Challenges of Europe

Split

Faculty of Economics, Business and Tourism, University of Split

17th - 19th May, 2023
Bol, Island Brač, Croatia

14th International Conference "Challenges of Europe"

"DESIGN FOR THE NEXT GENERATION"

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CHALLENGES OF EUROPE:

DESIGN FOR THE NEXT GENERATION

14th

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Publisher:
Faculty of Economics, Business and Tourism, University of Split
Cvite Fiskovića 5
21000 SPLIT, CROATIA
Phone: + 385 21 430 600
Fax: + 385 21 430 701

For the Publisher:
Vinko Muštra, Dean

Managing Editors:
Vinko Muštra, Josip Visković, Ivana Perica

Typesetting:
Josip Grgić, Velimir Skroza

Cover Design:
Antonija Kvasina

CHALLENGES OF EUROPE:
DESIGN FOR THE NEXT GENERATION

Fourteenth International Conference

Challenges of Europe

Conference Proceedings:

PDF available online

Edited by:

Faculty of Economics, Business and Tourism in Split

University of Split
Faculty of Economics,
Business and Tourism
Split, Croatia

SPLIT - BOL, BRAČ, May 17-19, 2023

UDC 338.24(4)(063)

ISSN 1849-2541 (Online)

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FOREWORD

Dear colleagues,

the proceedings you are reading contain the papers presented at the 14th International Conference "Challenges of Europe: Design for the Next Generation, held in May, 2023 in Bol on the island of Brač in cooperation with the European Commission. The proceedings contain only a selected subset of papers that can be scientifically evaluated by researchers in this way.

This is an opportunity to recall our first conference, which was held in 1995 under the name "Enterprise in Transition". It was launched with the aim of supporting the economies of Central and Eastern Europe in particular in their efforts to adapt to the changes demanded by the market economy.

In view of the transition of the economies of the post-socialist countries of Central and Eastern Europe to a market economy, transition-related issues have become less important over time. In 2009, the conference was renamed "Challenges of Europe" to emphasize the need to explore various economic topics and issues faced by the global and integrated European economy.

In doing so, we focused on the necessity and the possibilities of connecting business entities in order to achieve synergy effects. This in no way excluded the possibility of addressing the economic problems from the perspective of other economies or the need to gain universal economic knowledge. This was, therefore, the basis for our conference, which, in line with the EU's recovery plan, focused on shaping the next generation to emerge stronger from the pandemic, transforming economies and societies and shaping a Europe that works for all. Moreover, the conference was by no means limited to the European context, which was confirmed by the participation of researchers from all over the world.

As conference organizers, we are particularly proud of our distinguished guests. Having already hosted Professor Joseph Stiglitz, Professor Jean Tirole, Professor Eric Maskin and Professor Oliver Hart, Nobel Laureates and world-renowned scientists, we have now had the pleasure of once again welcoming Nobel Laureates in Economics: Professor Eric Maskin and Professor Alvin Roth. It is important Other distinguished guests and keynote speakers such as Professor Edward Altman from New York University, Professor David Reibstein from the University of Pennsylvania, Professor Özge Öner from the University of Cambridge and Luc Tholoniat, Director of the European Commission's Directorate-General for Economic and Financial Affairs, should also be mentioned. They have all helped us to raise the excellence and prominence of the conference and of the papers presented.

It is worth noting that a panel discussion entitled "Our Path Towards International Accreditation" took place during the conference. In addition, the conference was also a good opportunity for young researchers and PhD students, who delivered their presentations during the conference as part of their doctoral workshops. The PhD students also had the opportunity to meet all the distinguished keynote speakers at an informal breakfast meeting.

The "Challenges of Europe" conference and these proceedings you are holding in your hands would not have been possible without the many volunteers who devoted their time and energy to the organisation of the conference. With this in mind, we are particularly grateful to the members of the International Programme Committee and the Organizing Committee who have taken on a huge burden. Our sincere thanks go to all the reviewers who participated in a double-blind review process that enabled us to present the selected papers for this conference.

We would also like to thank all others who generously contributed to the conference in any way and without whom the new insights presented in these papers would have been withheld from scientific thought.

Split, March, 2024

Chairperson of the Programme Committee
Associate Professor Vinko Muštra

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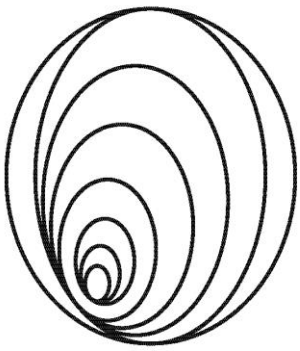

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XIV

CONFERENCE PROCEEDINGS

FUTURE PROSPECTS FOR JUMPSTARTING TECHNOLOGICAL INNOVATION IN ENHANCING THE COMPETITIVENESS OF CROATIA BUSINESS SECTOR

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Key words: *Innovation, R&D Spending, Innovation Policy*
JEL codes: *L25, D23, D25*

ABSTRACT

Technology and innovation has always been among the major concerns of those striving to shape the future. Since decades, broadening the prospects for innovation directed discussion has been an imperative shaping public policy and company strategies. The pace of technological advances on world levels has recently been accelerating, which might be partly directed and inflated by COVID influences.

In terms of methodology, this paper presents a cross-section of (secondary) statistical data organized and interpreted in accordance to a list of issues identified by international bodies engaged in the research of R&D and innovation activity. Our original plan was to examine the likelihood of advancing the competitiveness of the Croatia economy for the future from the perspective of company level R&D activity. Instead, we were forced to rely on aggregate, national level, data. We review existing policy initiatives, draw some data and comment on the existing innovation supporting framework.

The paper is structured as follows: In the introductory part, we present expose some ideas we find encouraging for direction research into innovation activity at company and country level. The theoretical section defines the basic concepts and approaches dedicated to understanding innovation, particularly the discourse on the nature of "disruptive technologies". Under the third section we provide some context by highlighting some reports on recent innovative performance of Croatian firms in international, primarily European settings. This is followed by an exposition of data and by concluding remarks.

1. INTRODUCTION – THE RESEARCH AGENDA

The motivation for starting this research stems from the feeling that Croatia faces a moment in time that is likely to bend future prospects of economics and social development. In general, economic trends do not look bad; according to Eurostat GDP continues growing slowly, yet above the average rate of growth for EU and the Eurozone, while government debt remains bellow both averages and continues to decrease. If ever, now is the moment where assets may be available for investing in new developmental trajectories. On the other hand, the present moment is driven by unexpected developments. One crisis seems to follow another; a prompt application of measures to deal with this incidental occurrences of systemic crises, would be expected to direct the attention of policy makers to innovation and R&D in order to preserve sound socio-economic development (even though, as the Israeli-Palestinian war develops one wonders about the social cost involved). Recent developments add relevance to a point made by the Bar Am et al. (2020) stating that "understanding the state innovation is even more critical than ever".

Croatia has been enjoying a decade of generally positive macroeconomic performance that consequently led to closing up its developmental gap. (Srdelić, Davily-Fernadez, 2022). In terms of institutional support, Croatia has gained access to European funds and expertise, particularly since it joined the EU in 2013. Joining the EMU and becoming part of the Schengen area, which was accomplished in 2023, should additionally boost developmental prospects.

As to references to innovation activity, Srdelić, Davily-Fernadez (2022, p. 20) show that R&D is the most important explanatory factor of non-price competitiveness of Croatia.

Awareness concerning the importance of R&D also in Croatia exists, but apparently, there is need for a stronger and more articulated support by public authorities. Undergoing efforts remain poorly organized and lacking coordination. In 2013 a WB Country Series Paper reported that Croatia has undertaken steps to make its R&D sector more competitive and more effective in supporting economic growth, mostly from the part of the Croatian Ministry of Science, Technology and Higher Education. The effort, with some lag, was expected to reflect an overall increase of spending on R&D.

In terms of institutional support to innovation, either in the form of explicit policy or government contribution to developing supporting factors such as human capacity and financial endowments, it was noted that initiatives were taken at the national level:

- Public infrastructure is being established and integrated into supranational scientific networks (Croatian public academic institutions are part EHEA, ERA; reforms promote academic performance by providing research funding, establishing quality accreditation procedures and merit based system of academic advancement),

- Government agencies were established, such as BICRO, HABOR, technological parks and cluster initiatives are being promoted; but there also by tax reductions, tech-research and scientific-research equipment are exempt from import duties… (World Bank, 2013).

However, what remains underreported is activity by the private sector, i.e. initiatives at micro-level (company, group, individual). Apparently, this is not just the problem in Croatia.

The interest in technological developments has always been strong. At the beginning of the 2000, it was incurred that R&D activity was crucial for maintain sound economic growth and the OECD (2004, p. 5) was reporting on new "waves of innovation, notably in information and communications technology (ICT) and biotechnology going on. Interest for the topic pervaded over time and the number of international organizations and specialized teems systematically researching R&D and innovation has grown producing a string of annual reports such as the Global Innovation Index, a UN funded World Intellectual Property Organization (WIPO); the OECD Science, Technology and Industry Scoreboard; the European Innovation Scoreboard; national level projects and policy initiatives. All of them tried to establish and document trends producing a valuable stream of insights and supportive data.

Still, over the years, there have been some mild differences in the dominating rhetoric. Mainly, approaches at the turn of the century were prone to stress the importance of understanding contextual factors affecting innovation activity and stressing the importance of innovation activity at a micro level. Stern, Porter and Furman (2000) explicitly indicate that "ultimately, it is the microeconomic conditions associated with a nation's cluster which determine whether firms respond to technological opportunity and innovate at the global frontier" (p. 3).

In the early 2000's, the OECD (Patents and Innovation Trends and Policy Challenges, OECD, 2004, p. 15-18) will point out the notions of:

- Innovations being central to business strategy;
- Innovation processes becoming globalized, which lead to a review (strengthening) of patent rights;
- A growing awareness about the importance of "cross-fertilization" of public and private efforts;
- The sectoral structure recognized as important for understanding innovative activity.

The list above served to guide our choice of data to be used for understanding the patterns of R&D activity and innovation in Croatia. As more than ever innovations were being presented as a phenomenon evolving from company strategies, we initially attempted to review firm level data (ORBIS). However, as data on Croatian companies R&D was generally unavailable, we reverted to macro level data and tried establishing patterns that compare to globally identified trends and developments in other countries.

We are aware that most recently, some 20 years later after, the research agenda was expanded to include some new issues that affect the level and direction of R&D activity worldwide, namely:

- The importance of new investors (PE, VC) fueling R&D;
- The introduction of new concepts, such as „deep-tech" (Hodgson, 2023);
- A sensitivity to the efficiency and effectiveness of innovation promoting instruments, such as tax subsidies (reported to be on the rise according to Appelt at al. 2023, OECD, 2023);

- Innovation strategies designed as part of more complex policy platforms that target precise development goals, such as sustainability and digitalization (UN and EU strategies for period until 2030), and

- Increasing protectionism/nationalism in designing policies intended to support technology development (STI Outlook, 2023).

These new developments are certainly intriguing and worthy to be taken under consideration. Yet, it has been hard enough compiling evidence that will illustrate the first list of factors, so that we will attempt just to comment on them as we go along.

2. THEORETICAL PERSPECTIVES ON TECHNOLOGICAL CYCLES AND MARKET ENTRY

Since the 1970s, population-ecology theory has been considered the main theoretical strands dedicated to explaining the success rates (birth/death trends) of particular companies in particular industries. It focused on explaining strategic alternatives and issues related to individualized (company level) approach when it comes to market entry, market segmentation etc. It promoted the idea that companies should build capacities (resource composition, structural organizational arrangements) that help them achieve a strategic fit between company capabilities and market (environmental) opportunities.

As originally exposed by Aldrich and Pfeffer (1976), the population-ecology model explains the logic of natural survival to companies operating on the same market. The model assumes there is a strategic fit between the strategies and structures chosen by the firm and the conditions in its market environment, mainly the availability (whether scarcity of abundance) of critical resources that are contested by market competitors. It is more recent, as well as more broadly oriented ramification, considers the concept of market ecology can be defined/modeled as a state of market structure likely to promote efficient behavior by market actors. This line of reasoning latter evolved into the concept of business ecosystems, which are being using to develop a general theory of factors influencing innovation. The perspective of business ecosystems explicitly includes regulatory/ governmental involvement in the creation and further developments of market conditions.

