%83%9a%e1%83%98%e1%83%90-%e1%83%9b%e1%83%94%e1%83%97%e1%83%94%e1%83%95%e1%83%96%e1%83%94%e1%83%9d%e1%83%91%e1%83%98%e1%83%a1-%e1%83%9a/?fbclid=IwAR1quDGSypKHUoQhTRcsVTGvYzMKQra1cUos_9BY_GScJiq75mTQa2B6ck).
7. Qajaia,O. 2002 - O.Qajaia, Megrelian-Georgian Dictionary, Tbilisi
8. Qobalia,A. 2010 - Megrelian Dictionary, Tbilisi
9. Charaia,P. 1997 - P. Charaia, Megrelian-Georgian Dictionary, Tbilisi
10. Khvedelidze, N. 2022- N. Khvedelidze, Ornithological references from private collection of Ilia Chavchavadze, (Wild Nature), <https://wildlife.ge/4834/2022/06/>

# **Visual Communication and Cultural Diversity in International Advertising**

**Mirdaim Axhami<sup>1</sup>, Loreta Axhami<sup>2</sup>**

<sup>1</sup>*Department of Marketing and Tourism, Faculty of Economy, Albania*

*e-mail: [mirdaimaxhami@feut.edu.al](mailto:mirdaimaxhami@feut.edu.al)*

<sup>2</sup>*Department of Journalism and Communication, Faculty of History and Philology, Albania*

*e-mail: [loreta.axhami@hfh.edu.al](mailto:loreta.axhami@hfh.edu.al)*

---

## **Abstract**

Cultural environment influences advertising. Although markets are becoming increasingly similar in most of the countries, the biggest challenge of marketing and advertising decision-makers of multinational companies is how to communicate effectively with consumers of a different culture. Previous studies emphasize the necessity of adapting advertising strategies to the consumers' culture. Meanwhile, in effective advertising, sometimes visuals communicate better than words. In this context, the main purpose of the study is to investigate how visuals are used in international advertising in Albania, how they are designed and how they reflect cultural differences. The study is based on a combination of quantitative and qualitative methods of scientific research: descriptive analysis of respondents gathered through questionnaires and in-depth interviews with advertising agencies specialists in order to examine to what extent the cultural traits are taken into consideration by advertisers in international advertising campaigns. Findings show that Albanian companies and advertising agencies are more focused on ethical than cultural issues of advertising. Being a small market and the financial crisis of the media has affected the lack of attention to cultural differences in advertising. The study emphasizes the need to pay more attention to the cultural aspects of international brand advertisements, especially style and visual communication.

**Keywords:** visual communication, individualistic/collectivistic culture, diversity, advertising.

---

## **1. Introduction**

The key question for global marketers is whether the specific advertising message and media strategy must be changed from region to region or country to country because of environmental requirements. Proponents of the "one world, one voice" approach to global advertising believe that the era of global village is fast approaching, and that tastes and preferences are converging worldwide. According to the standardization argument, because the people everywhere want the same products for the same reasons, companies can achieve great economies of scale by unifying advertising around the world. Advertisers who follow the localized approach are skeptical of the global village argument. They, rather, assert that consumer still differ from country to country and must be reached by advertising tailored to their respective countries. Proponents of localization print out that most blunders occur because advertisers have failed to understand and to adapt to foreign cultures (Keegan & Schlegelmilch 2001).

As many previous studies shows, the controversy over advertising approaches will probably continue for years to come. The question of when to use localized versus standardized approach depends on the product involved and a company's objectives in a particular market. Visual communication, a very important component of local and international advertising is the main component of this study.

## **2. Literature Review**

Advertising plays a fundamental role in economic and social development. The ability of advertising to deliver carefully prepared messages to target audiences has given them a major role in the marketing programs of most businesses and organizations. On the other hand, the cultural environment influences advertising. According to Kanso (1992) 'managers attuned to cultural issues tended to prefer the localized approach whereas managers less sensitive to cultural preferred a standardized approach'. Carter (1997) highlights that 'the challenge for advertisers and agencies is finding ads which work in different countries and cultures. At the same time as this global tendency, there is a growing local tendency. It's becoming increasingly important to understand the requirements of both.

## **2.1 Visual communication and cultural component in advertising**

Visual messages play a profound role especially in the international advertising. In fact many previous studies show that international ads are increasingly getting entirely visual. The most important role of visual components is to capture attention, and recent research identifies the visual as an important element of standardization. Visual communications of any kind, whether persuasive or informative, from billboards to birth announcements, should be seen as the embodiment of form and function: the integration of the beautiful and the useful (Rand 2014).

The idea of using the visual image as a source of persuasion began to be considered by rhetorical scholars in the late 1960s. Paul Lester (1996; 2003), in his book 'Images that Injure', examined the role of the visual image in creating and maintaining cultural stereotypes. According to Lester, although media stereotypes are not inevitable, media experts suggest that one of the reasons why media stereotype is because advertisers demand quickly interpreted shortcut pictures. Paul Messaris (1997; 2015) put forward a theory in Visual Persuasion of visual argument in advertising. He outlines three major roles that images can play in ads: they can elicit emotions by stimulating the appearance of a real person or object; they can serve as photographic proof that something really did happen; and they can establish an implicit link between the thing that is being sold and some other images. Messaris argues that these three functions of advertising images stem from underlying, fundamental characteristics of visual communication-characteristics that define the essential nature of images, and distinguish them from language and from the other modes of human communication. By analyzing a variety of commercial, political and social issue advertisements, Messaris also discusses the role of images in cross-cultural advertising.

Literature suggests that pictures play such a central role in ads that, even without explicit product-relevant information, pictures still exert a considerable influence on the persuasiveness of advertisements (Peracchio & Meyers-Levy, 1997). Pictures have been shown to enhance the persuasiveness of ads. Furthermore, advertising pictures are thought to activate both visual and verbal message learning and processing by enhancing consumers' memories of other semantic information (Childers & Houston, 1984; MacKenzie, Lutz, & Belch, 1986; Miniard et al., 1991). According to Mitchell & Olson (1981); Mitchell (1986) pictures are thought to be more influential mostly due to their ability to evoke strong emotional responses from consumers. Therefore, pictures in advertising can powerfully convey meaningful concepts, including cultural values, such as individualism and collectivism, and affect product perception (Scott, 1994; Peracchio & Meyers-Levy, 1997).

In effective advertising, both print and television, it's not just the word that need to communicate the message, the visuals communicate as well. In fact, visuals do some things better than words. The effective use of visuals in advertising can be related to a number of effects such as: grab attention; stick in memory; cement belief; tell interesting stories; communicate quickly; anchor associations. Today the visual element is understood to be an essential, intricate, meaningful, and culturally embedded characteristic of contemporary marketing communication (Mc Quarrie & Mick, 1999). Communication and culture are not separate entities or areas and each is produced through a dynamic relationship with the other (Schirato and Yell, 2000).

## **2.2 Hofstede's national cultural dimensions model**

Hofstede's model (2010) distinguishes cultures according to six dimensions: individualism/collectivism, power distance, masculinity/femininity, uncertainty avoidance, long-/short-term orientation and indulgence versus restraint. It provides scales from 0 to 100 for 76 countries for each dimension, and each country has a position on each scale or index, relative to other countries. Individualism/collectivism can be defined as 'people looking after themselves and their immediate family only, versus people belonging to in-groups that look after them in exchange for loyalty'. The high side of this dimension, called Individualism, can be defined as a preference for a loosely-knit social framework in which individuals are expected to take care of only themselves and their immediate families.

Its opposite, Collectivism, represents a preference for a tightly-knit framework in society in which individuals can expect their relatives or members of a particular in group to look after them in exchange for unquestioning loyalty. A society's position on this dimension is reflected in whether people's self-image is defined in terms of "I" or "we." This difference between individualism/collectivism culture is reflected in the different roles of advertising: persuasion-individualistic versus creating trust-collectivist.

Sometimes the communication style is decisive for consumers' acceptance of advertising. Various advertising researchers have studied differences in style such as the direct versus indirect styles used in individualistic and collectivistic cultures (Cho et al. 1999). Some cross-cultural research points out that the degree to which individuals are integrated into groups (e.g., collectivism vs. individualism) is correlated with visual-communication cultural values (Hall, 1976; Hofstede, 2001; Mooij, 2009). For example, while collectivism is positively correlated with high-context communication frameworks, individualism is correlated with low context communication frameworks (Hall, 1976; Mooij & Hofstede 2011).

## **3. Methodology**

A survey was conducted in Albania among 1203 respondents, during 2 May 2023 to 5th June 2023.

### **3.1 Research Context**

Albania was the most isolated country in Eastern Europe under the communist regime. After the collapse of the regime in 1991, the economy of Albania went through a process of transition from a centralized economy to a market-based economy on the principles of the free market.

### **3.2 Participants**

The survey, conducted among 1203 respondents, of which 1036 questionnaires were considered as valid, a sample composed by 61.4% females and 38.6% males, investigated the impact of visual advertising components such as image, picture, etc.; communication styles of local and international advertising and culture on attitudes of consumers.

Based on the Hofstede's national cultural dimensions model, respondents were divided into two age groups: 18-30 years old and older than 30 years. Average age of participants is 41.58 years old.

### **3.3 Research Questions**

This study is focused on usage of visuals in international ads in Albania, the way they are designed and how they reflect cultural differences. The aim is to give answers to the following research questions:

1. What is importance level of visual advertising components such as image, picture, colors, etc. in relation to attitudes towards local & international ads in Albania?
2. Does advertising communication style (direct versus indirect) influence attitudes to advertising?
3. Are there difficulties and differences in perceiving foreign ads messages that are communicated only through visual language?
4. Do international ads reflect cultural differences in Albania?

### **3.4 Instruments**

In this survey, people were asked questions related to the following:

- The role and importance of visual components in international advertising;
- Ads influencing attitudes and decision-making;
- Difficulties in perceiving foreign ads' message communicated only through the visual language;
- Persuasiveness: local advertisements versus international advertisements.

### **3.5 Data Analysis**

The collected data were analyzed using Statistical Package for the Social Sciences (SPSS) which is useful for both quantitative and qualitative data and the chances of errors are little. Descriptive statistics give a clear picture of the behavior and attitudes in general. The results were interpreted based on a descriptive statistical analysis and according to the research questions.

### **3.6 Research Limitations**

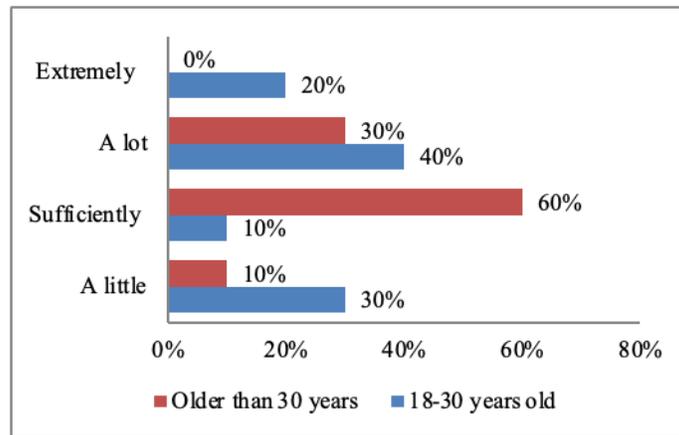
The realization of this study has some limitations of which the applicants were aware. These limitations were taken into consideration during the analysis and interpretation of the results.

- Targeted population was limited in the capital of Albania, Tirana excluding people of the same age group in other cities and villages.
- Lack of studies specifically related to this topic in Albania makes it impossible to compare the findings to create a more complete framework of the way the object of study has evolved.

## **4 Research Results and Findings**

Referring to the Hofstede's model, 18-30 age group born after the 90s, in a democratic system and market economy exhibits features of individualistic culture. Age group over 30 shows features of collectivist society and is skeptical of ads in general and of foreign ads specifically. These differences are reflected in the different roles of advertising: persuasion - individualistic features (18-30 years old generation) versus creating trust-collectivist features (generation over 30).

As shown in Fig. 1, 60% of the group older than 30 years old declared that the style of advertising communication (direct vs. versus indirect style) sufficiently influences their attitude to advertising, product, brand, service, etc. while 40% of the group 18-30 years old expressed that the ads communication style influence a lot to them. Collectivistic culture to which it belongs the group older than 30 years old are high-context communication cultures, with an indirect style of communication, meanwhile the individualistic culture, 18-30 years old is correlated with low context communication frameworks.

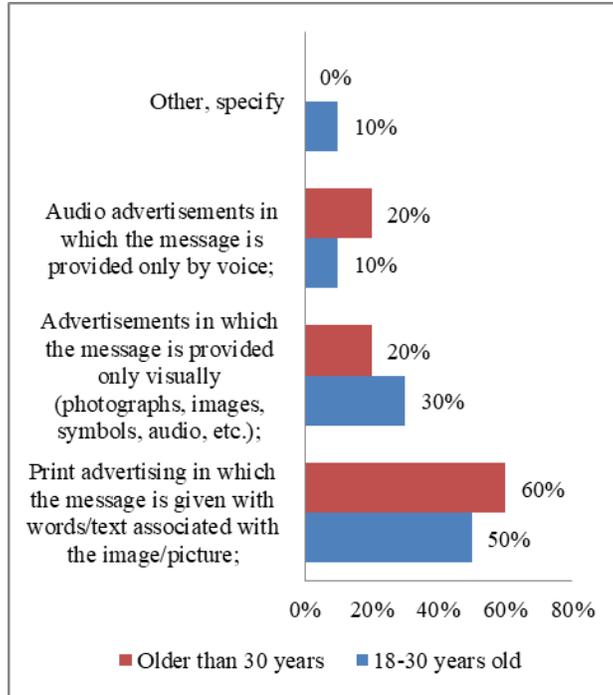


**Figure 1.** Influence of attitude to ads by communication style

According to advertising managers in Albania, for different reasons the ads communication style many times is not in their focus. Not considering style of communication can be problematic, for example, the direct style of individualistic culture may be offensive to members of collectivistic culture. Therefore, paying attention to the right advertising style may be more influential to success than executive aspects of advertising. In our complex society, the ‘struggle’ for consumers’ attention is getting stronger. This is reflected in advertisements too. As shown in Fig. 2, most of the respondents from both two groups say that print advertising in which the message is given with words/text associated with the image/picture influence more on their attitudes and decision-making.

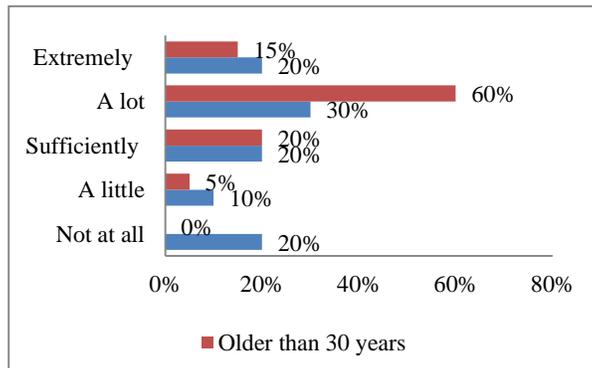
Only 30 % of 18-30 years old declare that they are more influenced by advertisements in which the message is provided only visually (photographs, images, symbols, audio, etc.). Meanwhile, for 20% of the group older than 30 years, the two types of advertising, specifically audio advertisements in which the message is provided only by voice and advertisements in which the message is provided only visually have the same level effects on decision-making.

According to the data below, the visual components of advertising such as image, picture, colors, size, etc. are very important especially for the group of older than 30 years, (exactly for 60% of them). This is related with the fact that pictures and images have been shown to enhance the persuasiveness of ads. As mentioned before, this group reflects collectivist culture, which means that advertisements it is necessary to first build a relationship and trust between involved parties. The usage of visual components helps to create more credibility.



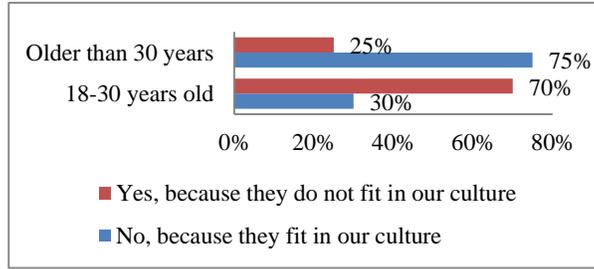
**Figure 2.** Ads influencing attitudes and decision-making

For 40% of 18-30 years old, visual components of advertising are extremely and sufficiently important against 20% not at all (see Fig. 3). According to advertising managers in Albania, usage of visual components in local and international ads is very important but in general they do not pay attention to the differences according to the cultural dimension and age groups.



**Figure 3.** Importance of visual components in international advertising

A huge difference is observed in the attitudes of the two groups towards foreign advertisements. 70% of older than 30 years claim that they have difficulty in perceiving the message of foreign advertisements that are communicated only through the visual language because they do not fit in their culture against 75% of 18-30 years old group who claim the opposite. According to them, there is no difficulty in perceiving the message of foreign advertisements that are communicated only through the visual language because they fit with Albanian culture (see Fig. 4). This is another significant finding which means that international brand managers should consider changes in attitude towards international advertising between different age groups. In the case of Albania they should refer to historic and economic development, especially the transition from centralized economy to a market-based economy.

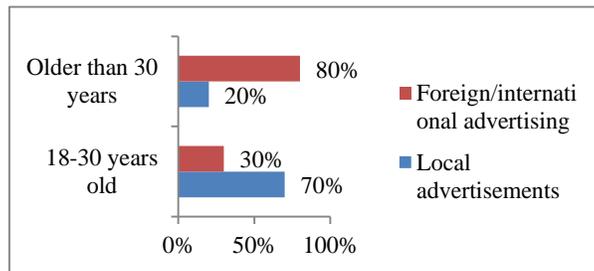


**Figure 4.** Difficulties in perceiving foreign ads' message communicated only through the visual language

Even though, some forms of visual presentations are universally understood, this data confirm that relying only on visual communication, in order to overcome the cultural barriers the success is not guaranteed. An interesting fact in Albania is that young people who are grown up with advertisements are usually more suspicious of advertisements regardless of whether they are local or international.

In a prior study Tartari (2014) focused on cultural and linguistic diversity between foreign and Albanian individuals representing as image in commercial advertising of Albanian companies. The author concludes that cultural image conveyed by local characters, which are vulnerable and sensitive in Albanian society, is more culturally influential. This fact affects the commercial part. Foreign celebrities find it difficult to be loved from the general public because they are culturally different, speak another language and have another lifestyle. Tartari points out that Albanian corporations need advertisements conceived according to their culture and local language. Duplication of advertisements can save money for companies but put the viewer in the role of the respondent. The customer needs clearer messages that do not have international logic but a local message.

A great difference between two age groups is noted in relation to advertisements persuasion, local versus international advertisements. 80 % of the older than 30 years old group say that they trust more foreign/international advertising against 70 % of 18-30 years old group which trust more local advertisements. Only 20 % of the older than 30 years old group say that they trust more local advertisements against 30 % of 18-30 years old group which trust more foreign/international advertising (Fig.5).



**Figure 5.** Persuasiveness: local advertisements vs international advertisements

Another interesting fact is that most of both groups think that messages in foreign advertisements must adapt to the native culture.

