7th Higher Education Institutions Conference

23-24 September, 2019, Opatija, Croatia
Building Agile Organization

PROCEEDINGS

Double-Blind Peer Reviewed

Edited by: Karmela Aleksić-Maslać and Philip Vranešić

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LSB Luxembourg School of Business

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Content

Welcome Note

Dear Guests,

On behalf of Croatia's first AACSB accredited business school, the Zagreb School of Economics and Management, let me wish you a warm welcome to Opatija, and to our seventh consecutive Higher Education Institutions Conference – HEIC 2019 – "Building Agile Organization". We sincerely believe that this conference will prove to be a valuable forum in which you can share your experience with other higher education professionals, as well as gain valuable insights from our esteemed speakers. The world is indeed getting smaller due to the rapid pace of glo[1]balization. External forces are causing the higher education sector to face both increased pressure and new challenging opportunities. Global interconnectivity puts diversity and adaptability in the fo[1]cus of higher education governance. Considering the complexity of these challenges that business schools face, this conference will provide four plenary sessions, each dealing with a vital issue regarding higher education, transformational strategies for higher education, innovating teaching methods, new faculty models and labor market challenges while a bonus workshop on Monday will provide attendees a valuable look into the new AACSB standards and the accreditation process. Thank you for choosing to attend the HEIC 2019. I sincerely hope you will keep good memories of our conference and Opatija. I would also like to take this opportunity to thank our sponsors not only for supporting this conference, but also for recognizing the need to further dialogue on the future development of business education.

Best regards,
Đuro Njavro, PhD
Dean, Zagreb School of
Economics and Management

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Panel session

Zoran Barac

Dr. Zoran Barac is the Managing Director of the Zagreb School of Economics and Management (ZSEM) where he is also the Head of the Finance and Accounting Department.

Dr. Barac received his Ph.D. in Management at the University of St. Gallen in Switzerland and his M.Sc. in International Economics at the University of Zagreb, Faculty of Economics and Business. Currently he teaches the course: Corporate Governance.

Before joining the Zagreb School of Economics and Management, Dr. Barac held several senior executive and board positions in the corporate sector such as a finance director of the regional media company and CFO of a pharmaceutical distribution company. Before entering the corporate sector, Zoran Barac was the President of the management board of the Croatian Pension Investment Company. Dr. Barac also served as a Governing Board member of the Croatian Pension Supervisory Authority in the period from 2000 to 2005.

Dr. Barac currently serves as the President of the Supervisory board of Platinum Invest, an Investment Funds Management Company. He also serves as a Supervisory board member of the ZSEM Business Academy and a member of the Supervisory board of Croatia Airlines. As an experienced coach and sports official he serves as the President of the Croatian Wushu Federation, a national sports organization that governs Croatian Wushu, which is the collective term for the martial art practices and sports which originated and developed in China. Also as a National Wushu team coach, he coached medal winning athletes in national and international competitions. Dr. Barac also served as a member of the Governing Council of the Croatian Agency for the Supervision of Pension Funds in the period between 2000 and 2005.

Boris Debić

Boris Debić is a Google technologist since 2005. He holds an M.Sc. in Physics from the University of Zagreb, Croatia. At Google he has worked in several roles: Release engineering, G+Privacy, Global Infrastructure, Data center site location, Ads serving infrastructure. He has worked with Google.org on analysis and exchange of global climate modeling data sets and agricultural data to provide food security forecasts. Currently works on projects for Developer Relations. With support from NASA Ames directs Mars Society's NorCal Rover project. He is a board member of several high tech startup companies in both the US and Croatia including http://production.pro which was featured as a top three at Launch Fest in San Francisco. Prior to Google he held positions in: Silicon Valley startups, most notably E.piphany; the United Nations; the Croatian Ministry of Foreign Affairs and the University of Zagreb. Boris Debić has been a lecturer, invited keynote speaker and organizer of Computer Science conferences.

Vesna Dodiković-Jurković

Vesna Dodiković-Jurković, PhD, is a Vice Director of the Croatian Agency for Science and Higher Education (ASHE). Within the agency her main responsibilities include: Development and introduction of a model of external audit of Quality Assurance Units at Croatian HEIs; Dissemination of a good practice and promotion of a quality culture among HEI's at national level; Cooperation with other European and international agencies and networks that are oriented on processes of external evaluation in higher education sector; Human resources development and cooperation of ASHE with HEI's and scientific organizations as well as other involved stakeholders; Introduction of QA system in line with ESG at ASHE, and many more. Ms. Dodiković-Jurković obtained her PhD in 1998 from the University of Zagreb, Faculty of Nature Science. Since then she was participating in numerous international training programs such as "Performance Audit in the Public Sector" (Berlin, 2014), "Management of Higher Education Institutions" (Israel, 2012), "Evaluation of Science & Technology Policies" (Manchester, 2012), and many more. Ms. Dodiković-Jurković is also a member of the Scientific Committee CIMQUSEF since 2010.

Dino Dogan

Dr. Dino Dogan is an experienced executive and a professor of Management at the Luxembourg School of Business. He has extensive experience in the telecommunications and media sector. Dino has worked 10 years with Alcatel in their German subsidiary and in their Paris headquarters. In the Telekom Austria group, he acted as the CFO of their Croatian subsidiary and as CFO of Mobilkom Austria, overseeing and implementing the merger with Telekom Austria to create Austria's largest telecommunications operator – A1 Telekom Austria. For the successful integration, he was awarded the European Change Communication Award. Dino has also served as the CFO of Croatian Telekom (a member of Deutsche Telekom group) and has worked as a consultant at the Boston Consulting Group. Dino currently runs his own Business consulting and Design management company and acts as the CEO of Europlakat d.o.o. (a member of JCDecaux group). Dino received his MBA and PhD from the University of Stuttgart.

Daniel Kahn

As Daniel is originally from Manchester in the United Kingdom but is now based in Paris where he has lived for the past 15 years. He has a BSc(hons) in Computer Science, a BA(hons) in French and Business and over 10 years of experience in education and career consulting.

He has extensive knowledge of the business school world and leads the team who produce the business school related rankings for the QS World University Rankings. Daniel specialises in data analysis and process improvement. Daniel has travelled extensively meeting with deans, accreditation and admission directors, at recruitment fairs, school visits and events. He has spoken at numerous conferences. Previously he researched and implemented the use of NFC technology for QS admission events. Daniel's travels have taken him to over 75 countries, and the list continues to grow. While studying he worked for 6 years as a professional chef – something that has now become a full time hobby.

Kjell R. Knudsen

Dr. Kjell R. Knudsen became dean of the School of Business and Economics at the University of Minnesota Duluth, on January 1, 1998. A native of Norway, he first came to the United States on a Fulbright Scholarship to Gonzaga University in Spokane, Washington in 1965. After graduation from Gonzaga in 1967, Dr. Knudsen attended the University of Minnesota, Minneapolis on a Torske Klubben Fellowship. He received his MBA in 1969 and PhD in Management in 1973. Since 2000, Dr. Knudsen has been heavily involved as a Peer Review Training member and chair as well as a mentor with AACSB International. From 2003–2009, Dr. Knudsen served on the Initial Accreditation Committee. In April 2009, Dr. Knudsen was appointed to serve a threeyear term on the PreAccreditation Committee.

Eileen Mcauliffe

As Deputy Dean, Eileen provides strategic leadership for strategy development, business planning, resources (people and financial), accreditation, recruitment and international development. She is the strategic lead for business school accreditations, specifically AACSB and EPAS. Eileen has led a number of high profile, cross University and external projects. Eileen has a developing research profile with research interests including international tax planning, transfer pricing, taxpayer behaviour, tax evasion and educational research in tax. With her oil industry background, Eileen is involved in a number of research projects relating to the oil industry. Eileen is a member of the United Nations' Platform for Collaboration on Tax; a member of the Tax Research Network and a sits on a number of technical and advisory committees relating to the development of effective tax systems and tax education globally. I am passionate about tax education and speak annually at International Tax Week; a collaboration of seven european universities which provides undergraduate tax students the opportunity to work together on specific tax cases. I have a PhD in taxpayer behaviour, am a qualified accountant and before I moved into Higher Education worked for ConocoPhillips in International Tax.

Timothy S. Mescon

Timothy S. Mescon is executive vice president and chief officer for Europe, the Middle East, and Africa for AACSB International. He is president emeritus of Columbus State University (Georgia), where he served from 2008 to 2014. Previously, he served as dean and Dinos Eminent Scholar Chair for 18 years at the Michael J. Coles College of Business at Kennesaw State University in Georgia. Mescon gained extensive experience as an AACSB peer review team member, chair, and committee member for 25 years before joining AACSB. He is the author of more than 200 articles and case studies, and he has coauthored four books, his latest Entrepreneurship: Venture Initiation, Management and Development, 2nd edition (Routledge/M.E. Sharpe). Mescon received his PhD from the Terry College at The University of Georgia, his MBA from the Cox School at Southern Methodist University, and his BA from Tulane University.

Vedran Mornar

Vedran Mornar is a Professor of Computer Science at Faculty of Electrical Engineering and Computing, University of Zagreb, Croatia, where he currently teaches several graduate and undergraduate computing courses. He graduated and received his PhD degree in Computer Science at the same university. As a Fulbright scholar, he studied at the University of Southern California, Los Angeles for an academic year. His professional interest is in e-learning, application of operational research in real-world information systems, database design, development and implementation. He has been the project leader of the projects on the national level, most notably National information system for application to HEI, which also provides complete organizational support for the State matura exams. In the period from 2002 to 2006, he was the vice dean of the Faculty. From 2006 to 2010 he was the dean. From 2009 to 2013 he was the president of National Council for Higher Education. He is serving as the president of Croatian Association for Information and Communication Technology – Mipro. From 2014 to 2016 he held the office of the Minister of science, education and sports of the Republic of Croatia.

Sunčica Oberman Peterka

Sunčica Oberman Peterka is a full professor at the Josip Juraj Strossmayer University of Osijek, Faculty of Economics in Osijek, where she teaches entrepreneurship and strategy courses. She defended her PhD on the topic of entrepreneurial universities at the Josip Juraj Strossmayer University in Osijek, Faculty of Economics in 2008. From year 2014. she is the vice-dean for study programmes and she is the head of international interdisciplinary inter-university doctoral program Entrepreneurship and Innovativeness. Prior to employment at the University (2000), she worked at the Center for Entrepreneurship Osijek (1997-2000) as a trainer and consultant for SMEs and she is still involved in different projects as trainer and consultant for SMEs. She has been a member of the GEM team for Croatia since 2002 and she is a member of European Council of Small Business and Entrepreneurship (ECSB). Her areas of research interest are: entrepreneurship education, entrepreneurial university, authentic leadership, new venture creation, small business management, strategic management.

Afif Rustom

Afif Rustom is an international business development professional, whose career has been focused on transforming content providers and institutions to digital through various tools and methodologies enhancing the overall outcomes and learning experience. He works closely with key stakeholders in ministries of education, consortiums, institutions and content providers to enable learners, instructors and management to make a systematic transformation to digital and scale the solutions. In such capacity he has held various roles such as Senior Regional Manager for Europe at McGraw-Hill Education based in Frankfurt and Regional manager for the Gulf region at McGraw-Hill Education based in Dubai . His experience has been extensive across more than 50 countries in building and leading teams to tackle educational solutions and implement digital transformation with successful results based on usage, collaborative interaction, and achieving learning outcomes . He is currently leading the Business Development team for Europe, Middle East and Africa at VitalSource Technologies. He is based in Frankfurt, working closely with various Higher Education and K12 Institutions, regional partners, publishers, consortiums and ministries of education. Key Interests: technology, digital education, business intelligence, innovation, learning science, transformational management and professional development.

Metka Tekavčić

Prof. Metka Tekavčič was named Dean of the Faculty of Economics, University of Ljubljana (FELU) in 2013. From 2001 to 2007 professor Tekavčič was Vice-Dean at the FELU. From 1999 to 2001 she was also the Head of the Academic Unit of Management and Organization. Her research interest lies in the fields of cost and performance management, as well as non-profit and especially education management. Prof. Tekavčič is president of the FELU's Senate and the Head of the Institute for Management and Organization. In 2014 she was awarded the Artemida award for Women's Excellence in Management. From 1992 till 2013 she was a member of the City Council of Ljubljana, Slovenia. She has long been and remains a member of the supervisory boards of many important Slovenian companies and other institutions. In addition to her work, prof. Tekavčič has also served as a member of the advisory board at the University of Primorska and was elected as vice-dean of Challenge: Future. In 2016, the Dean Tekavčič was appointed as a new member of the EQUIS Accreditation Board.

James Uhomoibhi

Prof. Uhomoibhi, a native born of Nigeria is an academic of strong international standing in Physics, Computing and Engineering. He has a first degree in Physics from Nigeria, a BPhil degree from Italy and moved to the UK where he completed his MSc in Optoelectronics and Optical Information Processing and a PhD in Laser Physics. Following his initial appointment as lecturer in Queen's University Belfast he completed a PGCHET in Higher Education. Today he is at the University of Ulster where he has acted as Faculty e-learning coordinator for many years and lectures in engineering. He is a visiting Professor of Physics, Computer Science and IT in Nigerian Universities. Prof. Uhomoibhi is a Chartered Physicist and a member of the Institute of Physics; He is a Chartered IT Professional, a Fellow of BCS, a Fellow of the UK Higher Education Academy and a Fellow of the Centre for Higher Education Research and Practice.

Prof. Uhomoibhi is the African Laser Centre Representative in Europe and has served as Head of SEFI Task Force on European Cooperation with Africa. SEFI is the European Society for Engineering. Education. He is a member of the Executive Committee of IGIP (The International Society for Engineering Pedagogy) and advises on African Engineering Education initiatives. He is a member of the Board of the International Network for Engineering Education and Research (iNEER). He is a member of Council BCS, the Chartered Institute for IT. Prof. Uhomoibhi is a member of the Diversity and Inclusion Committee (DIC) and the International Committee of the Institute of Physics (IoP). He is the founder and current Chair of the BCS e-Learning Specialist Group. In

2011 Prof Uhomoibhi was appointed a LEADS Scholar by the Nigerian National Universities Commission (NUC), charged with the responsibility of linking experts and academics in the Diaspora to the country. Prof Uhomoibhi is a recipient several academic and community awards including amongst others, the iNEER Global Achievement Award in Engineering Education (2011), Belfast Distinguished Conference Ambassadors Award (2012), BCS Long Service Award and the All Ireland Powerlist Distinguished African Leadership Excellence Service Award, which he received in 2012.

Damir Zec

Damir Zec is a Territory Service Leader for IBM in South East Europe, a region covering more than 12 countries, including Bulgaria, Croatia, Hungary, Romania, Serbia and Slovenia. Prior to this position, Damir was Country Leader of IBM Croatia Ltd. In that role, Damir was responsible for all business activities in Croatia, covering IBM's portfolio products and services. He has joined IBM in 2009 as a Territory Services Leader. He was responsible for sales and support of the full range of IBM's information technology products, services and solutions. Damir has a wealth of experience from different leadership roles at IBM and other IT companies (MDS Metalika, Azelija, Dignus, Recronet) where he worked for more than 20 years in various management positions. As a part of his professional development, Damir is Certified Member of Croatian Association of Certified Members of Management and Supervisory Board (part of European Confederation of Directors' Associations (ecoDa) and he holds a degree in Electrical Engineering from the University of Zagreb.

New cultures of Innovation in Higher Education

Session chair: Goran Oblaković

The Impact of Board of Directors' Composition on Firm Performance through Innovation in Finnish and Swedish Corporate Sector

Shab Hundal[1], Anne Eskola[2] and Ilya Nekrasov[3]

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Abstract

In the modern business world, the organizational, and technological risk exposures are normal, perpetual and deeply ingrained. In such milieu, corporations place a high value on innovation in order to survive, grow and sustain. In the modern business settings, innovation is reckoned as a synonym to corporate success. The composition and characteristics of the board of directors are one of the principal determinants that influence the nature and degree of innovation in a firm. The current study examines whether corporate innovativeness is affected by the characteristics of composition of firm directors and furthermore investigates the extent to which the innovativeness affects firm performance. Secondary quantitative data of 24 Finnish and 36 Swedish publicly traded companies have been obtained from their financial statements, annual reports and NASDAQ OMX Nordic database for the period from 2012 to 2018. The empirical findings revealed that firm performance is influenced by corporate innovativeness, which, in turn, is found to be affected by characteristics of the directors. The major contribution of the current paper is that firm-level innovativeness is not fully exogenous since the firm leadership characteristics, as represented by the board of directors of a firm, impact the innovativeness of a firm.

Keywords: *Corporate governance, board of directors, innovation, board composition, financial performance, non-financial performance, systematic risk.*

1. Introduction

Joseph Schumpeter was the first economist, who propounded the idea of the economics of innovation in a scientific manner in the 1930s [1]. Prior to the economics of innovation, the economic value was considered primarily associated with physical resources. Since the second half of the twentieth century, the discussion pertaining to innovation has gained tremendous momentum and emerged as an important topic of empirical research. The field of economics of innovation is not only confined to researchers but also very much recognized by the major international institutions, such as the Organization for Economic Cooperation and Development [2].

The modern day corporations function in an unprecedentedly risky business environment especially those emanating from organizational and technological facets. In order to survive, grow, sustain, on the one hand, and function smoothly and stay competitive, on the other hand, the corporations assign a great deal of relevance to innovation. Similarly, innovation influences attraction and retention of customers, development, and differentiation of products and services, and market entry, among several other things. In the current business settings, characterized by multiple and complex natured risks, innovation can play a pivotal role in order to affect corporate success. The firms, which are unable to keep pace with the required innovation, may face the existential threat or experience a considerable downturn in terms of their business performance.

Innovation depends upon several technological and business factors, which are often considered *exogenous*. However, it is important to understand that innovation can be *endogenous* too since corporate leadership plays an important role with respect to innovation in corporate objectives, planning, and strategy. Every board of directors

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has unique characteristics related to its composition (for example, board size, age, board independence, multiple directorships, education background of directors) that can influence the nature and degree of innovation in a firm, among other determinants, which in turn can affect the economic value of the firm [3].

The current study examines whether, first, several characteristics pertaining to the firm-level boards of directors such as busyness of corporate board of directors, board size, age, education level of a board members, gender affect the firm's innovativeness; and second, the firm-level innovativeness affects market risk exposure of firms, and firm performance both based on market and accounting measures.

In order to answer the abovementioned research questions as many as 24 Finnish and 36 Swedish publicly listed firms on NASDAQ OMX Nordic have been analyzed for the seven-year period– 2012 to 2018. The findings show that several firm-level characteristics of board composition, such as gender, multiple directorships, and board size, affect the firm-level innovativeness. Similarly, firm-level innovativeness influences the accounting-based and market-based performance of firms. The key theoretical contributions of the current paper are the followings-first; innovation is not fully exogenous, as the nature of firm-level leadership underpinned by the characteristics of board of directors, can influence its innovativeness, and second; the association between characteristics of board of directors and firm performance is based on an important premise, which is innovativeness in the current paper, among other things. Similarly, this is one of the fewest studies exploring the abovementioned phenomena in the Finnish and Swedish business settings.

2. Review of Literature and Hypotheses

The overarching goal of a corporate board of directors is to provide entrepreneurial leadership to the firm by ensuring that required monitoring and controls measures are intact and fully functional so that the risk exposure of the firm can be effectively identified, assessed and managed. In addition, the board is responsible for setting strategic goals and at the same time ensuring that all required human and financial resources are in place so that the firm is capable of meeting its overall performance targets [4]. Furthermore, it is the responsibility of directors to appoint executives, approve financial and other reporting and, where necessary, provide guidance to the management of the company [5].