Their interest lies in understanding factors that drive changes and the way existing ecosystems coevolve. The idea of ecosystem attracted much researchers' attention in recent year. By Adner (2016, pp. 40) it was explained as "the alignment structure of the multilateral set of partners that need to interact in order for a focal value proposition to materialize", while Granstrand and Holgersson (2020) "the evolving set of actors, activities, and artefacts, and the institutions and relations, including complimentary and substitute relations that are important for the innovative performance of an actor or a population of actors".

The idea of ecosystems can be interpreted as a more contemporarily "version" of the population-ecology/resource dependency metaphor. The contemporary approach to interpreting and developing science, technology and innovation policy; to quote the OECD, relies on the "system ecology" approach develop in the business literature. Its important feature is that it proposed looking at trends as a result of multiple interrelated factors (co-determination of causal effects) acting in a complex network of firm/institutional interdependencies. A model of an innovation ecosystem, such as Passi et al. (2023) will point to a number of co-evolving elements (some 20 of them) includes: Market size, Ecosystem attractiveness, Hype, Ideas, Social benefits, Regulators, Finance…

Another enlightening narrative that stands out is that of disruptive innovation.[1] Disruptive innovations appear to be a promising path (loophole) capable of promoting latecomers/marginal into the front light. The term disruptive technology was promoted by Bower and Christensen in 1995.[2] Here firm behavior on markets has been developing around the idea that different technologies coexist on the same market and that innovation, at least at its beginnings is not necessarily superior in performance when compared to technologies that are more traditional.

According to Christensen:

> …*When introduced, disruptive innovations are initially inferior on accepted performance dimensions relative to incumbent products, but offer a novel mix of attributes that appeal to fringe customer groups such as those near the bottom of the market…Consequently, incumbents are typically not motivated to develop their own disruptive innovations that promise lower margins, target smaller markets, and introduce inferior products and services that their existing customers.*

What the theory is really about are the different development trajectories of firms serving the same market, such that once marginal firms (the entrant(s) outperform strong incumbents basically by adopting technology that appeared inferior (for being underdeveloped) at the time. This approach will not so much focus on the proper time of entry, but rather on the expectation that the success of a potentially disruptive technology will require some complacency from the incumbents, providing incumbents are likely to develop products that serve the needs of the most demanding and most profitable market segment. Neglect of marginal market segments allows for a time window that can be exploit alternative technology that may eventually make new-entrants overtake major incumbents.

As stressed by Adner (2002) this is again a demand-based view of technology competition. Market dynamics requires a certain state of demand conditions to trigger the development of disruptive technologies. The market structure is presented by a segmentation of consumers according to particular preference trade-offs s regarding the functional performance of goods and services. As put by Adner, market opportunities arise when consumer preferences are met with consumer willingness to pay for performance improvements. Requirements of some market segments may be met by non-standard/disruptive technologies. If over time, preferences of two consumer groups overlap (or, preference symmetry occurs), decreasing willingness to pay for high end products will increase the importance of price differentiation and demand will shift between competitors.

The theory has been supported by case studies. Such studies (for example, Coccia and Wang, 2015 on anticancer drugs, Yang, Kim and Choi, 2022 on Korean on-line retail platforms), even though they might be demeaned and considered anecdotal confirmations, demonstrate the only ***some*** **firms** in **specific sectors** (with dynamic technological developments) have managed to follow the growth trajectory envisaged by theory.

Both narratives help understand technology development trajectories but in a perspective that leans on the role of consumer behavior (preferences) in driving incentives of companies to

[1] The DT theory is a bit restrictive as it addresses product innovations; id does not speak of other types of innovation such as process, organizational, market communication and other forms on innovation. See Gault (2016) on the evolution of the Oslo definition of innovation, its scope and implications for measurement.

[2] As suggested by the author himself, the concept has often been misunderstood. So 20 years later Christensen et al. (2015) make an effort to point out the main ideas.

innovate. Consequently, they focus on the private sector and neglect public investments and policy. In addition, they are more appropriate for understand specific markets and specific company strategic efforts. (Again, this can be seen as another limitation to the approach.) On the positive side, these theories advocate that those that can develop a strategy that captures the right moment and right pathway to success, can actually advance their competitiveness. (We hope Croatia is in a position to do so in the near future; as long as we do not rock the boat.)

Population-ecology narratives point to the importance of firms establishing a strategy. This strategy can work of a firm is capable of spotting the state of resources; or, abundance or scarcity of resources existing in a proper moment in time (an opportunity window). It is similar with disruptive technologies narratives. But coming from a time in history when once strong companies (incumbent firms) were unable to maintain dominancy, the disruptive technology paradigm additionally requires certain market conditions (complacency by incumbents) and a long enough evolution period for news entrants to evolve and displace incumbents. Another apparent distinction between the two narratives stems from the fact that the size of entry-level investments does not seem to be particularly important for the success of DT.

The critical issue demanding some stand is: can a paradigm of entrants outperforming incumbents, as a theory of *industrial structure* transformation, be extended to "predict" repositioning of national industry sectors in international settings… (Note that such a thesis will imply that a larger numbers of firms in multiple industries should demonstrate substantial innovative capacity)[3]

Even though at first sight focusing on individual firm behavior and performance does not appear very suitable for macro-level analysis, it is a fact that the industry approach logic is being employed also at the macro level in developing public policy. Policy researchers and policy makers are more than ever talking of (technological) competition, securing resources and building capabilities… These can be seen in the ever more comprehensive approach to explaining innovation and R&D investment trends on national and regional levels.

These authors (the paper) is also important because it set the standards for measuring factors affecting R&D productivity at country level and establishing the measurement of R&D outputs as: scientific outputs, innovative outputs and productivity (gains). (Today the approach can be found in the WIPO yearly report employing seven pillars: five groups for contributors/inputs and two groups of outcomes/outputs, one being "more visible" (knowledge and technology), and the other being more complex to report (creative outputs).

As an example, the OECD newest Science, technology and Innovation Outlook 2023, subtitled "enabling transition in times of disruption", demonstrates the contemporary sensitivity to business environments and an "embeddedness" of explanations of trends in the rhetoric of competition. In the introductory abstract, the STI Outlook points out that the contemporary crises with COVID, called attention to "insufficient funding, wealthier-country hoarding and logistical challenges..." have triggered "Vaccine nationalism" and "diplomacy".

[3] Post WWII Japan appears to offer confirmation. According to Tetsuji (2015), the Japanese miracle has been an "*extension of the national catch-up effort that began in the late nineteenth century. There are constant features underlying the economic dynamism of the prewar and postwar eras. But there are also differences. The basic growth factor common to the prewar and postwar economies was the "backwardness" of the Japanese economy relative to the world's advanced industrial economies…"* (see the catching up chart at: https://www.nippon.com/en/in-depth/a04003/

This raised "concerns about strategic competition in other technology areas, as well as the prospects of future STI co-operation on global challenges such as climate change" As a result, as COVID combined with challenges related to the war in Ukraine the technology innovation arena become a matter of high public interest. Several OECD countries are developing STI policies in order to "make economies and societies more resilient, and are aware that keeping up requires "long-term investments in R&D, skills and infrastructures".[4]

3. SOME CONTEXTUAL REFERENCES ON INNOVATION ACTIVITY

Nowadays, according to the European Innovation Scoreboard 2022, Croatia is an "Emerging Innovator" with innovation performance at 66.5% of the EU average. It also means that Croatian performance is above the average of the Emerging Innovators (indicated by the 50.0% threshold). Innovation performance is increasing (15.5%-points) at a rate higher than that of the EU (9.9%-points).

On world levels, it was noted that "After a boom in 2021, investments in innovation showed a mixed performance in 2022. Scientific publications, R&D, venture capital (VC) deals and patents continued to increase to higher than ever. However, growth rates were lower than the exceptional increases seen in 2021. In addition, the value of VC investment declined and international patent filings stagnated in 2022." (GII, 2023, p. 21.)

Following the trajectory of historical changes in (the more empirical) policy perspective. During the 2000s OECD (OECD, 2004, p. 15-18) policy was pointing out that innovation activity is related to the business sector ("Innovation is central to business strategy"); and, as innovation processes were becoming globalized, there was a movement towards a review strengthening) of patent rights. It also stressed the role of the parallel system of public institutions (the academic world) in maintain innovation activity.

Now, 20 years later, the overall perspective did not change much; the methodology (pillars) used to report contributors and results from innovative activity remained more or less the same. Yet some new issues/concerns come forward, such as:

- Higher sensitivity to efficiency and effectiveness of innovation promoting instruments; for example, tax subsidies (on the rise according to Appelt at al. 2023);

- Innovation strategies designed as part of more complex platforms that target precise development goals, such as sustainability and digitalization (UN and EU strategies for period until 2030); and

- New investors looking for opportunities (PE, VC) introducing new concepts and measures for tracking innovation performance (see how deep-tech is being defined by Hodgson, 2023)[5]. Some argue that Europe is falling behind because its financial system is inferior to the US when it comes to financing innovation and particularly in scaling new promising business models (ibid);

[4] OECD STI Outlook 2023 QUOTE: „Governments are putting in place measures to (i) reduce STI interdependency risks and restrict international technology flows; (ii) enhance industrial performance through STI investments; and (iii) strengthen international STI alliances among like-minded economies. These measures could disrupt integrated global value chains and the deep and extensive international science linkages that have built up over the last 30 years. "

[5] According to Hodgson the concept (deep tech) was coined in 2014 to refer to technology based on tangible engineering innovation and scientific advances with the ability to disrupt several industries.

- Increasing protectionism/nationalism in designing policies intended to support technology development.

3.1. **Some empirical evidence of contemporary R&D trends**

Going back to world levels, look at the data by WII Report OECD (2022) indicates that the importance of R&D spending by the business sector has been correlated with GDP growth (Figure 1).

Figure 1. R&D trends follow GDP

Source: WIPO, 2022

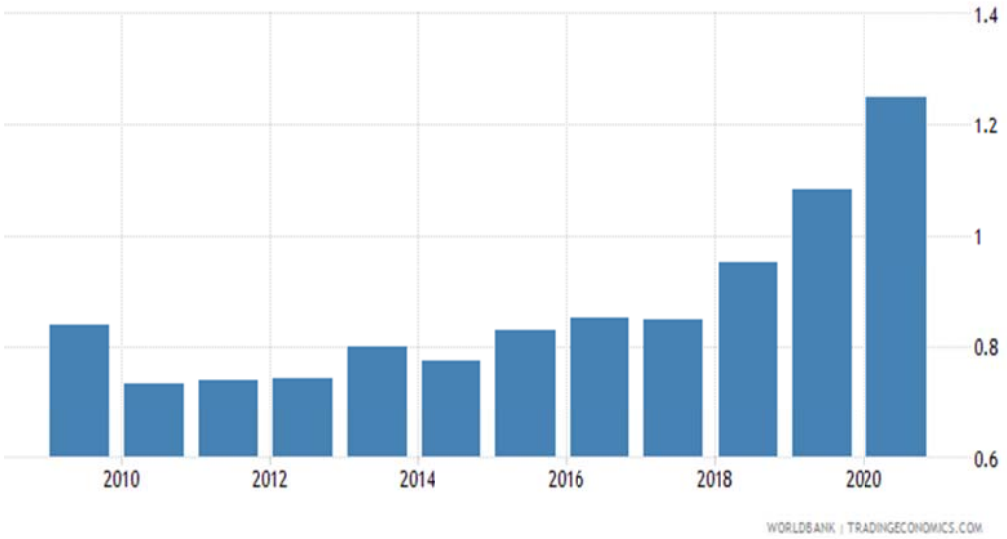
The graph clearly illustrates a close relationship between R&D investment and GDP growth. This is most visible during crises periods. A way out of the 2008 crises was marked by path of "constant growth of R&D spending by both the public and the private sector. (The worldwide recovery of business enterprise expenditure on R&D (BERD) was quick, reaching 3.2% growth in 2010 and gaining at the faster pace of 7.2% in 2011 and 6.6% in 2012. WIPO, GII, 2015). Another point to be made is that the "rest of the world" appears to be more "sensible" to drop in GDP. Finally, as it will show later as we look at Croatian figures, it is interesting to note that the authors chose to plot levels of business R&D.