## 5. Conclusion

Ignoring cultural differences in advertising is a source of misunderstandings that may result in a cost for businesses. Taking into account cultural differences can be used as a competitive advantage by companies when designing international campaigns. In order to have effective ads, foreign companies should take into consideration cultural differences.

The fact that Albanian advertising market is smaller compared to the regional countries affects negatively the quality of advertising both local and foreign, which is reflected in the lack of focus on cultural differences. On the other hand, financial media crisis has influenced in making them less attentive to quality and cultural aspect of domestic or foreign advertising.

In general, Albanian companies and advertising agencies pay more attention to ethical and moral advertising issues than cultural aspects. An interesting fact is that most of both respondents groups think that messages in foreign advertisements must adapt to the native culture. According to advertising managers in Albania, usage of visual components in local and international

ads is very important but in general they do not pay attention to the differences according to the cultural dimension and age groups. Likewise, paying attention to the right advertising style may be more influential to success than executive aspects of advertising.

## References

- Carter, M. (1997). Think globally, act locally, Financial Times, 30 June
- Cho, B., Known, U., Gentry, J.W., Jun, S., & Kropp, F. (1999). Cultural Values Reflected in Theme and Execution: A Comparative Study of U.S. and Korean Television Commercials. *Journal of Advertising*, 28(4), 59-73
- Mooij, M., Hofstede, G. (2011). Cross-Cultural Consumer Behavior: A Review of Research Findings , *Journal of International Consumer Marketing*, (23) 181–192
- Hall, E. T., (1976). *Beyond Culture*, Anchor Press, NY
- Hofstede, G., Hofstede, G. J., & Minkov, M. (2010). *Cultures and Organizations: Software of the Mind*, Third Edition, McGraw - Hill Education
- Keegan, W. J., Schlegelmilch, B. B. (2001): *Global Marketing Management: A European Perspective*, Financial Times, Prentice Hall
- Kanso, A. (1992). International advertising strategies: global commitment to local vision, *Journal of Advertising Research*, January/February, 10-14
- Lester, P. M. (2003). *Images that injure: Pictorial stereotypes in the media*, Second edition, Praeger
- Mac Kenzie, S. B., Lutz, R.J., & Belch, G. E.(1986). The Role of Attitude toward the Ad as a Mediator of Advertising Effectiveness: A Test of Competing Explanations', *Journal of Marketing Research*, Vol. 23, No. 2 May
- Miniard, P., Lord, K.R., Bhatla, S. & Dickson, P.R (1991). Picture-Based Persuasion Processes and the Moderating Role of Involvement, *Journal of Consumer Research* 18(1):92
- McQuarrie, E.F., Mick, D.G. (1999). *Visual Rhetoric in Advertising: Text-Interpretive, Experimental, and Reader-Response Analyses*, *Journal of consumer research*, Vol. 26
- Peracchio, L. A., & Meyers-Levy, Joan. (1997). Evaluating Persuasion-Enhancing Techniques from a Resource-Matching Perspective, *Journal of Consumer Research*, Vol. 24, Issue 2
- Rand, P. (2014). *Thoughts on Design*, San Francisco, CA: Chronicle Books
- Schirato, T., & Yell, S. (2000). *Communication and Culture: An Introduction*, SAGE
- Scot, L. (1994). Images in Advertising: The Need for a Theory of Visual Rhetoric, *Journal of Consumer Research* 21(2):252-73
- Tartari, A. (2014). Identitete kulturore përcjellë nga reklama bartur nga personazhe publikë, *Studime Albanologjike*, Diversiteti kulturor në media
- Wells, W., Burnett, J. & Moriarty, S. (1989). *Advertising principles and Practices*, Prentice Hall
- Whitelock, J., & Chung, D. (1989). *Cross-Cultural Advertising. An empirical study*, International Journal of Advertising, Vol.8

# IFRS 17's Impact on Pricing and Profitability: A Comparative Analysis in Life Insurance

Esmeralda Yryku<sup>1</sup>, Diana Lamani<sup>2</sup>

<sup>1</sup>Department of Accounting, Faculty of Economy, Albania

<sup>2</sup> Department of Accounting, Faculty of Economy, Albania

\*Corresponding Author: e-mail: esmeralda.yryku@unitir.edu.al

---

## Abstract

The implementation of International Financial Reporting Standard 17 (IFRS 17) introduced significant modifications to the life insurance sector, particularly in pricing and profitability calculations. The primary focus of this study was the Contractual Service Margin (CSM) and its evolved measurement and recognition processes. The research underscored the alterations in financial reporting before and after the enactment of IFRS 17, highlighting the transformations in financial and actuarial procedures. Employing an analytical and comparative method, the study juxtaposed theoretical frameworks with practical examples, making the intricacies of IFRS 17 more accessible. Initial findings revealed substantial differences between models employed before and after the adoption of IFRS 17. The updated models necessitate intricate calculations of Fulfillment Cash Flows (FCF) and CSM, with comprehensive considerations and adjustments. An illustrative scenario post-IFRS 17 adoption showcased the elaborate calculations required, accounting for both unrealized profits and adjusted future cash flow values. These calculations accentuated the complexity and specificity involved in revenue recognition and liability measurement, showcasing the transformative essence of IFRS 17 in life insurance operations. This research significantly augmented the understanding of IFRS 17's impact on life insurance entities, proving invaluable for scholars, industry professionals, and policymakers. By demystifying the complexities inherent in IFRS 17 with lucid examples, the study provided pivotal insights into the precision and sophistication mandated by the standard. The preliminary findings underscored that IFRS 17 enhances financial clarity and comparability in the life insurance sector, facilitating a more informed understanding of firms' financial standing.

*Keywords:* IFRS 17, Life Insurance, Pricing Strategies, Profitability Metrics, Contractual Service Margin, Financial Reporting.

---

## 1. Introduction

### 1.1 Background and context of IFRS 17 implementation in the life insurance sector.

In an era where financial standards evolve with the intricate demands of global markets, there lies the undeniable importance of understanding the frameworks governing these transformations. Specifically, the International Financial Reporting Standard 17 (IFRS 17) represents not merely an addition to the accounting lexicon but ushers in a significant shift in the way insurance contracts are financially reported and comprehended.

For years, the discourse among financial experts, including economists and accounting professionals, has centered on the critical need for an accounting standard that accurately reflects the complex financial activities in the insurance sector. Historically, the industry has contended with antiquated financial reporting standards that did not consistently, transparently, or comparably convey the true nature of insurance contracts. The advent of IFRS 17 represents a strategic move to address these deficiencies – a deliberate initiative aimed at guaranteeing that entities present insurance contracts in their financial statements in a manner that fairly reflects their economic reality.

While IFRS 17 was deemed by some as the "biggest accounting change in decades (EY, 2022), its implementation was not without challenges. However, the overarching goal remained clear: to enhance transparency, consistency, and comparability in the life insurance sector, fostering a robust economic environment.

As financial reporting becomes more reflective of the economic realities under the new Standard, insurers may need to reassess their product designs. This re-evaluation might lead to modifications in product features, benefits, or terms to maintain or enhance profitability (Clark et al, 2020).

IFRS 17 requires that products be categorized according to their risk characteristics and cohort, which may lead to a more detailed recognition of profits and losses. This can potentially impact pricing decisions in order to ensure sufficient profitability across

cohorts (EY, 2018). The strict requirements for data accuracy, actuarial modeling, and financial reporting may result in a greater emphasis on pricing models driven by data. This could potentially result in more precise assessments of risk and, consequently, more competitive and risk-based pricing options for consumers. The decision to use IFRS 17 for this study is complex. In theory, it represents the most recent and comprehensive effort to address the gaps in financial reporting of insurance contracts. Its systematic approach to measuring liabilities and recognizing revenue makes it a suitable model to analyze and comprehend. In a real-world context, as various regions globally adopt IFRS 17, a more profound comprehension of its operational aspects becomes crucial for individuals engaged in financial accounting and analysis.

Our research was initiated based on two distinct evaluations. Firstly, we considered that the practical examples outlined within IFRS 17, even in their simplified versions, could offer valuable insights into the intricacies of actual insurance financial reporting. Secondly, we believed that by conducting thorough computations, one could uncover the fundamental tenets of IFRS 17 and recognize its game-changing nature. To validate these suppositions, we initiated a study involving hypothetical scenarios and computations that closely resembled the multifaceted nature of financial reporting under IFRS 17. Though they were simplified models, they served as proxies to demonstrate the underlying principles of the standard. For instance, we calculated key financial metrics such as Free Cash Flow (FCF) and Contractual Service Margin (CSM) – each serving as a touchstone to understand the larger framework of IFRS 17. The computations, while elementary in nature, served as a bridge between theoretical understanding and practical application, offering a conceptual scaffold for those unfamiliar with the nuances of the standard.

The study acknowledges that it has limitations. Firstly, it heavily relies on theoretical frameworks and hypothetical examples, which may not fully represent real-world scenarios or the diverse nature of insurance contracts. Additionally, the focus on the CSM means that other important aspects of IFRS 17 that impact insurers' financial reporting may be overlooked. The study also does not consider the operational challenges and costs associated with transitioning to the new standard, such as the need for enhanced actuarial and financial modeling techniques and technology upgrades.

In conclusion, the world of insurance financial reporting is no longer what it once was. With the advent of IFRS 17, stakeholders, from insurance companies to investors, must recalibrate their understanding and approaches. The assessments and computations outlined in this analysis represent an initial phase towards that goal. Within this analysis, readers will not only gain a fundamental understanding of IFRS 17 but will also be well-prepared to explore into the profound changes it introduces in the field of financial reporting.

### *1.2 Significance of pricing and profitability calculations in the insurance industry*

The insurance industry, a cornerstone of modern financial systems, relies heavily on robust pricing and profitability calculations. These elements determine not only the viability of individual insurance products but also the overall financial health and sustainability of insurance entities. Historically, pricing in the insurance sector was derived from basic actuarial principles, utilizing historical claims data to predict future losses. However, with the advent of advanced data analytics and risk modelling, the industry has seen a shift towards more dynamic and comprehensive pricing strategies. Insurers now employ multifaceted approaches, incorporating various economic, social, and technological factors to set premiums that accurately reflect underlying risks (Palmer, 1989).

The life insurance sector, inherently complex due to the long duration of its contracts and the various risks it encompasses, faced challenges in the transition. The implementation of IFRS 17 required insurers to adopt a unified accounting model, shifting from a myriad of models that had been influenced by varying national regulations and traditions. Economically, this transition affected the valuation of liabilities and the presentation of profitability, compelling insurers to reconsider their product designs and business models. The transition to IFRS 17 compelled insurers to reconsider their product designs and business models, as the unified accounting model affected the valuation of liabilities and the presentation of profitability (Pelsser *et al.* 2021). While IFRS 17 primarily focuses on financial reporting, its impact is likely to cause significant changes in the pricing structures and product designs within the insurance industry, which could potentially affect profitability margins.

From an economic perspective, the interaction between pricing and profitability is what determines market competition. Effective pricing strategies not only guarantee sufficient coverage for potential claims, but also sustain competitiveness within the market. When pricing is in line with the inherent risks, insurers can attain ideal levels of profitability, thereby creating a stable economic environment in which consumers have faith in the value proposition of their insurance offerings.

The balance between "accurate pricing" and "profitability" is fundamental for insurers to remain solvent and competitive in a dynamic market. This balance is crucial for several reasons:

Accurate pricing ensures that insurers charge premiums that adequately cover the expected costs of claims. If premiums are consistently set too low, insurers may face financial instability and struggle to pay claims, risking their solvency. In a competitive insurance market, offering competitive premiums is essential to attract and retain customers. Insurers need to strike a balance between competitive pricing and profitability to stay relevant and gain market share (Golnaraghi *et al.*, 2022). Regulators play a vital role in ensuring insurers' ability to pay claims and remain solvent. Compliance with regulatory requirements often involves setting appropriate premiums that align with actuarial calculations. Accurate pricing is, therefore, a fundamental practice in the insurance industry to ensure the financial health of insurers and the protection of policyholders (Poitras, 2013). It allows insurers to

strike a balance between offering competitive premiums to attract customers and maintaining the necessary financial reserves to meet their obligations. Furthermore, it fosters transparency and trust in the insurance market, attracting capital flows and contributing to overall financial stability (International Monetary Fund, 2002). Insurers must carefully assess risks, market dynamics, and regulatory requirements to find the optimal balance between accurate pricing and profitability. This balance is crucial for their financial stability, competitiveness, and overall success in a dynamic insurance market. According to a study by De Nichilo (2022) the effects of IFRS 17 on financial statements and strategies for achieving objectives are still unknown. However, it expects that the standard will bring substantial benefits to financial stability in the EU, particularly through increased transparency and improved internal risk management frameworks for insurance companies.

### *1.3 Evolution of Actuarial Modeling: The IFRS 17 Influence*

Actuarial procedures, which are essential in the insurance sector, have undergone changes in anticipation of the implementation of IFRS 17. The modifications in these procedures highlight significant differences in how models are created before and after the adoption of IFRS 17. Prior to the introduction of the Standard, actuarial models relied heavily on historical data and specific guidelines from the local region to evaluate insurance contracts. However, it has been discovered that these models can be inconsistent when applied internationally, resulting in financial reports that do not provide stakeholders with a clear and comparable understanding of the economic dynamics of insurance companies. This inconsistency can be attributed to variations in regulatory frameworks, market conditions, and risk profiles between different countries. The limitations of these models in fully comprehending the economic dynamics of insurance companies have been recognized (Cummins, 1990). Actuarial models prior to the implementation of the Standard mainly depended on historical data and guidelines specific to the local context to assess insurance contracts. These models were frequently based on traditional accounting standards and practices, which focused on historical cost and incurred claims. The actuarial approach in evaluating insurance contracts underwent significant changes with the introduction of IFRS 17. According to the International Actuarial Association (2022), this new standard brought about a more principle-based approach that focused on utilizing current and future cash flows to determine the value of insurance contracts. Furthermore, IFRS 17 requires the use of more advanced techniques, such as stochastic modeling, to assess the uncertainty and variability of future cash flows (International Actuarial Association, 2022). The primary objective of implementing IFRS 17 is to establish a more consistent and transparent framework for measuring and reporting insurance contracts, moving away from reliance on historical data and local-specific guidelines, as stated by the International Actuarial Association (2022). Overall, the introduction of IFRS 17 has had a significant impact on the actuarial approach to evaluating insurance contracts, shifting towards a more principle-based and forward-looking methodology.

## **2. Data Sources and Research Approach: Comprehensive Examination**

To ensure a comprehensive understanding of the changes induced by IFRS 17, this study explores both operational frameworks and financial narratives. It analyses the detailed methodologies introduced following the implementation of IFRS 17, emphasizing the need for precision and sophistication in economic practices. While the calculations presented in this study are simplified for illustrative purposes, it is important to highlight the significance of employing advanced statistical techniques and sophisticated actuarial models in practical applications. These tools enable insurers to navigate the economic complexities inherent in IFRS 17 and make informed economic decisions regarding financial reporting and risk management. The analytical and comparative method employed in this study serves as a guide to navigate the complex economic terrain of IFRS 17. Contemporary economic theories help us comprehend these implications. One of the prevailing economic theories that provide a lens to examine IFRS 17 is the Efficient Market Hypothesis (EMH), which suggests that markets are efficient and current asset prices reflect all available information (Frunza, 2016). Under IFRS 17, the increased transparency in insurers' financial reporting could enhance market efficiency as it provides more detailed information to stakeholders, potentially leading to more accurate pricing of insurance stocks. Contrasting with EMH, Behavioural Economics considers the psychological aspects of economic decision-making, which may not always be rational. The introduction of IFRS 17 might lead to initial market overreactions or under reactions as stakeholders adjust to the new reporting standards. The complex models required for liability measurement under IFRS 17 could also lead to diverse interpretations and decisions by investors, influenced by behavioural biases.

Another relevant theory is the Principal-Agent Problem, which addresses the challenges in aligning the interests of agents (management) with those of the principals (shareholders) (Shah, 2014). IFRS 17 requires the measurement of insurance liabilities to be based on current assumptions, which might affect management decisions on product pricing, investment strategies, and risk management. The standard's comprehensive reporting requirements could mitigate this problem by reducing information asymmetry between management and shareholders. Moreover, IFRS 17's approach to revenue recognition—where insurers recognize revenue as they provide coverage and services—resonates with the theory of Time Value of Money (TVM). TVM suggests that the value of money changes over time, an aspect that IFRS 17 incorporates by adjusting the contractual service margin for the time value of money and financial risks. This adjustment directly affects how profit is recognized and reported, aligning the recognition of profits with the delivery of services over time.

By contrasting economic theories with practical scenarios, this research aims to clarify the complexities of the Standard and emphasize its potential for transformation. In the following sections, we explore in greater detail the specific economic aspects of

how IFRS 17 will affect the insurance industry, shedding light on the economic consequences related to revenue recognition, liability measurement, and financial operations. This approach ensures that the study not only provides economic insights but also equips industry practitioners and policymakers with a practical economic understanding of the forthcoming changes in the financial landscape.

### 3. Changes in Financial Reporting

#### 3.1 Differences in Models: An Economic Insight into Life Insurance Accounting

The adoption of IFRS 17 has significant implications for life insurance companies. It not only changes the way financial information is presented but also requires significant updates to systems and processes. This includes changes in data collection, valuation methods, and reporting systems to ensure compliance with the new standard. While this brings challenges in implementation, it also offers an opportunity for better financial reporting and improved decision-making for stakeholders. The Standard changes how revenue is recognized in insurance, especially for life insurance contracts. Previously, life insurance companies followed a method that involved recognizing unrealized gains immediately when related premiums matured. However, IFRS 17 introduces a new approach where these gains are recognized gradually throughout the coverage period. This approach is in line with the fundamental economic principle that emphasizes the correlation between revenue recognition and the provision of services. Moreover, the previous framework was known for its static nature and was mainly restricted in its ability to adapt to future cash flows. On the other hand, IFRS 17 is based on a framework that requires regular reassessment of assumptions. This characteristic ensures that the revenue recognized is relevant and up-to-date, aligned with the most recent and relevant data. The transition to IFRS 17 comes with the implementation of a more intricate and multifaceted procedural framework, especially when it comes to calculating Fulfillment Cash Flows (FCF) and Contractual Service Margin (CSM). This development emphasizes a dedication to accuracy and a comprehensive representation of the true economic nature of insurance agreements, even though it does come with an increase in computational complexity. Table 1 is an economic analysis that clarifies these variations.

**Table 1.** Key Differences in Accounting Models Pre and Post-IFRS 17 Implementation

Aspect	Category	Pre-IFRS 17	Post-IFRS 17
Revenue Recognition	Treatment of Unrealized Profits	Recognized at Sale	Deferred and Recognized over Coverage Period
	Future Cash Flow Adjustments	Minimal Adjustments	Regular Updates and Adjustments
	Complexity Level	Moderate	Intricate FCF & CSM Calculations
Liability Measurement	Basis of Measurement	Premium Allocation Approach	Building Block Approach (FCF & CSM based)
	Adjustments Needed	Occasionally at Year-end	Regular and Comprehensive Adjustments
	Complexity Level	Simplified	Highly Specific

Liability quantification remains of utmost importance in the realm of life insurance contracts, as it serves as an essential tool to verify solvency and provide an accurate depiction of financial status. In the past, the primary method used was the Premium Allocation Approach, where liabilities were quantified based on the premiums allocated to them. However, IFRS 17 introduces the Building Block Approach, a cutting-edge method that seamlessly combines both FCF and CSM components. This new approach offers a comprehensive framework to identify and quantify the liabilities inherent in life insurance contracts.