Among the most important characteristics of corporate boards that can affect their effectiveness is the independence of directors. Several studies demonstrate that independent directors are capable of providing better monitoring functions since they do not have any economic interests with the firm. Therefore, a firm having a higher proportion of independent directors on their boards have a lower likelihood of fraudulent practices and accounting manipulations. Board diversity is of paramount importance for a firm board to be effective. Diversity leads to a multiplicity of ideas, perspectives, and viewpoints, which may help firms to visualize, plan and strategize in the holistic manner [6]. Some studies suggest that in order for a corporate board to increase its effectiveness of monitoring and control management, it is important for it to have a diverse mix of directors [7]. Since *the quality comes through quantity*, therefore, some studies, inspired by the resource-dependence theory, suggest that firms having larger board size and/or firms, whose directors have multiple directorships in other firms, can capitalize their *reputational capital*, consisting of *human capital* (education, skills, expertise and experiences) and *relational capital* (professional networks of directors), and resultantly enhance their performance [8,9]. Multiple directorships or busyness of directors directly affects the independence of corporate directors. Accordingly, as the level of busyness of directors increases, their responsibilities increase as well as, resultantly busy directors monitor the managerial actions and apply control mechanism in a better way, since the potential loss of their reputation, in the event of failure to performs their core responsibilities, is immense. On the contrary, the key argument of the agency theory suggests that busyness of corporate directors can negatively affect the firms' performance. There are a number of reasons attributed to such a negative association between the busyness and form performance [9]. First, multiple directorships may cause a decline in time and attention required to perform the core responsibilities of directors. Second, busy directors may fail to monitor managerial actions. Third, capabilities of busy directors, especially those having so-called high reputational capital, is often firm-specific and their application in the different organizational settings may not be effective.

Another determinant of board efficacy is the so-called *relationship investing*, which implies that when a major stockholder receives a seat on the board, he/she develops a natural instinct to, first, apply effective monitoring and control mechanisms, and second, provide the best of his/her reputational capital to the firms, lest he/she should experience any wealth erosion [10].

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The concept of firm performance, which is an integral aspect of the operational efficiency of firms, occupies a pivotal strand in both theory and practice [11]. Furthermore, the concept of firm performance finds a great deal of relevance in the corporate governance literature too. The operational efficiency underlines *how much is produced* whereas corporate governance underpins *how is produced*. The concept of corporate governance, when added to the firm performance, brings rules, responsibilities, best practices, regulations, accountability, disclosures, monitoring, control and several other ethos in the overall discussion of board leadership, innovativeness, and firm performance.

Regarding firm performance assessment, it is worth mentioning that, historically, firms used to rely on accounting indicators, principally. According to some researchers, the accounting measures of firm performance underscore managerial quality [12]. Similarly, the accounting performance measures are often used by analysts and investors to benchmark the profitability on the invested capital [13]. Similarly, market-based performance measures are forward-looking and therefore underline the expectations of the future performance of the firm [14]. Researchers argue that market-based measures provide a more complete picture than that by accounting-based indicators, as former consider the greater range of relevant information pertaining to firm profitability, growth and stock valuation. The firm performance measures can be split into two subcategories: financial and strategic performance [14]. The first measure includes profitability, market value, and growth performance, whereas, the second includes non-financial measures. Similarly, another aspect of the form performance is the systematic risk, also known as non-specific, unavoidable or market risk, is related to the extent to which a firm's stock price is influenced by the market factors and macro-economic determinants such as economic cycles, government actions, and fiscal and monetary policies [15]. The systematic risks cannot be avoided, as every firm, regardless of its performance and other characteristics must face them [16].

Based on the review of literature, the following hypotheses have been made:

H_1: Busyness of corporate directors affects firms' innovativeness.

H_2: Board size affects firms' innovativeness.

H_3: Higher education level of boards of directors positively affects firms' innovativeness.

H_4: Higher proportion of women on boards of directors positively affects firms' innovativeness.

H_5: Higher median age of boards of directors affects firms' innovativeness.

H_6: Innovativeness affects market-based performance of firms.

H_7: Innovativeness affects accounting-based performance of firms.

H_8: Innovativeness affects systematic risk exposure of firms.

3. Data and Methodology

The current study is based on secondary data for the period 2012-18 obtained from the published annual reports of firms, especially financial statements, and corporate governance reports. Additionally, the stock price data were obtained from the NASDAQ OMX Nordic database. The sample size includes 24 Finnish and 36 Swedish firms. The total number of firm-year observations are 393.

Table 1 below highlights the variables used in the analysis along with their labels and their decription.

Table 1. Definition and description of variables

Variables	Label	Description
Age	Age	The median age of a firm's directors. Median age is the representative age of the board members.
	Agesq	The age variable is squared in order to bring non-linearity.
	AgeNL	Natural logarithm of the age variable discounts the size effect of the variable.
Board Size	BoardS	Number of directors of a firm.
	BoardSsq	Squared value of the board size variable.
	BoardSNL	Natural logarithm of the board size variable.
Education	Edu	For example, if a director of a firm holds two bachelor's degrees, one master's degree and a doctor of philosophy degree, then he/she claims one point each for two bachelor's degrees (2), two points for one master's degree (2) and three

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		points for a Ph.D. (3). Therefore, altogether seven points will be added to the firm-level education. The same procedure will be followed for other directors of the firm. The final firm-level value will be the cumulative value of education a firm's directors.
	EduSq	Squared value of the education variable
	EduNL	Natural logarithm of the education variable
Gender	Gender	The gender variable is calculated as a proportion of female directors on the board. The calculation is as follows: Gender = Female Board Members of the Firm/Firm Board Size
Busyness	Busyness	For example, if a director of the firm is on 3 boards of directors and 4 committee members of other firms, then the busyness number will be 7. The same procedure will be followed for other directors of the firm. Finally, median level of busyness (multiple directorships) will be calculated at the firm level.
Board Independence	BoardInd	The board independence variable is a proportion of independent members of a board. The calculation is as follows: Board Independence = Independent Directors of the Firm Board/Board Size
Research and Development	RD	RD is the value of expenses incurred on the research and development at the firm level. The data can be obtained from the Income Statement of the firm.
Total Sales	Sales	A total value of sales revenue can be obtained from the Income Statement of the firm.
Gross Profit	GrossProfit	Gross profit or Earnings (Profit) before tax can be obtained from the Income Statement of the firm.
Total Assets	TotalA	It is the total amount of resources a company possesses. The book value of the total assets can be obtained from the Balance Sheet of the firm.
	TotalALog	Natural logarithm of the total assets variable.
Intangible Assets	IntA	Intangible assets include intellectual property such as patents, trademarks, and copyrights. The book value of the variable can be obtained from the Balance Sheet of the firm.
Market Capitalization	MarketCAp	The market capitalization of a company refers to its total market of the firm equity. The data is obtained from the NASDAQ OMX database. The median share price of the given firm for the given year, is multiplied by the number of outstanding shares.
	MarketCapLog	Natural logarithm of the market capitalization variable.
Book Value	BV	This variable is the book value of equity, also known as net worth and net assets. The value is calculated by firm level total assets minus total liabilities. The data can be obtained from the Balance Sheet of the firm.
Innovation 1	Inno1	This variable is calculated by dividing Research & Development Expenditure by Total Sales Revenue of the firm for a given year. Both numerator and denominator values can be obtained from the Income Statement of firms.
Innovation 2	Inno2	This variable is calculated by dividing value of the Intangible Assets by Total Assets value of the firm for a given year. Both numerator and denominator values can be obtained from the Balance Sheet of firms.
Beta	Beta	Beta coefficient represents the systematic/market risk exposure of the firm. Beta coefficient reflects regression (slope) of the firm-level stock return on the market (index) return. A higher beta shows higher market risk. The data for firm-level stock return on the market (index) return can be obtained from the NASDAQ OMX database.
Gross Profit Margin	GPmargin	This variable can be obtained by dividing Gross Profit by Sales Revenue of the firm for a given year. Both numerator and denominator values can be obtained from the Income Statement of firms.
Market-to-Book value ratio	MVBV	This variable is calculated by dividing Market Capitalization by Book Value of firm assets of the firm for the given year.
Instrumental variable 1	InstrumentalIV1	A predicted variable of Innovation 1 variable.
Instrumental variable 2	InstrumentalIV2	A predicted variable of Innovation 2 variable.

In the current paper, several data analytical techniques, for example, descriptive statistics, correlational analysis and regression analysis have been applied. The following multivariate ordinary least square regression models have been applied to test various hypotheses:

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$$Innovation\ 1 = a_{it} + \beta_1(Age)_{it} + \beta_2(Agesq)_{it} + \beta_3(AgeNL)_{it} + \beta_4(BoardS)_{it} + \beta_5(BoardSsq)_{it} + \beta_6(BoardSNL)_{it} + \beta_7(Edu)_{it} + \beta_8(EduSq)_{it} + \beta_9(EduNL)_{it} + \beta_{10}(Gender)_{it} + \beta_{11}(Busyness)_{it} + \beta_{12}(BoardInd)_{it} + \beta_{13}(RD)_{it} + \beta_{14}(Sales)_{it} + \beta_{15}(GrossP)_{it} + \beta_{16}(Inno2)_{it} + \beta_{17}(GPmargin)_{it} + \beta_{18}(MVBV)_{it} + \beta_{19}(MarktCapLog)_{it} + \beta_{20}(TotalALog)_{it} + \beta_{21}(InstrumentalIV2)_{it} + \beta_{22}(Beta)_{it} + \varepsilon_i$$

$$Innovation\ 2 = a_{it} + \beta_1(Age)_{it} + \beta_2(Agesq)_{it} + \beta_3(AgeNL)_{it} + \beta_4(BoardS)_{it} + \beta_5(BoardSsq)_{it} + \beta_6(BoardSNL)_{it} + \beta_7(Edu)_{it} + \beta_8(EduSq)_{it} + \beta_9(EduNL)_{it} + \beta_{10}(Gender)_{it} + \beta_{11}(Busyness)_{it} + \beta_{12}(BoardInd)_{it} + \beta_{13}(RD)_{it} + \beta_{14}(Sales)_{it} + \beta_{15}(GrossP)_{it} + \beta_{16}(Inno1)_{it} + \beta_{17}(GPmargin)_{it} + \beta_{18}(MVBV)_{it} + \beta_{19}(MarktCapLog)_{it} + \beta_{20}(TotalALog)_{it} + \beta_{21}(InstrumentalIV1)_{it} + \beta_{22}(Beta)_{it} + \varepsilon_i$$

$$GPmargin = a_{it} + \beta_1(Age)_{it} + \beta_2(Agesq)_{it} + \beta_3(AgeNL)_{it} + \beta_4(BoardS)_{it} + \beta_5(BoardSsq)_{it} + \beta_6(BoardSNL)_{it} + \beta_7(Edu)_{it} + \beta_8(EduSq)_{it} + \beta_9(EduNL)_{it} + \beta_{10}(Gender)_{it} + \beta_{11}(Busyness)_{it} + \beta_{12}(BoardInd)_{it} + \beta_{13}(RD)_{it} + \beta_{14}(Sales)_{it} + \beta_{15}(GrossP)_{it} + \beta_{16}(Inno1)_{it} + \beta_{17}(Inno2)_{it} + \beta_{18}(MVBV)_{it} + \beta_{19}(MarktCapLog)_{it} + \beta_{20}(TotalALog)_{it} + \beta_{21}(InstrumentalIV1)_{it} + \beta_{22}(InstrumentalIV2)_{it} + \beta_{23}(Beta)_{it} + \varepsilon_i$$

$$Beta = a_{it} + \beta_1(Age)_{it} + \beta_2(Agesq)_{it} + \beta_3(AgeNL)_{it} + \beta_4(BoardS)_{it} + \beta_5(BoardSsq)_{it} + \beta_6(BoardSNL)_{it} + \beta_7(Edu)_{it} + \beta_8(EduSq)_{it} + \beta_9(EduNL)_{it} + \beta_{10}(Gender)_{it} + \beta_{11}(Busyness)_{it} + \beta_{12}(BoardInd)_{it} + \beta_{13}(RD)_{it} + \beta_{14}(Sales)_{it} + \beta_{15}(GrossP)_{it} + \beta_{16}(Inno1)_{it} + \beta_{17}(Inno2)_{it} + \beta_{18}(MVBV)_{it} + \beta_{19}(MarktCapLog)_{it} + \beta_{20}(TotalALog)_{it} + \beta_{21}(InstrumentalIV1)_{it} + \beta_{22}(InstrumentalIV2)_{it} + \beta_{23}(GPmargin)_{it} + \varepsilon_i$$

$$MVBV = a_{it} + \beta_1(Age)_{it} + \beta_2(Agesq)_{it} + \beta_3(AgeNL)_{it} + \beta_4(BoardS)_{it} + \beta_5(BoardSsq)_{it} + \beta_6(BoardSNL)_{it} + \beta_7(Edu)_{it} + \beta_8(EduSq)_{it} + \beta_9(EduNL)_{it} + \beta_{10}(Gender)_{it} + \beta_{11}(Busyness)_{it} + \beta_{12}(BoardInd)_{it} + \beta_{13}(RD)_{it} + \beta_{14}(Sales)_{it} + \beta_{15}(GrossP)_{it} + \beta_{16}(Inno1)_{it} + \beta_{17}(Inno2)_{it} + \beta_{18}(GPmargin)_{it} + \beta_{19}(MarktCapLog)_{it} + \beta_{20}(TotalALog)_{it} + \beta_{21}(InstrumentalIV1)_{it} + \beta_{22}(InstrumentalIV2)_{it} + \beta_{23}(Beta)_{it} + \varepsilon_i$$

4. Empirical findings

In the Table 2 below descriptive statistics of the sample firms have been highlighted. The average median age of the board of directors is 56,8 years, whereas the average total board size is 9. Similarly, the average of busyness and board independence is 3,56 and 0,72, respectively. The average values of Innovation-1 and Innovation-2 are 0,05 and 0,11, respectively. From the firms performance perspective, the average values of gross profit margin and market-to-book are 0,37 and 1,42, respectively.

Table 3 highlights that Inno1 variable is positively associated with market value of firms and book value of firms as measured by total assets. Similarly, Inno1 is negatively associated with *the Gender* variable, representing proportion of women on corporate boards. Similarly, Inno2 variable is positively associated with firm board size and ratio of market-to-book value of firms, and at the same time Inno2 variable is negatively associated with market risk exposure of firms and book value of firms. Similarly, accounting measure of performance is positively associated with the market-to-book value of firms, and negatively associated with board size and market value, and book value of firms. The market performance of the firms, as measured by the market-to-book value of firms, is positively associated with Inno2 variable, and negatively associated with board size, education of board members, market risk exposure and book value of firms. However, beta coefficient, the market risk exposure of firms, is positively associated with education of boards of directors and busyness of directors, and negatively associated with board size, Inno2 variable, market-to-book value and market capitalization of firms.

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Table 2. Descriptive Statistics (N=393)

Variables	Range	Minimum	Maximum	Mean	Standard deviation
Age (year)	25,5	44	69,5	56,8	4,08
BoardS (number)	9	5	14	9	2,16
Edu (number)	55	2	57	18,7	6,78
Busyness (number)	7	1	8	3,56	1,49
BoardInd (coefficient)	0,73	0,20	0,93	0,72	0,11
RD (Million Eur)	4997	0,01	4997	167,33	566,32
Sales (Million Eur)	37947,71	48,00	37995,71	5792,46	6469,76
GrossP (Million Eur)	16501,00	-120,00	16381,00	1761,41	2350,55
TotalA (Million Eur)	46114,31	31,00	46145,31	6371,39	8586,94
IntA (Million Eur)	18241,15	6,50	18247,65	649,73	1588,47
MarketCap (Million Eur)	47465,20	15,01	47480,21	6419,43	7993,65
BV (Million Eur)	35377,01	543,93	35920,94	2932,68	4639,66
Beta (coefficient)	3,10	-0,27	2,83	0,73	0,24
Inno1 (coefficient)	0,48	0,01	0,49	0,05	0,05
Inno2 (coefficient)	0,72	0,01	0,73	0,11	0,15
GPmargin (coefficient)	0,88	-0,02	0,86	0,37	0,21
MVBV (coefficient)	23,77	0,10	23,87	1,42	1,85

Table 3. Pairwise Coefficient of Correlation (N=393)

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14
X1	1	-,05	,06	,05	,04	,02	-,01	,01	-,00	-,02	-,05	-,03	-,04	,00
X2	-,05	1	,26**	-,02	,02	-,03	,13**	-,21**	,05	,14**	-,30**	-,13*	,37**	,45**
X3	,06	,26**	1	-,10*	,37**	,02	,18**	,19**	,00	-,02	-,04	-,12*	,29**	,34**
X4	,05	-,02	-,10*	1	,11*	-,03	-,15**	,02	-,10*	-,03	,05	,03	-0,05	-0,06
X5	,04	002	,37**	,11*	1	-,07	-,08	,10*	-,02	,04	-,06	,04	,05	,05
X6	,02	-,03	,02	-,03	-,07	1	-,03	-,01	-,02	,04	,04	,02	-,04	-,07
X7	-,01	,13**	,18**	-,15**	-,08	-,03	1	0,05	,71**	,01	,02	-,07	,36**	,40**
X8	,01	-,21**	,19**	,02	,10*	-,01	-,05	1	-,04	-,11*	-,06	-,13**	-,11*	,03
X9	-,00	,05	,00	-,10*	-,02	-,02	,71**	-,04	1	,08	,03	-,00	,13*	,11*
X10	-,02	,14**	-,02	-,03	,04	,04	,01	-,11*	,08	1	,03	,12*	-,00	-,17**
X11	-,05	-,30**	-,04	,05	-,06	,04	,02	-,06	,03	,03	1	,19**	-,15**	-,34**
X12	-,03	-,13*	-,12*	,03	,04	,02	-,07	-,13**	-,00	,12*	,19**	1	,01	-,35**

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X13	-,04	,37**	,29**	-,05	,05	-,04	,36**	-,11*	,13*	-,00	-,15**	,01	1	,74**
X14	,00	,45**	,34**	-,06	,05	-,07	,40**	,03	,11*	-,17**	-,34**	-,35**	,74**	1

Note: X1 – Age; X2 – BoardS ; X3 – Edu; X4 – Gender; X5 – Busyness; X6 – BoardInd; X7 – RD; X8 – Beta; X9 – Inno1; X10 – Inno2; X11 – Gpmargin; X12 – MVBV ; X13 – MarktCapLog ; X14 – TotalALog. Correlation coefficients are significant at ** (1%) and * (5%).

Table 4 highlights the impact of boards of directors related variables on innovation variables. Busyness of corporate directors is the only variable related to the boards of directors composition that positively influence Inno1 variable, which is calculated by dividing R&D expenditure by sales revenue. Similarly, board size and busyness affect Inno2, calculated by dividing value of the intangible assets by total assets, negatively, however, education of directors affects Inno2 positively.

Table 5 highlights that board size, education, proportion of women in boards of directors (Gender), market capitalization of firms, age of board members, Inno1 variable and market-to-book value ratio positively affect the accounting performance measure (Gross profit margin). Similarly, non-linear value of the board size (squared), and education (squared), busyness of directors, beta coefficient, book value of firm, non-linear value of age of directors (non-logarithmic) negatively affect the accounting performance of firms.