With Croatia trends "work" a bit different; economic activity mirrors worldwide trends, but R&D investments have a somewhat different trajectory as is shown by Figure 2(a) and Figure 2(b). Peaks and troughs in GDP follow world patterns. When it comes to R&D expenditures, the picture changes (Figure 2b). Even during recession, R&D was sustained and has even shown some growth.

Figure 2(a). Croatian GDP growth trends

Source: https://www.theglobaleconomy.com/compare-countries/

Figure 2b. R&D activity in Croatia



Source. https://tradingeconomics.com/croatia/research-and-development-expenditure-percent-of-gdp-wb-data.html

R&D spending in Croatia is modest in absolute figures. After all, Croatia is a small economy (population of 3.9 million, 60 billion euros GDP); however, with rates of R&D spending to GDP lower than the European average.[6]

In the decade 2010-2020 R&D expenditures as % of GDP for Croatia have remained in the positive, even in times when GDP growth was (slightly) in the negative (Figure 3). However, the trend was much smoother and the investment rates were generally low (source WB).[7]

[6] It should also be noted that Europe (as the most important macro environment influencing the economic performance of Croatia) has been less active than its main competitive rivals. According to a study produced by McKinsey Global Institute, Europe30 patent activity is lagging behind the US in a whole range technological areas. (Smit et al. 2022., p. 24)

Perhaps standing on the positive side of the "0-line" may be attributed to Croatia joining the EU in 2013. Still, already at the time Croatia was preparing to enter EU, it was acknowledged that Croatian investments in R&D are insufficient and lagging behind countries with similar income levels (World Bank, 2013. p. 11). According to it, at the national level (government) institutions have provided support for "improving the legal environment… and creating programs to support innovating private sector companies." But the report also advised that the level of expenditures in R&D should rise to an average of 3% of GDP and that additional efforts are needed to stimulate private sector R&D and innovation (European Commission 2023 Country Report – Croatia, p. 49).

A more recent evaluation of Croatian innovation performance (WIPO, 2022) will find that Croatian performance matches expectations by being in accordance with its income level. In fact, the score of innovation output to innovation input in 2022 is better than average. However, Croatian overall performance is below the high-income country group average. Of all GII pillars and at its worst when it comes to institutions (particularly its business environment). [8]

Table 1. Croatia – GII Croatia country ranking

Year	GII	Innovation inputs	Innovation outputs
2015	40	-	-
2016	47	-	-
2017	41	-	-
2018	41	42	42
2019	44	46	52
2020	41	44	43
2021	42	41	48
2022	42	45	40

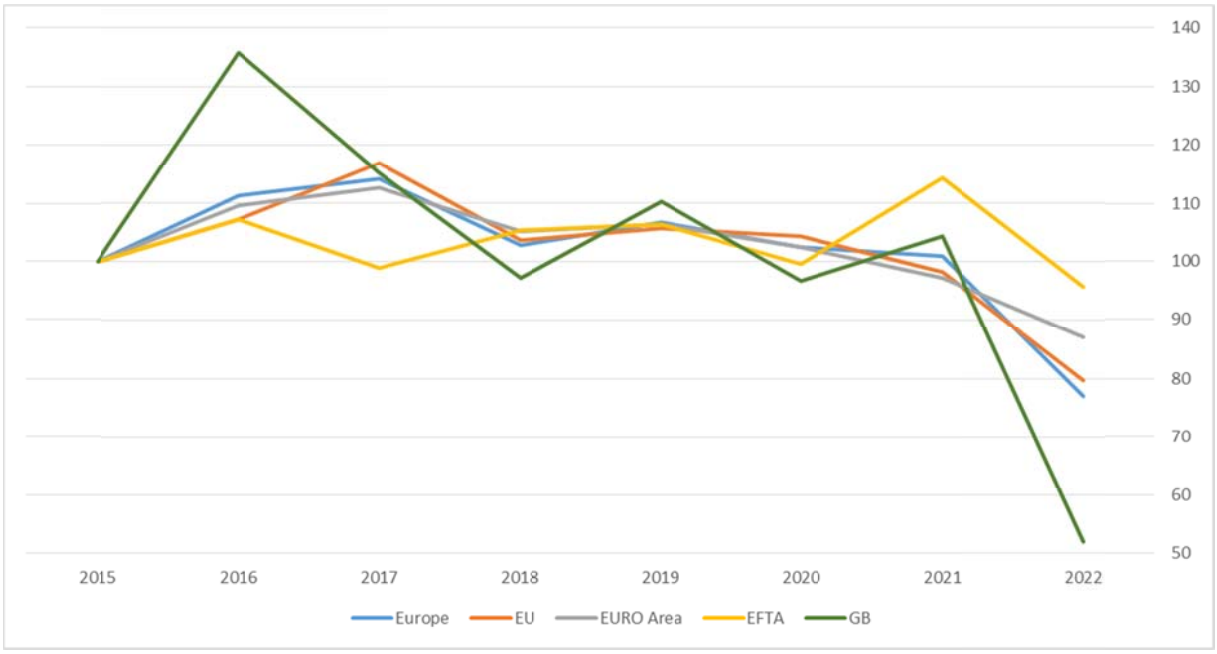
Source: WIPO – GII

Employing a different data source (ORBIS company level data) will demonstrate that European R&D spending has been generally decreasing (Figure 3).

[7] WB methodology: "Gross domestic expenditures on research and development (R&D), expressed as a percent of GDP. They include both capital and current expenditures in the four main sectors: Business enterprise, Government, Higher education and Private non-profit. R&D covers basic research, applied research, and experimental development" (https://tradingeconomics.com/croatia/research-and-development-expenditure-percent-of-gdp-wb-data.html)

[8] The Global Innovations Index (GII) is calculated on yearly basis by the World Intellectual Property Organization (WIPO). Croatia has been a member since 1991. The GII rests on 7 pillars: Institutions, Human capital and research, Infrastructure, Market sophistication, Business sophistication, **Knowledge and technology outputs, Creative outputs**. Institutions include: the political environment, the regulatory environment and the business environment. In 2020 its worst ranking was for market sophistication. By items, the worst rankings were attributed to state of cluster development, university/industry collaboration, and intensity of local competition…

Figure 3. R&D expenditures by company sector 2015-2022 (billions of Euros)



Source: created by authors with data from ORBIS database

Unfortunately, data on R&D for Croatia could not be found in the ORBIS database; so we could not verify was is primarily public spending being reported in national level statistics.

3.2. **The analysis of Eurostat data**

To measure the strength of the relationship between R&D activity and variables thought to be significant for R&D activity, we retrieved data from Eurostat and performed Pearson correlation tests. The two indicators chosen for R&D activity are R&D as a percentage of GDP and patent applications per million inhabitants. The indicators for which we expected a possible relationship with R&D activity included: the overall level of GDP, the average number of employees in manufacturing firms, the turnover of SMEs in manufacturing, direct investment flows, the share of manufacturing in GDP, the share of computer programming, consulting, and information services in gross value added, the share of HGE (high growth enterprises) in the total number of firms, the share of firms with more than 250 employees in the total number of firms, their share in turnover, and the share of persons employed in these firms in the total number. The information whether the country is a former communist country was used as an additional dummy variable.

We found no strong significant relationships with R&D in GDP and other variables. Modest significant correlations, however, are found for the size indicators: share of employees in firms with more than 250 employees [$r(28) = 0.484$, $p = 0.011$] and a share of turnover in these firms [$r(26) = 0.426$, $p = 0.030$]. As expected, there is also a moderate relationship between the share of R&D in GDP and the number of patent applications [$r(30) = 0.490$, $p = 0.006$]. We also found a negative relationship of moderate significance with post-communist country status [$r(30) = -0.466$, $p = 0.010$]. Several other variables that showed moderate relationships with R&D in GDP were not statistically significant.

A comparison of the relationships between the selected indicators and patent applications per million inhabitants showed a strong positive correlation with the indicators of firm size:

number of employees per firm in manufacturing [r(28) = 0.709, p = 0.000], share (%) of firms with more than 250 employees [r(28) = 0.693, p = 0.000], and share (%) of employees in firms with more than 250 employees [r(27) = 0.616, p = 0.001]. Again, post-communist countries showed a negative correlation with our R&D indicator, and in the case of patents this correlation is strong [r(30) = -0.529, p = 0.003]. Another strong negative correlation was found with direct investment flows [r(27) = -0.572, p = 0.002].

We also found some moderately strong significant correlations with patent applications: a positive correlation with the share of HGE [r(27) = 0.385, p = 0.047] and a negative one with SME manufacturing turnover [r(29) = -0.418, p = 0.024], the latter being another indicator of firm size. The detailed results of the analysis are presented in two correlation matrix tables and are available in the appendix to this document.

The dummy variable indicating whether the country is a former communist country was included because research shows that post-communist countries often lag behind in terms of their ability to innovate. Zawalińska et al. (2018) argue that the technological backwardness of CEE countries is the result of half a century of neglect of technological progress, insufficient investment, and low productivity, while others (Ženka et al., 2017) point out that post-communist CEE countries have a pattern of locating their knowledge-intensive business services mainly in the capital city, while manufacturing is scattered in smaller towns, which may also be a reason for the R&D lag, or that innovation capacity is determined by the ability to retain a highly skilled workforce (Bernard et al. 2014).

The relationship between firm size and R&D has been well analyzed and documented since Arrow (1983) made the theoretical assumption that larger firms have an advantage because of their ability to raise capital and generate more internal funds. Recent empirical research tends to confirm the assumption that larger firms have an advantage (Yang, 2023; Peng et al. 2018; Choi and Lee, 2018; Dindaroglu, 2013). Small and medium-sized companies rely more on venture capital funding to achieve innovation. If successful, they can become HGEs or Gazelas, i.e., high-growth companies (Flachenecker, 2020).

4. A LOOK AT SOME OF THE POSSIBLE EXPLANATIONS OF DIFFERENCES IN R&D AND INNOVATION ACTIVITY OF CROATIA COMPARED TO WORLD TRENDS

Explanations of differences in GDP and R&D may come various factors, such as:

- Differences in sources of R&D financing (ratio of public to private financing),
- Economic structure (sectoral composition of the economy),
- Historical trajectories (technology cycles, path dependency),
- Cultural factors (attitudes...).

The underlying question is what motivates investments in R&D. Is it the perspective of future profits[9] or are these primarily "political" goals. Since the main provider of funding seems to be state, apparently political motivation prevails.

By the already mentioned GII and the European Innovation Scoreboard 2022 (Eurostat), Croatia is doing well, even a bit above expectations; but still is very much in the catch up phase. (For the EIS the average performance of emerging innovators is set at 50% of the European average and over the past years, Croatian performance gap to the EU is becoming smaller.)

On the negative side, the European Innovation Scoreboard also indicated that when it comes to R&D investments by the business sector, Croatia's position is at 40%, the percentage of spending by the business sector in Croatia is among the lowest in comparisons to most of the countries presented (compare to EU average at 57 and Euro Area at 58%). Similar findings were produced by a survey conducted by Aralica, Račić and Radić (2008). It confirmed that the private sector in Croatia has been rather inactive when it comes to R&D.