Under previous frameworks, recalibrations were infrequent and mostly limited to year-end intervals. However, under IFRS 17, there is a need for regular and thorough recalibrations, creating a flexible system that can adapt to changes in the financial landscape. The implementation of IFRS 17 has increased the level of detail in liability evaluations. This involves a rigorous analytical process based on solid empirical evidence and forward-looking assessments. In the past, the Premium Allocation Approach was dominant, determining liabilities based on premiums paid. On the other hand, IFRS 17 advocates for the Building Block Approach, an innovative framework that considers both expected cash flows and contractual service margins. This enables the determination of liabilities based on anticipated monetary inflows and outflows, combined with potential profits, providing a clear understanding of an insurance company's obligations.

In the past, intermittent annual recalibrations were considered sufficient. However, in the current era following the implementation of IFRS 17, insurers are required to undertake continuous and comprehensive recalibrations of their liabilities. This requirement aligns with the principles of the standard, emphasizing the reflection of actual economic activities and the inherent changes in insurance contracts. Under IFRS 17, the complexity of liability quantification has significantly increased (Table 2). This demands an unprecedented level of precision, compelling insurance companies to exercise meticulous care in their numerical calculations and subsequent evaluations.

Furthermore, this significant shift towards a more comprehensive accounting framework aligns with a broader academic and economic discussion that advocates for increased transparency and accountability in financial reporting. It resonates with the need for financial statements to not only provide a retrospective summary of finances, but also to offer prospective narratives that provide valuable insights into an entity's financial well-being, performance, and sustainability (EY, 2023).

**Table 2** Detailed Representation of Liability Measurement under IFRS 17

Component	Description	Calculation Basis
<b>Present Value of Future Cash Flows (PVFCF)</b>	Estimated cash flows, discounted to their present value, that the insurer expects to pay out over the lifetime of the contract.	Calculated by estimating future cash flows and applying an appropriate discount rate to reflect the time value of money.
<b>Risk Adjustment for Non-Financial Risk (RA)</b>	An additional amount over the PVFCF to account for the uncertainty related to the amount and timing of insurance cash flows.	Determined by considering the compensation the insurer requires for bearing the uncertainty of non-financial risk.
<b>Contractual Service Margin (CSM)</b>	The unearned profit that the insurer will recognize as it provides insurance coverage in future periods.	The excess of the total consideration of the contract over the PVFCF and RA at the inception of the contract.
<b>Liability for Remaining Coverage (LRC)</b>	The total obligation of the insurer for the remaining coverage period of the contract.	The sum of the PVFCF, RA, and CSM. This represents the liability before any services are provided.

**3.2 Acknowledgment of Contractual Service Margin (CSM) under IFRS 17: Complexities and Challenges in the Context of Life Insurance Contracts.**

The concept of the Contractual Service Margin (CSM) holds great significance within the framework of IFRS 17, which primarily focuses on the accounting treatment of insurance contracts. It serves as a representation of the unearned profit associated with a specific group of insurance contracts that an entity anticipates recognizing as services are rendered over a period of time (Yousuf *et al.*, 2021). The CSM assumes a crucial role in the financial statements of insurers, exerting a considerable influence on how revenue and profit pertaining to insurance contracts are reported. The recognition of the Contractual Service Margin (CSM) in either profit or loss is dependent on the allocation of the balance under the general measurement model as stated in IFRS 17 – Level of Aggregation International Accounting Standards Board Meeting, 2020. Changes in non-economic assumptions can alter the CSM, thereby smoothing the underwriting margin on an annual basis, as outlined in the 2017 introduction to the IFRS 17. Furthermore, IFRS 17 requires adjustments to be made to the CSM in relation to estimated future cash flows for contract fulfillment. The CSM is reduced at the inception of certain contracts due to acquisition costs, which are subsequently recognized through the process of amortization. It is important to note that IFRS 17 prohibits adjustments to the CSM resulting from changes in discount rates for specific contracts, as highlighted in the 2018 publication discussing insurance contract issues raised by the industry.

The implementation of IFRS 17 in the financial and actuarial fields has attracted considerable interest. This Standard, which became effective on January 1, 2023, has introduced the concept of the CSM. It reflects the present value of future profits an insurer expects to earn as it fulfills its insurance obligations over the life of the contracts. This margin represents the unrealized gains inherent in the portfolio of insurance contracts held by the entity.

The process of identifying the CSM in financial statements, particularly in profit and loss accounts, is systematically determined. It is supported by the principle of distributing the total balance, strictly following the guidelines of the general measurement model. This distribution method allows for the adjustment of the CSM depending on changes in non-economic assumptions. This adjustment mechanism helps in generating a more stable underwriting margin on a yearly basis, a characteristic that is closely observed by financial analysts and stakeholders.

IFRS 17 includes specific requirements regarding the modification of the CSM. In particular, any changes in the forecasts for future cash flows require corresponding adjustments to the CSM. Additionally, it is important to note that acquisition costs, which are incurred at the start of the contract, reduce the CSM. This reduction is then recognized in the financial records through a systematic amortization process over the duration of the contract.

However, there are certain strict rules in the International Financial Reporting Standard for insurance contracts that explicitly prohibit any adjustments to the Contractual Service Margin (CSM) for insurance contracts that do not have direct participation features. This signifies that in the case of specific types of insurance contracts, any alterations to the CSM must not be undertaken in response to fluctuations observed in discount rates (Yousuf *et al.*, 2021). It is important to note that direct participation features in insurance contracts pertain to the policyholders' involvement in both the gains and losses incurred by the underlying assets of the insurance company. Consequently, for such contracts, there are provisions in place that facilitate adjustments to the CSM with the intention of accounting for variations in discount rates or risk mitigation (IFRS 17 – Risk Mitigation Option, 2020).

According to the guidelines set out in IFRS 17 (Table 3), organizations are required to discount their evaluations of future cash flows related to insurance contracts at rates that accurately reflect the time value of money (Bulpitt *et al.*, 2018). These discount rates play a crucial role in determining the CSM for insurance contracts.

**Table 3** Key Aspects of Contractual Service Margin (CSM) Analysis

Factor	Description
Definition and Purpose of CSM	IFRS 17 introduced CSM as a representation of unearned profit expected from an insurance contract (IFRS 17: IFRS 17 – Level of Aggregation International Accounting Standards Board Meeting, 2020). This necessitates a shift in accounting methodologies, creating complexities for entities familiar with traditional methods.
Dynamic Adjustments	Under IFRS 17, there's an imperative for periodic recalibrations related to CSM, especially when estimates of fulfillment cash flows for future periods change. Such dynamism requires robust systems and processes.
Recognition in Profit or Loss	The manner in which CSM is recognized in profit or loss under the general measurement model is intricate. Entities must allocate the CSM balance methodically, thereby introducing potential challenges in profit recognition patterns.
Variation with Underlying Items	Challenges arise when determining CSM for insurance contracts that fluctuate based on changes in underlying items. This can lead to valuation complexities due to the variable nature of some contracts.
Integration with Existing Systems	The detailed acknowledgment of CSM requires entities to assimilate these new requirements into existing accounting and IT infrastructures, potentially leading to significant overhaul efforts.

#### 4. Illustrative Scenario: In-depth Analysis Post-IFRS 17 Adoption

The implementation of IFRS 17 was a significant change in insurance accounting. This scenario explores the changes brought about by the Standard in revenue recognition and liability measurement. We will consider a generic insurance policy for 5 years with a yearly premium and estimated claim payments, all subject to a discount rate. The assumptions include a fixed term of 5 years for the insurance policy, an annual premium of €1,200, claim payments of €50,000 at the end of year 5, a discount rate of 3%.

**Table 4** Accounting Parameters for Insurance Policies Pre- and Post-IFRS 17 Implementation.

Parameters	Pre-IFRS 17	Post-IFRS 17
<b>Initial Policy Parameters</b>		
Term of the Policy	5 years	5 years
Yearly Premium	€1,200	€1,200
Estimated Claim Payments	€50,000	€50,000
Discount Rate (%)	3%	3%
<b>Revenue Recognition</b>		
Premium Recognized	€1,200	€240*
Unearned Premium Reserve	0	960€
<b>Liability Measurement</b>		
Liability for Incurred Claims	€50,000	€50,000
Fulfillment Cash Flows (FCF)	Not Applicable	€48,500**
Contractual Service Margin (CSM)	Not Applicable	€1,500***
<b>Total Liability</b>	€50,000	€50,000

Notes for calculations:

All values provided are approximate and are intended for illustrative purposes only. It's important to mention that the \*\* and \*\*\* markers denote calculations based on the scenario and formulas as prescribed by the IFRS 17.

\*\* The calculation for Free Cash Flow (FCF) was derived by considering the present value of estimated claim payments subtracted from the present value of premium receipts received over the term of the policy.

\*\*\* The Contractual Service Margin (CSM) represents the discrepancy between the total liability and the Free Cash Flow (FCF).

The scenario provided in Table 4 illustrates the transformative nature of IFRS 17, especially in terms of revenue recognition and liability measurement in life insurance. This table gives a snapshot of these calculations for a single policy over a year. Actual enterprise-level calculations would consider various other parameters like risk adjustment, portfolio size, and more. IFRS 17 transforms accounting and reporting in the insurance industry. Under IFRS 17, revenue recognition is spread over the coverage period. New concepts like FCF and CSM are introduced, leading to more precise calculations.

*Revenue Recognition;*

Before the introduction of IFRS 17, accounting practices allowed for the full yearly premium of €1,200 to be immediately recognized as revenue. This meant that as soon as the insurance policy was issued and the premium was paid, the entire amount was recorded as income in the financial statements of the insurance company, irrespective of the coverage period of the policy.

However, with the implementation of IFRS 17, the approach to revenue recognition in the insurance industry has undergone a significant change. Now, instead of recognizing the entire premium upfront, only a fraction of the yearly premium is recognized each year. This is calculated by dividing the total premium by the term of the policy. In this case, with a €1,200 yearly premium and a 5-year policy term, only €240 (€1,200 divided by 5 years) is recognized as revenue each year.

The concept of the Unearned Premium Reserve becomes particularly important post-IFRS 17. This reserve represents the portion of the premium that has been collected but is not yet recognized as revenue. It essentially accounts for the coverage that the insurance company is obligated to provide in the future. In our example, since only €240 of the €1,200 premium is recognized in the first year, the remaining €960 (€1,200 - €240) is allocated to the Unearned Premium Reserve. This amount will be recognized as revenue in subsequent years, aligned with the period of coverage provided by the insurance policy.

*Liability Measurement;*

Under both pre-IFRS 17 and post-IFRS 17 scenarios, the Liability for Incurred Claims is maintained at €50,000. This figure represents the insurer's obligation to pay out claims as they are incurred, irrespective of the accounting standards in place.

With the implementation of IFRS 17, the concept of Fulfillment Cash Flows (FCF) is introduced. In the scenario provided, the FCF is calculated to be €48,500<sup>9</sup>. This calculation reflects the expected costs and revenues from the insurance contract, adjusted to their present value.

Another key component introduced by IFRS 17 is the Contractual Service Margin (CSM), which is unique to this accounting standard. The CSM represents the unearned profit from the insurance contract, essentially the profit that the insurer expects to earn in the future from the contract. It is determined as the difference between the total liability and the FCF. In this example, the CSM is calculated to be €1,500 (€50,000 total liability minus €48,500 FCF).

Despite these new elements in measuring liability under IFRS 17, the overall liability for the insurer remains the same at €50,000 in both pre- and post-IFRS 17 scenarios. This consistency demonstrates that while IFRS 17 introduces more detailed and complex methods of liability measurement, the fundamental obligations of the insurer remain unchanged.

**Table 5** Insurance Liability and Cash Flow Projections Pre-IFRS 17 over a 5-Year Period

Year	Premiums Received €	Claim Payments (Estimated) €	Discounted Cash Flows €	Initial recognition of insurance liabilities €	Unrealized Profits €
1	1,200	0	1,165.05*	1,200	34.95
2	1,200	0	1,130.64**	2,400	104.31
3	1,200	0	1,096.77***	3,600	207.54
4	1,200	0	1,063.38****	4,800	344.16
5	1,200	50,000	43,252.91*****	6,000	(37,252.91)

<sup>9</sup> Present Value of Premium Receipts for Each Year: Calculated as the sum of the present value of the yearly premium (€1,200) discounted at a 3% rate over 5 years, resulting in approximately €5,495.65. Sum of Present Values of Premium Receipts: The sum of the present values of premiums over 5 years totals €5,495.65 Present Value of Claim Payments: The present value of a one-time €50,000 claim payment at the end of a 5-year term, calculated at a 3% discount rate, amounts to approximately €43,130.44. Initial Calculation of FCF: The initial FCF, before risk adjustment, is calculated by subtracting the present value of claim payments from the sum of present value of premiums, resulting in FCF= €5,495.65-€43,130.44= -€37,634.79 Required Risk Adjustment for Target FCF of €48,500: The required risk adjustment to achieve a target FCF of €48,500 is calculated as €48,500 - initial FCF, which equals €86,134.79.

**Table 6** Insurance Liability and Cash Flow Projections Post-IFRS 17 over a 5-Year Period

Year	Premiums Received €	PV of future Cash Flows €	Risk Adjustment €	CSM (Unrealized Profits) €	Liability for Remaining Coverage €
1	1,200	1,165.05*	0	34.95	1,200
2	1,200	1,130.64**	0	69.36	2,400
3	1,200	1,096.77***	0	103.23	3,600
4	1,200	1,063.38****	0	136.62	4,800
5	1,200	1,030.28*****	0	(37,766.79)	6,000

Both tables show how an insurance company's finances change over five years, emphasizing the big effect a large claim payment can have. Upon examination of the Table 5 and Table 6, several key insights emerge regarding insurance liability and cash flow projections over a 5-year period, both pre and post-IFRS 17.

Under the pre-IFRS 17 regime (Table 5), the accounting framework was primarily driven by the accrual method, emphasizing the recognition of premiums and liabilities as they were incurred. The unrealized profits in this scenario were determined based on the premiums received and the discounted cash flows (DCF) from expected future payments.

Year 1: An unrealized profit of €34.95 was observed, calculated as the difference between the premiums received (€1,200) and the DCF (€1,165.05).

Year 2: The cumulative unrealized profit increased to €104.31 (€2,400–€2,295.69), reflecting the addition of the second year's premium and the corresponding DCF.

Years 3-4: The trend of increasing unrealized profits continued, reaching €207.54 (€3,600–€3,392.46) and €344.16 (€4,800–€4,455.84), respectively.

Year 5: A significant shift occurred due to the large claim payment (€50,000), resulting in a negative unrealized profit of €6,000 - €48,739.03= €-37,252.91 highlighting the impact of large future liabilities on profitability.

(Total DCF for Premiums Previously calculated as €5,486.12; DCF for Claim Payment is 50,000/ (1.03)<sup>5</sup>=€43,252.91. Total DCF (Premiums + Claim Payment): €5,486.12 + €43,252.91 =€ 48,739.03.

Post-IFRS 17 (Table 6), the accounting model shifted to a more forward-looking approach with the introduction of the Contractual Service Margin (CSM). This model recognizes revenue over the period insurance coverage is provided, aligning revenue with value creation.

Year 1-4: The CSM was calculated annually, starting with €34.95 in Year 1 and increasing each year, reaching €136.62€ by Year 4. This gradual recognition of profit corresponds to the service provided.

Year 5: A dramatic change was observed with the CSM turning into a significant negative value (€5,486.12 - €43,252.91 = €-37,766.79), due to the large claim payment at the end of the contract. This reflects the loss recognized under IFRS 17, which is consistent with the principle of matching revenue with the coverage period.

The shift from pre-IFRS 17 to IFRS 17 marks a transition from a predominantly accrual-based accounting system to one that emphasizes the matching of revenue with the service period. Under IFRS 17, profitability is more closely tied to the actual provision of insurance services, rather than just the receipt of premiums. The recognition of large future liabilities (such as claim payments) has a more immediate and pronounced impact on profitability under IFRS 17. These findings emphasise the increased transparency and alignment with economic reality in financial reporting for insurance contracts as mandated by IFRS 17.

In conclusion, IFRS 17 introduces significant changes in how life insurance companies recognize and report revenue and profits, leading to a more nuanced and realistic depiction of financial health and obligations.

## 5. Conclusion

The article presents a comparative analysis of the impact of IFRS 17 on pricing and profitability in the life insurance sector. It emphasizes the changes in financial reporting and actuarial procedures, introducing new metrics such as the Present Value of Future Cash Flows (PVFCF), Risk Adjustment (RA), and Contractual Service Margin (CSM) under IFRS 17. The research paper demonstrates the significance of precision, clarity, and comparability in financial statements, contributing to a comprehensive understanding of insurers' financial status and obligations. It provides insights into the intricacy and specificity involved in revenue recognition and liability measurement under IFRS 17, offering valuable information for scholars, industry professionals, and policymakers. The article highlights how IFRS 17 transforms life insurance operations, enhancing financial clarity and comparability, and enabling a more informed comprehension of firms' financial position. The findings of the paper reveal

significant differences between the models used before and after the implementation of IFRS 17, particularly in pricing and profitability calculations. The updated models under IFRS 17 require detailed calculations of (FCF) and (CSM), taking into account various considerations and adjustments. An illustrative scenario after the adoption of IFRS 17 demonstrated the complex calculations needed, taking into consideration both unrealized profits and adjusted future cash flow values. The research highlights the complexity and specificity involved in revenue recognition and liability measurement under IFRS 17, highlighting its transformative impact on life insurance operations. The initial findings emphasize that IFRS 17 improves financial clarity and comparability in the life insurance sector, facilitating a better understanding of firms' financial position. Further research can investigate the long-term effects of IFRS 17 on the life insurance industry, including the practical difficulties faced by insurers in implementing the standard. Future studies can focus on the implications of IFRS 17 on premium consistency and its potential impact on policyholders and insurers.

### Appendix: Complex Mathematical Derivation and Modelling.

In this appendix, we explore the intricate mathematical models and calculations that form the basis of the shift in insurance liability evaluation from pre-IFRS 17 to post-IFRS 17 standards. This process combines the disciplines of actuarial science and accounting principles within a global framework.

#### A. Discounted Cash Flow Methodology Pre-IFRS 17

Under the pre-IFRS 17 framework, insurance companies primarily relied on historical cost accounting, with future liabilities discounted at a predetermined, often static, discount rate. The Discounted Cash Flow (DCF) model used here is expressed as:

$$DCF_t = \sum_{i=1}^n \left( \frac{P_i}{(i+r)^i} \right)$$

Where:

- $DCF_t$  is the discounted cash flows at time  $t$ ,
- $P_i$  represents future cash outflows (e.g., claim payments),
- $r$  is the predetermined discount rate,
- $n$  is the time horizon over which the cash flows are projected.