Table 4. Effect of board of directors characteristics on innovation variables (N=393)

Dependent Variable	Independent Variable	Regression coefficients	t-value	sig
Inno1	Busyness	0,06	2,68	0,00
Pseudo R^2	0,13	Durbin-Watson test	1,78	
Inno2	BoardSNL	-0,23	-2,67	0,00
Inno2	EduSq	0,71	22,66	0,00
Inno2	Busyness	-0,34	-14,05	0,00
Pseudo R^2	0,19	Durbin-Watson test	1,86	

Table 5. Effect of board of directors characteristics and innovation on accounting-based performance (Gross profit margin) (N=393)

Dependent variables	Regression coefficients	t-value	Significance
BoardSsq	-0,02	-3,22	0,00
BoardS	42,98	2,67	0,01
EduSq	-0,01	-1,64	0,10
Edu	0,02	1,85	0,07
Gender	0,11	1,54	0,10
Busyness	-0,03	-5,04	0,00
Beta	-0,09	-2,77	0,01
MarktCapLog	0,11	5,79	0,00
TotalALog	-0,13	-6,87	0,00
AgeNL	-0,03	-5,01	0,00
Age	13,52	4,12	0,00
Agesq	12,23	4,13	0,00
Inno1	0,14	2,52	0,01
MVBV	0,07	1,58	0,10
Pseudo R^2	0,35	Durbin-Watson test	1,87

Table 6 highlights that market capitalization of firms, sales revenue, busyness of directors, non-linear value of education (squared), and Inno2 variable positively affect the market-based performance (market-to-book value ratio). Similarly, book value of firms (non-linear), gross profit margin, age of directors, and Inno1 variable negatively affect the market based performance measure of firms.

Table 7 highlights that education of directors, book value of firms, proportion of women directors on boards and busyness of directors positively affect the market risk exposure of firms, whereas, board size, market capitalization of firms, gross profit margin and age of directors negatively affect the same. Interestingly, none of the two innovation variable have any impact on the market risk exposure of firms.

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Table 6. Effect of board of directors characteristics and innovation on market-based performance (market-to-book value ratio) (N=393)

Dependent variables	Regression coefficients	t-value	Significance
TotalALog	-1,83	-16,83	0,00
MarktCapLog	1,01	7,67	0,00
MarketCap	0,01	4,15	0,00
Sales	0,01	2,81	0,01
GrossP	-0,01	-2,20	0,03
Busyness	0,06	1,50	0,10
Age	-2,86	-1,35	0,10
Agesq	-2,59	-1,36	0,10
EduSq	0,001	5,276	0,00
EducationNL	-0,76	-4,10	0,00
Inno2	0,80	6,94	0,00
Inno1	-0,06	-1,49	0,10
Pseudo R^2	0,42	Durbin-Watson test	1,77

Table 7. Effect of board of directors characteristics and innovation on the systematic risk (beta coefficient) (N=393)

Dependent variables	Regression coefficients	t-value	Significance
BoardSsq	-0,01	-6,34	0,00
BoardSNL	-0,83	-6,41	0,00
Edu	0,01	4,95	0,00
EducationNL	0,33	1,77	0,08
MarketCap	-0,01	-5,21	0,00
TotalALog	0,06	4,53	0,00
Gender	0,11	1,97	0,05
Busyness	0,02	2,72	0,01
GPmargin	-0,07	-1,81	0,07
AgeNL	-0,02	-3,29	0,00
Pseudo R^2	0,42	Durbin-Watson test	1,79

5. Conclusion

The principal argument of the current paper is that innovation is not exclusively exogenous, since the corporate leadership as represented by the board of directors play a pivotal role pertaining to the innovation activities of firms. The correlation analysis shows that Inno1 is negatively associated with the proportion of women on corporate boards, whereas, Inno2 variable is positively associated with firm board size. Similarly, business, and education of corporate directors and board size affect innovativeness of firms. Inno1 affects accounting performance positively, whereas the same affects market performance negatively. However, Inno2 affects market performance of firms positively. However, none of the two innovativeness variable impact market risk exposure of firms. The major contribution of the current paper is that it challenges the popular notion that there is a direct association between the firm level innovation and firm performance. The core argument of the paper is that before innovation start determining firm performance, it must be affected by the board of directors characteristics and the same phenomenon is empirically proved in the current paper.

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Organizational culture as a key factor of organizational success: Case of Borovo

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Abstract

This paper reflects on the theoretical basis and the possibility of defining the organizational climate as an important factor for the success of the company. Mainly the issue of the number of dimensions of the organizational climate is considered, as well as the issue of characteristics related to the climate of the company.
In this paper, authors analyze the organizational climate and the satisfaction of 610 Borovo dd employees, which enables a better understanding of employees' perceptions, identification of problem areas within which improvements are needed and highlighting aspects of the work that employees are satisfied with and which should be retained. The primary research was conducted on 610 employees by using the Organizational Climate Questionnaire that measures 12 dimensions of the organizational climate and contains a set of open questions for measuring qualitative indicators of the organizational climate.
The results show that employees, among the 12 measured dimensions of the organizational climate, most favorably perceive teamwork/decision-making in the team and their relationship with their superiors, while they are least satisfied with the compensations and career development opportunities in Borovo dd. There are no major differences in the perceived organizational climate within sectors. The implication of the results can be utilized in any organization, including universities. The authors' goal is to continue with this stream of research in educational institutions.

Keywords: *organizational climate, job satisfaction*

1. Introduction

Since the organizational climate refers to the perception of all aspects of the environment (events, procedures, rules and relationships) that are psychologically significant to the members of the organization, it represents one of the most important psychosocial factors for the successful functioning and development of the organization. Although organizational climate is a construct that scholars have been trying to explain for more than fifty years and place it in organizational theory, there is still no single definition of organizational climate [1,2]. First, the climate can be viewed from the perspective of the organization, that is, it can be considered as an attribute of the organization, in the sense that it is viewed as a kind of combination of attitudes, feelings and behavior that characterize life in the organization [3], or according to Wooldridge and Minksy climate is the perception of how much an organization meets the current expectations of its members [4,5]. In terms of measurement capabilities, it is evident that different authors define organizational culture indicators differently. They also not only define them differently, but there is no unambiguous agreement among the researchers on the number of indicators or factors or dimensions of the organizational climate. Some authors showed that climate is related to the performance of different sectors or departments in an organization, and especially to employee satisfaction [6].

The importance of examining the organizational climate is also borne out by the fact that numerous studies show that the process of organizational development, and thus the process of improving the effectiveness of the organization, begins with an analysis of the current situation within the company [7,8]. Also, organizational climate testing is a tool for management in improving organizational efficiency and optimal use of human resources. It could be said that the management of the future is actually the management of the organizational

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climate, where quality employees function at the optimum of their capabilities and thus represent high value to their organizations.

The purpose of this paper is to examine the organizational climate and employee satisfaction of Borovo d.d. company thereby providing a better understanding of employees' perceptions, identifying problem areas in which improvements are needed, and highlighting aspects of the job that employees are comfortable with and that should be retained. For the purpose of the work, an instrument for measuring organizational climate will be constructed, which will have a stronghold in the findings of previous research in the field of organizational climate research.

In addition to the main research goal, the specific goals of this paper are:

G1: Examine organizational climate in Borovo d.d. using the Twelve Dimensions of Employee Organizational Climate questionnaire as an instrument for collecting quantitative data on employees' organizational climate perception. The total sample of employees and all individual sectors of the company were surveyed.

G2: Clarify the resulting organizational climate structure by collecting additional qualitative data to open questions from the constructed questionnaire, which will give a better insight into the opinions and attitudes of employees regarding the organizational climate. In this way, employees can express their views on the organizational climate in areas that may not be adequately covered by the closed questions in the questionnaire.

G3: Examine the benefits and problem areas within which improvements are possible in order to get an overview of the most critical areas. Based on the analysis of problem areas, it is possible to make recommendations to management for improving and improving the organizational climate.

2. Review of the Literature

Previous research examining organizational climate shows that organizational climate influences basic organizational processes of communication, problem solving, decision making, conflict management, learning and motivation, efficiency and productivity of the organization, it's innovation and job satisfaction and other attitudes towards work employees [9].

Organizational climate is a psychological construct that was first mentioned in the literature in 1939, when Lewin, Lippitt, and White published a paper on the experimental creation of social climates in boys' groups, and from the very beginning this construct was developed with the aim of specifying environmental influences on motivation and behavior, and further studies by Gellerman in the 1960's [10,11]. Almost from the very introduction of the term climate, controversy has arisen over the question of whether climate is a characteristic of the organization itself (objectivism) that employees merely describe, or that climate is an individual's experience and as such exists only as employee cognition (subjectivism) [12]. Other authors thus assume that the cause of climate is most evident in management and organizational practices, while others argue that climate is due to the objective context and structure of the organization [13,14]. This division also meant different climate measurements, where some were based on objective, immediate measures such as delay or sickness, while others focused on questionnaire measures [15]. Although the development of climate measurement made more authors adhere to the subjectivist concept, there were also ideas that combined approaches, and so James and Jones considered that climate should be measured at the individual level, but since it is an organizational feature, these measures should aggregate and reduce to the organizational level [16]. More recently, the consensus has been accepted that the source of climate is psychological in origin, after Schneider and Reichers found that climate is more a consequence of person-environment interactions (organizational processes) and to a lesser extent organizational structures [17]. Also, while climate is based on the perceptions of individuals and as such is individual, these measures relate to the organizational context, which also makes the climate organizational [15].

Only a few serious examples of quantitative research on organizational climate have been reported in Croatia [e.g.18]. In the literature, sometimes the organizational climate is equated with the term organizational culture. There is no agreement among researchers as to whether these are two of the same constructs or are two separate constructs that need to be measured in different ways. Goodman and Svyantek used the Organizational Climate Questionnaire (OCQ) to operationalize the dimensions of organizational culture [19]. While this may seem paradoxical, other researchers such as Litwin and Stringer have used the same questionnaire to measure organizational climate [20].

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By reviewing the literature, it can be concluded that different authors define organizational culture indicators differently [15,16,21,22,23]. Also, not only do they differently define them, but there is no unambiguous agreement among the researchers about the number of indicators or factors or dimensions of the organizational climate [25,26,27,28]. For this reason, the authors decided to develop a questionnaire. The selection of the questionnaire is based on the most common topics covered by the organizational climate and employee satisfaction surveys, as well as by contemporary scientific research in the field of organizational climate measurement.

Organizational climate questionnaire used to test organizational climate in the company Borovo d.d. measures 12 dimensions of organizational climate and employee satisfaction (1. Job satisfaction, 2. Company structure, 3. Communication, 4. Decision making and teamwork, 5. Career development, 6. Relationship with immediate superior, 7. Relationship with the sector director, 8. Relationship with the Board, 9. Collegiate cohesion, 10. Working pressure, 11. Compensation, 12. Engagement). It was designed to examine the organizational climate of employees by experts in research methodology in the social sciences. The questionnaire contains a total of 81 questions. The main part of the questionnaire measures 12 dimensions of organizational climate and consists of 64 closed-ended questions answered by a Likert scale ranging from 1 to 5, with a score of 1 indicating - strongly disagree, 2 - mostly disagreeing. 3 - neither agree nor disagree, 4 - mostly agree, 5 - completely agree.

Additionally, 5 open-ended questions were included in the questionnaire, through which the respondents were free to express their views and opinions on the company and the positive sides of the company and possible dissatisfaction with the company. An example of open-ended questions is, "What are you most satisfied within the company?", "If you had a meeting with the CEO, what would you say "and " How would you have to describe the climate / atmosphere / condition of the company in 3 words - what description would you choose? "

Also, 12 questions on general information about the respondent and about the company in general (sector, department, total work experience, work experience in the company, gender, age, qualification, type of employment, function) are also an integral part of the questionnaire.

The authors aimed to address the following 3 hypotheses.

Hypothesis 1: Employees among the 12 measured dimensions of organizational climate will most positively perceive teamwork and team decision-making, while least satisfied will be with compensation and career development opportunities at Borovo d.d.

Hypothesis 2: Employee attitudes and opinions reflected in open questionnaire questions will support the results obtained through quantitative analysis of data on the organizational climate questionnaire.

Hypothesis 3: The most positive perceived dimensions (“strengths”) in the company will be decision making and teamwork, while the least will be compensation, career development and work pressure.

3. Methods

3.1. Participants

The survey was conducted on a total of 610 of the planned 712 employees of Borovo d.d. and a return of 86% of respondents1. The average age of employees is 38.1 years (sd = 9.9), 74% of employees are female and 26% are male. In terms of education, most employees have completed secondary education (67%) and higher (9%) or university degree (19%). According to the sample, the average length of service in Borovo employees d.d. is 11.5 years, with the largest group of those between 10-20 years of service. The employee with an indefinite contract is 80% and four fifths of the company are employees by function, while the remaining fifth is divided into managers, executives and directors.

4. Results

Given that the sample covers 86% of the population of Borovo employees, the differences shown do not need to be statistically verified because they reflect the population values for Borovo employees. That is, the data collected represent the population-representative and the differences obtained are also the real differences in the population of employees Borovo d.d.

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	M	sd	N	Min	Max	alfa
Job satisfaction	3.29	0.865	668	1	5	0.897
Company structure	3.49	0.9	668	1	5	0.869
Communication	3.04	0.951	666	1	5	0.891
Decision making and team work	3.75	0.824	666	1	5	0.82
Career development	2.82	1.03	666	1	5	0.882
Relationship with the intermediate supervisor	3.68	1.057	653	1	5	0.971
Relationship with the sector director	3.43	1.135	635	1	5	0.976
Relationship with the management	3.03	1.101	652	1	5	0.948
Collegiate cohesion	3.04	0.773	650	1	5	0.561
Work pressure	3.54	0.95	646	1	5	0.815
Compensation	2.76	1.082	647	1	5	0.876
Engagement	3.41	0.926	646	1	5	0.788

Descriptive indicators of the responses obtained were calculated for each of the dimensions of the organizational climate together with the basic metric indicators of the individual measures (alpha reliability coefficients).

Table 1: Descriptive statistics for the twelve measured dimensions

Legend:
M… average value
sd… standard deviation
N… number of employees in the sample
Min, Max… minimum and maximum
alpha score… dimension reliability

According to the profile, company estimates show that on average, estimates gravitate around the value of 3 (neither agree nor disagree) and fall below 2.76 or exceed 3.75. Average estimates ≈ 3 indicate a more conservative expression of employee opinion or lack of opinion, so we will focus on the dimensions in which the estimates are highest or lowest.

Accordingly, employees perceived teamwork / decision making in the team most positively, and their relationship with their superiors, while being least satisfied with the compensation and career development opportunities at Borovo d.d. The perception of greater work pressure is also more pronounced. It is important to note that due to the pressure and fear of not being "resented", the assessments of the immediate superiors / directors of the sector are strongly influenced by giving socially desirable answers. Thus, employees are often more inclined to make larger judgments on these dimensions. Management relations estimates are on average 3, which indicates that most employees do not have enough information to make judgments about the Board's performance. Due to the above, such average grade does not reflect so much the average attitude towards the Management Board, but rather goes towards non-existent communication / representation of the Management Board with the employees of certain departments.

High alpha scores indicating the internal consistency of claims within a given dimension (≈0.80) indicate that the claims of dimensions questionnaires are well selected and may be summed up and interpreted as overall dimensions. A slightly lower value in Collegiate Cohesion indicates that the claims are somewhat more divergent, but still satisfactory. The greatest differences between employees' estimates were recorded with the Relationship with the Sector Director dimension, and the largest similarities were with the College Cohesion dimension. In other words, since any alpha> 0.7 is generally considered to indicate satisfactory reliability, the metric reliability characteristics of the questionnaire used have proven to be more than satisfactory.

When asked what they were most satisfied with, 120 employees answered that they were satisfied with the following: their own job, opportunities (experience, knowledge), working hours and, to a certain extent, equipment (work clothes). These answers can be categorized as "work conditions".

In addition, 180 employees stated that they were satisfied with their relations with their colleagues, relations with their (immediate) superiors and communication in general. These answers can be categorized into the category of satisfaction with interpersonal relationships in the company Borovo d.d.

An additional 230 employees stated that they were not satisfied with anything, while the remaining employees did not answer this question.

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When asked what most dissatisfied 259 employees gave answers that can be classified in the category of working conditions. Employees cite the most dissatisfaction with the organization of work (pressure, stress, lack of people, poor organization of business processes ...), working hours (overtime, staying longer than prescribed, vacations), remuneration (no effort is recognized and work is not appreciated)), inability to move forward, reduction of various benefits (parking, team building, education, transportation ...), work equipment, organizational climate, inability to win contracts indefinitely and in general working environment (cold, noise, etc.)

Furthermore, 154 employees provided an answer that could be classified as interpersonal. This category includes answers that employees are dissatisfied with: superior-employee relations, peer relations, enterprise injustice (nepotism, privileged employees / departments, inequality), department-sector relations and communication, and communication in general.

In addition, 352 employees are also a great source of dissatisfaction with salary levels. An additional 44 employees said they were not happy with anything.

When asked "When would you have to describe the climate / atmosphere / state of the company in 3 words - what description would you choose?" 66.6% of employees gave a negative description of the working climate, while 33.4% gave a positive description. This question was answered by 83.4% of the employees who answered the questionnaire, which is 72% of the total planned number of employees.

To try to explain job satisfaction based on organizational climate dimensions, we conducted a regression analysis with 12 dimensions of organizational climate as predictors and job satisfaction as a criterion (please see table below).

	Beta	**p**
Engagement	**,249**	,000
Communication	**,210**	,000
Decision making and team work	**,152**	,000
Compensation	**,112**	,000
Relationship with the sector director	**,092**	,005
Relationship with the intermediate supervisor	**,090**	,003
Career development	,064	,099
Relationship with the Bord	,041	,278
Collegiate cohesion	,015	,577
Work pressure	-,044	,036
R	**0,88***	,000
R2	0,77	

p<0,01

Table 2: Regression analysis of explanations for job satisfaction

The results of the regression analysis show a high percentage of explained variance of the dependent variable ($R = 0.77$; $p < 0.01$), which means that more than half (59.3%) of the total variance of job satisfaction can be explained by the organizational climate dimensions. The best predictor of job satisfaction is engagement, then communication, then decision making and teamwork, and then compensation. Other dimensions of organizational climate did not prove to be significant predictors of overall job satisfaction.

5. Conclusion

Although there are numerous definitions of organizational climate, fundamentally, organizational climate is broadly defined as the perception of formal and informal organizational policies, practices, and procedures [17]. It is about employees' perceptions, their experience of the organization in which they work, in terms of practices, policies, procedures, routines and rewards, with the focus of the climate being on the organizational

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situation and its relation to employee perceptions, feelings and behavior [16]. Thus, a climate measure is a perceptual measure, intended to describe rather than evaluate the organizational environment.

According to the estimates collected on all Borovo employees, employees among the 12 measured dimensions of organizational climate most positively perceive teamwork / decision making in the team and their relationship with their superiors, while they are least satisfied with the compensation and career development opportunities in Borovo d.d. The perception of greater work pressure is also more pronounced. Estimates do not exceed the average estimate of 3.75 (mostly agreement) nor do they fall below 2.76 (mainly agreement).

When comparing all sectors across the 12 dimensions of the organizational climate, the same general trend of estimates is observed as in the total sample, even though different sectors and demographics results were not presented in this paper.

Regression analysis showed that the examined dimensions of organizational climate explain just over half of the variance of job satisfaction, with the best predictors of job satisfaction: engagement, communication, decision making and teamwork, and compensation.

As the most positively perceived dimensions ("strengths") in the company we can distinguish decision making and teamwork and relationship with immediate superiors. Main aspects of the "dissatisfactions" that have been repeated most often across sectors would be in the order of compensation, career development and work pressure.

Given the perceived strengths and weaknesses of the company by employees, it is clear that employees are most satisfied with their relationships with colleagues. On the other hand, they are most dissatisfied with the working conditions, with the aforementioned being mostly related to the organization of work and inappropriate working hours, which cause great pressure and stress for Borovo employees.