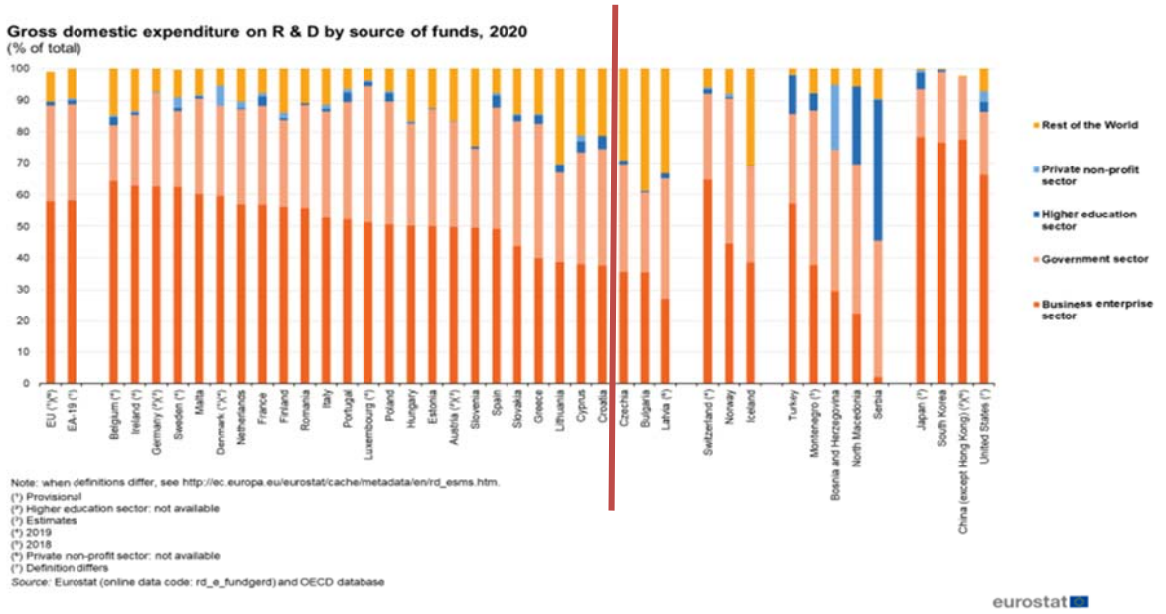
4.1. **Economic structure**

It is expected that the country's economic structure reflects of the structure of R&D spending. The OECD STI Scoreboard (2015, Chapter 5 - Competing in the Global Economy, pp. 188-189) stresses that intensity of R&D greatly varies across industrial sectors, and that adjusted business R&D intensity should be observed to draw the right conclusions on country performance. They also mention that, at the time, the economic structure of South and Eastern Europe countries is close to the OECD average; while countries like Germany, Belgium, France should be considered as countries that have some dominant industrial sectors that account for large parts of the country's R&D investments, or countries with specialized R&D activity.

A comparison of Croatian R&D spending to that of other European countries indicates that Croatian business sector share in R&D spending is one of the lowest in the EU (Figure 4).

[9] As we are trying to observe country level performance, profit seeking motivation would be tied to reliable incentives, or profit prospects generated by market trends and eventual institutional support (subsidies, tax incentives?) So, there a correlation of public and private R&D related spending is expected.

Figure 4. Composition of R&D spending by sector



Source: Eurostat

Since 2015, they fell by 36%. In fact, in terms of contribution to the overall country ranking, firm investments have deteriorated and aggregate rankings and come at 40% of the European average (Innovation Scoreboard, EIS Country profile, 2022). These are about the same figures as in 2013 (OECD, 2015), meaning past efforts by public authorities did not provide intended outcomes. The issue of who will finance innovation was elaborated recently by the WII report of 2020. One of the points stressed in the report concerns the role of venture capital for pursuing technological development and economic growth.

The figures also imply that it is governmental spending that makes up for the next 40% share of total national R&D spending. This puts the government in position to strongly affect the innovation behavior and performance in Croatia. However, it is doubtful whether the government can have a deep understanding of industry dynamics. We believe it would be preferable to have large business entities planning the investment in R&D; and that those might bring product and process innovation.

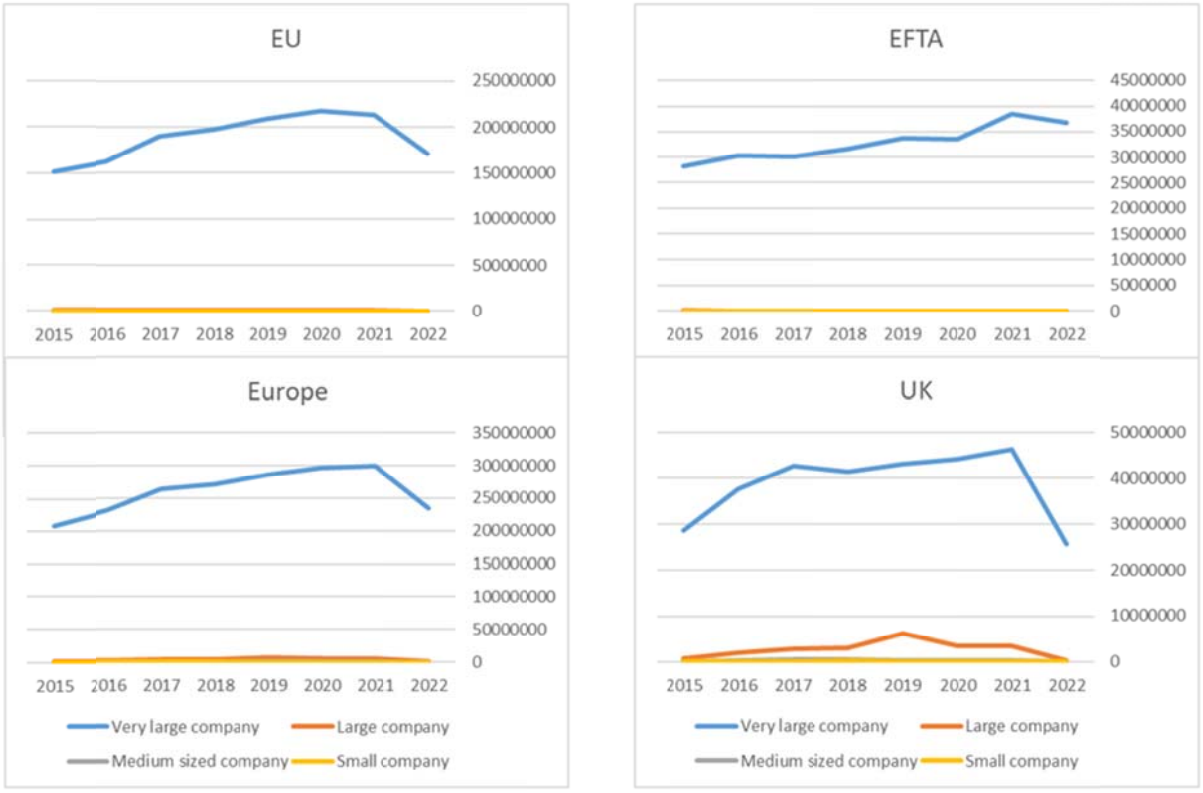
As a final note on the influence of the sectoral structure on R&D activity: Empirical data will suggest that some industry sectors are more technologically innovative than others. Such dynamism has recently been in the biotech industry, pharmaceutical industry, and financial industry with its "fintech" solution. In addition, some industries may attract more investor (or government) attention in specific circumstances or times. Such is the case of the pharma industry in recent years. For example, COVID related investments of private companies motivated by willingness of public authorities to increase health related spending increasing profit expectations, so the pharma industry was willing to activate their own resources. Concentrating on specific industries makes it easier to understand specific factors that drive innovation in particular moments in time.

4.2. **Size composition of the economy**

Another issue is size[10] along with the relative investment capacity of business entities.

Figure 5 reports on R&D intensity figures compiled by using the ORBID database. It clearly illustrates the dominance of large firms.

Figure 5. R&D intensity in relation to size composition of the economy (by number of employees)



Source: created by authors using ORBIS data

When it comes to sources of financing, it should be assumed that companies devoting funds to R&D are generally those making a profit. Often those are larger companies, likely to establish a more significant market presence making them more likely to make R&D commitments and enforce market strategies that will help them secure future profits.[11] Croatian companies do not enjoy size advantages on either European, or world markets. Therefore, it is unlikely they would be able likely to provide substantial investments in technological innovations, and protect profit margins from competitors even in the event of gaining patent protection.

[10] We are aware that the size composition of a national economy addresses questions broader than the issues of investment capacity or resource availability that again relies on competitive strategies, or the primary reasons that companies to invest in R&D.

[11] a dominant market position towards competitors and strong bargaining power with wholesalers, government funds…

Table 2. Innovation profiles: Croatia compared to EU average

Innovation profiles	Croatia %	EU %
In-house innovators with market novelties	9.7	10.7
In-house product innovators without market novelties	13.0	12.3
In-house business process innovators	7.8	11.0
Innovators that do not develop innovations themselves	7.1	11.6
Innovation active non-innovators	0.3	3.3
Non-innovators with potential to innovate	25.3	19.9
Non-innovators without disposition to innovate	36.9	31.5

Source: EIS (2022)

Going back to the sectoral (industry) structure, the EIS 2022 also provides a comparison of Croatia and the EU average. (Table 3- selected items).

Table 3. Economic structure and performance

Selected items	Croatia %	EU %
GDP/c (ppp)	20,900	31,200
Employment share in Manufacturing	17.8	16.4
Turnover share of SMEs (%)	42.6	34.8
Turnover share of large enterprises (%)	37.6	48.2
Foreign controlled enterprises	14.0*	11.7
Enterprise births (10+ employees) (%)	2.5	1.0
Total Entrepreneurial Activity (%)	11.8	7.3
FDI net inflows (%GDP)	3.5	1.0
Top R&D spending enterprises	0.0	18.3
Government procurement of advanced tech products	2.5**	3.5

* note that they contribute to 30% of R&D investment according to Figure 4 (rest of the world)
** It is likely that shares of government spending on R&D are related to defense, but we did not look at these figures

Source: EIS (2022)

A final note taken by looking at EI Scoreboard 2022 (time series 2015-2022) is that overall firm investment activity has been deteriorating year upon year. On the positive side, Innovating activity has increased, and so did intellectual assets.

4.3. Technology cycles and path dependency – when is the right moment and how much are we constrained by historical developments

It must be noted that best performing economies that are at the same time the economies growing at the fastest pace, such as China, or S. Korea (Japan included, have close to 80% of R&D spending being financed by the business sector.[12]

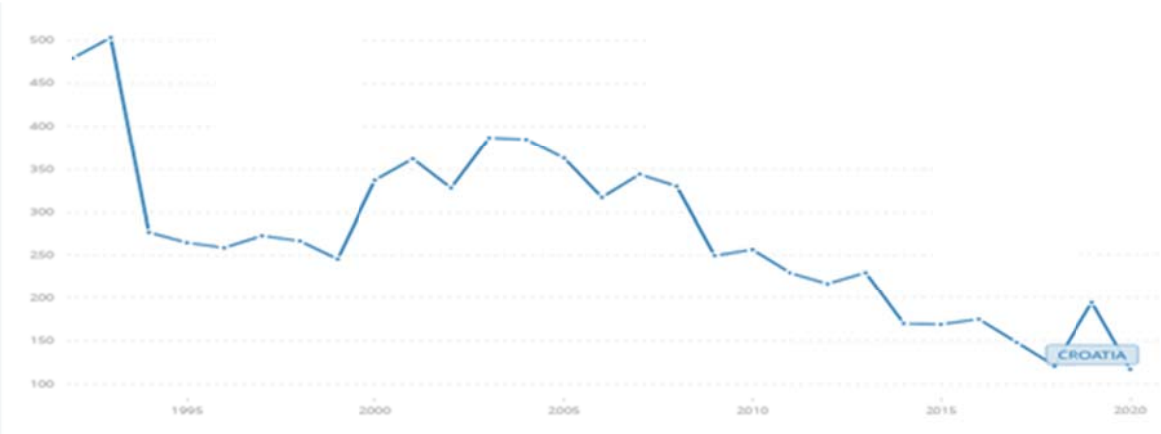
A possible indicating of the importance of historical trends can be found when looking at patent activity. The already mentioned Stern, Porter, Furman (2000) examined the patenting activity of 17 OECD countries in the period 1973-1996. Patents were considered as a "visible innovative activity". When technological development is measured by numbers of patents being issued, the US and Japan have been witnessing a surge of patents since the nineties.

[12] A question that comes to mind is whether it is structure of the economy, particularly the dominance of more "traditional" business sector in GDP formation, the main reason for small contribution to national R&D spending. Alternatively, is the structure just a reflection of historical developments, and (still) an "overgrown" governmental role in the economy.