#### B. Introduction of the Risk Adjustment Component

The IFRS 17 model introduces a risk adjustment component to better reflect the uncertainty in cash flow estimates. This component is quantified using stochastic modeling, considering various scenarios and their respective probabilities. The risk adjustment ( $RA$ ) is derived using the formula:

$$RA = \sum (P_i \times Pri) \times \alpha$$

Where:

- $Pri$  is the probability of scenario  $i$ ,
- $\alpha$  represents the riskiness of the underlying insurance contracts.

#### C. Contractual Service Margin (CSM) Calculation

The CSM under IFRS 17 represents unearned profit that the insurer expects to recognize as it provides insurance coverage in future periods. The CSM is calculated at the initial recognition of a group of insurance contracts and is subsequently adjusted for changes in cash flow estimates related to future services. The formula is given by:

$$CSM = \text{Premium Received} - PVFCF - RA$$

Where:

- $PVFCF$  is the present value of future cash flows

#### D. Liability for Remaining Coverage (LRC)

Under IFRS 17, the Liability for Remaining Coverage includes the CSM and the present value of future cash flows, considering the time value of money and the uncertainty in the amount and timing of cash flows. It's computed as:

$$LRC = PVFCF + \text{Risk Adjustment} + CSM$$

### E. Mathematical Modeling of Insurance Contracts Post-IFRS 17

Incorporating the above components, the post-IFRS 17 model for insurance contract valuation is a more dynamic and comprehensive mathematical model that can be expressed as:

$$L_t = DCF_t + RA - CSM$$

Where  $L_t$  is the total liability at time  $t$ .

This mathematical derivation emphasizes the forward-looking nature of IFRS 17, where liabilities are assessed based on current values and expectations, providing a more realistic and risk-reflective financial picture. The shift from a historical to a current, market-consistent evaluation under IFRS 17, as demonstrated by these complex mathematical derivations, represents a significant advancement in the accountability and transparency of financial reporting for insurance contracts on an international scale.

### References:

Bulpitt, T., Gilchrist, A., Kay, A., & Visser, E., 2018. IFRS 17: Discount Rates. Retrieved from: *Milliman*. <https://lu.milliman.com/-/media/country-sites/ireland/pdf/ifrs-17-discount-rates.ashx>

Cummins, J., 1990. Asset Pricing Models and Insurance Ratemaking. *ASTIN Bulletin: The Journal of the IAA*, 20(2), 125-166. doi:10.2143/AST.20.2.2005438

De Nichilo, S., 2022. Implications of IFRS 17 in European Financial Stability: Accounting Methodology and Evaluation Modelling. 17(3).

Dominic Clark, Jeremy Kent, and Ed Morgan, 2020. Impact of IFRS 17 on insurance product pricing and design. Retrieved from [https://www.milliman.com/-/media/milliman/pdfs/articles/31121dp\\_impact-of-ifrs-17\\_20200512.ashx](https://www.milliman.com/-/media/milliman/pdfs/articles/31121dp_impact-of-ifrs-17_20200512.ashx).

Frunza, Marius-Christian. Efficient Market Hypothesis Testing, 2016. In *Solving Modern Crime in Financial Markets*.

Golnaraghi, M., Kloek, G., Schaltuper, M., Wilson, V., Fischer, S., Carr, B., & Hanscombe, B., 2022. Anchoring Climate Change Risk Assessment in Core Business Decisions in Insurance.

Impacts of IFRS 17 insurance contracts accounting standard, 2018. Retrieved from [https://assets.ey.com/content/dam/ey-sites/ey-com/en\\_gl/topics/insurance/insurance-pdfs/ey-ifrs-17-global-dsp-considerations.pdf](https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topics/insurance/insurance-pdfs/ey-ifrs-17-global-dsp-considerations.pdf).

International Financial Reporting Standards, 2017. IFRS 17 Standards Fact Sheet. IFRS Foundation. [www.ifrs.org](http://www.ifrs.org).

IFRS 17 – Risk mitigation option, 2020. Retrieved from <https://kpmg.com/xx/en/home/insights/2018/02/ifrs17-transition-trg-newsletter-insurance-direct-participating-contracts.html>.

IFRS 17, Introduction, challenges and opportunities, 2017. Retrieved from [https://www.milliman.com/-/media/milliman/importedfiles/uploadedfiles/insight/2017/ifrs-17-dublin\\_presentation.ashx](https://www.milliman.com/-/media/milliman/importedfiles/uploadedfiles/insight/2017/ifrs-17-dublin_presentation.ashx).

IFRS 17: challenges, opportunities and the road ahead for Nordic insurers. (2023, June 30). Retrieved from [https://www.ey.com/en\\_dk/financial-services/ifrs-17-challenges-and-opportunities](https://www.ey.com/en_dk/financial-services/ifrs-17-challenges-and-opportunities).

IFRS 17: IFRS 17 – Level of aggregation International Accounting Standards Board meeting. (2020, February 20). Retrieved from <https://kpmg.com/xx/en/home/insights/2018/02/ifrs17-transition-trg-newsletter-insurance-contractual-service-margin.html>.

IFRS 17 Insurance Contracts Appendix I. (n.d.). Retrieved from <https://efrag.org/Assets/Download?assetUrl=%2Fsites%2Fwebpublishing%2FMeeting%20Documents%2F1907221359374264%2F08-02%20Appendix%20I%20IFRS%2017%20DEA%20-%20EFRAG%20TEG%2020-09-02.pdf>.

Palmer, B. A., 1989. Tax Reform and Retirement Income Replacement Ratios. 56(No. 4).

Pelsser, A., Ghosh, A., Er, C., Zhang, H., Thorpe, J., Stansfield, J., Malde, K., Mirin, N., Dyble, R., Walton, R., Berry, T., Qin, W., & Yousuf, W., 2019. IFRS 17: Profit profiles under IFRS 4 and IFRS 17. Retrieved from [https://www.actuaries.org.uk/system/files/field/document/IFRS%2017\\_Profit%20profiles%20under%20IFRS%204%20and%20IFRS%2017\\_20190717.pdf](https://www.actuaries.org.uk/system/files/field/document/IFRS%2017_Profit%20profiles%20under%20IFRS%204%20and%20IFRS%2017_20190717.pdf)

Poitras, G., 2013. *Commodity Risk Management Theory and Application. Taylor & Francis.*

Tran HQ, Mathieson DJ, Ordoobadi DJ, Schinasi GJ., 2002. *Global Financial Stability Report Market Developments and Issues. Washington, D.C: International Monetary Fund.*

Shah, Sunit, *The Principal - Agent Problem in Finance*, 2014. *CFA Institute Research Foundation L2014-1*, Available at SSRN: <https://ssrn.com/abstract=2574742>

Yousuf, W., Stansfield, J., Malde, K., Mirin, N., Walton, R., Thorpe, B., Thorpe, J., Iftode, C., Tan, L., Dyble, R., Pelsser, A., Ghosh, A., Qin, W., Berry, T., & Er, C., 2021. *The IFRS 17 contractual service margin: a life insurance perspective. 26(2).*

What insurers have learned to date from the implementation of IFRS 17? 2022 Retrieved from [https://www.ey.com/en\\_gl/ifrs/ifrs-17-implementation-less-than-one-year-to-go](https://www.ey.com/en_gl/ifrs/ifrs-17-implementation-less-than-one-year-to-go).

# Unemployment – a balancing factor of employee turnover intention in North Macedonia

Marijana Cvetanoska Mitev<sup>1</sup>, Andrijana Ristovska<sup>2</sup>, Predrag Trpeski<sup>3</sup>

<sup>1</sup>Department of Economics, Faculty of Economics – Skopje, Ss. Cyril and Methodius in Skopje, North Macedonia

<sup>2</sup>Department of Human Resources Management, National Bank of North Macedonia, North Macedonia

<sup>3</sup>Department of Economics, Faculty of Economics – Skopje, Ss. Cyril and Methodius in Skopje, North Macedonia

\*Corresponding Author: e-mail: marijana.cvetanoska@ecf.ukim.edu.mk

---

## Abstract

In the global business arena, organizations cope with the constant demand for adaptation, primarily fueled by the forces of globalization and rapid technological evolution. Recent research has shed light on the vital role of techno-structural changes, encompassing technological integration and organizational structural shifts, in shaping employee turnover intentions. Notably, within the context of developing countries where labor market opportunities remain limited, and sophisticated tools for monitoring employees and turnover intentions are in their infancy, a remarkable shift is occurring. Employees in these regions are displaying a profound capacity to endure the numerous transformations imposed upon them. This study delves into the intricate relationship between techno-structural changes and employee turnover intention in North Macedonia. It explores the mediation role of unemployment in this dynamic environment, whether the scarcity of alternative employment opportunities in the country acts as a mitigating factor, reducing employee turnover intention. Our analysis is grounded in a comprehensive dataset, comprising 282 complete survey responses from a diverse spectrum of employees in North Macedonia. The results from regression analysis underscore the substantial influence of techno-structural changes on employee turnover intention in this setting. Furthermore, a multiplicative mediation analysis uncovers a compelling dynamic: unemployment emerges as a full mediator, effectively tempering the impact of techno-structural changes on turnover intention. In essence, this study illuminates the intricate interplay of techno-structural changes, unemployment, and turnover intentions, providing critical insights into the resilience of employees within North Macedonia's labor market.

*Keywords:* employee turnover, North Macedonia, organizational change, unemployment.

---

## Introduction

In recent years, organizations have experienced a dichotomy of rapid growth and downsizing, while markets have simultaneously expanded and contracted. This dichotomy reflects a global landscape characterized by fierce competition and demanding technological requirements. As such, organizations find themselves navigating a constantly shifting and evolving business environment due to profound economic changes, intense competitive pressures, globalization, and the dynamic reshaping of business activities on a global scale. Change has become one constant, and the adaptability to change is crucial for the survival of both organizations and individuals within them.

Effective change management demands that the process begins at the initial planning stages, with a clear and precise definition of the desired outcomes. According to Cummings and Worley's "Organizational Development and Change," there are four central categories of organizational interventions (Cummings and Worley, 2014):

1. Changes in processes related to human resources;
2. Techno-structural changes;
3. Changes in human resources management;
4. Strategic changes.

Turnover intention has been investigated over the last fifty years, through different research methods and within different industries, in order to achieve generalizations about the factors and characteristics related to the propensity to leave the organization (Steel and Lounsbury, 2009). Analyzing relevant research on this subject is instrumental in uncovering the factors behind employee turnover in organizations and identifying what motivates individuals to consider leaving their current workplace. Of particular interest in contemporary research is the growing emphasis on how the introduction of organizational changes impacts employee behavior and influences their commitment to staying with their current organization.

However, the pressing issue of unemployment, both at the global and national levels, presents an opportunity for further investigation. Specifically, the scarcity of reasonable alternative employment options for individuals within the country may lead them to be more tolerant of various factors that could otherwise prompt them to consider leaving their current workplace. In other

words, while people may initially resist newly introduced workplace changes, which can be a driving force behind their desire to depart from their current organization, the awareness of limited job prospects in the labor market, coupled with high unemployment rates, may act as a counterbalancing factor, thereby influencing their intention to stay. Therefore, this paper employs a multiplicative mediation analysis within its framework—a method that has been utilized for over two decades in social sciences and management research, proving successful in evaluating the role of a mediator in the research model.

The paper investigates the theoretical and empirical aspects of the relationship between employee turnover and organizational change, and unemployment as a mediator. In the second section of the paper, we present an overview of the theoretical literature related to the relationship between employee turnover and organizational change. The literature review about the role of alternative employment prospects in employee turnover tolerance is given in the third section. The fourth section contains some descriptive statistics about unemployment in North Macedonia. Fifth section of the paper presents the methodology and empirical analysis of the four groups of organizational changes (Changes in processes related to human resources; Techno-structural changes; Changes in human resources management; Strategic changes) and the employee turnover intention in North Macedonia. Moreover, multiplicative mediation analysis is applied in this section which points to the fact that there is full mediation, or unemployment is a mediator in the relationship between techno - structural changes and the intention to fluctuate. The conclusion summarizes the results of the theoretical and empirical research included in the paper, with some general prescriptions and recommendations.

### **Organizational changes as a "push" factor of employee turnover intention**

Today, organizations make greater efforts to successfully adapt employees to a rapidly changing work environment in order to maintain organizational competitiveness (Chen et al. 2014). In the current scenario, modern research is increasingly dedicated to understanding how the characteristics of today's unstable business environment influence employees' intentions to leave their positions. This intention to leave is a significant indicator of how adaptable employees are to organizational changes.

Employees often struggle to recognize the necessity of frequent organizational changes. As a result, they may not connect these changes to past experiences or accurately assess their significance and impact, perceiving them subjectively. Therefore, it is crucial to examine the circumstances under which employees respond to frequent organizational changes. Such analysis aims to facilitate their successful adaptation, enhancing organizational performance. This insight holds particular importance for organizations, especially for human resource managers seeking to retain valuable employees whose engagement significantly influences the success of these changes.

The relationship between organizational change and management is based on the role of managerial competence and support in the process of change management, excluding the ethical aspect of leadership, especially the perceptions of ethical leadership that provide new insights into the relationship between change and its outcomes, such as employee turnover intention. Burnes and By (2016) argue that all approaches to change and management are based on a set of ethical values that influence the actions of managers and strengthen or weaken the results of change.

Rafferty and Griffin (2006) also explore the frequency of organizational change—how often changes happen within an organization—as a critical aspect that influences how employees perceive these changes. This emphasizes that the timing of change, especially when it concerns changes that have already been implemented, holds great significance in understanding its impact on employees. Thus, when organizations are in a period of a large number of activities and tasks, the introduction of new procedures can lead to a large risk. Therefore, involving employees in the process of planning changes and analyzing the time frame and period in which they consider that the change can be introduced, contributes to reducing their sense of uncertainty, which in turn leads to balancing their intention to fluctuate, as a current indicator for leaving the workplace.

In order for managers to effectively manage the change process, it is important to understand the type and level of change they are facing (Dasborough et al., 2015), as change management has a strong impact on organizational performance. However, there is a lack of research analyzes about the negative impact that a change could have on organizational performance.

In the process of organizational change, employees experience feelings of anxiety, uncertainty, fear and stress (Ronnenberg et al., 2011). When change occurs frequently, individuals experience discomfort and anxiety as a consequence of the immediate inability to identify the beginning or end of that change. Thus, they evaluate change as a potential threat to themselves and their own personality, due to the unpredictable nature of events (Kernis, 2006). Employees often desire to actively participate in the change process and make meaningful contributions. However, their inability to comprehend the necessity and core objectives of these changes, as highlighted by Rusly et al. (2012), can sometimes lead to an increased intention to leave the workplace.

Our paper centers its research on the four organizational change types delineated by Cummings and Worley (2014). These change interventions have the potential to induce stress among employees. If not adequately managed by change agents, this stress can result in undesirable turnover.

### **Assessing Employee Turnover Tolerance: The Role of Alternative Employment Prospects**

Employee turnover has long been a subject of substantial research focus, with scholars diligently examining the factors that underlie this phenomenon. Within the extensive literature, there is a consensus that alternative employment opportunities

significantly impact turnover intention and employee behavior. Researchers like Mattila (1974), Mobley, et al. (1979), Michaels and Spector (1982), Hulin, et al. (1985), Blau (1994), Lambert, et al. (2001), Thatcher, et al. (2003), Ing-San and Jyh-Huei (2006), Dardar et al. (2012), Nawaz and Pangil (2016), and Hom et al. (2017), have all contributed to this body of knowledge.

March and Simon (1958) succinctly noted that economic conditions within a country play a vital role in determining employee turnover intention. They posited, "Under almost all conditions, the most accurate and unique indicator of employee turnover intention is the economic situation in the country. When there are many alternative employment opportunities (because of the increasing number of new job openings), voluntary turnover is at a high rate. Conversely, when jobs are scarce, voluntary turnover is low."

Ing-San Hwang and Jyh-Huei Kuo's (2006) findings underscore a noteworthy positive correlation between perceived alternative job opportunities and turnover intention in public sector organizations. This correlation is further demonstrated by the work of Thatcher et al., (2003), who specifically examined turnover intention in the information - technology sector (IT). Their study revealed a strong positive correlation between perceived alternative job opportunities and turnover intention. Similarly, Dardar et al., (2012) research in oil industry companies in Libya confirmed this positive correlation. Hence, when individuals perceive attractive and profitable opportunities in the labor market, their intention to leave their current job is more likely to increase.

To illustrate, in Singapore, the presence of a high number of employment opportunities is often accompanied by expectations of a greater employee turnover rate, in contrast to countries where job openings are scarce. Put simply, the availability of alternative job options, or the belief in their availability, encourages employees to contemplate leaving their current positions, actively seeking new opportunities (Blau, 1994).

In essence, the availability, or lack thereof, of alternative employment opportunities in a given country can significantly influence employees' tolerance to various push factors that might otherwise lead them to consider leaving their current workplace.

### **Descriptive analysis of unemployment in North Macedonia**

A serious social, economic, and political problem as a result of the internal situation of North Macedonia, but also beyond its borders, is its unemployment. Unemployment has long been a pressing issue in developing countries, with far-reaching socio-economic implications. In today's rapidly evolving world, characterized by technological advancements, the dynamics of labor markets are shifting, placing even more significance on the challenge of unemployment. Unemployment is a multi-faceted socio-economic issue. It represents not only a challenge for those without work but also a burden on society as a whole.

The modern labor market is undergoing continuous transformation, primarily driven by rapid technological advancements. The proliferation of digital technology has disrupted traditional job roles, creating new opportunities but also rendering certain skills obsolete. Automation and artificial intelligence are altering the nature of work, leading to both job displacement and the emergence of new employment opportunities. The evolving landscape of labor markets carries a blend of uncertainty, opportunities, and risks. To achieve progress in building more inclusive, sustainable, and prosperous societies, it is imperative to manage these changes effectively.

The high unemployment rate in North Macedonia is a characteristic for the entire period after the declaration of the country's independence in 1991, but also in the years before that. During the transition, there is a lack of financial resources, a change in the economic model of the country, a restructuring of the economy, a change in the ownership structure, the conflict in 2001, which contributed to hindering the process of finding solutions to reduce the unemployment rate (Apostolovska - Toshevskva et al., 2012).

A significant level of unemployment leads to a reduced quality of life for the population and hampers the efficient use of resources and economic growth. In recent years, there has been a declining trend in the unemployment rate. This trend is accompanied by an increased employment rate and a slightly increased population activity rate. The decline in the unemployment rate, which had been ongoing, saw a reversal in the first quarter of 2020 due to the limited job opportunities created during the global health crisis. It is of particular importance to note that women are particularly affected in terms of the socio-economic crisis during the pandemic.

In 2021, North Macedonia had 943,004 people in its active population, comprising both employed (795,087) and unemployed (147,917) individuals. A comparison with the previous year reveals interesting insights. Firstly, there was a decrease in the active population, indicating that fewer people were either employed or seeking employment in 2021. However, the number of unemployed people also decreased, suggesting that some people found job opportunities. Notably, while there was a slight increase in the number of employed individuals, this increase did not fully account for the decrease in unemployment. In essence, the reduction in unemployment was not solely due to more people securing jobs. Other factors, such as changes in workforce participation or individuals leaving the labor market, played a role. The data underscores the intricate labor market situation in North Macedonia for the year 2021.