In order to be fair, limitations of the paper need to be mentioned as well. Future papers might include more results as much more data was collected. This paper provides an insight into organization climate in Borovo dd. but not the whole story. Furthermore, even though certain authors view the university organizational culture behaving the same way as other organizations, some specificities in universities can be observed [29,30]. The authors intend to further research the specificities of universities. The authors further acknowledge, that variables could be latent and reflective, and plan to explore covariance-based structural equation modelling (CB-SEM).

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New Teaching and assessment methods I

Session chair: Shab Hundal

Remodeling the Financial Education: Introducing CFA Research Challenge

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Abstract

The current focus in financial education research is on financial literacy, and the research stream of new teaching methods is growing. Nowadays, finance is a less abstract and more engaging study, giving students a practical set of knowledge and skills. In this context, we evidence the changes in mandatory curricula, but elective projects are neglected in the literature. With this study, we explore a voluntary competition project for students in the field of finance, the CFA Research Challenge. The study explains as to what are the experiences of faculty advisors in the competition project and offers advice for overcoming the challenges faced. To gather data, interviews with faculty advisers were conducted. The interviews were transcribed and analyzed. This data leads to the following six themes: decision to involve, expectations versus reality, frustrations and obstacles, changing students' perceptions, organizational issues and rewards. Themes will be useful for understanding the optimal timeframe of a project, student team composition and benefits for faculty advisors and students.

Keywords: *financial education, students, CFA research challenge, competition, faculty advisor, finance*

1. Introduction

Modern higher education institutions (HEIs) are becoming more like modern businesses and are in a constant need to compete globally. The main challenge is to make students competitive in the business environment [1]. Keeping track of industry development, HEIs seek for new topics, update curricula, and reinforce teaching methods. A goal is to align perspectives for students' future success. Still, the majority of faculty members observe students through their grades, leaving it up to students to work on their own motivational and behavioral factors to affect their academic excellence [2], [3]. Considering the pivotal role of HEIs faculty in the students' educational process, there are numerous opportunities to affect the students' academic excellence [4], [5]. Particularly with education in the field of finance, which is traditionally one of the most challenging areas of teaching in economics and management-oriented HEIs.

Research on financial education mainly focused on financial literacy, whereas is assessed the individuals' behavior and attitudes towards consumption and savings [6]–[12]. When it comes to the more specific financial education curriculum, studies again focused on improving student financial literacy [13]. In recent studies we can find some advances in educational research devoted to finance: flipped classroom concept used to enhance active learning [14]–[16]; teaching finance concepts in a long-distance learning environment with the use of online technology [17]–[19]; gamification in teaching finance [20]–[23]; and specialized software use in teaching finance [24]–[26]. The majority of those studies focused on engagement and learning through new methods of teaching, showing that the effectiveness of teaching finance increased with the changes in classroom teaching towards new models. Still, all studies reflect the changes in mandatory curricula and its assessment. When it comes to elective projects in finance offered to students, with a particular reference to competition programs in finance, we do not have any evidences in the current literature.

Thus, the purpose of this study was to explore a voluntary competition project for students in the field of finance, the CFA Research Challenge (CFA RC). The study also sought an explanation as to what are the experiences of faculty advisors in the CFA RC.

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2. Financial Education in Croatia

Financial education in Croatia lies mainly in the brick and mortar HEIs. A number of institutions offer some financial management education enclosed in their study curriculum. Croatia has 1,237 university-level programs out of which an undergraduate level financial management education (full or partial) is offered by 12 institutions. On the other hand, among 177 undergraduate professional programs, 22 institutions offer some financial management studies in their curriculum. The average cost of such education depends on each institution. Usually, when it comes to university level programs, tuition fees range from 0 – 15,000.00 HRK, while undergraduate professional programs range from 0 – 200,000.00 HRK.

Professional charters, such as Chartered Financial Analyst (CFA), Association of Chartered Certified Accountants (ACCA), or Chartered Alternative Investment Analyst (CAIA), lately are almost a necessity for earning a relevant degree for specific knowledge or set of skills in an area of financial management. All mentioned above require at least a bachelor's degree. Additionally, they are valued credentials, accepted worldwide and bring credible proof of knowledge for its holders. Such accreditations increase the odds of being employed. For instance, only 4% of CFA charter holders are unemployed at any time. Rates differ between countries (Russia 5%, Germany 2%). According to the CFA Candidate Survey, 78% of candidates are already employed, full-time or part-time. Regarding the employment outlook, 51% of candidates expect an increase in employment opportunities in the next 12 months. CFA Society Croatia currently counts 68 charter holders and more than 200 candidates. The vast majority of charter holders have a bachelor's degree from university undergraduate programs (94%). 3% of charter holders have a background in undergraduate professional programs [27].

Connecting real-life practical tasks as presented in the CFA RC and theoretical knowledge is sometimes challenging. Students usually lack practical, real-life examples that would provide an in-depth understanding of the subject. This is mainly as study cases offered in the HEIs' curriculum are traditionally simplified versions that do not occur in an actual business environment.

3. CFA Research Challenge as an Addition to Formal Education in Finance

The CFA RC is an international student competition in which students create a research report of a publicly-traded company given to them by their local CFA Society. The competition started in 2007, and the first winner was Babson College representing CFA Society Boston. Students are divided into teams, guided by faculty and industry advisor. Each CFA RC season leverages the efforts of over 150 CFA member societies, 4,000 member volunteers, and more than 6,000 students from over 1,000 universities. The first level is a local competition which is usually organized by the local CFA Society. Students have a task to write a written report on the subject company and make an oral presentation which lasts 10 minutes and afterword they need to participate in a question and answers session in front of a judging panel. The winning team will have the highest combined score based on the written report results (weighting 50%) and the presentation results (weighting the rest 50%). There are numerous teams from different universities, and the winner goes to the regional competition. There is a similar process at the regional level, and the winner on that level goes to the global finals [28].

CFA Institute pays special attention to ethical consideration of the process. There are many requirements, but they are the same for all participants. Teams must consist of no fewer than three and no more than five members. There are strict rules regarding intellectual property and plagiarism, faculty, and industry advisors' involvement and contact with a subject company [28].

Local-level competition usually starts in October, and the global final is in April/May. During the CFA RC, students get the opportunity to put theoretical knowledge into practice. For instance, they apply Porter's five forces and SWOT analysis for a better understanding of the subject company and industry. They forecast financial statements (i.e., P&L, balance sheet, cash flow), and calculate an intrinsic value based on the most sophisticated financial models. Also, they evaluate the risk probabilities with Monte Carlo and simulation analysis. Networking is another benefit of the CFA RC. It is very often that students immediately get a job offer from the top companies [27], [28].

Universities which achieve good results, greatly benefit from international recognition and interest from international students. Some universities which participate in CFA RC latter become CFA Affiliated University.

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To become the CFA Affiliated University significant portion of the curriculum should be aligned with the CFA Program Candidate Body of Knowledge (CBOK) [28].

There are several steps for the preparation of a written report. The faculty and industry advisors delegate authority to students for specific parts of the report. Usually, each of the students has a specific role, e.g., prepare business overview, industry analysis, competitive positioning, risk assessment, financial modeling, and valuation. After the submission of the written report, students develop the final presentation. The presentation consists of the essential parts of the written report, and it should be further proof of the investment case [28]. Given the complexity of the whole process, advisors need to overcome many challenges. The first challenge is to keep their students motivated when they are faced with challenging tasks. The second challenge is to keep the team together, and the third challenge is to share their knowledge in a short period.

4. Methods

In this qualitative study, we interviewed faculty advisors to get an insight into what was the CFA RC project flow and what were the common challenges in the project. The study we organized around three main research questions: (RQ1) What were the main reasons for faculty advisors to start with CFA RC project?, (RQ2) How do faculty advisors perceive the benefits of the project (both for themselves and reflecting to students)?, (RQ3) How do faculty advisors perceive the obstacles in the project (both for themselves and reflecting to students)?

4.1. Sample Selection

We used purposeful sampling to select participants to help us the best to understand the problem and the answer our research questions [29]–[31]. The criteria used to select participants was to have the role of faculty advisor within the CFA RC project in the past. This criteria automatically referred to CFA RC criteria for faculty advisors whereas faculty advisors (a) must be currently employed as a faculty member by the team's sponsoring HEIs, (b) be selected by the team's HEIs, (c) is responsible to provide guidance and direction to the team throughout all levels of competition, (d) may not conduct any analysis for the team's written report or presentation or participate in the presentation, (e) may not contribute any research or content to either the written report other than providing guidance, directions, suggestions and feedback, (f) may not spend more than ten hours with the team before submitting the written report, and (g) may contribute an additional three hours for each local, regional or global final in which team competes [28]. The faculty advisors in this study ranged in age from 34 – 40 years. Both work as lecturers at Zagreb School of Economics and Management (ZSEM). Both have economics and management background and with regards to educational attainment both have finished graduate studies in finance and banking, while one is a doctoral candidate in the field of economics and business. Both have industry experience before joining academia. Even if this makes the rather small sample, those were the only faculty advisors involved in this project in Croatia.

4.2. Data Collection and Analysis

Before conducting interviews, we developed an interview protocol for asking questions [31], [32]. We conducted face-to-face semi-structured interviews as the primary data collection tool in this study as we could not directly observe participants due to the time frame of the CFA RC project. Thus, our participants provided historical information. Interviews were held in the premises of ZSEM and lasted for approximately one hour per interview. Interviews were voice recorded. We transcribed the interviews and thus prepared the data for analysis. The second step involved coding of all data where we organized our qualitative data by bracketing chunks and wrote specific words representing categories in the document margins. We coded data in themes with specific descriptions. The last step was interrelating themes and interpreting the meaning of themes.

5. Research Findings

The data indicated that faculty advisors share many everyday experiences in the CFA RC project. As patterns in the data emerge, we identify five themes that capture the essence of advisors' experiences (Figure 1).

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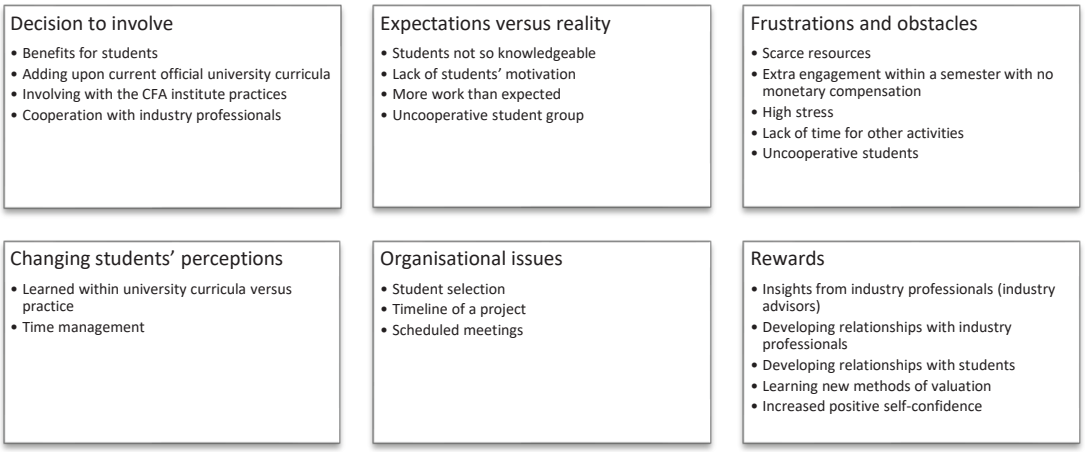
Figure 1. Themes from qualitative interviews with faculty advisors



5.1. Decision to Involve

Benefits for students and adding upon current official HEI curricula is the first and most important reason that impacted the decision to involve in the CFA RC. Both advisors emphasized that there is currently a lack of practical insights given to the best students that are willing to learn more in the corporate finance surrounding. Even if current HEI curricula frames around a full load of corporate finance topics, there is not enough time to give them a real practical experience. Cooperation with industry professionals both faculty advisors emphasized as important. Though one faculty advisor pointed out the cooperation to be beneficial not only for students but also for advisors per se.

One faculty advisor also indicated the involvement with the CFA institute practices being one of the reasons to involve. It gives the HEI a competitive advantage in applying for CFA scholarships and developing an affiliated HEI curriculum. The other thing in engaging with the CFA institute practices is also the visibility of the HEI program in the media as faculty advisor expects that media coverage for this project will be part of marketing practices for HEIs. The last thing in involving with CFA institute practices is allowing faculty advisors to change the curricula in consecutive years, making it more aligned with financial practices and requirements. This is needed for making future students more adapted for ongoing changes and challenges in financial (investment) practice through their undergraduate and graduate studies.

5.2. Expectations Versus Reality

None of the faculty advisors said that the real flow of the project met their expectations. Even if there was a limited timeframe for advising students, faculty advisors emphasized that they needed to spend extra time to prepare for those limited advisory sessions. The main problem was that the students were not so knowledgeable. Even if some teams had students that never took corporate finance courses, those were expected to study more and to ask more. Still, with students that passed three major courses in finance at the undergraduate study (Financial Institutions and Markets, Corporate Finance 1 and Corporate Finance 2), their knowledge seamed to vanish. Students usually had problems with combining knowledge in specific areas of project development (i.e. understanding macro- and microenvironment of the observed industry, understanding the cost of debt and equity, developing the weighted average cost of capital, calculating terminal value). As one faculty advisor added: "This was more problematic for students that took financial courses a couple of months or years ago, and especially with those that had good grades at corporate finance courses". The reasoning for this given by the same faculty advisor might lie in the "learning for grades" concept that is common for HEI students.

Followed by the lack of knowledge in specific corporate valuation field, seemed to impact the students' motivation. This was the general conclusion from both faculty advisors. Both faculty advisors emphasized that during the stages of project introduction and company's presentation meeting, there was generally no particular motivation shown by students. At the company's presentation meeting students were extremely motivated, and

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the motivation was kept at a high level for the following two weeks. Still, from then by the end of a project, students' motivation kept falling.

One faculty advisor drew a line with the other students' obligations at the HEI. Even if students did participate in this comprehensive challenge that required their superficial efforts, they maintained their full-time student status. Hence, they had to take all mid-term exams every week for all their semester courses. As the semester was approaching the end, the level of motivation was low. Even if both faculty advisors expected that students would take winter break time (January) to work more intensively on a project, this was not the case. One faculty advisor also emphasized that a couple of years ago, one team decided to work on a project just in January. This team ended in the last place on a local competition as, even if they thought that one or two months would be enough to deliver a final project, it was just not sustainable. Both faculty advisors concluded that one of the critical criteria for completing the project is dedication through continuous work on a project.

From the side of faculty advisors', they both were disappointed with a load of work required. Even if the CFA society specified the workload per hour for faculty advisors, in real practice, it could not be countable. One faculty advisor emphasized that teams who are more knowledgeable, require less assistance from faculty advisors. On the other hand, teams who had less knowledge needed more help. As there is a limitation in terms of contact hours with students, faculty advisors had to have materials prepared for students. This mainly meant selecting reading materials for basic corporate valuation concepts and focusing on the meetings. This faculty advisor participated in a project from the very beginning of CFA RC at ZSEM and experienced multiple projects with students.

5.3. Frustrations and Obstacles

The major frustration in CFA RC project, as set out by both faculty advisors, were scarce resource provided by the company that was the unit of observation in the project. Usually, the company's data are available online, but in the case of valuing financial institutions (as was the case in 2019), the data were scrutinized. As stated by both faculty advisors, this placed students in a different competitive situation with regards to other teams on a regional level of a CFA RC. Valuing financial institutions can hardly be done without additional data on the company, and even if that is the case, both faculty advisors emphasized that the company should be more opened in sharing their data with students.

The other element that influenced frustrations for faculty advisors was the extra engagement within an academic semester with no monetary compensation. The project is entirely voluntary, but with a full load of classes, schools should be more opened to some compensation for the faculty advisors. One faculty advisor referred to covered trip expenses as part of the remuneration for workload within the CFA RC project. This is an acceptable form of recognizing the faculty advisors' efforts and should also be used in the following years of the project. Still, one faculty advisor emphasized that initially, there was a problem with finding faculty advisors. People generally assume that the project is a full load and there will be a lack of time for other activities. As stated by both faculty advisors, this is true, but both emphasized the rewarding concept of the project when everything goes well.

One faculty advisor emphasized that one of the obstacles is high stress associated with the project. It is because students are uncooperative or are not following the given instructions. Other faculty advisor concluded that uncooperative students could be teamed in two categories: a) students who are incredibly knowledgeable and believe that everything they do is the right thing and deny taking any pieces of advice from faculty advisor; and b) unmotivated students. An unmotivated team of students usually did not show up in meetings, and this resulted in high stress from a faculty advisors' side.

5.4. Changing Students' Perceptions

One of the most considerable upsides of the CFA RC project, as outlined by faculty advisors, was that students changed their perceptions about corporate valuation. What they learned in their previous financial courses had a significant impact on the outcome for students who participated (and previously had major financial courses), as stated by faculty advisors. Faculty advisors advocate the need for more practical insights for other students as it seems that student teams ts within the competition are the only ones who will have the opportunity to change their perception of finance in the early stages of their professional career (i.e., throughout their studies). One faculty advisor pointed out that this might be a career challenge for students, as the majority of them who ended

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the project successfully, decided to attend additional educational seminars or workshops in the field of finance. Other faculty advisor said that the project has also changed students' perceptions regarding time management. What students previously thought is mainstream in academic culture, doing things "ad hoc", is not sustainable in practice, as shown through this project. Thus, both faculty advisors agreed that time management and practical insights were the critical movements in changing student's perceptions of the financial industry.

5.5. Organizational Issues

Key drivers of organizational issues in the CFA RC project, as stated by our respondents were student selection, a timeline of a project, and scheduled meetings. Firstly, the faculty advisors were never fully satisfied with their teams. More experienced faculty advisor implemented several strategies when forming student teams (i.e. student selection). The first strategy was to announce the project and invite all interested students for a meeting. After an initial meeting, students with the highest grades were selected. This yielded a team that never handed in a project as students were more focused on grades in other courses than on the project. The second strategy was to leave it up to students to form two teams on their own. When faculty advisors fully initiated the student team, they had issues with students who invited their colleagues not because of their knowledge or abilities, but because of the social networks. This also yielded a negative team result at the end of the project as faculty advisors would work only with one or two students, while others were dealing with other courses. The third strategy was to invite the student population to participate in a project, then to select the ones who were sufficiently interested in a project, had good grades from previous courses or had an interest in finance. This opened the opportunity for students who did not have financial courses to become part of the CFA RC team. Then, faculty advisors mixed students from both graduate and undergraduate levels, keeping an eye on gender equality and knowledge level. One faculty advisor emphasized that this was the best strategy for student selection. To validate this strategy, one additional year of the CFA RC has to pass where the strategy could be tested. Winning teams on a local level were formed in this manner, and both faculty advisors emphasized that there has to be a refined mixture of students in competition teams.

The timeline of the project was one of the major organizational issues for students and faculty advisors. The project starts at the mid-semester for undergraduate students, and the majority of efforts are required by the end of the semester when students also have other course obligations. As stated by faculty advisors, this is problematic as a project should be finished around the end of February and mid-March when students are tired and are entering a new academic semester. Graduate students did not have this problem as their courses are on a modular basis so they can devote more time to a project. The project timeline is incompatible with the academic calendar as faculty advisors have a full load of final exams and mid-term exams in the same period. Overcoming this problem, as emphasized by one faculty advisor, was to search for replacements in given periods, but other faculty members did not appreciate this at the HEI. One faculty advisor also provided a solution for this for the HEI's management team. The idea is to decrease an academic workload for faculty advisors given the hours they devote to the CFA RC project.