Innovation activity was also growing in EU but at a slower pace. In term of number of patents, Croatia is doing worse than before.[13]

Figure 6 show the decrease in patent activity by Croatia resident companies in the past decades.

Figure 6. Patent applications – residents - Croatia



Source: WIPO

Some explanations for Croatian performance in GDP terms may be found in expectations that "The potential impact of investments in research and innovation on productivity growth is even higher for developing countries, given the opportunity for catching up…", as stressed by Lederman and Maloney (2003, p. 9).

However, if no policy efforts exist, there is little ground for expecting that things will change in the future. Historical examples will suggest that those countries that led an active policy were capable of achieving progress; if not in technology creation (high-tech), than at least at technology adoption.

5. CONCLUSIONS

It is indicative observation concerning Croatia is that R&D spending does not shadow GDP trends. R&D investment rates are low: The business sector has little participation in country R&D. Its already minor contribution has been declining.

Economic structure can be treated in different ways: by analyzing the national business sector by its composition in terms of economic classification of activities (technological dynamism, more or less innovative sectors), by looking at company size (resource endowment, investment capacity), by referent to particular industries and markets (bargaining positions). However, all these comparisons suggest that the situation will not be improving "spontaneously". Today, understanding the reasons for insufficient innovatory activity of Croatia is essential. The lag is particularly evident when R&D is observed by sectors; with the public sector research attracts funds and produces (academic) results, while the private sector remains less productive. During the past decade, when world level business R&D seems to be leading the race, the Croatia business sector investments have been declining.

[13] Nonresident applications have been even poorer. https://data.worldbank.org/indicator/IP.PAT.NRES?locations=HR

Relying on the Stern, Porter and Furman (2000) perspective it may be argued that not taking a micro perspective is one of the main explanations for why public policy and governments spending in R&D have failed to make a more profound impact on business sector innovativeness, as seems to be the case in Croatia. If industry structure is "weak" in terms of shares of technologically dynamic sectors; if companies do not stand out in terms of size and R&D investments capacity; if links between private and public STI are lacking or dysfunctional, negative trends will continue despite of rising of comparative macroeconomic indicators.

The only "unrestricted" force capable of breaking the circle of inertia can be provided through prompt governmental engagement in a way that will introduce incentives for applicative research and strengthen the support form of innovation of a lower profile, i.e. process innovations and strategic repositioning of firms on European, if not global markets. Basically, we rest on the premise that times of substantial unrest concerning the economic future are often open to new trajectories for developing technologies and business models. Consequently, national innovation policy should address issues concerning conditions of doing business (market settings, consumer expectations, policy measures) and support business sector resilience, so that companies themselves can advance their market position and dilute historical power asymmetries between small and companies and traditional industrial towards the new dynamic industrial sectors.

At this moment, we do NOT have much more that a compilation of theoretical elaborations of technology development, some insights on technology policies and some (illustrative) data gathered by consulting the literature and searching the internet. In the future, we plan to explore the situation/capabilities/prospects of Croatia concerning the preset state of R&D momentum and the availability of institutional support.

LITERATURE

Adner, R., (2002): **When are Technologies Disruptive? A Demand-Based View of the Emergence of Competition**, ***Strategic Management Journal***, 23: 667-688, https://doi.org/10.1002/smj.246.

Adner, R., (2016): **Ecosystem as Structure: An Actionable Construct for Strategy, Journal of Management,** 43 (1): 39–58. https://doi.org/10.1177/0149206316678451.

Aldrich, H. E., Pfeffer, J., (1976): **Environment of Organizations**, ***Annual Review of Sociology***, 2: 79-105.

Appelt, S. et al., (2023): **Cost and uptake of income-based tax incentives for R&D and innovation**, OECD Science, Technology and Industry Working Papers, No. 2023/03, OECD Publishing, Paris, https://doi.org/10.1787/4f531faf-en.

Aralica, Račić, Radić (2008): **Innovation Propensity in Croatian Enterprises: Results of a Community Innovation Survey**, ***South East European Journal of Economics and Business***, 2008, 3(1): 77-88, https://doi.org/10.2478/v10033-008-0008-6.

Arrow, K. (1983): **Innovation in large and small firms**. pp. 15-28. In Joshua Ronen (ed,) Entrepreneurship.

Bar Am, J., Furstenthal, L, Jorge, G., Roth, E. (2020**), Innovation in a crisis: Why it is more critical than ever, McKinsey,** https://www.mckinsey.com/capabilities/strategy-and-

corporate-finance/our-insights/innovation-in-a-crisis-why-it-is-more-critical-than-ever#/.

Beaudry, C., Bruger-Helchen, T., Cohendet, P., (2021): **Editorial: Innovation policies and Practices within innovation ecosystems**; ***Industry and Innovation***, 28(5): 535-544. https://doi.org/10.1080/13662716.2021.1929870.

Bernard, J., Kostelecký, T., Patočková, V., (2014): **The Innovative Regions in the Czech Republic and their Position in the International Labour Market of Highly Skilled Workers**, ***Regional Studies***, 48 (10): 1691–1705. https://doi.org/10.1080/00343404.2013.770138

Bower, J., & Christensen, C., (1995): **Disruptive Technologies: Catching the Wave**, ***Harvard Business Review***, 73, 43-53.

Choi, J., Lee, J., (2017): **Firm size and compositions of R&D expenditures: evidence from a panel of R&D performing manufacturing firms**, ***Industry and Innovation***, (): 1–23. https://doi.org/10.1080/13662716.2017.1297222

Christensen, C.M., Raynor, M.E., McDonald, R., (2015): **What is disruptive innovation? Twenty years after the introduction of the theory, we revisit what it does**, HBR December 2015.

Coccia, M. & Wang, L., (2015): **Path-breaking directions of nanotechnology-based chemotherapy and molecular cancer therapy**, ***Technological Forecasting and Social Change***, Elsevier, 94(C), pp. 155-169.

Dindaroglu, B., (2013): **R&D Productivity and Firm Size in Semiconductors and Pharmaceuticals: Evidence from Citation Yields,** In I. Yetkiner, M. Pamukcu, & E. Erdil (Eds.), ***Industrial Dynamics, Innovation Policy, and Economic Growth through Technological Advancements*** (pp. 92-113), IGI Global. https://doi.org/10.4018/978-1-4666-1978-4.ch006

Dutra, S. et al. (eds.), (2022): **Global Innovation Index 2022 - What is the future of innovation-driven growth?**, 15th Edition, World Intellectual Property Organization, https://doi.org/10.34667/tind.46596

Flachenecker, F. et al. (2020): **High Growth Enterprises: demographics, finance and policy measures**, EUR 30077 EN, Publications Office of the European Union, Luxembourg. https://doi.org/10.2760/34219

Gault, F., (2016): **Defining and Measuring Innovation in all Sectors of the Economy: Policy Relevance**; OECD Blue Sky Forum III, Ghent, Belgium, 19-21 September 2016., https://doi.org/10.1016/j.respol.2018.01.007

Granstrand, O., Holgersson, M., (2020), **Innovation Ecosystems: A Conceptual Review and A New Definition**, ***Technovation*** 90–91: 102098. https://doi.org/10.1016/j.technovation.2019.102098

Hodgson, L., (2023): **Why Europe struggles to scale its deep-tech startups**, News and Analysis, PitchBook Platforms, https://pitchbook.com/news/articles/europe-deep-tech-vc [Accessed 17.5.2023]

Lederman, D., Maloney, W F. (2003): **Trade Structure and Growth**, Available at SSRN: https://ssrn.com/abstract=402460

Milchevski, T. et al. (2021): **Analysis of the Croatia Smart Specialization Strategy: Logical Framework, Instruments, and Indicator Results**, World Bank

Passi, J. et al. (2023): **Modeling the dynamics of innovation ecosystems**, International ***Journal of Innovation Studies***, 7(2): 142-158., https://doi.org/10.1016/j.ijis.2022.12.002

Peng, C., Wei, A., Chen, M., Huang, W., (2016): **Synergy between R&D and advertising on shareholder value: Does firm size matter?**, ***Canadian Journal of Administrative Sciences / Revue Canadienne des Sciences de l'Administration***, 35/1: 47-64. https://doi.org/10.1002/cjas.1390

Smit et al. (2022): **Securing Europe's competitiveness: Addressing its technology gap**, McKinsey Global Institutesmit

Srdelić L., Dávila-Fernández, M., (2022.): **Međunarodna trgovina i gospodarski rast Hrvatske,** (proširenі sažetak), Working Papers W-64, Hrvatska narodna banka

Stern, S., Porter, M. E., Furman, J. L., (2000): **The Determinants of National Innovative Capacity**, NBER Working Paper No. w7876, Available at SSRN: https://ssrn.com/abstract=240765

Tetsuji, O., (2015): **Lessons from the Japanese Miracle: Building the Foundations for a New Growth Paradigm**, https://www.nippon.com/en/in-depth/a04003/ [Accessed 1.7.2023]

Yang, S., Kim, Y., Choi, S., (2022): **How to Respond to Disruptive Innovation in Online Retail Platforms**. ***J. Open Innov. Technol. Mark. Complex***, 8, 130. https://doi.org/10.3390/joitmc8030130

Yang, C. H., (2023): **R&D responses to labor cost shock in China: does firm size matter?,** Small Business Economics. https://doi.org/10.1007/s11187-023-00741-x

Zawalińska, K., Tran, N., Płoszaj, A., (2018): **R&D in a post centrally-planned economy: the macroeconomic effects in Poland**, ***Journal of Policy Modeling***, 40(1): 37-59. https://doi.org/10.1016/j.jpolmod.2017.09.007

Ženka, J., Novotný, J., Slach, Ivan, I., (2017): **Spatial Distribution of Knowledge-Intensive Business Services in a Small Post-Communist Economy**, Journal of the Knowledge Economy, vol 8, Issue 2, pp.385–406. https://doi.org/10.1007/s13132-015-0260-9

EIS (2022) **European Innovation Scoreboard**, Country profiles, https://ec.europa.eu/assets/rtd/eis/2022/ec_rtd_eis-country-profile-hr.pdf

European Commission (2023) **Country Report – Croatia,** https://economy-finance.ec.europa.eu/system/files/2023-05/HR_SWD_2023_611_en.pdf

OECD (2004) **Patents and Innovation Trends and Policy Challenges**, https://www.oecd.org/science/inno/24508541.pdf

OECD (2015), **OECD Science, Technology and Industry Scoreboard 2015: Innovation for growth and society**, OECD Publishing, Paris, https://doi.org/10.1787/sti_scoreboard-2015-en

OECD (2023) **OECD Science Technology and Innovation Outlook: Enabling Transitions in Times of Disruption** https://www.oecd-ilibrary.org/sites/0b55736e-en/index.html?itemId=/content/publication/0b55736e-en

Trading economics (2023) https://tradingeconomics.com/croatia/research-and-development-expenditure-percent-of-gdp-wb-data.html, [Accessed 1.7.2023]

WIPO (2015) **The Global Innovation Index - Effective Innovation Policies for Development** https://www.wipo.int/edocs/pubdocs/en/wipo_gii_2015.pdf

WIPO (2020) **Global innovation index, Croatia** https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2020/hr.pdf

WIPO (2021) **Global innovation index, Croatia** https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2021/hr.pdf

World Bank (2021) **Analysis of the Croatia Smart Specialization Strategy: Logical Framework, Instruments, and Indicator Results**; https://mzo.gov.hr/UserDocsImages/dokumenti/EUfondovi/OPKK_2014-2020/Pregled-javnih/Analiticki%20izvjestaj%204.%20komponente.pdf

World Bank (2013) **Western Balkans Regional R&D Strategy for Innovation, Country paper Series – Croatia**, WB Technical assistance project (P123211), https://www.worldbank.org/content/dam/Worldbank/document/eca/Western-Balkans-R&D-Croatia.pdf