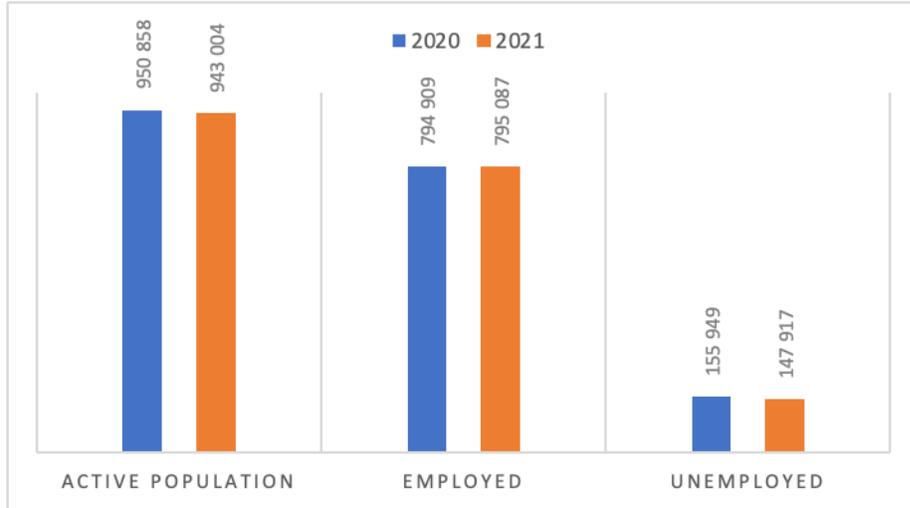


Figure 1. Total active population in North Macedonia  
Source: State Statistics Office

In contrast to the data from the previous year, the statistics provided by the Employment Agency of North Macedonia for 2022 reveal a troubling trend. The number of unemployed individuals surged significantly, jumping from 159,823 in 2021 to 185,620 in 2022. This substantial increase not only marks a reversal of the earlier declining unemployment trend but also raises concerns about the overall health of North Macedonia's labor market. The disparity between the decline in unemployment in 2021 and the subsequent increase in 2022 suggests that the prior year's improvements may not have reflected a sustainable and robust labor market recovery.

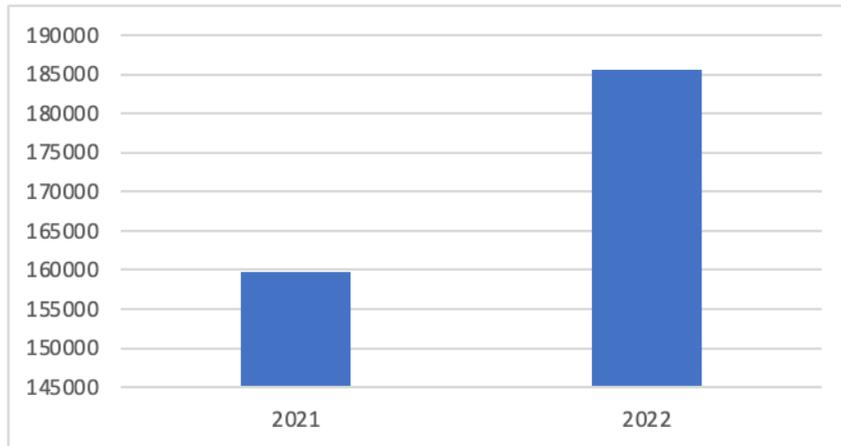


Figure 2. Unemployed in North Macedonia in 2022  
Source: Employment agency of North Macedonia

Particularly exposed groups to the risk of unemployment and inactivity on the labor market in North Macedonia are young people.

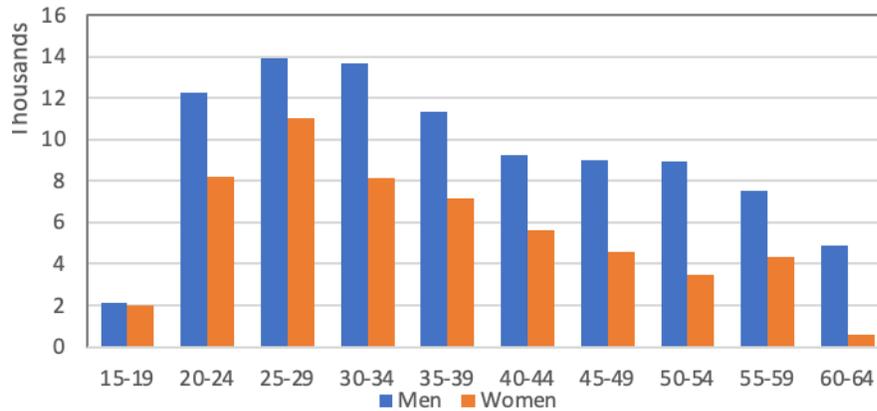


Figure 3. Unemployed by age and gender in North Macedonia in 2021  
Source: State Statistics Office

Unemployment rate among young people (15-24 years old) in 2021 is 36.4%. The most important reasons for youth unemployment are poor qualification structure (a large number of young people who are unskilled or semi-skilled), inconsistency between the needs of the labor market and the educational system, the strict need of employers to hire people with previous work experience, the rise of the gray economy, in which people are employed, but are still listed as unemployed in the state records in order to be entitled to health insurance.

Youth unemployment brings with it huge consequences on the personality of the young person and on his future, but also on the communities in which they live. Unemployed youth have difficulties in establishing meaningful connections in society and face social and political isolation. The negative consequences of periods of unemployment, according to research, affect young people on several levels. With each day spent in a state of unemployment, the chances of future employment decrease, and the risk of poverty increases. Unemployed people also lose the opportunities to create the necessary contacts for success in the labor market and this lack of social capital building is one of the reasons for the future worse labor market quotation. Unemployment affects the increase of antisocial and deviant phenomena and increases inequalities between different groups in society. Socially excluded unemployed and educated people face another type of problems. They lose their knowledge, which quickly becomes obsolete, they lose their professional skills and work abilities, and they cannot survive if it is not for social assistance and support from the state, which can only provide them with some social security.

The situation with youth unemployment also causes migration movements, that is, young emigration or brain drain. The phenomenon of emigration of young people, especially those with higher education, has been intensifying for the last few years and, according to certain analyses, it threatens to have far-reaching consequences for the socio-economic prospects of the country. A serious problem and reasons why young people leave the country is their insecurity in the quality of education, health services and the role of institutions in general, as well as the lack of confidence that they will be employed according to their profession. Youth emigration negatively affects investments and the economic development of the country, while youth unemployment, apart from negatively affecting the perceptions of young people, also creates higher social costs and the loss of investments that were invested in the education and training of these young people. Youth unemployment is a challenge, both for those who lack sufficient skills and for those who have a higher level of education but simply cannot find employment that matches their qualifications.

Another significant feature of unemployment in the country is the long period of time to search for and find a job after completing education. Thus, according to the data from the Employment agency of North Macedonia, 26.9% (30381) of the unemployed have been waiting for employment for up to 11 months, while 73.1% (82352) of the unemployed have been waiting for employment for 12 months or more.

The labor market in North Macedonia is characterized by a diverse workforce with varying levels of education and skills. While it has experienced periods of both growth and challenges, certain key features include a relatively high unemployment rate, particularly among youth, and a notable informal labor sector. Additionally, the country's labor market has been influenced by factors such as political and economic reforms, foreign investment, and the global economic climate.

### Data, methodology and results

This paper addresses the role of unemployment as a mediator in the context of North Macedonia, particularly in mitigating the impact of techno-structural changes on employee turnover intention.

The primary aim of this research is to investigate whether unemployment operates as a mediator between techno-structural changes, which are the primary drivers of employee turnover intention in North Macedonia. The study seeks to determine whether

unemployment plays a mediating role, ultimately reducing turnover intention and increasing employees' tolerance toward these transformative changes.

For the purposes of this paper, the data from a survey conducted in 2019-2021 was used regarding the impact of four different groups of organizational change (changes in processes related to human resources; techno-structural changes; human resource management changes, and strategic changes) on employee turnover intention in North Macedonia. Employees in the public and private sectors in North Macedonia with different demographic characteristics in terms of gender, age and education were included in the survey. The questionnaire was conducted through the electronic service for collection and analysis of research data “Kwik Surveys,” as well as sent electronically (via e-mail and social networks) to the respondents.

In this research, using the **simple linear regression** method, it was determined that *there is a positive correlation (analyzed through Pearson coefficient) between all four groups of organizational changes and the employee turnover intention in North Macedonia, that is, people feel resistance to the newly introduced changes at workplace and often, it can be the cause of their desire to leave the organization.* P-values are lower than the significance level " $\alpha=0.05$ ", which means that all groups of organizational changes have a significant impact on the turnover intention.

Table 1. Simple linear regression – organizational changes and the employee turnover intention

	Coefficient $b_1$	Pearson coefficient of correlation ( $r$ )	Coefficient of determination ( $r^2$ )	$p$ -value
Changes in processes related to human resources	0.124	0.254	0.064	0.000
Techno-structural changes	<b>0.138</b>	<b>0.255</b>	<b>0.065</b>	0.000
Human resource management changes	0.090	0.184	0.034	0.002
Strategic changes	0.105	0.228	0.052	0.000

Source: Authors' calculation in SPSS

The **multiple regression**, on the other hand, made it possible to determine that the *techno-structural changes have the greatest impact on the turnover intention.*

Table 2. Pearson coefficient of correlation using multiple regression

	Turnover intention	Changes in processes related to human resources	Techno-structural changes	Human resource management changes	Strategic changes
Turnover intention	1.000	0.254	0.255	0.184	0.228
Changes in processes related to human resources	0.254	1.000	0.85	0.674	0.754
Techno-structural changes	<b>0.255</b>	<b>0.85</b>	<b>1.000</b>	<b>0.728</b>	<b>0.729</b>
Human resource management changes	0.184	0.674	0.728	1.000	0.832
Strategic changes	0.228	0.754	0.729	0.832	1.000

Source: Authors' calculation in SPSS

The following table presents the slope coefficient ( $b_1$ ) and the  $p$ -value. In multiple regression, there is a change in the values of the  $b_1$  coefficient of each of the groups of organizational changes, as well as in the  $p$ -value, because this statistical method measures the influence of mutual dependencies and interactions of several phenomena at once. The slope coefficient ranges from 0.045 for changes related to human resource processes to 0.084 for techno-structural changes. Based on the obtained results, it can be concluded that techno - structural changes have the greatest impact, but it was still necessary to move on to additional analyses. Additional analysis consisted in dropping the least significant variables (changes related to human resource processes and changes

in human resource management), in order to analyze changes in the model as a result of the two most significant independent variables.

Table 3. Multiple regression – organizational changes and the employee turnover intention

	Coefficient <i>b<sub>1</sub></i>	<i>p</i> -value
Changes in processes related to human resources	<b>0.045</b>	0.442
Techno-structural changes	<b>0.084</b>	0.194
Human resource management changes	0.046	0.399
Strategic changes	0.057	0.3

Source: Authors' calculation in SPSS

The multiple regression where the least significant changes are discarded is presented in Table 4.

Table 4. Multiple regression – organizational changes and the employee turnover intention

	Coefficient <i>b<sub>1</sub></i>	<i>p</i> value
Techno-structural changes	<b>0.103</b>	<b>0.025</b>
Strategic changes	0.041	0.293

Source: Authors' calculation in SPSS

It can be seen that techno - structural changes have a greater impact than strategic changes and the p-value that is lower than the significance level "α", in contrast to the p-value for strategic changes, which shows statistical insignificance. Hence, we can conclude that techno - structural changes, that is, the introduction of new technology and new systems in the operation, the redeployment of different jobs in the organization, the restructuring of the work (increase/decrease of organizational units, increase/decrease of the number of employees, delegate tasks, use outsourcing services, etc.), changes in management (hierarchical changes), changes in the rules and structure of teams, as well as changes in the organizational structure itself, have the greatest impact on the employee turnover intention in North Macedonia.

In order to respond to the subject and purpose of this paper, we conducted an analysis of the impact of unemployment as a socio-economic problem, i.e., insufficient alternative employment opportunities in the country, on increasing the tolerance of employees to the changes that encourage their intention to leave the workplace.

Regarding the subject and the purpose in this paper, the following hypothesis is set:

***H1: Unemployment increases the tolerance of employees to techno-structural changes before making the final decision on turnover.***

This section presents the findings from the conducted analysis on the role of unemployment as a mediator, that is, determining whether the inclusion of this variable reduces the impact of techno-structural changes on the employee turnover intention in the country.

Namely, unemployment, explained through the insufficient alternative employment opportunities on the labor market, was included through the question "if the alternative employment opportunities on the labor market in the country were limited, employees would consider a voluntary job change", to which the employees on a scale of 1-10 gave their answers. The average value of the employees' answers was 3.52, that is, with limited alternative employment opportunities, the employees would not voluntarily leave their current workplace.

Hence, through the application of multiple linear regression, a multiplicative mediation analysis was conducted, where unemployment was included as a mediator (M) in the analysis, between the impact of techno-structural changes (X) and the employee turnover intention (Y).

The analysis was conducted using *Baron and Kenny's method* of mediation testing (Table ), conducted in three steps. First of all, the influence of techno-structural changes (X) on the turnover intention of employees in North Macedonia (Y) was determined during the simple regression. The next step in this method is an analysis of the influence of the independent variable – techno-structural changes (X) on the mediator (M), that is, unemployment, where it was determined that there is a statistically significant ( $p < \alpha$ ) positive correlation ( $r = 0.264$ ) between techno-structural changes and unemployment. At the very end, the mutual influence of the independent variable (X) and the mediator (M) on the dependent variable (Y), that is, the turnover intention of employees, was analyzed. Based on the analysis in the third step, it was determined that by including unemployment as a mediator (M) in the analysis, the impact of techno-structural changes (X) on the turnover intention (Y) decreases, while the p-value in this relationship becomes statistical insignificant. More specifically, the slope coefficient ( $b_1$ ) for “X” is 0.043, compared to  $b_1 = 0.138$  in the first step of the mediation analysis, while the p-value is 0.075 ( $p > \alpha$ ). At the same time, there is a statistically significant relationship ( $p < \alpha$ ) between unemployment and the turnover intention, which in statistics is a condition for confirming the indirect effect (mediation).

Table 5. Coefficients of mediation regression

Steps of testing	$b_1$	$SD(b_1)$	95% CI	p value	r	$r^2$
<b>Step 1: DV: Turnover intention</b>						
IV – Techno-structural changes	0.138	0.031	0.076, 0.199	0.000	0.255	0.065
<b>Step 2: DV: Unemployment</b>						
IV – Techno-structural changes	0.235	0.051	0.134, 0.336	0.000	0.264	0.069
<b>Step 3: DV: Turnover intention</b>						
IV1 – Techno-structural changes	0.043	0.024	-0.004, 0.091	0.075	0.687	0.472
IV2 - Unemployment	0.400	0.027	0.346, 0.454	0.000		

Source: Authors' calculation in SPSS

The conducted multiplicative mediation analysis points to the fact that there is full mediation, that is, **unemployment is a mediator** in the relationship between techno - structural changes and the intention to fluctuate, because with its inclusion in the analysis, the impact of techno - structural changes on the employee turnover intention North Macedonia is decreasing and becoming statistically insignificant. Hence, although the introduction of new technology and new systems in the operation, the redeployment of various jobs in the organization, the restructuring of the work, changes in management, changes in the rules and structure of teams, as well as changes in the organizational structure itself, have an impact on the intention of employee turnover, Macedonian labor market in relation to unemployment contributes to suppressing the employee intention to leave the workplace. Based on these findings, the alternative hypothesis is accepted, according to which unemployment increases the tolerance of employees towards organizational changes before making the final decision on turnover.

## Conclusion

It is widely acknowledged that change is an inherent aspect of organizational life even though there is no universally accepted definition of why organizations undergo change. An organization's ability to adapt incrementally in response to its environment is crucial for its survival. Contemporary managers, particularly those in human resources roles, often struggle with the challenge of employee resistance to new organizational developments.

Recent management research has increasingly emphasized the impact of organizational changes on employee behavior and their commitment to staying with their current organizations. This paper explores the consequences of various types of organizational changes, as classified by Cummings and Worley (2014), on employees' intentions to leave their positions. These changes enclose adaptation in human resources processes, technological and structural shifts, changes in human resources management, and strategic transformations.

Our analysis revealed a positive correlation between all four categories of organizational changes and the tendency of employees in North Macedonia to consider leaving their jobs. However, it is important to note that each of these four categories exerts a different level of influence on employees' turnover intentions, with techno - structural changes having the most significant impact. Furthermore, the pressing issue of unemployment, both on a global and national scale, has opened up avenues for further investigation. North Macedonia faces one of the highest unemployment rates in Europe, and the lack of alternative employment opportunities can increase employees' tolerance for factors that might otherwise lead them to consider leaving their jobs.

Our study indicates that despite employees' initial resistance to new workplace changes, the awareness of limited job opportunities in a high-unemployment environment can mitigate this resistance and, in turn, their intention to leave. In this context, we have demonstrated that unemployment acts as a mediator in the relationship between techno - structural changes and turnover intention.

This suggests that unemployment increases employees' willingness to face organizational changes before deciding to leave their current positions.

Effective human resource management plays a crucial role in retaining employees who contribute to organizational goals and success. The scarcity of alternative job opportunities in the labor market can stifle creativity, diligence, and the pursuit of one's potential and career growth. Modern HR managers, in keeping with global trends and technological advancements, should conduct comprehensive analyses to identify and address the root causes of employee turnover intentions, using data-driven insights to mitigate undesirable effects.

## References

- Apostolovska, B., Apostolovska Toshevska, B., Markoski, B., Dimitrovska, O., Milevski, I., and Gorin, S. (2012). Characteristics of the unemployment in the Republic of Macedonia. *HUMAN GEOGRAPHIES – Journal of Studies and Research in Human Geography*, 6, doi: <https://doi.org/10.5719/hgeo.2012.61.59>
- Blau, G. (1994). Testing a two-dimensional measure of job search behavior. *Organizational Behavior and Human Decision Processes*, 59(2), pp.288–312. doi: <https://doi.org/10.1006/obhd.1994.1061>
- Cummings, T.; and Worley, C. (2014). *Organization development and change*. Cengage learning.
- Dardar, A.; Jusoh, A.; and Rasli, A. (2012). The Impact of Job Training, job satisfaction and Alternative Job Opportunities on Job Turnover in Libyan Oil Companies. *Procedia - Social and Behavioral Sciences*, 40, pp.389–394.
- Dasborough, M.; Peter, L.; and Yuliani, S. (2015). Understanding emotions in higher education change management. *Journal of Organizational Change Management*, 28(4), pp.579–590. doi: <https://doi.org/10.1108/JOCM-11-2013-0235>
- Hom, P.; Shaw, Jason; Lee, T.W.; and Hausknecht, J.P. (2017). “One Hundred Years of Employee Turnover Theory and Research,” *Journal of Applied Psychology* 102(3), pp.530 –545.
- Hulin, C.L.; Roznowski, M.; and Hachiya, D. (1985). Alternative opportunities and withdrawal decisions: Empirical and theoretical discrepancies and an integration. *Psychol Bull* 97(2), pp.233–250. doi: <https://doi.org/10.1037/0033-2909.97.2.233>
- Ing-San H.; and Jyh-Huei K. (2006). Effects of Job Satisfaction and Perceived Alternative Employment Opportunities on Turnover Intention – An Examination of Public Sector Organizations. *Journal of American Academy of Business, Cambridge*. 8(2), pp. 254-269.
- Lambert, E. G.; Hogan, N. L.; and Barton, S. M. (2001). The impact of job satisfaction on turnover intent: A test of a structural measurement model using a national sample of workers. *The Social Science Journal*, 38(2), pp.233–250. doi: [https://doi.org/10.1016/S0362-3319\(01\)00110-0](https://doi.org/10.1016/S0362-3319(01)00110-0)
- March, J.G., and Simon, H.A. (1958). *Organizations*, Wiley, New York, NY.
- Mattila, J.P. (1974). Job Quitting and Frictional Unemployment. *American Economic Review, American Economic Association*, 64(1), pp.235-239.
- Michaels, C.E.; and Spector, P.E. (1982). Causes of employee turnover: A test of the Mobley, Griffeth, Hand, and Meglino model. *Journal of Applied Psychology*, 67(1), pp.53-59. doi: <http://dx.doi.org/10.1037/0021-9010.67.1.53>
- Mobley, W. H.; Griffeth, R. W.; Hand, H. H.; and Meglino, B.M. (1979). “Review and Conceptual Analysis of the Employee Turnover Process,” *Psychological Bulletin*, 86(3), pp.493-522.
- Thatcher, J. B.; Stepnia, L. P.; and Boyle R. J. (2003). Turnover of Information Technology Workers: Examining Empirically the Influence of Attitudes, Job Characteristics and External Markets. *Journal of Management Information Systems*, 19(3), pp. 231-261.