Scheduled meetings are also one of the organizational issues. Students and their faculty advisors do not have the same schedule. As pointed out by faculty advisors, it was almost impossible to find the perfect fit. One faculty advisor advised that meetings, as done in the previous CFA RC project (i.e., in 2019), should be done early in the morning when everyone can attend. Thus, meetings took place very early in the morning, before official working hours.

5.6. Rewards

There are multiple rewards for faculty advisors we gained from given interviews. First, there is a great insight provided by industry professionals in the project, where both students and faculty advisors benefit. It is essential to keep track of current investment practices to offer better backup for other students in finance (not only those part of the CFA RC teams). This increased the knowledge of new methods and data sources for faculty advisors. Also, as stated by both faculty advisors, this is a project that develops a relationship with industry professionals. It is essential for future projects within or outside curricula. Industry professionals could be invited as guest lecturers or become members of for-profit projects. One faculty advisor emphasized the great networking with students, where they have the opportunity to follow the development of a single student and to be sure to recommend it in the future. This faculty advisor also said: *"Sometimes it is tough to understand student's*

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aspirations. Once they become part of the team, you can see how they really "feel" the finance. Thus, it is easier for me to recommend this student in the future for some excellent job positions or continuance of their studies."

One faculty advisor emphasized the concept of increased positive self-confidence when the team proceeds to the regional challenge. It is a rewarding moment for both students and faculty advisors. For faculty advisors, it means that *"we taught them well"* as outlined by the faculty advisor. On the other side, both faculty advisors emphasized that self-confidence increased for students who proceeded to the regional level of competition. This also was a rewarding moment for faculty advisors, as after a couple of months struggle with the project, advancing to the next level of competition was the satisfying moment for both – faculty advisors and students.

6. Discussion

This study added new information to the growing body of literature on adding new strategies of teaching finance, and to improving current curricula. It also illustrates the usefulness of the industry-related projects in studying finance. One distinct advantage of the CFA RC project, through the eyes of faculty advisors, is to provide an elective element for students that are motivated to learn more and see the benefits for the project. CFA RC, as a competition project, is one of the leading forces for bridging the theory-practice gap in corporate finance teaching. Incorporating CFA RC within an elective curriculum is an advantage in providing an in-depth look at industry-related issues of corporate valuation. When the project is successfully finished, it has positive implications for faculty advisers, increasing their self-confidence, providing new networking opportunities, and learning about new investment practices. If we advocate that HEI's full-time faculty is not focused on the finance practice, this increases their competitiveness in the potential industry-related job seeking. Still, faculty members involved in CFA RC need to understand the full scope of the project's challenges.

This study focused on the faculty advisors who were part of CFA RC in the previous years. This is an advantage in providing an in-depth look at a specific population, but also the main limitation of our study because of a small sample size. Unfortunately, the CFA RC participating schools in Croatia to our knowledge are only two: ZSEM and Faculty of Economics and Business (FEB), University of Zagreb. Two schools do not compete in the same vertical. ZSEM participates in the local CFA RC provided by CFA Society Slovenia, and FEB is part of the CFA RC within CFA Society Hungary. There is no clear evidence why two schools from the same country do not participate in the same vertical of challenge. Still, with the newly formed CFA Society Croatia, we expect that there will be more schools part of the new structure of the local problem in the upcoming years. In that sense, we could include more faculty advisors in this study and make our sample size adequate. As CFA RC official rules limit two student teams per school, we expect that in a best-case scenario, we could have min. 209 faculty advisors (if all institutions offering study programs in economics participate with one team) [28]. This would also be a good sample for explanatory mixed methods study where we could first survey faculty advisors on the themes we discovered in this study, and then seek for additional explanations through the qualitative stage.

The second limitation of our study refers again to our sample. We gained insights from faculty advisors, but we did not include industry advisors. In future studies, it would be beneficial to see what industry advisors have to say. How do the industry advisors view their role in the CFA RC? What were the main challenges they faced? Additionally, to get a broader picture, students should also be included in future studies. From the narrations of faculty advisors, we partially saw the main challenges students faced, but maybe students have a different opinion on the whole project. Some questions remain unanswered like "How do students that participated in CFA RC describe their decision to start with the CFA RC competition?", "How do they describe their CFA RC experience?", and "How does participation in CFA RC change these student's personal lives and professional future?"

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Introducing the research-based teaching method in the international business bachelor's degree program

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Abstract

Research is an integral part of higher education, specifically international business (IB) higher education. This paper has highlighted the significance of research for higher education from a variety of perspectives, namely, recognition bodies, policymakers, industry and society in general. Thus, there is an increasing pressure on teachers at higher education institutions to increase the research output. This paper provides first a brief overview of learning approaches and methods and coins the research-based teaching method. Then it describes the implementation of research-based teaching model at JAMK School of Business. Our findings show that research-based teaching method proves to be beneficial for all stakeholders, as it results in high-quality theses, award-winning conference papers and journal publications. Based on obtained results, authors recommend academicians, scholars and policymakers to promote research-based teaching method. Lastly, the authors discuss the limitations and call for further research to improve the research-based teaching method.

Keywords: *International Business (IB), Higher education, Research-based teaching, JAMK University of Applied Sciences*.

1. Introduction

History of humanity shows that research has developed and evolved the knowledge in all fields of life from artistic disciplines, such as dance and music, to rocket science of reaching Mars. It is safe to say that research is the mother of all knowledge acquired by a human being. The significance of research is unquestionable regardless of vocation, trade and education domain. Given the significance of research, policymakers have set the policies to promote research in every institution. Specifically, research is an integral component of degree awarding institutions (DAI) across the globe. Research output is one of the key performance indicators of higher education institutions. There are several organizations, which rank higher education institutions across the world. The most well-known ranking systems include the QS World University Rankings, Times Higher Education World University Rankings, and the Academic Ranking of World Universities (ARWU) [1]. Almost all ranking systems put greater weight on research activities of higher education institutions. For instance, 'The Times Higher Education World University Rankings' has set a massive 60% weight (research 30% and research citations 30%) on research activity [2]. It is not a secret that the higher the university ranking the higher the probability of attracting talented students, faculty members and researchers. Similarly, the accreditation of higher education by third parties is an essential tool for developing competitive advantage. Certification helps higher education institutions to improve their process and quality of education, thus to attract good students. Also, a degree from accredited schools helps the student to get better employment opportunities. Employers can easily recognize student competence based on their educational institution and accreditations. For example, there are several accreditations for a business school such as Association to Advance Collegiate Schools of Business (AACSB), International Accreditation Council for Business Education (IACBE), and European Foundation for Management Development (EFMD), to mention a few [3]. Like university ranking organizations, accreditation organizations of business schools also emphasize the research activity as one of the key performance indicators in their assessment.

Policymakers across the globe genuinely understand the significance of ranking and accreditations of higher education institutions in the economic and social prominence of their education system in the local and global

context. In Europe, research is at the forefront of educational institutions. In Finland, the Ministry of Education and Culture regulates higher education, and it has included research activity of higher educational institutions as a vital component for securing finances [4]. As a result, faculty members of academic and applied science universities are under increasing pressure to maintain the research output beside their teaching and other administrative tasks. Similarly, research is one of the critical components for degree programs in higher education institutions. For instance, a thesis is compulsory to obtain bachelor's and master's degree in Europe and other advanced countries [4]. To sum all, research is a necessary component for all stakeholders in the higher education system and the engine of new knowledge, which in turn contributes to the social and economic wellbeing of societies and humanity. As such, the core question is "*how to enhance student learning and increase research outputs by integrating research into the curriculum*".

This paper addresses this question by proposing an innovative pedagogical approach that incorporates research into learning in a way that benefits all stakeholders. As discussed earlier, research is equally crucial for education policymakers, educational institutions, teachers, students and society. The authors argue that incorporating research in learning creates win-win solutions for all stakeholders mentioned above. It helps teachers to produce research to meet the demands of new knowledge creation and enhance the institutional and national research output. The generated knowledge could be a vital source for teaching and learning in forthcoming years. In doing so, teachers also meet the demands of policymakers and the society. Students are indeed an essential resource for teachers, and through research-based learning, both students and teachers win as students acquire the learning and teachers maintain the research output. The article is organized so that we first review several learning theories and their connection with research to develop the argument about research-based learning. Then we explain how research-based learning has been practiced at the IB bachelor degree program. In the last section, the study will provide conclusions on the findings and outline potential avenues for adopting research-based learning as a pedagogical approach.

2. Literature review

2.1. Learning theories

According to the Oxford dictionary, the word learning refers to 'the acquisition of knowledge or skills through study, experience, or being taught' [6]. The psychology discipline views learning as 'the alteration of behaviour as a result of individual experience: when an organism can perceive and change its behaviour, it is said to learn' [7]. Scholars from several domains of knowledge acknowledge the importance of learning but differ in their view concerning the reasons, procedures and outcome of education [8]. Most of the learning theories originate from psychology researchers. However, scholars also have a strong belief that learning is not a science like psychology; instead, it is an art. For instance, Highet in 1950 has remarked that learning is an art, and as such applying scientific methods to human beings is dangerous [9]. In the same vein, Gage has used technique as a metaphor for teaching and learning [10]. More recently, researchers and academicians have started to emphasize that the learning environment should comprise the cognitive aspect that helps the learners to develop their skills [11]. In other words, student learning has received increasing attention, and researchers seem to be more interested in the teaching patterns rather than teaching behaviour [12]. The purpose of this paper is not to review and comment on various schools of thoughts concerning learning. Keeping parsimony in view, we will briefly introduce some selected learning theories and develop the rationale for our research-based teaching pedagogical approach.

John Dewey, an influential educational reformist, introduced the instrumentalist or pragmatic theory of learning [13]. In his theory, Dewey emphasized that learning occurs when the learner has an active engagement with the environment. His ideas gained increasing popularity among scholars and academicians and led to the development of several learning approaches, namely experiential learning, problem-based learning, and inquiry-based learning, to mention a few [13]. Dewey and other scholars of the above-mentioned school of thought have further emphasized that the traditional strict classroom environment is the crucial obstacle for delivering progressive education [14]. Progressive education system enables the learner to learn by engaging in the learning experience, to develop problem-solving skills, to apply acquired knowledge to actual problems, to build close connections with vocation and life-long learning, and to take responsibility and think of their responsibilities. In a nutshell, Dewey and his followers have emphasized that learners should be provided with an opportunity of learning by experiencing and doing things.

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According to George Siemens, learning theories such as behaviourism, cognitivism, and constructivism did not explain how learning is impacted by technology. In response, he introduced a new approach to learning called connectivism. According to Siemens's connectivism theory, "knowledge is distributed across a network of connections, and therefore, learning consists of the ability to construct and traverse those networks" [16]. Connectivism learning theory explains how communication technologies in the digital age have created learning opportunities. For example, emails, social media, the worldwide web, YouTube, online forums enable learners and teachers to learn and share information through networks. Students should be encouraged to move beyond the boundaries of the classroom and explore a range of digital tools to support their independent learning [17].

The authors argue that the proposed research-based teaching pedagogical approach has close connections with for example the inquiry-based learning, where the student would be learning new knowledge by engaging in research activity. It also receives support from the connectivism theory in that research in today's world is more and more enabled and conducted using technological means.

2.2. Teaching methods and learning outcomes

In general, teaching methods can be categorized into five broader categories [18].

1) *Information transmission or traditional lecturing*. In this method, the teacher explains or demonstrates the subject through videos, diagrams, or pictures. The implementation of this method requires the active participation of students and plenty of hours of independent work after the class. The critical weaknesses of this method are that low participation leads to weak learning outcomes, usually blamed for superficial learning and heavy work burden on the student [19].

2) *Activity-based teaching*. This method involves active student participation in contact teaching sessions. Using this method, the student is engaged in activities in learning by acting, performing, demonstration, thinking, writing, reading, reasoning, questioning, answering, and operating something. At the core, the method aims to make a student learn by doing something. Popular methods of activity-based teaching are dramatization, quizzes, role-plays, educational games, and group discussions, to mention a few. The implementation of this method requires very open and extrovert students. Therefore, shy students might feel pressured. Furthermore, this learning method may not suit all fields of study, and it requires a lot of planning and resources.

3) *Assignment-based teaching*. Using this method, the teacher assigns students to work independently outside the class. Therefore, the effective implementation of this method requires student self-regulation and commitment to work independently according to given instructions [20]. The learning outcomes are based on students' written work, the creation of some artefacts (e.g., software, a piece of art), and live presentations of work or performances of the actual process in the laboratory [21]. The effective implementation of this method calls for prior knowledge of learning about the subject matter.

4) *Literature-based teaching*. This method requires the student to read the content of course independently or according to given instructions. This method can be used together with additional tasks for contact teaching. Learning outcomes can be determined by comprehension of the assignment content in learning diaries, review of assigned books or literature [22]. However, this method can be used stand-alone only for expert level students, and it requires self-discipline from the student's side.

5) *Virtual teaching*. Virtual teaching method is used to substitute face-to-face contact teaching. The implementation of this method requires appropriate equipment and orientation of technology [23]. A fundamental disadvantage of this method is a loss of time caused by technical error functions and unstable software operation. On the other hand, it allows more flexibility and independence for students but at the same time requires self-discipline.

In a nutshell, no method is superior to others in the implementation of learning. However, the usefulness of a particular method may depend upon the characteristics of the learner and the subject in focus. For instance, students may differ in their personal and social skills. The effective implementation requires that teacher promotes individual student learning by personalizing the learning plans. In the classroom setting, the teacher may expect to face students with different levels of competences and abilities. Thus personalizing the implementation of teaching may help the teacher to produce desired outcomes at individual level. Authors argue that research-based teaching method is the best way to personalize learning for the individual student. Authors further argue that research-based teaching would help the teacher to achieve high-quality learning outcomes by

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boosting student confidence and promoting self-accountability, and by enabling the student to understand actual international business issues both theoretically and practically. Research-based teaching can also aid the teacher to address the need for research for companies, the teaching institution's demand for improving research output, and the development of the student's competence in research. Below we will present the findings of results of research-based teaching in the IB program at JAMK School of Business.

3. Results

The research-based curriculum was launched in the International Business (IB) bachelor's degree programme at JAMK University of Applied Sciences in Finland for the first time during the 2016-2017 academic year, and to date it has been implemented with adaptations for three cohorts. In this new curriculum, following the first year, which consists of fundamentals of business courses, the second year is the academic research year. The aim of this year is to divide the students into smaller groups, whereby they will have the possibility to work closely with the faculty in academic research projects, and finally conduct their bachelor thesis either individually or in pairs. As going for exchange is compulsory during the third year of the IB bachelor's degree programme, moving the thesis from the end of the studies to the second year has improved the quality of the thesis supervision process and the quality of the theses significantly. This finding is confirmed based on feedback from students and the faculty alike. Feedback suggests that the research-based curriculum has cultivated the students' academic literacy and research skills rigorously by integrating them into research projects with the faculty. Some of the good-performing students have even found the opportunity to co-publish with the faculty, which offered them advantages in getting access to their desired master's degree programmes. For example, a joint conference paper based on the thesis of an IB student won the best-paper award at the world congress of the International Management Development Association in Nicosia, Cyprus in June 2019. Thanks to the new curriculum, faculty of the academic tracks also had the privilege to focus and leverage student resources in advancing research in their areas of expertise. This also allowed them to better optimize links between teaching and research, enhancing their intellectual contributions to teaching. For example, two cases were written in the economics of internationalization and competitiveness track during the 2017-2018 academic year (one about the competitiveness of Taiwan, and the other about the competitiveness of Turkey and Turkish Airlines). These cases were published at Finnish Business Review, JAMK's scholarly publication, and they were used as teaching material in the same track during the 2018-2019 academic year. Overall, it is possible to argue that the new curriculum created a win-win situation for both students and the faculty.

There are six academic tracks in the new curriculum, and IB students need to select two of them during the spring semester of their first year. The tracks, which are 7 ECTS each, are cross-cultural management, marketing management, technology business and future foresight, user-centric innovations, finance and corporate governance, and economics of internationalization and competitiveness. The tracks aim to review the most relevant literatures in their areas, and each track is extended by a 5 ECTS research project, whereby students conduct an empirical study to solve a managerial problem by applying a relevant theoretical framework from their literature review. As a result, students complete total 24 ECTS during the autumn semester by participating in two tracks (14 ECTS in total) and their corresponding two research projects (10 ECTS in total). Students develop their literature review skills during the academic tracks and their methodological skills regarding data collection and data analysis during the projects. These exercises help them prepare for their next challenge, the thesis. Towards the middle of the autumn semester, students need to decide in which of their two tracks they will continue to do their theses. At the same time, they start with the bachelor theses part 1 course, where they further develop their academic writing skills and make the research plans for their theses. Wise students will do the final literature review assignment of one of their tracks to be the preliminary literature review chapter of their theses and save time and efforts. Finally, the empirical study and the finalization of the thesis will realize during the spring semester.

The progress of the students is being monitored rigorously during the academic tracks and their projects using the intended learning outcomes (ILOs) as the evaluation criteria. The two ILOs to assess the academic track are knowledge and understanding 1 (KU1) and intellectual skills 2 (IS2), and the two ILOs to assess the project are intellectual skills 1 (IS1) and IS2. KU1 evaluates that the student is able to employ theoretical and conceptual knowledge to identify and analyze problems. IS1 assesses that the student is able to gather, analyze and evaluate data and information, and transform empirical data into useful and actionable information. Finally, IS2 tests that the student is able to interpret and analyze complex issues from multiple perspectives and critically review

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academic literature and other relevant information sources. Students make a preliminary self-assessment of their skills in KU1, IS1 and IS2 and identify their target achievement levels at the beginning of the autumn semester. They also make a self-assessment of their achieved levels at the end of the autumn semester. These statistics are then compared with the assessments by the faculty in the literature review and project assignments. This evaluation system ensures that students develop their skills consciously and checks that the faculty's assessments are valid and reliable. Comparisons of students' self-assessment with faculty's assessment show that there are no significant deviations on average (see Table 1 for an example analysis from the economics of internationalization and competitiveness track). However, there are very rarely deviations on an individual basis, and it is an area for improvement to discuss about the reasons of such deviations between the faculty and related students. Note that the grading system at JAMK is from 0 to 5, whereby 0 means fail, 1 is sufficient, 2 is satisfactory, 3 is good, 4 is very good, and 5 is excellent.

Table 1. Comparative evaluation of ILO averages in the economics of internationalization and competitiveness track in 2018-2019

ILO	KU1	IS1	IS2
Pre-course level (self-evaluation)	2.47	2.47	2.24
Target level (self-evaluation)	4.12	4.06	4.06
Achieved level (self-evaluation)	4.21	4.14	4.07
Grade from track (faculty evaluation)	3.89		3.89
Grade from project (faculty evaluation)		4.15	4.15

The above-described two-track system was run for three consecutive academic years starting from 2016-2017 until the end of 2018-2019. Results showed that the new system improved students' performances in the theses and contributed to their faster graduation. However, feedback from the faculty revealed a deficiency: once students knew which track, they would continue in their theses, they were not anymore committed to perform equally well in their second track. Lack of commitment from students also affected the attitude of faculty negatively. Taking this into consideration the system was adopted to become one-track only starting as of the academic year 2020-2021. The academic year 2019-2020 will be a transition year such that students will be able to choose a single track or two tracks. Having fully committed students is expected to further improve the efficiency of the system. Attending a single academic track will also offer more flexibility for faculty to arrange their classroom activities and research projects, as there will not be worries overlapping sessions of different tracks. However, there are question marks whether students will be able to make the right choices for their tracks at the end of their first year. It is also yet uncertain what will happen with students who realize in the middle of the autumn semester that they would like to change their track.