APPENDIX 1. PEARSON CORRELATION MATRIX FOR R&D IN GDP

		R&D in GDP	Post communist country	GDP	Employees per enterprise - manufacturing	SME turnover in manufacturing	Direct investment flows - Million ECU/EUR	Manufacturing / GDP	Computer programming, consultancy, and information service activities / Value added gross	HGE %	% Enterprises more than 250	% Person employed im more than 250	% of Turnover in more than 250
R&D in GDP	Pearson Correlation	1											
	Sig. (2-tailed)												
	N	30											
Post communist country	Pearson Correlation	-.466**	1										
	Sig. (2-tailed)	,010											
	N	30	30										
GDP	Pearson Correlation	**,335**	-.363*	1									
	Sig. (2-tailed)	,070	,049										
	N	30	30	30									
Employees per enterprise - manufacturing	Pearson Correlation	**,333**	-,289	.374*	1								
	Sig. (2-tailed)	,083	,136	,050									
	N	28	28	28	28								
SME turnover in manufacturing	Pearson Correlation	**-,314**	,134	-,336	-.409*	1							
	Sig. (2-tailed)	,098	,490	,075	,034								
	N	29	29	29	27	29							
Direct investment	Pearson Correlation	**,167**	,218	,152	-.447*	-,017	1						

flows - Million ECU/EUR	Sig. (2-tailed)	,405	,274	,450	,022	,932							
	N	27	27	27	26	27	27						
Manufacturing / GDP	Pearson Correlation	**,086**	,307	,090	-,011	-.418*	,358	1					
	Sig. (2-tailed)	,650	,099	,635	,955	,024	,067						
	N	30	30	30	28	29	27	30					
Computer programming, consultancy, and information service activities / Value added gross	Pearson Correlation	**-,149**	.403*	-,177	,075	,037	-,044	,011	1				
	Sig. (2-tailed)	,476	,046	,398	,727	,865	,841	,958					
	N	25	25	25	24	24	23	25	25				
HGE %	Pearson Correlation	**,228**	-,116	-,022	,026	-,252	-,141	,042	-,113	1			
	Sig. (2-tailed)	,252	,565	,913	,901	,206	,502	,834	,608				
	N	27	27	27	26	27	25	27	23	27			
% Enterprises more than 250	Pearson Correlation	**,148**	-,264	,284	.944**	-.424*	-.473*	-,049	,258	,032	1		
	Sig. (2-tailed)	,453	,174	,143	,000	,025	,015	,804	,235	,877			
	N	28	28	28	26	28	26	28	23	26	28		
% Person employed im more than 250	Pearson Correlation	.484*	-.440*	.515**	.423*	-.747**	-,150	,143	,141	,170	.437*	1	
	Sig. (2-tailed)	,011	,022	,006	,035	,000	,475	,476	,532	,416	,023		
	N	27	27	27	25	27	25	27	22	25	27	27	
% of Turnover in more than 250	Pearson Correlation	.426*	-,312	.661**	,317	-.850**	,148	,245	-,120	,022	,269	.831**	1
	Sig. (2-tailed)	,030	,121	,000	,123	,000	,491	,228	,595	,916	,184	,000	
	N	26	26	26	25	26	24	26	22	25	26	26	26

APPENDIX 2. PEARSON CORRELATION MATRIX FOR PATENTS APPLICATIONS PER MILLION INHABITANTS

		Patents appli. per milion inhabitants	Post communist country	GDP	Employees per enterprise - manufacturing	SME turnover in manufacturing	Direct investment flows - Million ECU/EUR	Manufacturing / GDP	Computer programming, consultancy, and information service activities / Value added gross	HGE %	% Enterprises more than 250	% Person employed im more than 250	% of Turnover in more than 250
Patents appications per milion inhabitants	Pearson Correlation	1											
	Sig. (2-tailed)												
	N	30											
Post communist country	Pearson Correlation	-.529**	1										
	Sig. (2-tailed)	,003											
	N	30	30										
GDP	Pearson Correlation	,163	-.363*	1									
	Sig. (2-tailed)	,390	,049										
	N	30	30	30									
Employees per enterprise - manufacturing	Pearson Correlation	.709**	-,289	.374*	1								
	Sig. (2-tailed)	,000	,136	,050									
	N	28	28	28	28								
SME turnover in manufacturing	Pearson Correlation	-.418*	,134	-,336	-.409*	1							
	Sig. (2-tailed)	,024	,490	,075	,034								
	N	29	29	29	27	29							
Direct investment flows - Million ECU/EUR	Pearson Correlation	-.572**	,218	,152	-.447*	-,017	1						
	Sig. (2-tailed)	,002	,274	,450	,022	,932							
	N	27	27	27	26	27	27						

Manufacturing / GDP	Pearson Correlation	-,042	,307	,090	-,011	-.418*	,358	1					
	Sig. (2-tailed)	,824	,099	,635	,955	,024	,067						
	N	30	30	30	28	29	27	30					
Computer programming, consultancy, and information service activities / Value added gross	Pearson Correlation	,014	.403*	-,177	,075	,037	-,044	,011	1				
	Sig. (2-tailed)	,946	,046	,398	,727	,865	,841	,958					
	N	25	25	25	24	24	23	25	25				
HGEs %	Pearson Correlation	.385*	-,116	-,022	,026	-,252	-,141	,042	-,113	1			
	Sig. (2-tailed)	,047	,565	,913	,901	,206	,502	,834	,608				
	N	27	27	27	26	27	25	27	23	27			
% Enterprises more than 250	Pearson Correlation	.693**	-,264	,284	.944**	-.424*	-.473*	-,049	,258	,032	1		
	Sig. (2-tailed)	,000	,174	,143	,000	,025	,015	,804	,235	,877			
	N	28	28	28	26	28	26	28	23	26	28		
% Person employed im more than 250	Pearson Correlation	.616**	-.440*	.515**	.423*	-.747**	-,150	,143	,141	,170	.437*	1	
	Sig. (2-tailed)	,001	,022	,006	,035	,000	,475	,476	,532	,416	,023		
	N	27	27	27	25	27	25	27	22	25	27	27	
% of Turnover in more than 250	Pearson Correlation	,327	-,312	.661**	,317	-.850**	,148	,245	-,120	,022	,269	.831**	1
	Sig. (2-tailed)	,103	,121	,000	,123	,000	,491	,228	,595	,916	,184	,000	
	N	26	26	26	25	26	24	26	22	25	26	26	26

RESPONSE SET AS A CROSS-CULTURAL VARIABLE: RECENT EMPIRICAL DATA FROM CROSS-NATIONAL SAMPLES

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JEL codes: *C18; C83; M16*

ABSTRACT

Though the problems that may arise from response style bias in cross-cultural research using Likert-type questionnaire items to collect data have long been known (Smith, 2004a, 2004b), nonetheless Likert-type response categories are still employed with no analyses or consideration of response style biases. In this paper, using our own longitudinal data from a global project examining preferences for leader behaviors across societal cultures, we develop and test hypotheses regarding the influence of cultural values to multiple types of response style biases. Our findings provide partial support for our hypotheses, indicating the salience of influences of culture, but also other dispositional, situational and contextual factors on response styles across societal cultures. These findings pave the path toward future research

on disentangling these relationships, hence, fortifying the literature and providing useful guidelines for research practice.

1. INTRODUCTION

Survey questionnaires are critical and the norm in management research, as latent constructs such as leadership can be unobservable. It is still debated, after many decades, how to measure and control for response styles such as extreme responding, acquiescent responding, socially desirable responding, malicious responding, and random responding. Our purpose in this study is to firstly delineate types of response set and response bias. Hence, using data from a survey investigating ideal leadership values, we employ the Leader Behavior Description Questionnaire Version XII (LBDQXII) survey as our response testing instrument, to examine response sets and associations between national-level culture and variability in acquiescent and extreme response styles.

2. LITERATURE REVIEW

2.1. **Types of response style bias**

There are several categories of bias in organization and management research, and these further divide into multiple types across these categories. The main categories are *construct*, *method* and *item* bias (Van de Vijver, 2015; Johnson & Cho, 2010). *Construct bias* refers to the fact that sometimes the latent construct (construct being measured with the survey) may have varying meanings for different groups of people, which is particularly salient for international business (e.g. cross-cultural management) research (Harzing, et al., 2012; He & Van de Vijver, 2015). *Method bias* entails *sample, instrument and administration mode biases*. *Sample bias* refers to variations (demographic specifics, group affiliation etc.) in sample characteristics that have a bearing on target measures, rendering research, cross-cultural comparisons in particular, impossible (Podsakoff et. al., 2012). *Instrument bias* is a method type of bias that involves problems deriving from characteristics of the research instrument (e.g. scale used), such as *response styles* (respondents´ tendency to respond to survey items irrespective of the item content; Podsakoff et al., 2012; Varenbergh et al., 2013). *Administration mode bias* entails administration conditions (e.g., data collection modes and environments), ambiguous instructions, interaction between researchers and respondents (e.g., halo effects), and communication problems (e.g., language difference, taboo topic; He & Van de Vijver, 2015). Finally, *item bias* refers to variations in the meaning of survey items. These variations can occur due to translation or wording issue, or inapplicability of items for some groups of respondents which may trigger undesirable respondent traits or those the survey is not intended to measure, thus, distorting the results of the analyses of data obtained with such surveys (Van de Vijver, 2015; He & Van de Vijver, 2015).

In this paper, we focus on the *response style bias*, a type of method bias. Response style bias refers to the tendency of the participants or the examinees to respond to survey items independently of the latent construct, that is, the construct or concept that the survey is evaluating or measuring (Johnson et al., 2005; Smith, 2004). Researchers agree that response style bias will remain difficult or even impossible to prevent from appearing in datasets (Van de Vijver, 2015) and this notions facilitates an ongoing debate on whether the response styles are problematic, as in influencing the measurement structure, scale means, and relationships between variables, or simply a contrast which entails valuable information on the respondents with or without regard to the latent construct (Pleininger, 2017). The literature indicates a large consensus on the former position.

There are several major types of response style bias in survey research; agreement-disagreement also labeled acquiescence and de-acquiescence, extreme and mid-range responding, socially desirable responding, careless responding and non-responding (Van de Vijver, 2015; He & van de Vijver, 2012). Hence, some participants in survey research display a tendency to either agree or disagree with survey items (agreement-disagreement or acquiescence de-acquiescence style) regardless of their content and/or with regard to other factors. For instance, a respondent may feel offended, have insufficient time to respond to the survey, is suffering from survey fatigue, or may be insensitive to causing the detriments to the quality of the results by such a response pattern. Some of the drivers of this response style are respondents´ desire to generate false impressions or to please the organization or contact person and similar (Van de Vijver & Leung, 2002; Hoffman et al., 2013).

Respondents may also systematically select positive or negative endpoints of response scales (*extreme responding style*) or middle points thereof (*mid-range responding style*). This option is more appealing to busy respondents who may not have the knowledge regarding the topic of the survey and when there will be no repercussions of their passive random responses (e.g. when the survey is anonymous). It also often occurs when respondents are overloaded, or simply answer the fastest way possible by selecting the same response (i.e., Likert anchor 3) for every item (Johnson et al., 2005). Similarly, extreme responding often occurs when the content of the survey is important to respondents or fall in their area of expertise, commonly provoking an emotional reaction and leading respondents to select either (positive or negative; i.e. 1 or 5; 1 or 7) extreme ends of Likert categories.

Social desirability response style is characteristic for respondents who desire to present themselves, via their responses to survey items, in socially desirable manner. Social desirability style, thus, arises wittingly or unwittingly from a respondent's desires or goals such as acceptance in the community, desire to be seen as more socially acceptable in their attitudes to the products, services or company management and is usually difficult to tackle if there is no anonymity guaranteed for the respondent (Van de Vijver, 2015; He et al., 2014).

Some respondents may *respond carelessly*, that is, without regard to item content, and can do so randomly or non-randomly (Meade & Craig, 2012). Random careless responding involves selecting response options haphazardly without consideration of content, whereas nonrandom careless responding relates to respondents who evaluate the content of the first few items and then respond to the remaining items in a similar way assuming all items have same or similar content (long-string responding; Tawa, 2021; He et al., 2014).