# Using ChatGPT as a tool for determining the derivative of function

Bojana Ćendić<sup>1</sup>, Tatjana Stanković<sup>2</sup>

<sup>1</sup>Department of Mathematics and Statistics, Belgrade Business and Arts Academy of Applied Studies, Serbia

<sup>2</sup>Department of Mathematics and Statistics, Belgrade Business and Arts Academy of Applied Studies, Serbia

\*Corresponding Author: e-mail: [bojana.cendic@bpa.edu.rs](mailto:bojana.cendic@bpa.edu.rs), [tatjana.stankovic@bpa.edu.rs](mailto:tatjana.stankovic@bpa.edu.rs)

---

## Abstract

Artificial intelligence is becoming an integrated part of our lives. Its influence greatly changes our ways of approaching work, communication and even learning. In the field of education, AI tools are changing the approach to certain contents and ways of learning. New alternative learning and problem-solving methods arise. In this paper, we presented the results of using ChatGPT 3.5 in determining the first derivative of several different functions. Certain limitations in the use of ChatGPT have been shown through incorrectly obtained results or through complicated expressions that are attached as a result. However, these limitations should not be a demotivation for using ChatGPT as a tool in the process of learning and understanding the procedure for determining derivatives of a function. The effects of applying the obtained results and explanations depend on the creativity of the user. Incorrect results and explanations can be considered as a part of overcoming misconceptions and better understanding the procedures

*Keywords:* AI tools, Chat GPT, derivative of function, misconceptions.

---

## 1. Introduction

The development of technique and technology has influenced many changes in various segments of society, as well in education. With the appearance of artificial intelligence, these changes become rapid and require greater adaptability of the individual and the entire social system to the digital environment. A wide range of free AI tools provides the possibility of simple communication with a machine that simulate a conversation as with a human. These conditions increase the number of users of these tools. ChatGPT is one of the AI tools that can be used for educational purposes and it is widely distributed (Biswas, 2023).

Open AI developed a natural language processing (NLP) system called ChatGPT (generative pre-trained transformer) (Deng et al, 2022; Sharma et al, 2022). The variability of the training text supported by the Internet (Wikipedia, Reddit, etc.) empowered the communication model of ChatGPT-3.5 to become closely resemble to human communication. But it also contributed to the unreliability of the information provided by ChatGPT (Trust et al, 2023). Although this tool provides many benefits in the learning process such as quick feedback, individualization of the learning process and content, the existence of certain limitations should not be neglected. The limitations do not mean that it should be resisted according to the application of AI tools in different segment of life, especially in the learning process. But it implies that users should be aware of risks such as potential errors or incomplete answers (Biswas, 2023; Wardat et al, 2023).

## 2. Description of the study

A conventional way of determining the first derivative of a function has been overcome with the appearance of numerous IT and AI tools. The choice of tool depends on its availability, simplicity and on the purpose of determining the first derivative. For learning purposes and better understanding of the steps in determining the first derivative of a function the most commonly are used tools that offer a detailed explanations of the steps and additional instructions. One of these tools is ChatGPT. As well as other tools that are in the process of development, ChatGPT has its limits and may give an incorrect solution which may lead to misconceptions (Wardat et al, 2023).

The purpose of this study is to explore how ChatGPT solves the problems of determining the first derivative of given function considering the validity and reliability of explanations and solutions. Seventeen function are taken from the book "Matematika" (Kilibarda et al, 2021) and they are written in a form that is acceptable to ChatGPT. Determining the first derivative of these functions (Table1) requires knowledge of the rules and procedures. In this study we used ChatGPT 3.5 because of its availability to the general population.

**Table 1.** List of function given to ChatGPT

1. $y=5x^3-(1/4)x^2+17x-2$
2. $y=x^{10}-(10/9)x^9 + (5/4)x^8-(10/7)x^7+(5/3)x^6$
3. $y= (2x^4+5)*(x-1)$
4. $y= (1-x)/(1+x)$
5. $y= (1+x-x^2)/(1-x+x^2)$
6. $y=(4/3)x^{(3/4)}+ (3/4)x^{(4/3)}$
7. $y=x\ln x$
8. $y=(5^x)/(4^x)$
9. $y=e^x * \sin x$
10. $y=(5x^2+3x-4)^{20}$
11. $y=\sqrt{x+\sqrt{x}}$
12. $y=\sqrt{(1+x)/(1-x)}$
13. $y=\sin(\operatorname{tg}x)$
14. $y=\ln(\operatorname{tg}(x/2))$
15. $y=\ln(x+\sqrt{x^2 +1})$
16. $y=x^x$
17. $y=((2x+1)/(2x-1))^{(2x+1)}$

### 3. Results

Each task given to ChatGPT starts with sentence “Find the first derivative of a function  $y=...$ ”. The results are shown in Table 2. Six out of seventeen derivatives were incorrect.

Specifying the first derivative of a function ChatGPT defines which rule it uses and explains the solution steps. The Figure 1 illustrates an example it solved correctly with a step-by-step explanation.

In most of examples ChatGPT recognizes the rule that should be applied. Although the initial idea for determining the derivative of a functions in examples 16 and 17 is the same, when the expression is a bit complicated ChatGPT did not recognize the idea of logarithmic differentiation for the function in example 17 (Figure 2, Figure 3). The procedure that is used in example 17 is chain rule.

Incorrect results are most often the result of mistakes made when simplifying the rational expression. Example 5 (Figure 4) illustrates an error that occurred when multiplying polynomials in the numerator. Mistakes also occur in the process of simplifying irrational expressions. This is illustrated by examples 11 and 12 (Figure 5 and Figure 6) - the mistake occurred in the last step during the process of multiplying the denominator. In example 14, the mistake was a consequence of the fact that the expression  $\sec^2(x/2)$ , which was in the numerator in one step, was found in the denominator in the next step (Figure 7).

Example 15 illustrates that ChatGPT may give a correct final result but the procedure may be incorrect (Figure 8).

**Table 2.** List of functions handled by ChatGPT

Function	Result
1. $y=5x^3-(1/4)x^2+17x-2$	Correct
2. $y=x^{10}-(10/9)x^9 + (5/4)x^8-(10/7)x^7+(5/3)x^6$	Correct
3. $y= (2x^4+5)*(x-1)$	Correct
4. $y= (1-x)/(1+x)$	Correct
5. $y= (1+x-x^2)/(1-x+x^2)$	Incorrect
6. $y=(4/3)x^{(3/4)}+ (3/4)x^{(4/3)}$	Correct
7. $y=x\ln x$	Correct
8. $y=(5^x)/(4^x)$	Correct
9. $y=e^x * \sin x$	Correct
10. $y=(5x^2+3x-4)^{20}$	Correct
11. $y=\sqrt{x+\sqrt{x}}$	Incorrect
12. $y=\sqrt{(1+x)/(1-x)}$	Incorrect
13. $y=\sin(\operatorname{tg}x)$	Correct
14. $y=\ln(\operatorname{tg}(x/2))$	Incorrect
15. $y=\ln(x+\sqrt{x^2 +1})$	Incorrect
16. $y=x^x$	Correct
17. Find the first derivative of a function $y=((2x+1)/(2x-1))^{(2x+1)}$	Incorrect

**You**  
 2. Find the first derivative of the function  $y=x^{10}-(10/9)x^9 + (5/4)x^8-(10/7)x^7+(5/3)x^6$

**ChatGPT**  
 To find the first derivative of the given function  $y = x^{10} - \frac{10}{9}x^9 + \frac{5}{4}x^8 - \frac{10}{7}x^7 + \frac{5}{3}x^6$ , you can use the power rule for differentiation. The power rule states that if  $f(x) = ax^n$ , then  $f'(x) = nax^{(n-1)}$ .

Let's find the derivative step by step:

1. For the term  $x^{10}$ , apply the power rule:  $f'(x) = 10x^{10-1} = 10x^9$ .
2. For the term  $-\frac{10}{9}x^9$ , apply the power rule:  $f'(x) = 9 \times (-\frac{10}{9})x^{9-1} = -10x^8$ .
3. For the term  $\frac{5}{4}x^8$ , apply the power rule:  $f'(x) = 8 \times \frac{5}{4}x^{8-1} = 10x^7$ .
4. For the term  $-\frac{10}{7}x^7$ , apply the power rule:  $f'(x) = 7 \times (-\frac{10}{7})x^{7-1} = -10x^6$ .
5. For the term  $\frac{5}{3}x^6$ , apply the power rule:  $f'(x) = 6 \times \frac{5}{3}x^{6-1} = 10x^5$ .

Now, combine these results to find the overall derivative:

$$f'(x) = 10x^9 - 10x^8 + 10x^7 - 10x^6 + 10x^5$$

So, the first derivative of the given function is  $f'(x) = 10x^9 - 10x^8 + 10x^7 - 10x^6 + 10x^5$ .

**Figure 1.** Determining the first derivate of a function using ChatGPT- correct result

**You**  
16. Find the first derivative of the function  $y=x^x$

**ChatGPT**  
To find the first derivative of the function  $y = x^x$ , you can use logarithmic differentiation. Let  $y = x^x$ , then take the natural logarithm of both sides:  
 $\ln(y) = \ln(x^x)$   
Now, apply the logarithm rules to simplify the expression:  
 $\ln(y) = x \ln(x)$   
Differentiate both sides with respect to  $x$ :  
 $\frac{1}{y} \cdot \frac{dy}{dx} = 1 \cdot \ln(x) + x \cdot \frac{1}{x}$   
Simplify further:  
 $\frac{1}{y} \cdot \frac{dy}{dx} = \ln(x) + 1$   
Now, solve for  $\frac{dy}{dx}$ :  
 $\frac{dy}{dx} = y \cdot (\ln(x) + 1)$   
Substitute back the original expression for  $y$ :  
 $\frac{dy}{dx} = x^x \cdot (\ln(x) + 1)$   
So, the first derivative of the given function is:  
 $\frac{dy}{dx} = x^x \cdot (\ln(x) + 1)$

Figure 2. Example 16 - solution procedure using ChatGPT

**You**  
17. Find the first derivative of the function  $y = ((\frac{2x+1}{2x-1})^{2x+1})$

**ChatGPT**  
To find the first derivative of the function  $y = (\frac{2x+1}{2x-1})^{2x+1}$ , you can use the chain rule. Let  $u = \frac{2x+1}{2x-1}$ , then  $y = u^{2x+1}$ .  
Now, find the derivatives of  $u$  and  $y$  with respect to  $x$ :  
1. For  $u = \frac{2x+1}{2x-1}$ , find  $u'$ :  
 $u' = \frac{(2x-1)(2) - (2x+1)(2)}{(2x-1)^2} = \frac{-4}{(2x-1)^2}$   
2. For  $y = u^{2x+1}$ , find  $y'$  using the chain rule:  
 $y' = (2x+1)u^{2x}u'$   
Now, substitute  $u$  and  $u'$  back into the expression:

**You**  
5. Find the first derivative of the function 5.  $y = (1+x^2)/(1-x^2)$

**ChatGPT**  
To find the first derivative of the given function  $y = \frac{1+x^2}{1-x^2}$ , you can use the quotient rule. The quotient rule states that if you have a function  $h(x) = \frac{f(x)}{g(x)}$ , then the derivative  $h'(x)$  is given by:

$$h'(x) = \frac{f'(x)g(x) - f(x)g'(x)}{(g(x))^2}$$

Let  $f(x) = 1 + x - x^2$  and  $g(x) = 1 - x + x^2$ . Now, find the derivatives of  $f(x)$  and  $g(x)$  with respect to  $x$ :

- For  $f(x) = 1 + x - x^2$ ,  $f'(x) = 1 - 2x$ .
- For  $g(x) = 1 - x + x^2$ ,  $g'(x) = -1 + 2x$ .

Now, apply the quotient rule:

$$h'(x) = \frac{(1-2x)(1-x+x^2) - (1+x-x^2)(-1+2x)}{(1-x+x^2)^2}$$

Simplify the numerator:

$$h'(x) = \frac{1-2x-x+x^2-1+x-x^2+2x-2x^2}{(1-x+x^2)^2}$$

Combine like terms in the numerator:

$$h'(x) = \frac{-2x-2x^2}{(1-x+x^2)^2}$$

Factor out a common factor in the numerator:

$$h'(x) = \frac{-2x(1+x)}{(1-x+x^2)^2}$$

So, the first derivative of the given function is  $h'(x) = \frac{-2x(1+x)}{(1-x+x^2)^2}$ .

Figure 3. Example 17 - solution procedure using ChatGPT

**Figure 4.** Mistakes when determining the first derivative of a function (example 5)

**You**

11. Find the first derivative of the function  $y = \sqrt{x + \sqrt{x}}$

**ChatGPT**

To find the first derivative of the function  $y = \sqrt{x + \sqrt{x}}$ , you'll need to use the chain rule and the power rule.

Let  $u = x + \sqrt{x}$ . Then,  $y = \sqrt{u}$ .

Now, find the derivatives:

- For  $u = x + \sqrt{x}$ :  

$$u' = 1 + \frac{1}{2\sqrt{x}}$$
- For  $y = \sqrt{u}$ :  

$$y' = \frac{1}{2\sqrt{u}} \cdot u'$$

Substitute back in terms of  $x$ :

$$y' = \frac{1}{2\sqrt{x + \sqrt{x}}} \left( 1 + \frac{1}{2\sqrt{x}} \right)$$

Combine the terms in the denominator:

$$y' = \frac{1}{2\sqrt{x + \sqrt{x}}} \cdot \frac{2\sqrt{x} + 1}{2\sqrt{x}}$$

Simplify further:

$$y' = \frac{2\sqrt{x} + 1}{4x + 2\sqrt{x}}$$

So, the first derivative of the given function is  $y' = \frac{2\sqrt{x} + 1}{4x + 2\sqrt{x}}$ .

**Figure 5.** Mistakes when determining the first derivative of a function (example 11)

**You**

12. Find the first derivative of the function  $y = \sqrt{(1+x)/(1-x)}$

**ChatGPT**

To find the first derivative of the function  $y = \sqrt{\frac{1+x}{1-x}}$ , you'll need to use the chain rule and the power rule. Let's break down the process:

Let  $u = \frac{1+x}{1-x}$ , then  $y = \sqrt{u}$ .

1. Find the derivative of  $u$  with respect to  $x$ :

$$u' = \frac{(1-x)(1) - (1+x)(-1)}{(1-x)^2} = \frac{2}{(1-x)^2}$$

2. Now, find the derivative of  $y$  with respect to  $u$ :

$$y' = \frac{1}{2\sqrt{u}}$$

3. Combine using the chain rule:

$$y' = \frac{1}{2\sqrt{\frac{1+x}{1-x}}} \cdot \frac{2}{(1-x)^2}$$

4. Simplify further:

$$y' = \frac{1}{\sqrt{\frac{1+x}{1-x}}} \cdot \frac{1}{(1-x)^2}$$

$$y' = \frac{1}{\sqrt{\frac{1+x}{1-x}}} \cdot \frac{1}{(1-x)^2}$$

$$y' = \frac{1}{\sqrt{\frac{1+x}{1-x}}} \cdot \frac{1}{(1-x)^2}$$

$$y' = \frac{1}{\sqrt{\frac{(1+x)(1-x)}{(1-x)^2}}} \cdot \frac{1}{(1-x)^2}$$

$$y' = \frac{1}{\sqrt{\frac{1+x}{1-x}}} \cdot \frac{1}{1-x}$$

So, the first derivative of the given function is  $y' = \frac{1}{\sqrt{\frac{1+x}{1-x}}} \cdot \frac{1}{1-x}$ .

**Figure 6.** Mistakes when determining the first derivative of a function (example 12)

**You**

14. Find the first derivative of the function  $y = \ln(\tan(x/2))$

**ChatGPT**

To find the first derivative of the function  $y = \ln(\tan(\frac{x}{2}))$ , you'll need to use the chain rule. The chain rule states that if you have a composite function  $f(g(x))$ , then the derivative is given by:

$$h'(x) = f'(g(x)) \cdot g'(x)$$

In this case, let  $f(u) = \ln(u)$  and  $g(x) = \tan(\frac{x}{2})$ . Now, find the derivatives of  $f(u)$  and  $g(x)$  with respect to  $x$ :

1. For  $f(u) = \ln(u)$ ,  $f'(u) = \frac{1}{u}$ .

2. For  $g(x) = \tan(\frac{x}{2})$ ,  $g'(x) = \frac{1}{2} \sec^2(\frac{x}{2})$  (the derivative of  $\tan(\frac{x}{2})$ ).

Now, apply the chain rule:

$$h'(x) = \frac{1}{\tan(\frac{x}{2})} \cdot \frac{1}{2} \sec^2(\frac{x}{2})$$

Simplify this expression:

$$h'(x) = \frac{1}{2 \tan(\frac{x}{2}) \sec^2(\frac{x}{2})}$$

You can also express this in terms of sine and cosine:

$$h'(x) = \frac{1}{2 \sin(\frac{x}{2})}$$

So, the first derivative of the given function is:

$$h'(x) = \frac{1}{2 \sin(\frac{x}{2})}$$

**Figure 7.** Mistake when determining the first derivative of a function (example 14)

**You**

15. Find the first derivative of the function  $y = \ln(x + \sqrt{x^2 + 1})$

**ChatGPT**

To find the first derivative of the function  $y = \ln(x + \sqrt{x^2 + 1})$ , you'll need to use the chain rule. The chain rule states that if you have a composite function  $f(g(x))$ , then the derivative is given by:

$$h'(x) = f'(g(x)) \cdot g'(x)$$

In this case, let  $f(u) = \ln(u)$  and  $g(x) = x + \sqrt{x^2 + 1}$ . Now, find the derivatives of  $f(u)$  and  $g(x)$  with respect to  $x$ :

1. For  $f(u) = \ln(u)$ ,  $f'(u) = \frac{1}{u}$ .
2. For  $g(x) = x + \sqrt{x^2 + 1}$ ,  $g'(x) = 1 + \frac{x}{\sqrt{x^2 + 1}}$  (the derivative of  $x + \sqrt{x^2 + 1}$ ).