4. Conclusion

Research is an integral part of the higher education system across the globe. The article attempts to present the significance of research in teaching, specifically in the context of IB higher education. The paper demonstrates that research is an essential element and critical indicator of quality for IB higher education. The research output of higher education institutions is recognized as one of the key performance indicators by all higher education institution ranking bodies. Also, research is considered necessary regardless of institution and organization type. Specifically, companies in their endeavor to internationalize require research-based analysis of the international marketplace. Given above academicians in IB programs are in an increasing pressure to develop research skills of their students and meet the expectation of their respective educational institution, industry and society in general. Authors have reviewed some learning theories and learning methods, and while emphasizing the limitations of existing approaches, they introduce the research-based teaching method in the context of IB higher education. Authors have described the implementation of research-based teaching model at JAMK School of Business. The research-based teaching method has proved to be very useful, resulting in high quality theses, conference papers, and journal publications. The following steps are recommended for the successful implementation of the model:

1. Name the second or the third year as the "academic" year.
2. Identify the core fields of research for the program based on the expertise and interests of the faculty.
3. Establish the academic tracks for the program in line with the identified core fields of research.

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4. Introduce the academic tracks to the students and let them choose their tracks during the spring semester of the previous year.
5. Run the academic tracks and their related projects in the autumn semester.
6. Let the students choose their thesis topics from their academic tracks and do their theses during the spring semester of the academic year.
7. Faculty shall select quality works from the academic tracks, projects, and theses, and further work with the students to develop them into publications.
8. Faculty shall use the publications as teaching material in their tracks in the next years.

Moreover, students were able to develop high-quality research for companies as well. Given encouraging results, the authors recommend IB teachers and scholars to adopt the research-based teaching method. Also scholars and academicians from other disciplines may study and implement this approach for high-quality learning outcomes. The authors urge scholars and academicians to investigate more approaches to implement research-based teaching. There is a famous saying that 'all the glitter is not gold'. The authors have also experienced several issues in the implementation of the research-based teaching method, such as lack of time resources, lack of student's interest in research, and lack of student's competences in reading the literature and writing research. In response, JAMK Business School has decided to organize a research week at the beginning of their studies. We hope that familiarizing students with research during the research week right at the beginning of their studies will help us draw their attention and influence their attitude towards the research-based teaching method.

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Dual Assessment in Higher Education: A Critical Analysis of Students Objectiveness

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Abstract

This study focuses on quantitative methods of dual assessment of students' knowledge in higher education. It does so by comparing on the one side student-generated grades and on the other side grades generated by their lecturers. It also discusses methodological issues of such studies and offers recommendations concerning the analysis and presentation of information. In the context of higher education courses this paper aims at answering: (1) did students overrated or underrated themselves in comparing to lecturers' assessments?; (2) are there gender differences in self-assessment; (3) what are the categories in rubrics where grades overlap and what are the categories where they differ the most?; and (4) how do results correlate with student's final grade?. This study was done on the sample of the entire 3rd year generation of Zagreb School of Economics and Management students (N=79), as a part of the Marketing Management course in academic year 2017/2018. Lecturers (N=2) who were doing the assessment have multiple years of grading experience. Presentation rubrics that were used for assessment of both female and male students is comprised of eight categories. Findings suggest that in general there are differences between self-assessment of the students and assessment made by lecturers. Furthermore, there are also gender differences in self- assessment in higher education.

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Neurofinance: Reviewing Upcoming Intellectual Shifts for Teaching Finance

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Abstract

While traditional finance is concerned with things people should do to achieve the optimal balance between return and risk, neurofinance focuses more on people and markets. It unites knowledge from neuroscience, psychology, and finance and is trying to understand why investors sometimes behave irrationally. Neurofinance, as an extension of behavioral finance, is an emerging discipline that combines neuroscience with strategies to decode decision making patterns in finance. It uses brain science to explore investment decisions and profits. Each investor has different objectives, experiences, education, and opportunities. With this in mind, neurofinance uses neurotechnology to examine how the brain behaves while a person is making financial and economic decisions. By looking at how the brain reacts during activities like making decisions – scientists became able to understand how brain functions and solves problems. Compared to the standard finance models, neurofinance offers a lot more in creating a model of decision making. In this article, we review the essence of neurofinance as part of the intellectual shifts in finance. We find that new ways of thinking about financial behavior and decision making in financial markets are of high relevance for successful finance professionals.

Keywords: *Neurofinance, investments, students, decision making*

1. Introduction

As finance increasingly interacts with other fields of research – influencing and being influenced by them – research trends and paradigmatic shifts currently revolutionize other areas and will similarly and inevitably impact on finance. Whereas finance operates presently within the hypothetical-deductive model of scientific inquiry, finance of the future may need to broaden its scope to incorporate other ways of observing the world and doing research. Progress, relevance, and conversation in an emerging scientific community require fresh approaches.

Significant intellectual shifts have taken place in the area of finance. The 1960s and 1970s were a primary transition for finance – a time when the bulk of cutting-edge finance principles turned into the mainstream. This transformed into twenty years of regular technological know-how, regardless of the emergence of anomalies inside the 1970s and the behavioral literature within the 1980s. In the 2000s, we witness the evolution of interdisciplinary research in financial decision making through the emergence of neurofinance. These intellectual shifts incorporate studies with the neoclassical rational expectations – building revolutionary procedures primarily based on psychology, evolutionary biology, neuroscience, and sociology theories. Similarly, those new strategies are transferring research from the ideological focus on model constructing towards including other methods of obtaining know-how [1].

While traditional finance is concerned with things people should do to achieve the optimal balance between return and risk, neurofinance focuses more on people and markets. It unites knowledge from neuroscience, psychology, and finance and is trying to understand why investors sometimes behave irrationally. Inputs from other sciences, especially psychology, are beneficial to scientists in understanding human behavior. Thus, neurofinance is an emerging discipline that combines neuroscience with strategies to decode decision making patterns in finance. It uses brain science to explore investment decisions and profits. With new and experimental

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methods, neurofinance challenges traditional finance. Each investor has different objectives, experiences, education, and opportunities. With this in mind, neurofinance uses neurotechnology to examine how the brain behaves while a person is making financial and economic decisions. By looking at how the brain reacts during activities like making decisions – scientists became able to understand how brain functions and solves problems. With those findings, it is possible to make better predictions about successful investment behavior. Compared to the standard finance models, neurofinance offers a lot more in creating a model of decision making, because it enables a look inside of the human brain while choices are being made. With this in mind, in this article, we review the essence of neurofinance as part of the intellectual shifts in finance. We find that new ways of thinking about financial behavior and decision making in financial markets are of high relevance for successful finance professionals.

2. Intellectual Shifts in Finance

2.1. Pre-Science (pre-1960s), Transition (the 1960s and 1970s) and Ordinary Science (1970s, 1980s, and 1990s)

Before the 1960s, the majority of finance studies carried out an institutional perspective without a precise unifying paradigm. Taking the institutional framework of monetary markets as given, researchers sought approaches to enhance the efficiency of these institutions and commonly employed a descriptive and intuitive method. Before the 1960s, there were a few examples of implemented arithmetic, inclusive of Markowitz's present-day portfolio concept, and a few empirical investigations [2], [3]. The 1960s and 1970s were a period of transition for the field. Finance-specific Ph.D. programs were established, as well as a multitude of journals specifically devoted to finance. The change to a scientific discipline was relatively quick and complete. The dominant paradigm in economics at the time was institutionalized as providing the sole logical basis of finance research and came to define the boundaries of the field's research agenda.

At some stage in intervals of ordinary science, new insights are generated within the dominant paradigm and certainly add to the body of collected expertise. Drastically, at some point in this era, studies based on a concept from psychology first regarded as a mission to the assumption of entirely rational finance professionals. This study's application, however, remained on the margins, criticized for its loss of a coherent theory and its limitations when carried out to the prediction of asset prices. Also, in this period, finance emerged as an "ordinary" sub-discipline of economics, often referred to as financial economics. Few authors argued about finance studies over this period – the way it exhibits the ordinary science properties. Campbell indicates that "for more or less the last two decades, theoretical and empirical tendencies in asset pricing have taken place within a well-set-up paradigm… We've got developed a ramification of models in response to those statistics (aggregate stock prices, interest costs, and pass-sectional patterns in stock returns). Even though those models fall within the sharp outlines installed with the aid of an advanced generation of theorists, the details are new and essential" [4].

2.2. Extraordinary Science (the 1990s, 2000s)

There's no unique disaster that could pinpoint an emergence of competing paradigms in finance inside the 1990s and 2000s. Much more likely, several elements blended have stimulated a developing range of researchers to discover new paradigms. Technology is facilitating new statistics series strategies and data sharing across disciplines and thereby supporting the emergence of a ramification of cross-disciplinary fields. Evidence from cognitive psychology, neuroscience evolutionary biology, and sociology, for example, has dispelled the belief that human beings are always rational: nor are they amoral wealth-maximizing opportunists. This presents the point of departure from the rational expectation's paradigm for the subsequent developing and rising tactics [5]–[7].

The strongest opponent to the neoclassical paradigm is behavioral finance. First rising within the 1980s, behavioral finance is now standard and properly entrenched within the finance literature with its meetings, journals, and associations. Behavioral researchers present their theories as a credible opportunity paradigm via the underlying assumption that people are rational. Built on cognitive psychology, behavioral finance assumes that finance professionals are bounded with biases. Also, it implies that finance professionals strive to behave rationally, but cognitive barriers prevent them from doing so. The man or woman, as the unit of evaluation,

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remains atomistic, acting of their very own hobby of maximizing wealth. In this sense, behavioral theories do not provide a philosophical assignment to the rational paradigm. The normative prescription of behavioral studies is to offer steering to finance professionals, so they recognize and avoid highly-priced mistakes of irrational behavior [8]–[10]. Although perceived as a research stream, behavioral finance is criticized as it lacks a unifying idea, the empirical work is plagued by data mining, and the behavioral results are often contradictory. Behavioral researchers maintain to address those criticisms, and recent efforts are directed towards growing a unifying quantitative paradigm of behavioral finance [11], [12].

As an extension of behavioral finance, within the interdisciplinarity agenda, neurofinance emerged. Neurofinance uses brain imaging technology and experimentally identifies the specific neural substrates associated with acquiring and processing information related to financial decision making. Neurofinance is sold bridge between psychology, neurology and investor behavior and is distinguished by its close relationship to cognitive neuroscience. While much of the link between neurological systems, human behavior, and economic decision making in conjecture at this point, neurology, and psychology are providing us with an increasing quantity of evidence, helping to bridge the gap between market efficiency and market reality. Understanding the neural mechanisms which explain behavior will help us to disentangle in the numerous complexities of modern financial life [13]–[15].

3. Neurofinance

Neurofinance, together with the use of brain imaging technology, experimentally identifies the specific neural substrates related to obtaining and processing facts in financial decision making. Neurofinance is brought as a bridge among psychology, neurology and investor behavior and is distinguished with its connection to cognitive neuroscience. While a great deal of the link between neurological systems, human behavior, and economic choice-making in the presumption of this factor, neurology, and psychology are imparting us with a growing amount of proof, assisting to bridge the space between market performance and facts about the market. Perceiving the neural mechanisms which explain that behavior will support us in understanding better the complexities of modern economics [13]–[15].

The purpose of neurofinance studies is to offer a neurological foundation of economic selection making or proof of how emotions may additionally influence financial decisions. Researchers on this growing area declare their evidence will, in the end, make contributions to a brand new theory of asset pricing incorporating the two foremost brain activities essential for human behavior in money-related decisions: pleasure-seeking (financial benefit) and pain avoidance (economic loss). One implication is that explicit feelings correlate with future stock market moves. Studies attempt to become aware of physiological and environmental trends that relate to investors' sophistication or irrationality. From this, researchers are searching for a way to improve the prediction of investors' behavior as a result of trading consequences and understanding of monetary markets. The normative implications are to develop equipment, know-how, and practical education methods to enhance trader's performance or create new approaches to support decision making [1], [14]–[16].

Neurofinance departs from the rational paradigm in numerous respects. First, the level of rationality is not assumed but inferred in lab experiments. Second, the subject of analysis is an individual mindset. As a consequence, it is not unusual for studies to have a few observations, even though experiments give multiple observations across time for every brain. Also, the normative implications endorse enhancing the efficiency of finance professionals' facts processing [1], [17].

The classical finance concept is constructed on the assumption that investors are rational [18]–[20], but this does not explain the unique management styles that we see in modern markets [10], [21], [22]. The starting point of behavioral finance is that buyers are not usually rational in practice – something that neuroscience experiments have additionally helped to demonstrate [13], [15], [23]. Economists now agree that investors have, at best, just slightly touched rationality. This means each investor's potential to be rational is restrained by using the records they have had - the cognitive ability in their minds to determine and the quantity of time they possess to make them. Neurofinance experiments are helping researchers recognize how particular elements of the brain are concerned with specific tasks. Imaging has also been used to validate the concept that financial selections are regularly made on an emotional basis. The alternatives humans make are motivated by past experiences and are pathway-connected [21], [24].

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3.1. Moving Towards the Adaptive Market Hypothesis

Contradicting traditional finance theories like Efficient Market Hypothesis [8], [25], [26], neurofinance shows that investors use different strategies to make their trading decisions instead of behaving as an ideal rational decision-maker. Investors learn different ways of trading, depending on their unique trading experiences. Our economic experience is very much influenced by our socioeconomic status, the goals we set to achieve in life, and biological variables influencing intelligence, personality and learning ability [13], [27], [28]. Therefore, we are expected to broaden distinctive financial selections making strategies to survive with our financial needs, but not all being equal [16]. Here is where finance professionals act in self-intrigue. However, their definitive objective is survival in markets as opposed to market return boost. Financial professionals are seen as canny, yet, not reliable, equipped for learning and adjusting to evolving situations. Speculators' mix-ups, which might be transitory, can bring noteworthy contravention of reasonable estimating connections. Markets are, in this way, not generally productive. Instead, they are typically very aggressive and versatile, fluctuating in their level of proficiency as the market condition and number of speculators changes with time. Not at all like the conventional worldview, consistent thinking is just a single part of a compound choice process. Deciding, imparting choices and following up on that choices are a piece of the procedure [29].

This is where studies introduce an adaptation to current market thinking. An Adaptive Market Hypothesis (AMH) is mainly connected with Professor Lo, but many different analysts are currently applying knowledge from this theory to deal with market return consistency [29]. The AMH joins the standards and hypothesis of intellectual brain science, neuroscience, and transformative science trying to give an intelligible hypothetical system accommodating business sector effectiveness with behavioral options [29]. The AMH additionally joins a neuroscience point of view. Primitive hardwired systems, for example, the “fight or flight” reaction and the effect of fear and greed on investment choices, affect markets. These physiological responses can on occasions, be profoundly associated and accordingly unsurprising. Information originates from positron emission tomography and fMRI that catches cerebrum work in light of playing out specific situations. Along these lines, feelings are being connected to rationality. Other information is intended to quantify the dynamic developmental nature of business sectors and speculator conduct focusing on setting, time, and different parts of the investing condition [1].

4. Neurofinance and Dual-Process Model of Decision Making

With regard to behavioral patterns in financial markets, we also have to imply the changes in decision making systems. Neurologists and cognitive psychologists have distinguished two sorts of processes regarding choice making: intuitive and deliberative. Intuitive choice-making actions are intuitive, programmed, and brisk, including the kinds of quick judgments that allow an investor to judge a circumstance instantly. Deliberative procedures include intelligent, legitimate, and reluctant considering. Albeit instinctive choice-making actions are vulnerable to delusion, they are hard to keep away from for two reasons. Firstly, individuals tend to depend on such procedures when challenged with different choices – the home they want to buy or the unsafe trading methodology they pick. Likewise, when an investor needs more skill, and a vital choice is required, these procedures may have a substantial impact. Second, even in natural circumstances, individuals tend to replicate cognitive responses utilized before [16], [30].

Thus, we argue that redundancy can rectify specific mistake-vulnerable procedures, which is the reason why rehearse enables individuals to swim, bowl, or play chess with less reflection. Also, deliberative preparation can outbalance intuitive processes in specific situations. This is the reason individuals are less vulnerable to intellectual predisposition when there are chances to absorb past experiences or when they can approach a professional, similar to investment specialists, private bankers, or different. Indeed, even with skill, cognitive biases are exceptionally tenacious and subject control-oriented.

Three particular biases can influence investors' perception: status quo bias, procrastination-related bias, and contrast bias. The status quo bias alludes to a group's leaning to persist to the status quo when different choices multiply a person's prosperity. Status quo impacts make more difficult the long-held conviction that call-off regulations in hedge funds guarantee more civil settlements, more appropriate process, or a satisfactory chance to assert rewards through the hedge fund. The status quo bias alludes to the disposition to appreciate the status quo over different choices, notwithstanding when those choices enlarge investor's welfare. On a basic level, a rational investor will pick between options given his or her desires and the potential expenses of settling on an

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educated guess. Practically speaking, be that as it may, just describing a choice as the status quo expands the odds that an investor will pick that option [31]–[33].

The second is a procrastination related bias. Time conflicting biases allude to a man's preference toward various trade-offs relying upon when he or she is demanded. Quick satisfaction may make an investor ceaselessly put off settling on choices to make them as soon as possible. Motivations or punishments may decrease hesitation. Subsequently, a long period before an investment due date may empower hesitation. A deadline that restricts documenting to specific dates of the month or year, in any case, may give adequate motivating forces to support quicker activity, sparing regulatory expenses and enthusiasm for potential applicants to a hedge fund [34]–[37].

The third is a contrast bias. It represents the irrational liability to measure one choice positively when within sight of different alternatives. On account of contrast bias, excessively numerous choices may cause a choice clash, making individuals to unintended delay or stay away from documenting claims against the hedge fund. The existence of a third, "bait" choice may direct investors to choose relatively more appealing, yet nominally, unwanted choices [12], [38].

5. Towards an Effective Decision Making

Companies are regularly settling on choices at each level. The choice selection ranges from managerial choices through to strategic decisions and routine operational choices. Choice selection in business is dealing with choosing decisions or bargains, keeping in mind the end goal to meet business targets. In any case, the choice selection is not just about selecting the correct decisions or bargains. Efficient choice selection is characterized as the procedure through which choices are chosen and after that oversaw through execution to accomplish business goals. Efficient choices result from a systematic procedure, with unmistakably characterized components, that is taken care of in a particular succession of steps. Managers have vital parts to play all through the successful choice selection process.

The choice selection is turning into the rest of the premise of the upper hand that can produce unrivaled returns for investors. In the meantime, many major organizations have accepted the open doors exhibited by advancements in frameworks and globalization to change their accounting and finance capacities. These open doors have empowered organizations to be both more proficient in their operations and more efficient in the way they encourage choice selection in the business. Usually, the finance professional's task in the industry may have been to supply administration data to help choose the selection or to flex the financial plan after a choice had been made to permit execution. Nevertheless, the part of the financial management is essential through all the procedure of efficient choice selection.

Over the last years, many significant associations have changed their back-office capacities with the goal that they encourage the business and enhance the choice selection. These capacities have the structure, processes, systems, and people to give current and exact management and financial data in an "easy to use" arrangement. Their finance managers are business proficient and, additionally, monetary specialists. They work inside a culture that appreciates their commitment to proof-based choice selection. The initial phase in a change program to enhance managerial choice selection ought to decide a mutual vision for the back office capacity's part. This shared vision ought to be produced and told by the chief executive officer (CEO) and chief financial officer (CFO) to the extensive business with the expectation that fund/business associates will enhance the choice selection.