Non-response style refers to the tendency of respondents to skip or not respond to some items or parts of the survey. This style becomes salient in a dataset when a large cohort of survey receivers do not provide answers to the entire survey or parts thereof (Klima et al., 2023; Meitinger & Johnson, 2020). Non-response style is potentially the most damaging of all biases, as it excludes an entire group of users with generally unknown characteristics and their opinions.

Finally, if respondents specifically respond or alter their responses to ensure that the study obtains some desired results, they exhibit *demand response style*. This is a danger when the respondents are sourced without applying random sampling techniques. They may know the researcher and realize what they are looking for as optimal results, i.e., high scores awarded in leadership skills survey if you know your line manager needs these high scores.

2.2. **Sources of response style bias**

As there are types of response style bias, there are also many sources of response style bias. These overlap with the categories of bias mentioned above as those reflect the sources. However, response style biases sources fall into three broad categories: *dispositional* (i.e. personal), *situational* and *contextual* (Uskul & Oyserman, 2006; Van de Vijver, 2015). *Dispositional sources* of bias relate to individual attributes and characteristics (e.g. age, gender, personality, familiarity with the topic of the survey or latent construct etc.; **Van de Vijver, 2015**). *Situational sources* of response style bias relate to situational characteristics such as the format of the response scale, the ambiguity of items, or time pressure (Baumgartner & Steenkamp 2001). For instance, research showed that the level of knowledge or familiarity with the topic or the latent construct, or personally relevant and involving constructs and topics of the survey, facilitate extreme and acquiescent (agreement), and hinder mid-range response style, while item irrelevance (for the respondent) facilitates mid-range, and low motivation facilitates careless responding (Uskul & Oyserman, 2006). Similarly, younger respondents tend to exhibit de-acquiescent and older respondents exhibit acquiescent response style (Johnson & Cho, 2010). Research also showed that longer measurement scales (beyond 5 Likert points) facilitate the mid-range responding and self-reports and online administered surveys along with time pressure and environmental distractions facilitate careless responding style (Tawa, 2021; Grau et a., 2019.).

The stated sources and their effects, however, are not in the focus of our study. We focus on the contextual sources of response style bias, among which the most represented in the literature is societal culture of the respondents. Indeed, previous research has documented response patterns as culturally contingent, manifested and systematic differences between countries with regard to response styles. This inhibits cross-cultural comparisons, rendering conclusions to simply reflect differences in response styles rather than real similarities and differences of the focal phenomena across national societal cultures (Podsakoff et al., 2012; Harzing et al., 2009; 2012). The main premise in this regard is that culture determines how participants respond to rating scales (Baumgartner & Steenkamp, 2001; Smith, 2004). For instance, depending on their cultural background, respondents may be more (or less) likely to respond affirmatively or use the extreme points of a scale irrespective of the item content. Such culturally-contingent response style bias is, therefore, a source of errors in observed measurement scores when comparing data from different cultures. If culture-specific contamination is large, scholars might not be able to draw valid conclusions in cross-cultural research (Hoffman et al., 2013). Although these measurement artifacts have been recognized and studied now for more than 50 years, surprisingly little is known with regard to their cultural origins.

2.3. **Response style bias and national culture: some empirical findings**

There has been research on culture and response style bias, however, despite some consensus, most of the findings are mixed. Johnson et al. (2005) showed Power distance and Masculinity to be positively associated with extreme response style and Individualism, Uncertainty Avoidance, Power Distance, and Masculinity to be negatively associated with acquiescent response style. These findings were corroborated and extend by Schaffer-Riordan (2003) and Silbiger & Johnson (2020) who showed extreme responding is positively related to Individualism, Power Distance, Uncertainty Avoidance and Masculinity and negatively with Collectivism. Smith (2004) however, countered these findings and reported positive relation between Collectivism and Power Distance with acquiescent response style. Chen et al. (2015) found Individualism positively related with extreme responding and negatively with mid-

range responding, while He and DeVijver (2014) found Individualism negatively related with careless responding. Varenbergh et al. (2013) found no effect of Individualism on acquiescent, extreme and mid-range responding, negative relation between Power Distance, Uncertainty Avoidance, Individualism and Masculinity with acquiescent responding, and positive relation between Power Distance, Masculinity and Uncertainty Avoidance and extreme responding. Grau et al (2019) confirmed these results and also reported positive relation between Power Distance and mid-range responding. Further, Van Dijk (2009) found that Power Distance, Individualism and Uncertainty Avoidance are negatively related to acquiescent responding, and that Uncertainty Avoidance and Masculinity are positively related to extreme responding, supporting above stated findings. Conversely, Hoffman et al. (2013) demonstrated a positive relation between Power Distance and acquiescent responding while confirming negative relation between Individualism and this response style. Smith and Fisher (2008) added to these results by demonstrating positive relation between Power Distance and Masculinity with extreme responding and positive relation between Femininity and Collectivism, and negative relation between Uncertainty Avoidance and Power Distance with acquiescent responding.

Some research has also been done on the cultural cluster basis. East Asian (i.e. more collective cultures) respondents have been shown to display a higher proportion of middle response in comparison to US and Canadian respondents (more Individualistic societies) who displayed more extreme response styles (Chen et al. 1995; Takahashi et al. 2002). Watkins and Cheung (1995) and Dolnicar and Grün (2007) confirmed that this difference was also apparent between Australian and Asian respondents. Si and Cullen (1998) found similar differences between East Asian and Western respondents from the US, Germany and the UK.

3. HYPOTHESES

The majority of the extant literature on culture and response styles diverges and is mixed, conflicting and, consequently, inconclusive, the convergence of the findings is also evident in some aspects. Acquiescent responding is a submissive response style that conveys agreeableness and deference to hierarchy, especially in contexts in which interpersonal or group harmony is important. One manner in which conformity might be expressed is via deferential, or acquiescent, behaviour. This implies that respondents from Collectivistic cultures should exhibit this style of responding. Hence, our hypotheses:

> **H1:** *Acquiescent responding style will be more prevalent in datasets from countries ranking high on Collectivism.*

Cultures high in power distance tend to be more authoritarian societies where conformity is stressed and submissiveness is common. One manner in which conformity might be expressed is via deferential, or acquiescent, behaviour. Thus, we hypothesize:

> **H2:** *Acquiescent responding style will be more prevalent in datasets from countries ranking high on Power Distance.*

Persons in low power distance cultures, which are similar to horizontal cultures in their emphasis on equality in status may be more likely to emphasize modesty as a value, leading to midrange responses. We, thus hypothesize:

> **H3:** *Mid-range responding style will be more prevalent in datasets from countries ranking low on Power Distance.*

Though the research reviewed was inconclusive, most studies indicate persons embedded in masculine cultures may be more likely to endorse extreme responses on surveys. Some of the better-known features of such cultures are emphases on assertiveness and on decisive and daring behaviour. These qualities may encourage respondents within such cultures to select the strongest available choices for representing their opinions. Similarly, persons from nations with individualistic cultures seek to achieve clarity in their explicit verbal statements because they are less concerned with the consequences of expressing strong opinions. Therefore, extreme response styles may be more common among persons from individualist countries. Oppositely, cultures that are more feminine emphasize modesty, which may be reflected at the individual level by personal preferences for middling and less extreme response styles. Hence, our hypotheses:

> **H4:** *Extreme responding style will be more prevalent in datasets from countries ranking high on Masculinity.*

> **H5:** *Midrange responding will be more prevalent in datasets from countries ranking high on Femininity.*

Collectivism is associated with a greater emphasis on interpersonal harmony and with less emphasis on individual opinions. Ambiguity in communication is adaptive in these cultural contexts. Thus, a middling response style should better fit the cultural norms and imperatives of persons living in collectivist cultures. Hence:

> **H6:** *Mid-range responding will be more prevalent in datasets from countries ranking high on Collectivism*.

According to Hofstede (2001), societies higher in uncertainty avoidance have many rules and have little tolerance for ambiguity. Research (Hofstede & Minkov, 2010) has suggested that individuals' extreme responding is a reflection of intolerance of ambiguity; respondents may often interpret the extreme anchors of a measurement scale as being more definitive and clearer than are scale midpoints. They are, thus, are more likely to be subject to qualifications and multiple interpretations by respondents. We, thus, hypothesize:

> **H7:** *Extreme responding style will be more prevalent in datasets from cultures that rank high in Uncertainty Avoidance.*

4. METHOD

4.1. Sampling & data collection

We applied random quota sampling, selecting from finite populations; in this case, employed businesspeople from various country and sub-country culture areas and (to a lesser extent) part-time working university business students. Our data collection of preferred leader behavior dimension scores and culture value dimension scores began in 1997 and is continuing. The project is made public through the Center for Cross Cultural Comparisons (CCCC), see: https://crossculturalcentre.homestead.com/LeadershipReseach.html

Our data for the Response Set studies are opportunistic data sets from the Global Preferred Leader Behavior and Societal Culture project of the CCCC. In our exploration of preferred leader behavior across cultures, we observed cross-cultural differences in response set, and added that investigation to our projects. Data was collected via mailed paper surveys to organization managers and executives to seek participation and distribution within their

organization, manual distribution and retrieval of paper surveys by volunteer students, faculty members, and researchers and online surveys (e.g., Google Forms and Qualtrics surveys).

4.2. **Survey instrument**

We employ the Leader Behavior Description Questionnaire XII (LBDQXII) as our response-testing survey instrument. Since 1991, the LBDQ XII and the LBDQ have been used in several cross-national-culture studies (see in example most recent: Ljubica et. al 2022). However, the psychometric properties of the LBDQ XII have not been investigated in a cross-cultural context.

The development of the LBDQXII is discussed in Stogdill (1962 and 1974). The development consisted of a group of leadership researchers at Ohio State University developing a pool of items describing leader behaviors, administering these items in surveys to groups of establishes leaders in U.S. Army Divisions, U.S. Highway Patrols, U.S. Aircraft Commanders, Ministers, Community Leaders, Corporate Presidents, Labor Union Presidents, College Presidents, and U.S. Senators. Their responses were factor analyzed and reduced eventually to the twelve dimensions of the LBDQXII. The leaders were asked to respond how often the ideal leader *should* engage in the behavior described, yielding estimates of *preferred* leader behaviors. As respondents were expressing opinions, attitudes, and beliefs about an ideal leader, we expect a tendency to respond toward the *often* and *always* (4 and 5 anchors) of the Likert Scale assessing the item, and for the item response curves to be generally negatively skewed.

Our English version of the LBDQXII survey has the following initial commentary:

IDEAL LEADER BEHAVIOUR DESCRIPTION QUESTIONNAIRE – FORM XII

Purpose of this Questionnaire: On the following pages is a list of items that may be used to describe the behavior of a supervisor as you think he or she <u>should</u> act the ideal supervisor. Although some items may appear similar, they express differences that are important in the description of leadership. Each item should be considered as a separate description. This is not a test of ability or consistency in making answers. Its only purpose is to make it possible for you to describe, as accurately as you can, the behavior of an ideal supervisor.

a. READ each item carefully.
b. THINK about how frequently the leader engages in the behaviour described by the item.
c. DECIDE whether he/she (A) *always*, (B) *often*, (C) *occasionally*, (D) *seldom* or (E) *never* acts as described by the item.
d. CAREFULLY MARK AN X OVER *one* of the five letters (A B C D E) following the item to show the answer you have selected.
e. MARK your answers as shown in the example below.