Now, apply the chain rule:

$$h'(x) = \frac{1}{x + \sqrt{x^2 + 1}} \cdot \left(1 + \frac{x}{\sqrt{x^2 + 1}}\right)$$

To simplify, multiply the numerator and denominator of the fraction on the right by the conjugate of the denominator:

$$h'(x) = \frac{1 + \frac{x}{\sqrt{x^2 + 1}}}{x + \sqrt{x^2 + 1}} \cdot \frac{\sqrt{x^2 + 1} - x}{\sqrt{x^2 + 1} - x}$$

$$h'(x) = \frac{\sqrt{x^2 + 1} - x + x}{(x + \sqrt{x^2 + 1})(\sqrt{x^2 + 1} - x)}$$

$$h'(x) = \frac{\sqrt{x^2 + 1}}{x^2 + 1 - x^2}$$

$$h'(x) = \frac{1}{\sqrt{x^2 + 1}}$$

So, the first derivative of the given function is:

$$h'(x) = \frac{1}{\sqrt{x^2 + 1}}$$

**Figure 8.** Mistake when determining the first derivative of a function (example 15)

During a human-like conversation with the user, ChatGPT provides answers with step-by-step explanations, gives definitions, rules, properties and sometimes simplifies solutions. Upon additional request, it reviews the solutions. The result may be changed. If the result is incorrect in the first interaction, after next interaction (review) it can be repaired and correct. Writing expressions requires some knowledge of specific notation such as “^” for exponent, or “sqrt” for square root. Therefore writing complex expression can be complicated especially for the user who is not familiar with writing mathematical expressions in LaTeX or similar software. On the other hand, there are operations that are very easily to use.

#### 4. Conclusions

Although the communication with ChatGPT is human-like and the explanations are step-by-step, the results obtained by this tool are not always accurate. There is no obvious pattern that can guide the common user to conclude which result is correct and which is not. In some cases the results are correct but the solution procedure is not. Sometimes during the interaction with ChatGPT if the obtained result is not correct, it can modify it and get the correct one. For that reason there is a recommendation to ask this tool for solution several times. Also, the difficult readability of certain mathematical expressions becomes much more apparent with the complexity of the expression. Simplifying the expressions is not always the right way. Even though ChatGPT is still in the development process, there is a great help that it can provide in the process of learning and understanding the way of determining the first derivative of a function with a respect of current restrictions in order to overcome possible misconceptions.

## **References**

- Biswas S., 2023. Role of ChatGPT in Education. *Journal of ENT Surgery Research*, Vol.1, Issue1, 01-03
- Deng J. and Lin Y. 2022. The Benefits and Challenges of ChatGPT: An Overview. *Frontiers in Computing and Intelligent Systems*, Vol. 2, No. 2, 2022
- Kilibarda V. and Ćendić L.B., 2021. Matematika, *Beogradska akademija poslovnih i umetničkih strukovnih studija*, Beograd
- Sharma S. and Yadav R., 2022. ChatGPT – A Technological Remedy or Challenge for Education System. *Global Journal of Enterprise Information System*, Vol. 14, Issue 4, Oct-Dec 2022
- Trust, T., Whalen, J., and Mouza, C. 2023. Editorial: ChatGPT: Challenges, opportunities, and implications for teacher education. *Contemporary Issues in Technology and Teacher Education*, Vol.23 (1), 1-23
- Wardat Y., Tashtoush M.A., AlAli R. and Jarrah A.M. 2023. ChatGPT: A revolutionary tool for teaching and learning mathematics. *EURASIA Journal of Mathematics, Science and Technology Education*, 2023, Vol.19 (7)

# The role of the Commission for the Protection of Competition in the Republic of North Macedonia

Ljuben Kocev

Department of International Trade, Faculty of Economics – Skopje, Ss. Cyril and Methodius University in Skopje, North Macedonia

\*Corresponding Author: e-mail: ljuben.kocev@eccf.ukim.edu.mk

---

## Abstract

The paper examines the role and performance of the Commission for the Protection of Competition (CPC) in the Republic of North Macedonia. It starts by providing context on the evolution of free market economies in developing countries and the importance of competition in order to achieve economic benefits. The paper highlights the necessity of creating a system for the protection of competition and emphasizes the role of national competition agencies. The specific focus is on the Commission for the Protection of Competition within North Macedonia's regulatory landscape. It delves into the history of competition law in the country, its adoption of the EU model of competition law, and the establishment of the Commission for the Protection of Competition. The paper discusses the main areas of focus for the CPC, including abuse of dominant market position, restrictive agreements, and market concentrations.

The analysis reveals that while the CPC has been granted extensive powers by the national legislator, its effectiveness is constrained by limited administrative capacity and a small budget. Comparisons with other national competition agencies in the region illustrate the CPC's resource constraints.

In conclusion, the paper underscores that the CPC's focus has shifted over the years from tackling abuses of dominant market position to evaluating market concentrations. It sheds light on the challenges and limitations faced by the CPC in fulfilling its mandate and offers insights into areas for potential improvement, such as increased funding, resources, and the promotion of private enforcement of competition law.

*Keywords:* competition law, antitrust, public enforcement of competition law, national competition authority (NCA), free market competition, North Macedonia

---

## 1. Introduction

Today, the model of free market economy is the most widely accepted model for the organization of the economic systems of countries. The free-market economy is a system in which markets operate without government intervention and prices of goods and services are determined by supply and demand. While in the past, many countries relied on the model of centrally planned economies, after the fall of the Iron Curtain most countries started gravitating towards some form of a free market economy.

In the model of a free market economy, the concept of competition has a key role. Competition is defined as the process of rivalry between companies, fighting for the acquisition of consumers over time (Whish & Bailey, 2012). It is the general view that competition leads to lower prices, greater choices for consumers, greater efficiency, and innovation (Lorenz, 2013). This is also affirmed by the EU Directorate-General for Competition, according to which “*competition encourages companies to offer consumers goods and services on the most favorable terms. It encourages efficiency and innovation and reduces prices*” (European Commission, n.d.).

However, the model of a free-market economy can be effective only if companies and market actors act independently of each other, but subject to the pressure exerted by their competitors. Even Adam Smith, who is widely considered the father of the free market economy, admits that there are limitations to the theoretic model in practice, by pointing out that “*people of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices*” (Smith, 1776).

Consequently, for free market economies to achieve their potential, a system that would enable free competition has to be established. This is accomplished through the enactment of laws for the protection of competition, and by creating mechanisms for the effective enforcement of those laws. Regardless of the necessity to create a system for the protection of competition, from a historical perspective, it has been a relatively new creation on a global scale. According to statistical data from the OECD, in 1970, only 12 jurisdictions had a competition law, and only seven had a functioning competition authority, whereas today, more than 125 jurisdictions have a competition law regime, and the large majority has an active competition enforcement authority (OECD, 2020).

National bodies and agencies for the protection of competition are the most important institutions for the enforcement of competition law. While in recent years there has been an ongoing trend towards decentralization of the enforcement of competition law, historically, national competition agencies have been the primary institutions through which pressure on market participants was exercised to prevent collusions. Consequently, the focus in this paper is only on national agencies, and in particular the national agency of the Republic of North Macedonia. In the analysis of the current role and position of the national agency for the protection of competition, a comparison is also made with EU rules on national authorities of EU member-states as well as with national agencies for the protection of competition from other countries of the region.

## **2. The system for protection of competition in the Republic of North Macedonia**

The existence of competition law is a relatively new concept within the Macedonian national legislation. Up until its independence in 1991, the country was part of the Socialist Federalist Republic of Yugoslavia, where the national economy was based on workers' self-management with strong state oversight and influence. After proclaiming independence, the country was determined to adopt the free-market economy modeled after the economic systems of the Western countries.

However, adopting a free market economy inevitably leads to the need for the establishment of rules for market protection and free market competition. As most countries found in a situation of adopting a new concept in their national legal systems, the country was faced with the challenge of choosing between the US or EU model of competition law (Dabbah, 2010), which is, in essence, a choice between the EU competition law, based on the principles of ordoliberalism, and the US competition law system predominantly based on the Chicago neoclassical economic thought (Jones & Sufrin, 2016; Nagy, 2013). Since joining the EU was laid as one of the main objectives of the country, it chose to model its system in line with the EU.

The first law in North Macedonia attempting to regulate free market competition was the Law Against Restrictions of Competition from 1999. Although this law showed the intention of the Macedonian legislator to enact rules on the protection of free market competition, it was widely criticized, and it remained a *de facto* unenforced act (Tushevska 2020). The first significant and enforceable act on the protection of competition is the Law on Protection of Competition which was enacted in 2005. The LPC created the foundations of the current system for the protection of competition in the country. The law also established the Commission for Protection of Competition (hereafter CPC) as a central body for the supervision of the implementation of its provisions. This law from 2005 was also short-lived and was replaced with a new modern Law on Protection of Competition in 2010 (hereafter LPC), which is in line with the recent trends.

Violations of competition law can occur primarily through either of the following practices – abuse of dominant market position, restrictive agreements, or concentrations. Consequently, these are the main areas of focus of every national competition authority, including the CPC. State aid is another practice through which free competition on the market can be disrupted and is also one of the areas that the CPC controls. However, in this paper, we analyze the role of the CPC primarily through its activities against the anti-competitive behavior of market participants.

Today, it is widely accepted that markets are more effectively protected if there is a more decentralized approach in the enforcement of competition law, and if functioning mechanisms are put in place for both, public and private enforcement (Jones & Sufrin, 2016; Kellaway et. al, 2015). Public and private enforcement of competition law represent different strategies aimed at fulfilling interconnected goals. Public enforcement agencies hold a pivotal role in deterring anticompetitive conduct, while private enforcement empowers individuals to pursue compensation against anticompetitive actions. As a result, these two approaches should operate in concert to accomplish the objectives of competition law - promoting free competition and averting anti-competitive practices.

Concerning public enforcement of competition law in North Macedonia, the CPC is the only responsible body that can issue fines for the violation of the competition law. It is worth noting that there are several national supervisory and regulatory agencies in the country regulating areas such as insurance, electronic communication, and energy, which also have the responsibility of protecting and promoting free competition in those markets. Concerning free market competition, close collaboration and cooperation between these agencies and the CPC is encouraged, and to some extent even required by the law. However, as shown further within the paper, from the results of the work of the CPC it cannot be deduced that there is a satisfactory level of cooperation between the Commission and the other supervisory and regulatory agencies.

Concerning private enforcement of competition law, currently, there is a lack of specific rules which would enable market participants, particularly other companies, and consumers, to effectively enforce the competition law rules. Firstly, concerning possible violations of the competition law, it remains unclear whether the CPC is the only body that can determine a violation of competition law rules, or whether national civil courts would be able to decide on such matters if an issue of competition law arises in a commercial contractual dispute. These divisions of competencies were explicitly regulated in the EU with the Council Regulation (EC) No 1/2003 which gave national courts full power to enforce EU competition rules. However, in North Macedonia, such rules that would explicitly grant powers to courts have not yet been put in place. Secondly, regarding compensation for damages to victims of such practices, the LPC merely contains a general rule that persons who will suffer damage due to violation of its provision may seek compensation according to the law (LPC, Article 58). However, since there are no specific rules, victims would have to seek compensation under general tort provisions from the Law on Obligations, and in front of civil courts under the general rules of civil procedure.

Consequently, it can be concluded that while the CPC is not the only body that has competencies concerning safeguarding free market competition, the current legislation is set in a way that effectively places the CPC as the sole authority responsible for the enforcement of the competition law.

### **3. The role of the Commission for the Protection of Competition of North Macedonia in the protection of a free market economy**

Bearing in mind that the CPC currently stands as the sole entity for public enforcement of competition law within the country, it is important to analyze its role within the economic system. This analysis would be conducted first, through the examination of its status and powers granted by the national legislator, followed by an overview of its resources, viewed through its number of employees, budget size, and budget spending, and finally, through the analysis of its achievements in the fight against violations of the free market competition.

#### *3.1. Legal status and power of the CPC*

The CPC is an independent state body with the status of a legal entity. It is entirely independent in its work and decision-making process within the competencies provided by the LPC. The Commission consists of a president, four members, and an administrative body (LPC, Article 26). The president and the four members of the Commission are appointed and dismissed for a five-year period by the Assembly of the Republic of North Macedonia, with the right to be reappointed (LPC, Article 27).

The funds for the operation of the Commission are also entirely provided by the Budget of the Republic of North Macedonia (LPC, Article 26).

The competencies of the Commission are laid down in the LPC and in broad terms, they comprise of the supervision of the application of the provisions stipulated in the LPC, monitoring and analyzing of the conditions on the market to the extent necessary for the development of free and efficient competition, and conducting administrative procedures and adopting decisions concerning market concentrations (mergers and acquisitions), restrictive conducts of market participants, abuse of dominant position as well as state aid. The Commission is also responsible for providing expert opinions to the National Assembly, the Government, and other state institutions, agencies, and enterprises, in matters related to the protection of free market competition. Finally, the CPC has a duty to cooperate and exchange information with other relevant institutions necessary for the protection of competition (LPC, Article 28).

The CPC has broad investigative powers allowing it to conduct announced inspections or unannounced raid downs, inspect the business's records, access relevant information, acquire copies or extracts from these records, temporarily seal business premises and records as required for the inspection, and interview and interrogate employees, directors and managers of the enterprise (LPC, Article 40,41,49 & 50). In urgent cases when there is a risk of serious and irreparable damage to competition, the CPC may issue an interim measure preventing potential harmful conduct from the potential infringer (LPC, Article 51).

In procedures related to the determination of the existence of a breach of the competition law, the Commission's decisions are final. However, unsatisfied parties have the right to commence an administrative dispute in front of a competent administrative court (LPC, Article 53).

In its function as a supervisor of the free market competition, and enforcer of the national competition law, the CPC also serves as a primary penalty offense authority for violation of the provisions of the LPC. In this aspect, the CPC has significant power, not only in the imposition of fines but also in the power to apply leniency rules on infringers who participate in discovering and sanctioning anticompetitive practices.

In relation to the fines that it can impose on infringers, the LPC provides that for more serious offenses, the CPC has the right to impose a fine in the amount of up to 10% of the worldwide turnover of the enterprise in the business year preceding the year in which the decision is rendered (LPC, Article 59). This fine can also be imposed on an "association of undertakings", which effectively means that it applies to a group of companies if it is found that many of the companies are involved in the infringement. From the period of 2015 to 2019, the powers of the CPC to impose fines were in stark contradiction with the provisions of the Law on Misdemeanor from 2006. In the amendments of the Law on Misdemeanor from 2015, in Article 38(7), was stipulated that the fine for violation of the rules of free competition "*can be in the amount of up to 2% of the turnover of the legal person for the business year preceding the year in which the decision is rendered.*" As a result, there was a disparity of 8% between the amount of the fine stipulated in the LPC as *lex specialis* and the fine stipulated in the Law on Misdemeanor as *lex generalis*. This was finally remedied with the enactment of the new Law on Misdemeanor in 2019. However, in this in-between period, there were several instances where the CPC disregarded the Law on Misdemeanor and imposed fines on infringers in the amount of 10% of their annual turnover by relying on the LPC.

While on paper it looks as if the CPC has expansive powers that go beyond the powers of many other supervision and regulatory agencies, and that to a large extent, the CPC combines investigative, prosecutive, and sanctioning powers, without much control and scrutiny, it has to be noted that the current rules establishing the powers of the CPC are merely following the legislative requirements of the *EU acquis*.

The European Commission detected that there are many imbalances in the enforcement of competition law on a national level of member-states. In 2017, the Commission published an Impact Assessment accompanying the Proposal for a Directive of the European Parliament and of the Council to empower the competition authorities of the member-states (European Commission, 2017). The Commission's Assessment estimates that due to the presence of undiscovered cartels, a loss of 181-320 billion euros annually occurs, which is approximately 3% of the EU GDP. The following year the European Parliament adopted the Directive (EU) 2019/1 to empower the national competition authorities (NCAs) of the member-states to be more effective in the enforcement of competition law. The Directive contains provisions aimed at the establishment of more effective tools to tackle anticompetitive practices, the increase in the powers of NCAs to impose deterrent fines, the introduction of more efficient leniency programs, and enabling and safeguarding the independence of the NCAs.

The LPC has already adopted many of these concepts even before the adoption of the Directive (EU) 2019/1. However, in some aspects, the Directive envisages even more power that should be vested in the national competition authorities. One example is the possibility of allowing inspections and raid downs not only on business premises but also into homes of directors, managers, and employees of enterprises if there is suspicion that documents that would be of interest to the investigation are located there (Directive (EU) 2019/1, Article 7(1)). Another is that the Directive provides a minimum standard for the maximum fine that may be imposed by NCAs, which may not be less than 10% of the worldwide turnover of the undertaking or association of undertakings in the business year preceding the year in which the decision is rendered (Directive (EU) 2019/1, Article 15(1)). This means that the minimal maximum fine is 10%, but member-states are free to increase the maximum fine well above 10% of the annual turnover if they deem it appropriate in some instances.

### 3.2. Overview of the resources of the CPC

As evident, from a legal point of view, the legislator has granted the CPC extensive powers to tackle anticompetitive practices and to fine infringers. However, the status and the powers granted by the law are only one indicator through which we can measure the institution's capacity. These powers would be of little significance if the institution did not possess sufficient resources. Very often market infringers are large national or multinational companies that have vast resources and technologies at their disposal that can be used to circumvent the competition rules. As technology advances it becomes more difficult to detect anticompetitive practices, and national competition authorities need to have more resources at their disposal to be able to achieve their goals.

According to Article 26(6) of the LPC, the CPC is responsible for its work to the National Assembly and is obliged to submit an annual report on its work by the end of March, for the preceding year. On the webpage of the CPC, the annual reports are published, from its establishment in 2005 onwards, all the way to 2021. The report for 2022 has not yet been published at the time of the submission of this article. The structure of the reports has changed over the years, and some information that was not contained within the report in the past has only been published within the latest reports.

Among other things, the annual reports contain information on the administrative capacity of the CPC, as well as a financial report. The administrative capacity refers to the number of employees within the CPC, and their status (president and members that are considered employees, or employees of the administrative body of the CPC) as well as some general information about their education. This information has been recorded in the annual report from 2005 onwards.