6. Discussion and Conclusion

This article aimed to represent the evolution of finance with an emphasis on neurofinance. Neurofinance is a relatively new field of research, a discipline that combines technology and knowledge from neuroscience studies to investigate how the human brain operates when making financial decisions. Using brain imaging technology proved to be useful in identifying the link between neurological systems, human behavior, and economic choice-making. Perceiving the neural mechanisms which help explain such behavior will help understand the complexities of modern economics. Even in irrationality, there seems to be the rule.

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Many of the findings in the neurofinance field of studies still focus on decisions related mostly to trading behavior as it is relatively easy to observe. However, widening the scope of the research to financial planning, sales techniques and other investment behaviors might offer additional valuable insights.

The limiting factor in conducting neuroscience research is the relatively high cost of an experiment (use and the required equipment for brain scans are not cheap). Additionally, there is a question of the validity of tests performed in a controlled environment such as laboratory, how applicable are they in real life.

Increased activity in this field in recent years results with the conclusion that without doubt, understanding the neural mechanisms which explain investment behavior is beneficial and will continue to play a significant role in modern financial life. While understanding human behavior in the process of decision making, each person improves its financial education, which is very much necessary in our society with increasing complexity in all fields.

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New Teaching and assessment methods II

Session chair: Karmela Aleksić Maslać

Comprehensive model of quality assurance to support teaching, learning and research: Case Study University of Maribor, Slovenia

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Abstract

As a member of the European Union, Slovenia has actively participated in the Bologna process on higher education. Since then, the quality assurance has been a central issue of higher education strategies corresponding to the standards and quality guidelines that have created the European Higher Education Area. Against this background, the study provides an overview of the institutional supports offered to education and research within Slovenian university structures. Further, it aims to identify key efforts to centralize the institutional framework promoting effective teaching, learning and research, and their integration into the established European quality assurance system. The analyses focus on the existing institutional model comprising strategies and tools to raise the quality assurance performed at the University of Maribor. The study assesses the interoperability and synergies across centralized supports, as well as the efforts for excellence within the university and its members. The initiative to analyse a case study on institutional support is based upon work associated with the methods from the COST Action 15221: Advancing effective institutional models towards cohesive teaching, learning, research and writing development. Additionally, the study discusses the challenges and opportunities to raise excellence within the existing model by highlighting innovative activities of current supports.

Keywords: *Slovenia, Teaching, Learning, Research, Quality assurance, University of Maribor.*

1. Introduction

Demand for highly skilled, socially engaged people is both increasing and changing. According to the renewed EU agenda for higher education, half of all jobs in the period up to 2025 are projected to require high-level qualifications. Without higher education (HE) institutions and systems that are effective in education, research and innovation, and integrated into the societies, Europe cannot respond to these challenges. It is a duty of HE to ensure up-to-date content, provide relevant study programmes in the fields where skills shortages exist, and develop methods of learning and teaching that allow students to acquire the breadth and depth of skills they need [1]. According to that, a range of EU documents emphasizes the quality assurance in higher education [2], [3], [4], [5], [6], in order to ensure adequate quality to the needs of rapidly changing society, as well as diverse, plural and democratic internal community [7]. In the past, quality has been predominantly studied and improved in the field of teaching and learning. Already in 2013, the High Level Group on the Modernisation of Higher Education mapped out pathways for improving quality in teaching and learning, but did not introduce any links with research and writing, although it is well known that effective learning and teaching are directly linked to effective research (6). The synergy between teaching and research is not an independent item but rather a mutual enhancement in quality, effectiveness and profoundness, also from financial point of view. For this reason, the analyses are conducted from both aspects of teaching and research, identified in many ways [8]. Essential points to adopt qualitative research are the development of problem solving, critical thinking and learning-to-learn, as

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well as communication skills. Therefore, research, which undoubtedly incorporates writing, is an important element of education. In parallel, the method called Problem-Based Learning is considered to be a good way to help students in acquiring the necessary skills [9].

The COST Action 15221 entitled "Advancing effective institutional models towards cohesive teaching, learning, research and writing development" (Action) represents an important contribution to the analyses of the transformational strategies across all four areas from the perspective of the HE institutions. This five-year project addresses the challenges of creating synergies among the increasingly specialized and centralized supports in view of more advantageous models and practices. In many higher education institutions centralised supports are growing, however in a reactive rather than strategic manner, often in the form of overlapping programmes or activities, centres, institutes and their members. This responsive growth, influenced by internal or external forces, should result in the goals, structures and services of central supports that could contribute to success, productivity and quality of HE. The Action addresses professional communication across institutions and research around the shared territory to support and develop the four areas. The Action, in which both co-authors have been actively participating since 2016, marks a communication around new models for the central support of teaching, learning, research and writing, for both staff and students following the objectives of the Action's Memorandum of Understanding (MoU) that aims at contemporary models of complementary, coherent and integrated provision leading to effectiveness, success and productivity [10].

Against this background, the study aims at the identifying the key efforts to promote high standards of education and research, and their impacts on HE framework of institutional supports at Slovenian universities. As a case study, the innovative model to support quality assurance from the University of Maribor (UM) will be presented. For this purpose, the study highlights the backgrounds as well as processes and tools to recognize strengths, opportunities and challenges associated with the existing model. The content is based on institutional and the corresponding legislation framework of EU and Slovenian documents, as well as on reviews, online reports and information leaflets of UM. Additionally, qualitative interviews with colleagues and members of leadership were conducted in order to identify their personal experience in practice.

2. Towards Quality Assurance of Higher Education System

Since the independency of Slovenia in 1991, the role and institutional framework of HE have changed significantly. Since 1999, when Slovenia joined the Bologna process, the HE system was gradually and systematically restructured towards a three-cycle study structure. The Bologna Process marks a series of ministerial meetings and agreements between European Countries to ensure comparability in the standards and quality of HE qualifications in line with the European Higher Education Area. The first HE programmes in Slovenia that were adapted to Bologna Declaration were offered in the study year of 2005/2006 [11].

The Slovenian umbrella document on HE is the Resolution on the National Higher Education Programme 2011–2020 (Resolution) that promotes the knowledge as a public good, and higher education as a public responsibility. The two fundamental societal roles of HE are, (i) support to and empowerment of citizens for their personal development, professional careers and active citizenship, and (ii) the spiritual, social, artistic, cultural and economic development of the community [12]. HE study programmes are offered by different public and private institutions. Currently, there are four public universities, a public independent institution of higher education, an international Association of Universities, and 44 private higher education institutions. The Ministry for Education, Science and Sport keeps a public record of all accredited institutions and study programmes that provide state-approved and accredited study programmes [13].

In 1993, Slovenia adopted a Higher Education Act [14], including particular procedures of self-evaluation of higher education institutions. Only in 2011, the Resolution set up the document of the National Qualifications Framework. Consequently, the Slovenian Quality Assurance Agency for Higher Education (SQAA) was established. Since then, the SQAA permanently develops and monitors external and internal evaluation systems in regard to quality assurance. Currently, a range of instruments ensures centralized supports to teaching, learning, and research as basic criteria for accreditation of new, and the quality evaluation of existing study programmes, taking into account the constitutionally guaranteed autonomy of university institutions [15]. In addition, the Slovenian Research Agency (ARRS) has established certain mechanisms complementary to the SQAA with an emphases on support of science and research, as general [16].

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3. Innovative Strategies to Raise Quality Assurance at the University of Maribor

The UM is the second largest Slovene university, established by the Republic of Slovenia in 1975. The roots of Maribor HE institutions go back more than 150 years. During the 20th century, various new institutions gradually joined the primary established educational college. In 1958, the Association of Higher Education Institutions was founded. In the 1980s, the city of Maribor grew to an important university centre, representing a milestone in the decentralization of Slovene HE. Since then, the possibility to study is accessible to students from all Slovenian regions and from abroad. Currently, the UM comprises 17 faculties and approximately 20,000 students and staff members. The UM also includes two supporting members, the University Library Maribor as an internal organizational unit, and since 2000, also the Student Dormitories [17].

The UM operates as a public institution in line with the principle of autonomy of the UM members in research, knowledge transfers and creativity, independent organizational arrangements, development of study and research programmes, as well as in the issues of human resources. The mission of the UM emphasizes ethical principles of honesty, curiosity, creativity, freedom of spirit, cooperation and knowledge transfer in the fields of science, art and education.

The UM and its member-faculties offer courses and study programmes leading to the award of diplomas, and credential programmes leading to the award of certificates, both conducted as full time or part time studies at different levels. In the academic year 2017/2018, the UM faculties implemented 28 professional programmes, 49 degree programmes, 70 master's programmes, 2 consecutive master's programmes, and 36 doctoral programmes. In the academic year 2018/2019, a total of 13,407 students were enrolled. In 2010, all study programmes were completely adapted to the requirements of the Bologna Declaration [18].

The teaching process is mostly conducted in the traditional manner as a combination of lectures and lab classes, upgraded recently with the IT-tool Moodle and e-learning. Problem-oriented project work has also proved to be very successful for certain interdisciplinary degree programmes, e.g. Mechatronics, Industrial Engineering, and Architecture. The UM professors, assistant professors, teaching assistants, and early-stage researchers conduct high-quality basic and applied research in the framework of various programmes and projects, primarily funded by the Slovenian Government and certain EU funds. Additionally, a range of research projects are realized based on agreements between the UM and local or regional companies, as well as in collaboration with international institutions [18].

International relations with the emphasis on mobility represent one of the main issues of support to study programmes and personal development. Academic exchange of both professors and students is conducted on the basis of inter-university or inter-faculty agreements with partner institutions from abroad [18].

3.1 Institutional supports to quality monitoring

As summarized in the Quality Manual of the UM, the centralized supports to quality assurance include methods and tools, as [18]:

a) monitoring the management and decision-making policy;

b) ensuring the autonomy of university teachers and the non-discriminatory position of students;

c) fostering internationalization of higher education;

d) monitoring the development of graduate and postgraduate programmes;

e) monitoring the infrastructure required for the development of higher education;

f) providing professional support to internal and external evaluations of study programmes.

As the Resolution reports, the responsibility for the quality of HE is primarily the task of higher education institutions themselves [12]. Accordingly, the Statute of the UM [19] introduced the Quality Assessment Committee of the University (QAC) to monitor and conduct institutional and programme evaluations with regard to quality, effectiveness and efficiency of didactic work, science and research, and artistic work, conducted by the UM and its university members. Since 2003, the QAC functions as permanent advisory body of the UM Senate, and, since 2009, regularly performs internal institutional evaluation processes based on the

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self-evaluation results acquired by all the UM members. Among 25 members there are representatives of the UM institutions, administrative staff and student council. In January, the annual report has to be published on the official UM website. The main tasks of the QAC are, as follows [4];

- to permanently monitor the provision of institutional reports on a yearly basis,
- to conduct self-evaluations processes,
- to monitor the effects of measures for quality improvements, and
- to report to the UM Senate.

Quality monitoring in science and research is connected to scientific disciplines and represent the basis of the HE courses. The UM faculties conduct basic and applied research individually or within national and EU research and development programmes. In terms of institutional support, the UM is focused on the integration of research and teaching. Aimed to achieve research excellence, the quality assurance monitoring also incorporates the development of doctoral and research programmes, quality research equipment and infrastructure, the integration of the early-stage researchers, as well as various issues concerning publishing, citation, and patents.

Since 2011, a special UM Department for Quality and Sustainable Development (DQSD) has been acting as an organisational unit to assist faculties and the UM members in all matters related to evaluation procedures and, as such, contributes to the UM interoperability, at large. The DQSD developed a set of unified quality indicators, criteria and data serving as the basis of self-evaluation in the area of student environment, facilities and equipment, studies and teaching, international activities, research and development, teaching and learning performance, as well as human resources. Several quality management documents are available also to the general public on the UM website.

Quality monitoring also involves library services of the Central University Library Maribor and library units at faculties that all together represent the UM Library and Information System to support informing, teaching, bibliographies, and archives.

Quality monitoring in cooperation with students is the precondition of effective communication. As such, the students' involvement in frame of Students Councils with representatives in all bodies, committees and senates at the level of the faculties and the UM Senate is of extreme importance. The students actively also cooperate in all processes of self-evaluation by conducting a yearly student surveys that assess the performance of the university staff and services.

3.2 Institutional framework of blended supports to teaching, learning and research

The publication Quality Manual of the UM (Manual) represents the main supporting instrument of quality management to inform internal operability, and is available on the UM website [18]. The Manual includes a range of competences, work methods and measures for quality monitoring and improvement at the UM. Special attention is paid to human resources, incorporating job descriptions, required level of education, work experiences, required knowledge and skills as well as responsibilities of various workplaces. Additionally, the Academic Personnel Manual determines issues related to employment contracts, rights and obligations, with special attention to researchers referring to the principles of the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers [18].

With the aim to achieve teaching excellence, the Resolution encourages the HE institutions to organize special development centres to support teaching, learning and research, with the emphasis on better didactic training [12]. Accordingly, the UM established various centres that are partly centralized and partly dispersed among the UM faculty member according to the scope and competences, as well as to the funding possibilities within development and research projects.

The Career Centre of the University of Maribor provides a centralized support to the wide range of services for the UM students, graduates and employees. It was established in framework of the project of Co-Funding of Activities of Career Centres in Higher Education 2015-2020, supported by the European Social Fund (80%) and the Ministry of Education, Science and Sport [19].

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The Centre for Life-Long Education is an organizational unit at the UM Faculty of Arts. It conducts various programmes for life-long education and international cooperation of students and staff exchange. Supported by several international projects it is fully open to the participation of the entire UM staff [19].

In the area of science and research, the UM and its members promote all kinds of support services aimed at increasing the collaboration with local and regional companies and institutions. A quality infrastructure is one of the main requirements for the provision of high-quality services. The development of UM information system as one of the key activities of quality assurance in HE supports the work processes of teaching, learning and research for both teachers and students. The centralized *Computer Centre of the University of Maribor* manages and maintains the ICT infrastructure, as general [19]. Various data are collected on yearly basis from institutional study affairs departments, offices for international cooperation, personnel services, libraries, the UM Enrolment and Information centre, student surveys. As a common data source, the UM *Computer Centre information data base* operates mainly to serve the requirements of the self-evaluation processes.

Recently, in the framework of the research and development project Didact.UM, the *Teaching Support Centre of the University of Maribor* has been established as an organisational unit of the UM Department of Education and Student Affairs. It offers comprehensive support and assistance for didactic use of ICT-tools and their implementation in HE teaching and learning practices. Slovenian higher education system is facing specific challenges in the area of didactics striving to adapt the higher education model from traditional one to the model appropriate to current student generations. Didakt.UM project aims at introducing didactic ICT tools and innovative e-learning practices. The *Digital Innovation Hub at the University of Maribor* develops a regional network of research, industry and business support organizations with the ambition to act as a focal point for East Cohesion Region of Slovenia, directing industry players towards partners in the digital transformation process. Creating a collaborative community focuses on digital technologies and new business models in order to improve the competitiveness based on co-development, testing, and launching of new products and services [19].

4. Challenges and Opportunities of Self-Evaluation Processes

Evaluation processes in frame of the quality assurance model represent a tool to access advantages, weaknesses and deficiencies that represent major challenges in the fields of teaching, learning and research. With regard to the Development Strategy of the UM 2013-2010 (Strategy), the existing UM centralized model of support contains a range of challenges [20]. Currently, an active involvement in the European Higher Education Area is of extreme importance for cultivating the UM international image. International activities and mobility of teachers, supporting staff and students contribute to the contemporary content of study courses enabling a higher level of quality of teaching, learning and research. The UM is actively encouraging the exchange of teachers and students with foreign university partners based on the international agreements.

With regards to the UM vision and the slogan *Create your future* from 2009, the most significant challenge is to raise the awareness of quality values in academic community, and to involve teachers and students, as well as the management and supporting staff in the external and internal evaluation processes. According to the Strategy, the challenge to achieve excellence of teaching, learning and research stresses an innovative environment by highlighting supporting activities, as [20]:

a) internationalization of institutions and programmes, reflecting in mobility, joint degree programmes, summer schools;

b) independent accreditation procedure of study programmes;

c) internationalization of teaching processes by visiting professors, foreign students, and conducting programmes, partly or as a whole, in English

d) encouraging the initiatives and creativity of students in project work, including international exchange, tutorial system, etc.;

e) monitoring active cooperation of science and research with companies and institutions in local, regional, national and international environment;

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f) support to the implementation of IT-tools and teaching methods, including e-learning and distance learning;

g) introduction of systemic measures for students with disabilities.

The internationalization depends on quality assurance and vice versa, both considered as a challenge contributing to the expansion of knowledge, communication and competences on one hand, and the development of new study programmes, on the other. However, a precondition for its implementation is active participation of students, teachers, researchers and management of the UM. A series of guidelines were set up in line with the objectives of the Resolution. The effective impacts on the quality of teaching, learning and research might be reached with [12].:

- conducting both teaching and research in cooperation with foreign institutions, teachers, researchers and students;
- increasing the number of joint degree programmes implemented in cooperation with foreign institutions with priority given to postgraduate programmes; and
- encouraging research within the framework of transnational projects and activities.

One of the most serious challenges in regard the long-term development perspective also is an instable funding system. The insufficient and inadequate funding of science and research is considered as extremely problematic. Namely, the current legal framework and system of public funding do not react to the real costs of the UM activities [20]. The UM constantly improves the quality of services aiming at delivering a solid financial performance of fundamental and supporting management processes, the adequate monitoring and efficiency control. To solve the issues of inefficient funding of research, the introduction of measures to improve the processes is urgently needed.

The students and their engagement also play an increasingly important role in the activities to raise quality assurance. Therefore, the UM provides training to develop a unique model for students' participation in evaluation processes.

5. Discussion and Conclusion

Undoubtedly, the evaluation processes represent a positive and valuable experience offering the opportunity to face the critical remarks of the third party to the members of management, teaching and supporting staff, inclusively student population. According to the Resolution [12], the national strategy measures predict the transition from programme- to institutional accreditation, among others. These processes, starting in 2019, might have considerable impacts on academic environment in the next future by introducing new aspects of self-evaluation procedures.

As one the most important tools to support teaching, learning and research in a long term perspective, the current self-evaluation model is almost a copy of the external evaluation conducted by SQAA. The teams for preparing self-evaluation reports, are recruited by the Quality Commissions of the UM, including management, teaching and supporting staff and students. On one hand, the evaluation results expose weaknesses and deficiencies, but also potential opportunities to improve or eliminate negative impacts, on the other. As the publication Country Report: Slovenia reports, the current procedures of self-evaluation have highlighted some deficits with regard to the size of the university, lack of integration, weak responsiveness of teachers, students and graduates, lack of support by the leadership, etc. Additionally, the comments include the critics of the lack of different resources wishing the implementation of student-centred learning, and more focus on research. Besides, the danger of over-regulating evaluation model is mentioned as a substantial remark to generally positive perception of university and faculties environment. According to that, the existing models of evaluation need an openness to new elements to ensure certain flexibility and adaptability to new circumstances of yearly reporting followed by monitoring of implemented measures.

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How best to teach cross cultural business negotiations in a disruptive global environment: thoughts for discussions

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Abstract

For decades, business schools have been relying on case studies to bring real life business situations in the confines of the classroom. Cases, role-plays, simulations and group exercises are effective pedagogical tools to develop communications, problem solving, creativity and interpersonal skills, as negotiation is an interactive process between two or more parties seeking to satisfy their respective interests. The objective of teaching cross-cultural negotiation is to improve the students' ability to become better negotiators in different settings. By involving the students in learning by doing, it reinforces their acquisition of critical skills needed to negotiate effectively. This entails knowing how to prepare and interact with the other party, maintaining a working relationship with the counterpart while controlling one's emotions. Teaching business negotiation with cases calls for constant revisions due to a disruptive global environment. Developing cases based on current business situations help prepare students with skills needed to negotiate in today's digital economy.