Table 1: Number of employees of the CPC from 2005-2021

Year	# of employees	Year	# of employees
2005	9 (2+7)	2014	27 (3+24)
2006	20 (3+17)	2015	29 (3+26)
2007	21 (3+18)	2016	28 (3+25)
2008	23 (3+20)	2017	27 (3+24)
2009	25 (3+22)	2018	27 (3+24)
2010	26 (3+23)	2019	26 (3+23)
2011	26 (3+23)	2020	27 (3+24)
2012	28 (3+25)	2021	27 (3+24)
2013	28 (3+25)	2022	N/A

Source: Annual Reports of the CPC 2005-2021 (kzk.gov.mk)

As evident from Table 1, the number of employees drastically increased in the first years of the establishment of the CPC, but from 2010 onwards the number has been set between 26 and 28 employees. Three of the total number of employees are comprised of the president of the CPC, and two members of the CPC who are elected by the National Assembly, which according to Article 27 of the LPC are professionally engaged in the operation of the Commission for the Protection of Competition. The remaining employees of the CPC are from the administrative body. While the number of employees itself cannot be sufficient to determine

the efficiency of an institution, it is an important starting point when expectations for the functioning of a certain institution are set. It is objectively difficult to expect a body with such a low number of staff to act as an efficient protector of the free market economy, by controlling all actors present on the domestic market, in addition to controlling state aid.

The CPC itself has stressed the necessity for an increase in the number of staff in almost all its annual reports. Regardless of these requests, the small number of employees remains to this day, and it even decreased in some years.

One of the important factors that contribute to the efficiency of an institution is the resources that it has at its disposal. The financial reports of the CPC became an integral part of the annual report in 2012, and consequently publicly available data is from this year onwards.

Table 2: Annual Budget of the CPC from 2012-2021

year	CPC budget (MKD)	CPC Budget (EUR)
2012	17.650.000,00 MKD	284.677,42 €
2013	18.761.351,00 MKD	302.602,44 €
2014	16.933.175,00 MKD	273.115,73 €
2015	17.784.337,00 MKD	286.844,15 €
2016	17.723.415,00 MKD	285.861,53 €
2017	18.780.296,00 MKD	302.908,00 €
2018	18.715.835,00 MKD	301.868,31 €
2019	21.340.595,00 MKD	344.203,15 €
2020	23.365.000,00 MKD	376.854,84 €
2021	21.331.510,00 MKD	344.056,61 €
Average	19.238.551,40 MKD	310.299,22 €

Source: Annual Reports of the CPC 2012-2021

As evident from Table 2, the average budget of the CPC in the last 10 years is a little over 310,000 EUR. However, in most years it is below 300,000 EUR, and this average is only reached with the significant increase in the budget in 2019, 2020, and 2021.

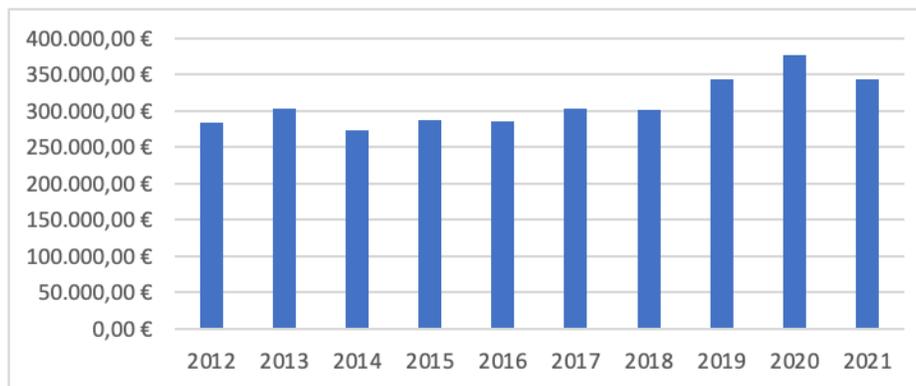


Figure 1: Size of annual budget of CPC 2012-2021

Source: Authors calculations based on Annual Reports of the CPC 2012-2021

Again, analyzing the budget in isolation would not be beneficial, as a budget of roughly 300,000 EUR might be very small for some countries, but it may be more than enough for others. Consequently, we analyze the size of the budget of the CPC with the size of the budgets from other national competition agencies in the region. Table 3 contains the budget size of the NCAs from selected countries from the Balkan. The budgets for 2021 are chosen, since that is the latest year for which all countries have available data.

Table 3: The budget size of NCAs from countries from the Balkan region for 2021

#	Country	Budget size in domestic currency	Budget size in EUR
1	Bulgaria	5.835.400 BGN	2.983.592 EUR
2	Serbia	279.746.891 RSD	2.385.040 EUR
3	Croatia	13.866.662 HRK	1.840.422 EUR
4	Slovenia	1.754.302 EUR	1.754.302 EUR
5	Albania	73.273.000 ALL	694.519 EUR
6	Bosnia and Herzegovina	1.239.000 KM	633.490 EUR
7	Montenegro	632.806 EUR	632.806 EUR
8	Kosovo	344.808 EUR	344.808 EUR
9	North Macedonia	21.331.510 MKD	344.056 EUR

Source: Author's calculation based on published annual reports from the NCAs

As evident from Table 3, the budget of the CPC is by far the lowest when compared to the budgets of the other NCAs from the region. Even in Kosovo, which proclaimed independence only in 2008, and is still represented by the United Nations Interim Administration Mission in Kosovo (UNMIK), the national competition agency has a slightly higher budget. Furthermore, even if we exclude the NCAs from Bulgaria, Croatia, and Slovenia, as EU member-states, and even the NCA from Serbia, as a country that has a significantly larger population than the rest of the countries on the list, the budgets of the next-in-line NCAs (Albania, B&H, and Montenegro) are double the size of the budget of the CPC. This indicates that even within a group of countries with similar geographical, demographical, political, and socioeconomic characteristics, the CPC has the lowest budget. Another significant factor aside from the size of the budget is the way it is being used. From the financial reports contained within the annual reports, it is evident that the majority of this budget is spent on wages and benefits for the employees.

Table 4: Share of expenditure on wages in the budget of the CPC from 2012-2021

year	budget of CPC	expenditure on wages	% of budget allocated for wages
2012	17.650.000,00 MKD	14.940.000,00 MKD	85%
2013	18.761.351,00 MKD	14.625.351,00 MKD	78%
2014	16.933.175,00 MKD	13.288.175,00 MKD	78%
2015	17.784.337,00 MKD	14.124.352,00 MKD	79%
2016	17.723.415,00 MKD	14.013.915,00 MKD	79%
2017	18.780.296,00 MKD	15.029.423,00 MKD	80%
2018	18.715.835,00 MKD	14.915.835,00 MKD	80%
2019	21.340.595,00 MKD	16.380.595,00 MKD	77%
2020	23.365.000,00 MKD	18.695.000,00 MKD	80%
2021	21.331.510,00 MKD	17.431.510,00 MKD	82%
average	19.238.551,40 MKD	15.344.415,60 MKD	80%

Source: Authors calculations based on Annual Reports of the CPC 2012-2021

As evident from Table 4, wages amount between 77%-82% of the annual budget. In addition to having the smallest budget in the region, if we add that on average, 80% of that budget is spent on wages for the employees, there is a minimal amount of funds left that can be dedicated to the education and training of employees or equipment necessary to achieve the goals of the CPC.

The method for financing the NCAs has been a relevant topic for as long as they have existed. On one side the NCAs are public authorities, and they have to comply with rules for public spendings, but on the other hand, they are tasked with the prevention, detection, and sanctioning of abusive practices by companies who very often have resources and budgets larger than the budgets of many countries. The traditional approach for financing NCAs in Europe has been through the allocation of funds from the national budgets, and very rarely NCAs are allowed to finance their operations from other sources such as fees, donations, or even fines. According to a research paper from 2009, only 3 NCAs in the world are able to directly finance their operations with the fines that they impose – Portugal, Peru, and Bulgaria (Sabbatini, 2009). From the list of countries whose NCA budgets were analyzed, only Serbia's and Bulgaria's NCAs are financed through the collection of their own revenues, while all remaining countries receive their funds exclusively from the national budgets. And, as evident from Table 3, the NCAs from Bulgaria and Serbia have the largest budgets compared to all other NCAs from the region.

Since the funds for the operation of the CPC are entirely provided from the national budget and it is not able to generate its own revenues, the CPC is entirely dependable on the will of the Government and the National Assembly. On several occasions, the CPC has pointed out the lack of funding as a problem for the achievement of its goals. In many years, it even requested the approval of larger budgets, but these requests were rejected.

However, not all regulatory agencies in the country are financed in this way. For example, other national regulatory agencies are able to generate their own revenues to finance their operations. For example, the Insurance Supervision Agency finances its operations through the collection of fees from insurance companies, remuneration for conducting courses and training, fees for licenses, technical assistance, etc (Law on Insurance Supervision, Article 258lj). Extending this possibility to the CPC would help remedy some of the problems that it faces and bridge the gap in its financing.

In conclusion, while the CPC has broad powers granted by the national legislator, its performance is hindered by the limited administrative capacity and budget that it has at its disposal. In the next section, we analyze the achievements of the CPC in its fight to maintain free market competition.

### *3.3. Accomplishments of the CPC in the fight for the protection of the free market competition*

In the last chapter of the paper, we analyze the achieved results of the CPC from its establishment in 2005 until 2021. This analysis is conducted on the basis of the annual reports published by the Commission, and also from the synthetization of previously conducted research. As already noted, the activities of the CPC in the prevention of anti-competitive behavior can be divided into three main categories - abuse of dominant position, restrictive agreements, and market concentrations.

Each of the annual reports on the work of the CPC contains detailed information related to the activities that the CPC has undertaken in the tackling of these practices. Unlike the information related to the budget of the CPC, the information related to the activities of the CPC for the prevention of anti-competitive practices has been made available from the first annual report onwards.

Table 5: Activates of the CPC related to the prevention of anticompetitive behavior (2005-2021)

Year	Abuse of dominant position	Restrictive agreements	Concentrations
2005	3	2	0
2006	3	2	7
2007	6	1	16
2008	2	3	29
2009	2	3	17
2010	1	2	22
2011	3	1	22
2012	4	6	23
2013	3	2	18
2014	4	4	32
2015	3	3	42
2016	2	3	31
2017	1	6	50
2018	2	4	61
2019	0	3	57
2020	0	3	62
2021	1	4	81
avarage	2,35	3,06	33,53

Source: Authors calculations based on Annual Reports of the CPC 2005-2021

As evident from Table 5, the number of procedures and decisions adopted by the CPC concerning the abuse of dominant position and restrictive agreements is relatively low when compared to decisions adopted on concentrations. On average, from the establishment of the CPC, 2,35 decisions are adopted concerning abuse of dominant position, and a little more compared to the restrictive agreements (3,06). The average number of decisions related to concentrations is significantly higher (33,53 per year).

To some extent, a difference is expected in the numbers of decisions of concentrations vis-à-vis decisions on restrictive agreements and abuses of dominant position as a result of the way in which these systems of control function. In terms of concentrations, the

control by the CPC for possible breach of competition law is conducted *a priori*, since the companies participating in a merger or acquisition have an obligation by law to notify the CPC and wait for its approval (in the form of a decision) before they complete the process *i.e.*, before the conduct occurs. If the concentration is contrary to the competition law rules, it would not be approved. On the other hand, in cases of restrictive agreements and abuses of dominant market position, the control of the CPC is *a posteriori*, because the CPC acts on conduct that has already occurred. In the case of concentrations, the obligation is on the side of the companies to notify the CPC, whereas, in the case of abuses of dominance and restrictive agreements, the CPC has an obligation to actively investigate and seek anticompetitive conduct.

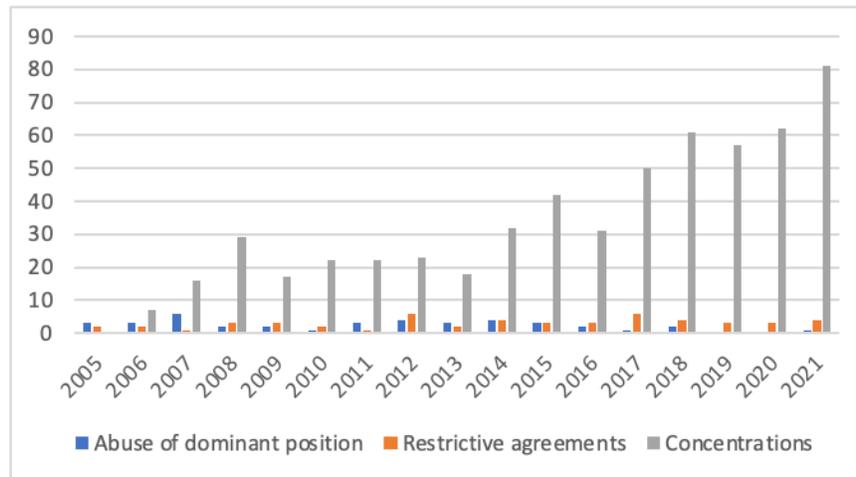


Figure 2: Statistics in the activities of the CPC in each of the areas of concern  
Source: Authors calculations based on Annual Reports of the CPC 2005-2021

Figure 2 contains a graph of the various areas in which the CPC adopts decisions. As evident from the graph, the number of decisions by the CPC on concentrations continually increases. While in the first year, there were no decisions on concentrations at all, in the following year their number was similar to the number of decisions on abuse of dominant position or restrictive agreements. However, from 2007 onwards, the number of decisions on concentrations rapidly increased, whereas the number of decisions on restrictive agreements remained relatively steady. The number of decisions on abuse of dominance, on the other hand, decreased over the years, with the CPC issuing only one decision in the past three years.

This shows that while at the beginning of its establishment, the CPC was primarily focused on tackling abuses of dominant market position, today, its activities and resources have mainly shifted to evaluating market concentrations.

As already noted, a powerful tool that the CPC has at its disposal is the ability to apply a lenient regime (leniency program) on infringers to obtain more information and tackle anti-competitive practices. The use of a leniency program is an indicator of the activities of the CPC in the fight against cartel offenses which falls under the umbrella of restrictive agreements and practices. A recent paper researched the application of the leniency program (expressed in Article 65 of the LPC) by the CPC in the period of 2010-2020 which covers the period from the enactment of the LPC until the publishing of the paper, and it found that Article 65 has never been used (Koevski et. al., 2021). This also indicates the shift in the focus of the CPC away from restrictive agreements and abuses of dominance.

#### 4. Conclusion

The CPC was established with the main objective of ensuring free market competition. It was envisaged as the main force in the fight against anticompetitive market behavior. Whether intentional or by choice, it is *de facto* positioned as the only enforcer of competition law in the country. This has been confirmed to a large extent by the law, but even larger extent, by the legal practice. From the legal point of view, the CPC's competencies encompass various aspects of ensuring competition, including monitoring market conditions, conducting administrative procedures related to market concentrations, addressing restrictive practices, abuse of dominant positions, and overseeing state aid. The CPC is also granted extensive investigative and decision-making powers. In the context of penalty enforcement, the CPC has the authority to impose large fines which for serious offenses can amount to up to 10% of the annual turnover of the undertaking or the association of undertakings. The LPC is already aligned in large part with the EU directive (EU) 2019/1, aimed at empowering national competition authorities.

However, the main obstacle to effectively exercising the powers granted by the LPC is the restricted administrative and budget capacity. The number of employees is not sufficient to achieve the objectives of the CPC. The already small number of employees has even decreased in the last years. The CPC also has by far the lowest budget in the region, which is almost entirely spent on the

wages of its employees, leaving very little resources available for education, training, and equipment necessary for the efficient oversight and protection of the free market competition.

The entire budget of the CPC is received from the budget of North Macedonia, Additionally, unlike other NCAs from the region, or even other regulatory agencies from North Macedonia, it cannot be financed through the collection of its own revenues.

As a result, the CPC has struggled to achieve more satisfactory results throughout the years. The majority of the CPC work is focused on the evaluation of market concentration. As evident from its annual reports, the number of decisions adopted concerning concentrations has increased steadily over the years, while the number of decisions adopted related to the abuse of dominant position is in decline.

Consequently, an effort needs to be made in the future to allow the CPC to receive sufficient resources for its operation. At the same time, a legislative step is imperative to strengthen the private enforcement of competition law. Not only is this necessary in light of the recent global trends, but it would also put additional pressure on market participants, and at the same unburden some of the load on the CPC.

## References

- Commission for the Protection of Competition (no date) Annual Reports, of the Commission for the Protection of Competition. Available at: <http://kzk.gov.mk/category/godishni-izveshtai/> (Accessed: 15 October 2023).
- Dabbah M. (2010), *International and Comparative Competition Law*, Cambridge University Press.
- Jones A. & Sufrin B. (2016), *EU Competition Law, Text, Cases and Materials*, 6<sup>th</sup> Edition, Oxford University Press.
- Directive (EU) 2019/1 of the European Parliament and of the Council of 11 December 2018 to empower the competition authorities of the Member States to be more effective enforcers and to ensure the proper functioning of the internal market, OJ L 11, 14.1.2019.
- European Commission (no date) *Competition Policy, Competition policy*. Available at: [https://competition-policy.ec.europa.eu/index\\_en#:~:text=Competition%20policy%20encourages%20companies%20to,pressure%20exerted%20by%20their%20competitors.](https://competition-policy.ec.europa.eu/index_en#:~:text=Competition%20policy%20encourages%20companies%20to,pressure%20exerted%20by%20their%20competitors.) (Accessed: 20 October 2023).
- European Commission (2017) *IMPACT ASSESSMENT Accompanying the document Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL to empower the competition authorities of the Member States to be more effective enforcers and to ensure the proper functioning of the internal market*. Brussels: European Commission.
- Kellaway R., Thompson QC R., & Brown C. (eds.) (2015), *UK Competition Law, The New Framework*, Oxford University Press.
- Koevski G., Tusevska B. & Spasevski D. (2021) *The concept of leniency in the Republic of North Macedonia*. Special Issue - Competition Law (in Pandemic Times): Challenges and Reforms, 5. pp. 60-84. ISSN 2459-9425
- Law on Insurance Supervision (“Official Gazette of the Republic of Macedonia” No. 27/02, 84/02, 98/02, 33/04, 88/05, 79/07, 8/08, 88/08, 56/09, 67/10, 44/11, 112/11, 7/12, 30/12, 45/12, 60/12, 64/12, 23/13, 188/13, 43/14, 112/14, 153/15, 192/15, 23/16, 83/18, 198/18, 101/19, 31/2020 and 173/2022), Article 158 lj.
- Law on Misdemeanor (“Official Gazette of the Republic of Macedonia” No. 62/66, 51/011 and 124/15)
- Law on Protection of Competition (“Official Gazette of the Republic of Macedonia” No. 145/10,136/11, 41/14, 53/16 and 83/18)
- Lorenz M. (2013), *An Introduction to Competition Law*, Cambridge University Press.
- OECD (2020). *OECD Competition Trends 2020*.
- Nagy C. I. (2013) *EU and US Competition Law: Divided in Unity?*, Ashgate Publishing.
- Sabbatini, P. (2009), *Funding the Budget of a Competition Authority with Fines It Imposes* Available at SSRN: <https://ssrn.com/abstract=1492666> or <http://dx.doi.org/10.2139/ssrn.1492666>
- Smith A. (1776), *Wealth of Nations*, Chapter 10: Of wages and profit in the different employments of labour and stock.
- Tushevska, B. (2020). *COMPETITION LAW IN REPUBLIC OF NORTH MACEDONIA 20 years of Competition law in the Republic of North Macedonia*. *Pravni vjesnik*, 36 (3-4), 43-68. <https://doi.org/10.25234/pv/8940>.
- Whish R. & Bailey D. (2012), *Competition Law*, 7<sup>th</sup> Edition, Oxford University Press.