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Correlation of different gamification systems - Kahoot vs badge

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Abstract

Gamification has already been intensively used in the last 10 years, especially in the education process. The purpose of gamification is to enhance student engagement and motivation by using game design elements in non-game context. As there are a lot of different gamifiction tools and systems, it is interesting to research about these technologies and how it impacts student's satisfaction and success in the learning process. For this reason, this paper analyzes the usage of two different gamification systems on a course Selected Topics from New Technologies (STNT) – Kahoot and badge. STNT is an elective course that can be enrolled by students from any year, from first to fourth, which are part of one of the three undergraduate programs on Zagreb School of Economics and Management (ZSEM) – Economics and Management, Business Mathematics and Economics, and Business Law and Economics. By collecting 4 different elements: student grade, Kahoot results, Badge results and Gamification survey results; the analysis and correlations were made in order to determine the streanghts and weaknesses of Kahoot and badge system.

Keywords: *Gamification, Badges, Education, Teaching methods, New Technologies*

1. Introduction

According to Deterding et al., gamification is using game design elements in non-game context [1], and it's already been using intensively for the last 10 years in order to motivate students to be more active in the education process. [2]-[5] As gamification is popular in the classic class, so is in blended-learning and online education [6]-[9] which enables student engagement through game, competition and fun. Research shows how younger students are more exposed towards extrinsic motivation, while older students towards intrinsic motivation. [10]

Most used game elements are the ones that include rankings, levels, points and badges [11]. In the paper "Understanding student behaviour and perceptions toward earning badges in a gamified MOOC", authors have shown that students who are highly motivated in collecting badges – also show a bigger engagement rate than students without high badge motivation [12]. In Rob van Roy et al. research, it is shown that different people experience the same badge differently according to one out of nine categories: Badges as rewards (Contingent rewards), Badges as goal-setting (Collectables, Challenges, Finish line, Competition), Badges as social signalling (Impression management, Badges as encouragement (Positive feedback, Milestones), Badges as information (Guidance). [13]

In this paper, the usage of gamification is analyzed on elective course Selected Topics from New Technologies (STNT) which is part of the undergraduate study on Zagreb School of Economics and Management. Two different gamification systems are analyzed - gamification in class by using Kahoot (face-to-face) and using badges online on Moodle LMS (Learning Management System).

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2. Gamification on STNT

ZSEM lecturers have used different gamification tools since 2012, and even more intensively since 2016 when couple of lecturers attended a workshop from Kahoot. [14, 15] Research conducted on the same student generation has shown that students are very satisfied with the experienced gamification on two courses of different nature – one being technology related, and another being law discipline. [16]

2.1. General information - STNT

STNT is an elective course that can be enrolled by students from any year, from first to fourth, which are part of one of the three undergraduate programs on ZSEM – Economics and Management, Business Mathematics and Economics and Business Law and Economics. It's the continuation of the Information and Communication (ICT) course from the first semester [17], and it is enrolled by students that have an interest of expanding knowledge in selected topics from new technologies, such as advanced Excel, digital marketing tools and programming in Python and SQL. The course performed for the first time in the academic year of 18/19, and number of enrolled students was 18. Table 1 shows the elements of the STNT final grade.

Table 1. Grade elements

Mandatory grade elements	%
1st exam	15%
2nd exam	15%
Computer Lab	40%
Activity	10%
Final exam	20%
Additional grade elements	%
Certificates from advanced tools	**≤ 5%**
Gamification - Kahoot	
Gamification - badges	
Student presentation	**≤ 5%**
Activity on forum 1	**≤ 5%**
Activity on forum 2	**≤ 5%**
Quizzes	

Gamification is not mandatory on the course, however, all of the students which were part of the class were engaged in gamification through knowledge tests in Kahoot and through badge rewarding system on Moodle LMS.

2.2. Kahoot on STNT

Kahoot is used on STNT to test knowledge and prepare students for exams, and all through the fun of the gamification process. Kahoot was played by students which were in the class during that specific time. Throughout the semester, there were 5 games, and each kahoot has 7 or 8 questions. Each question has four offered answers and only one is correct. On Figure 1 is an example of a Kahoot question.

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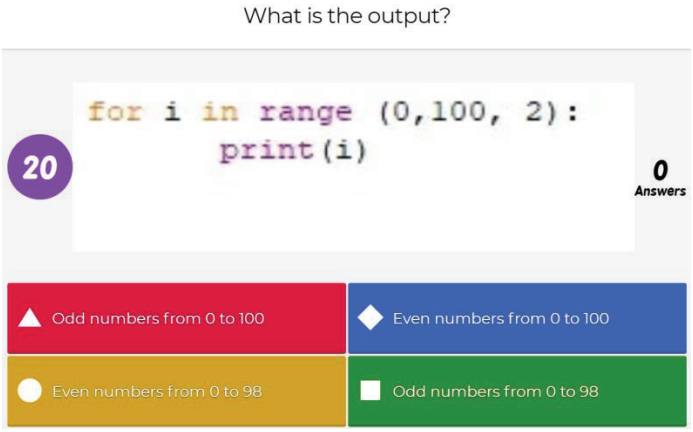

Figure 1. Kahoot example question

2.3. Badges on STNT

In order to make students more engaging in an online component of the course, on Moodle, most of the activities and assignments bring virtual rewards in a shape of a badge. Currently, a student can only see his own badges and can't compare their badge progress with other students. This is why badges only engage student as in a form of a reward, not as a competition satisfaction. In order to make this badge collecting experience more interesting for students, through most of the badges there is a Sheldon Cooper reference from "Big Bang Theory" [18]. Throughout the semester, 13 badges have been created, and in Figure 2 is an example of six different level badges from advanced Excel.

Excel Bonus	Available to users	• Complete: **"Assignment - Excel - PR4"**
Excel Doctor	Available to users	• Complete **ALL** of: **"Excel Intermediate"**, **"Excel Master"**, **"Excel Specialist"**
Excel Intermediate	Available to users	• Complete: **"Assignment - Excel - PR1"**
Excel Master	Available to users	• Complete: **"Assignment - Excel - PR2"**
Excel Specialist	Available to users	• Complete: **"Assignment - Excel - PR3"**
Exceldon	Available to users	• Complete: **"Assignment - EXCEL"**

Figure 2. Badges from advanced Excel

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3. Research results

The research of this paper is focused on four elements:

1. Student grade
2. Kahoot results
3. Badge results
4. Gamification survey results

The result of each element is correlated in order to see how elements affect each other, positively or negatively, higher or lower correlation, etc. The aim of this research is to analyze two different gamification systems and how they affect students and their perception regarding it.

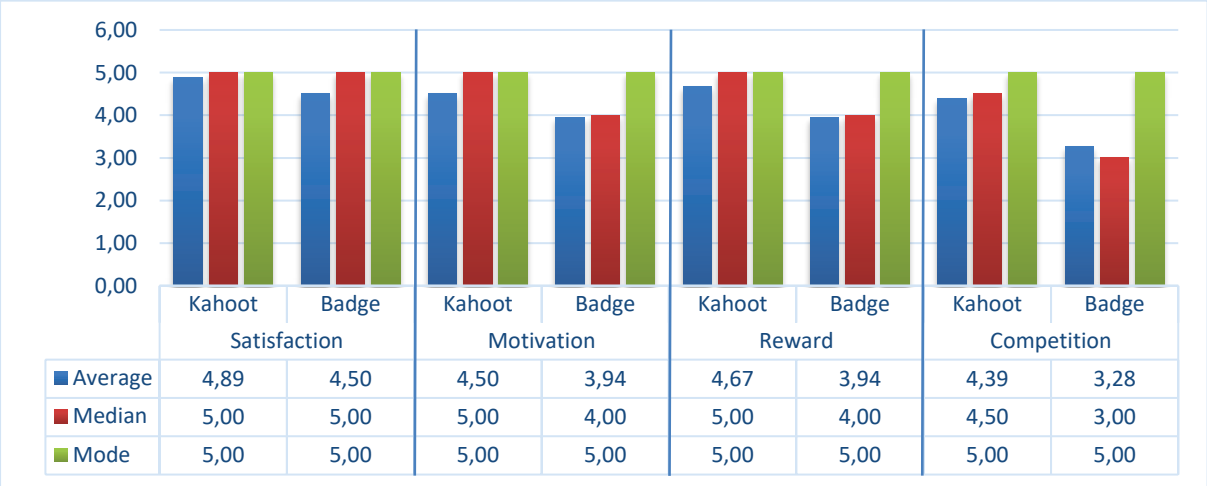
The student grade is presented as a measure for knowledge student gained throughout the semester. Kahoot and badge results were a measure of how well did a student do in the gamification process of learning. The survey was conducted in order to gather student's perception regarding satisfaction with gamification usage in a course, the motivation gained and how important is for them to compete in the process and to gain a certain reward – such as points, percentage of a grade, etc.

With the data received from 18 students, the analysis and correlation of all elements can be conducted to determine the relationships of gamification with students' final grade and perception based on survey results. The limitation to this research is the size of the sample since the targeted students were the only ones with all four elements. Also, since the badge gamification process is new and in its early stages, the development level is behind the already used tool – Kahoot.

3.1. Survey results

In the survey results, the "average, median and mode" analysis was conducted for student's perception on satisfaction and motivation, and also how students perceived the importance of competition and reward gaining.

Survey results, figure 3, have shown that students are very satisfied when using both Kahoot and badges as they had an average of 4,89 and 4,5 with a median and mode of 5. The motivation that is provided by gamification, for Kahoot the average rate is 4,5 with a median and mode of 5, while for badges the average is 3,94 with a median of 4 and mode of 5. The importance of a reward for Kahoot, the average score is 4,67 with both median and mode of 5, and for badge is the same as for badge motivation, 3,94, with a median of 4 and mode of 5. The competition factor goes in favor of Kahoot with an average of 4,39, median 4,5 and mode 5, while for badge competition is lower with an average of 3,28, median 3 and mode 5.



	Kahoot	Badge	Kahoot	Badge	Kahoot	Badge	Kahoot	Badge
	Satisfaction		Motivation		Reward		Competition	
Average	4,89	4,50	4,50	3,94	4,67	3,94	4,39	3,28
Median	5,00	5,00	5,00	4,00	5,00	4,00	4,50	3,00
Mode	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00

Figure 3. Column chart of Kahoot and Badge survey results

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The average of all four Kahoot questions is 4,61, while for Badge is 3,92. The results shows us that Kahoot is considered an overall better gamification tool in students' perception, however, with the limitation of the sample size.

One more question was added into the survey regarding a new element – avatar, which was rated with an interest average of 3,94, median and mode of 4. The meaning of an avatar is a character for each student which becomes stronger with better customization options when getting more points from a certain assignment, case, homework, etc. However, this gamification tool still needs further development – after a badge system develops to its fullest potential.

3.2. Significant correlations

All research results were analyzed in order to identify the correlation between students' grades, Kahoot scores and badge points. The aim was to analyze the success of both Kahoot and badge in regards with the knowledge gained throughout the semester – in a form of the final student grade.

Table 2 shows the correlations between the wanted elements – grade, Kahoot and badge. Grade and Kahoot have a positive high correlation (r=0,82), while grade and badge has a positive moderate (0,47) and Kahoot and grade also positive moderate (r=0,69).

	Grade	**Kahoot**	**Badge**
Grade	1	0.82	0.47
Kahoot	0.82	1	0.69
Badge	0.47	0.69	1

Table 2. Correlations of students' grades, Kahoot and badge scores

This shows us that there is a purpose in studying and researching this topic as gamification is working in favor of students.

Figure 4 shows a scatterplot for Kahoot (y axis) and student grade (x axis), and as it can be seen, the correlation of these two elements is high (r=0,82). That means that students who did well in Kahoot, also did well with the final grade - and vice versa.

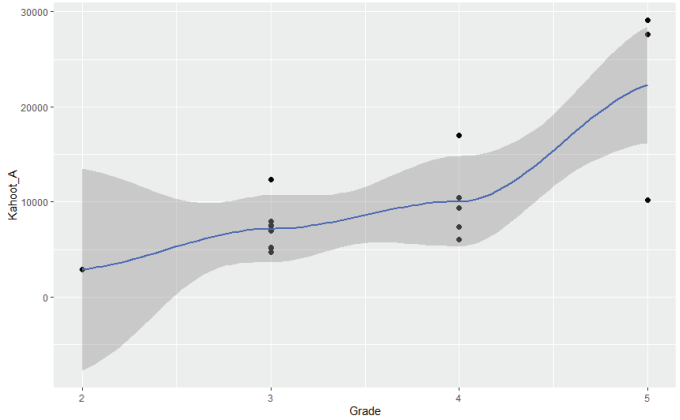

Figure 4. Scatterplot of Kahoot results and students' grades

However, Kahoot was expected to deliver positive results - the badge was a new element that needed analysis. In Figure 3, a scatterplot shows the relationship between badge points (y axis) and student grade (x axis). The relationship is similar to the one presented with Kahoot, however, the gaps between the dots is much more visible since the correlation is only moderate with r=0,47.

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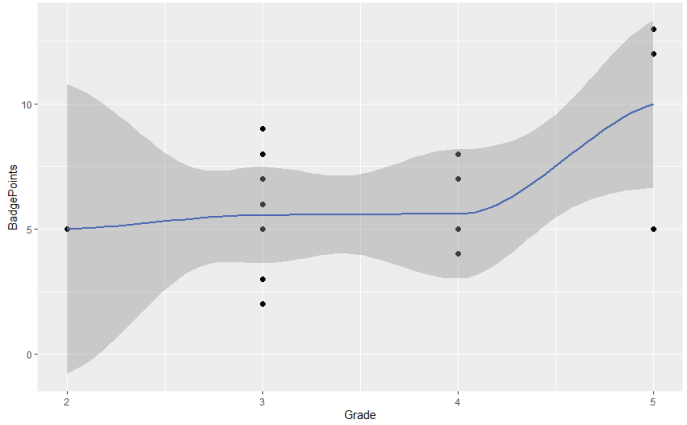

Figure 5. Scatterplot of badge results and students' grades

Figures 6 and 7 show boxplots of the same correlations, but tend to better explain the difference between the two gamification tools. Kahoot boxplot shows the real meaning of the gamification in education, as students grades get higher, so do their results in Kahoot games. The correlation is obviously lower in the badge example as grades 2 and 4 share the same mean of badge points (5) and grade 3 is close to it, but higher (6,25). That also means that the badge system still needs more time to develop a fair point system that will differentiate students more accurately by their knowledge, which is shown as a final grade.

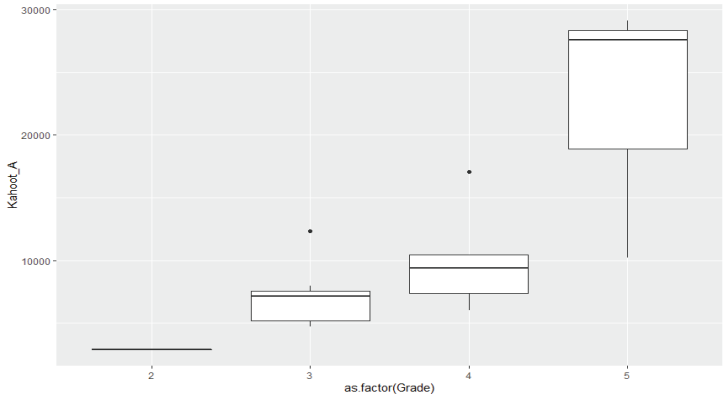

Figure 6. Boxplot of Kahoot results and students' grades

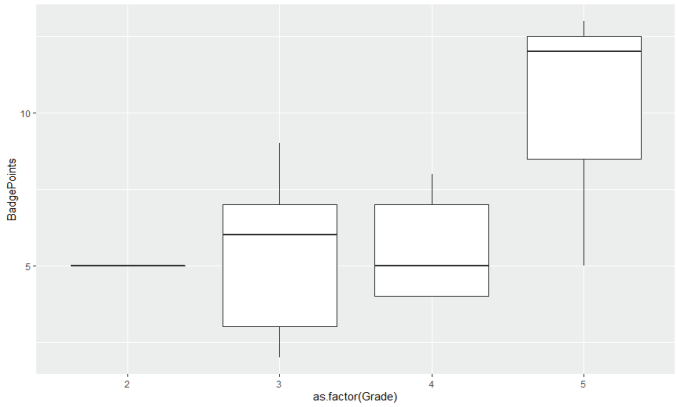

Figure 7. Boxplot of badge results and students' grades

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With the provided scatterplots and boxplots, it is visible that Kahoot exceeds badge as a gamification tool. However, this was expected due to the fact that badge was just implemented for the first time, while Kahoot was already used and has a sustained system which works for students and the grading system. The fact that badge tool shows a moderate correlation with the students grades in the first usage – there is a big promise that throughout the years badge system can be adjusted accordingly.

In order to determine the need of both gamification tools, Kahoot and badges, the correlation of both results was made. Figure 8 shows a scatterplot of both tools and the correlation is positive (0,69). The correlation is on a border of moderate and high correlation which is promising and indicates the need of further development of both tools and further research in this topic.

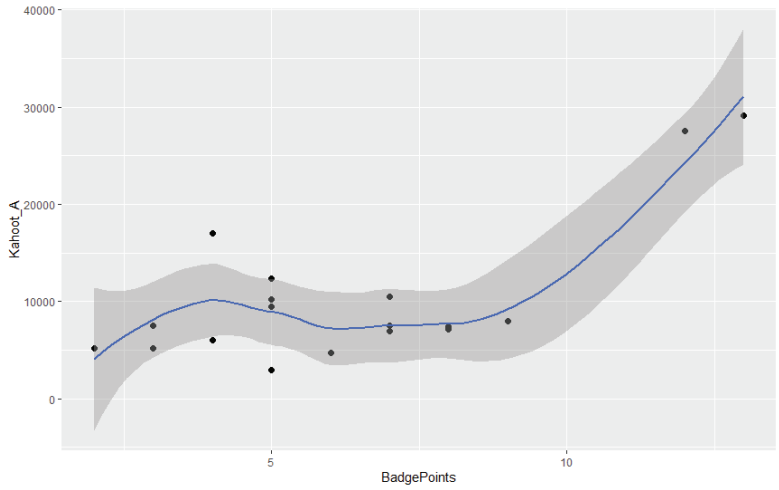

Figure 8. Scatterplot of badge and Kahoot scores

4. Conclusion

The aim of this paper is to compare two different gamification systems – Kahoot and badges. The data was collected from four elements – students' grades, Kahoot and badge scores and survey results in order to determine students' perception regarding gamification. The survey results analysis and chart visualization has shown that students are generally satisfied in using both tools, however, they are more satisfied with Kahoot. The reason for that may be that Kahoot has already been used and it has a stable system, while badges were a new implemented tool that still needs further progress.

The correlation of students' grades, Kahoot and badge scores was also made in order to compare and analyze the relationships of three elements that are based on real points – not students' possible perceptions. As grade and Kahoot have a positive high correlation, grade and badges have a positive moderate and Kahoot and grade also positive moderate, it is clear that this research is promising and indicates the need of further development of both tools and further research in this topic.

To conclude, Kahoot has proven to be a better and more satisfying tool for now, however, there is a need of further development of the badges system. In any case, the correlation of both tools is strong – meaning they complement each other and should be developed together. Also, authors of this paper also encourage more research regarding innovative teaching methods and tools in gamification as one new element was suggested in this paper for further research – avatar.

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