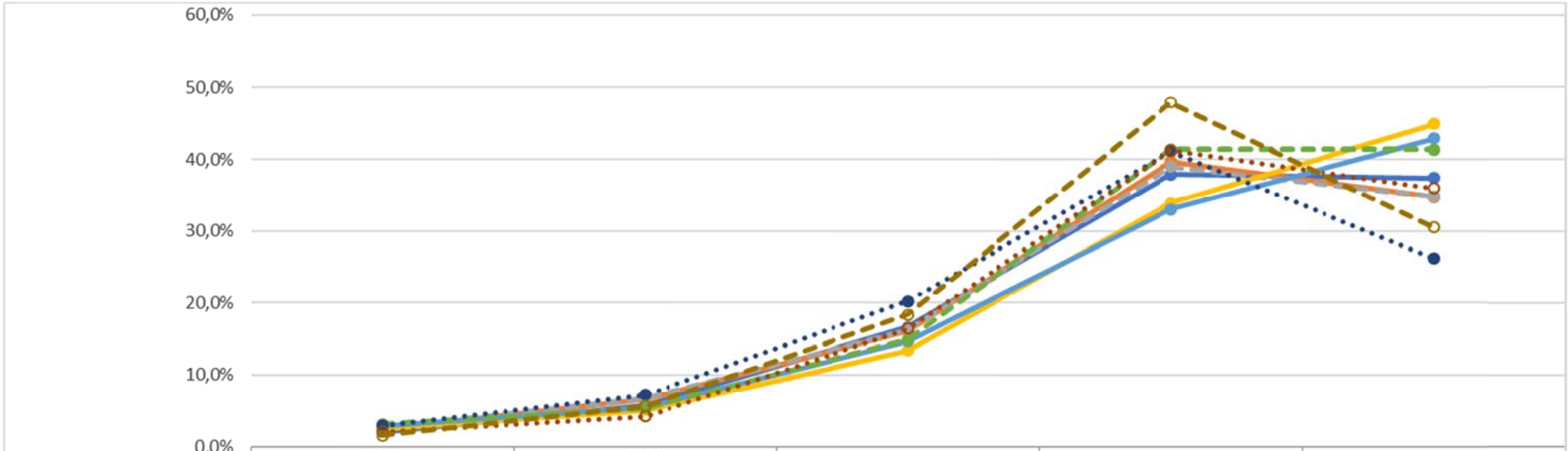
Example: Often acts as described	A	~~B~~	C	D	E
Example: Never acts as described	A	B	C	D	~~E~~

4.2.1. The "ideal managerial leader" A=Always B=Often C=Occasionally D=Seldom E=Never

5. INITIAL RESULTS FROM PRIOR SAMPLES

The intent of the design of the LBDQ XII is that higher scores on the positively phrased Likert scales indicate a greater level of preference for the behavior in the ideal leader. Therefore, differences in response patterns should indicate differences in response bias related to culture. In Figure 1 we can see statistical results on response characteristics by several national cultures (see below).

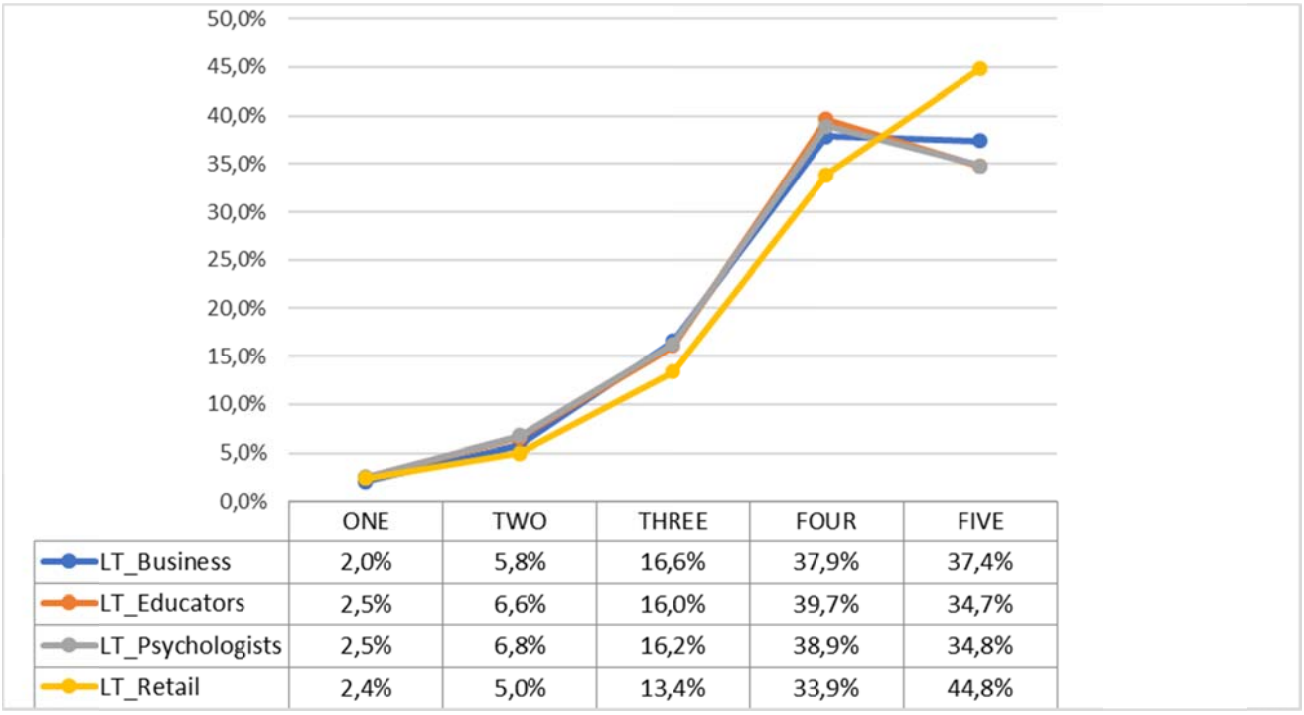
Figure 1. Examples of Response Sets for Several Cultures (LT: Lithuania, US: United States, Mx: Mexico, NZ: New Zealand, Tx: Texas; ND: North Dakota)



	ONE	TWO	THREE	FOUR	FIVE
LT_Business	2,0%	5,8%	16,6%	37,9%	37,4%
LT_Educators	2,5%	6,6%	16,0%	39,7%	34,7%
LT_Psychologists	2,5%	6,8%	16,2%	38,9%	34,8%
LT_Retail	2,4%	5,0%	13,4%	33,9%	44,8%
US_Tx_Hispanic	2,9%	5,4%	14,7%	33,0%	42,8%
MX_GDL_Bus	3,1%	5,3%	14,9%	41,3%	41,3%
US_ND_Bus	2,9%	7,2%	20,2%	41,1%	26,1%
US_TX_Anglo	2,0%	4,2%	16,4%	41,2%	35,9%
NZ_Bus	1,5%	5,6%	18,3%	47,9%	30,5%

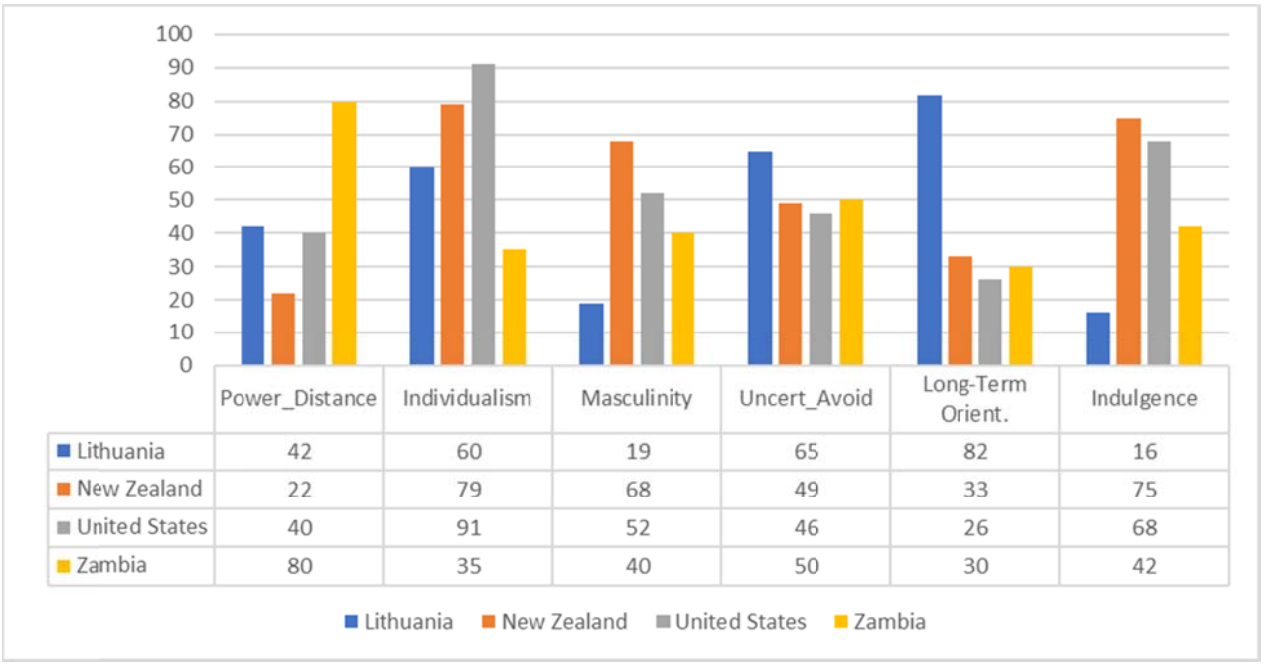
Further, we observed several patterns of response sets across various national samples, depicted in Figures 2 through 9;

Figure 2: Observed Patterns of Response Sets in Lithuania Across Job Categories



	ONE	TWO	THREE	FOUR	FIVE
LT_Business	2,0%	5,8%	16,6%	37,9%	37,4%
LT_Educators	2,5%	6,6%	16,0%	39,7%	34,7%
LT_Psychologists	2,5%	6,8%	16,2%	38,9%	34,8%
LT_Retail	2,4%	5,0%	13,4%	33,9%	44,8%

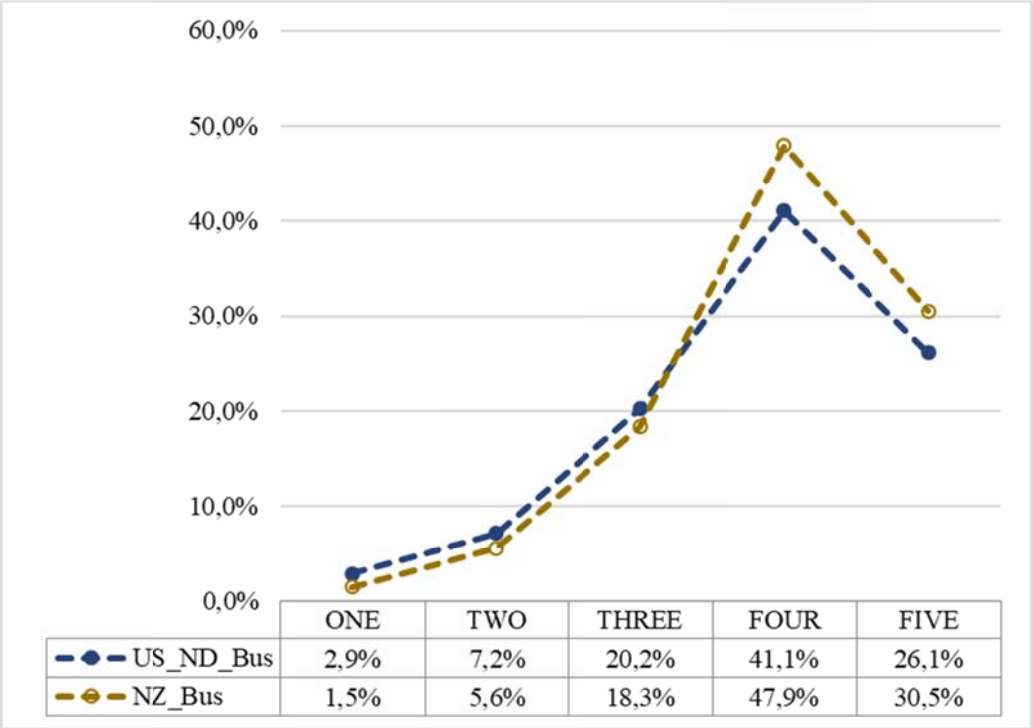
Figure 3. ITIM.com cultural value dimension comparisons for four countries with similar response set patterns.



	Power_Distance	Individualism	Masculinity	Uncert_Avoid	Long-Term Orient.	Indulgence
Lithuania	42	60	19	65	82	16
New Zealand	22	79	68	49	33	75
United States	40	91	52	46	26	68
Zambia	80	35	40	50	30	42

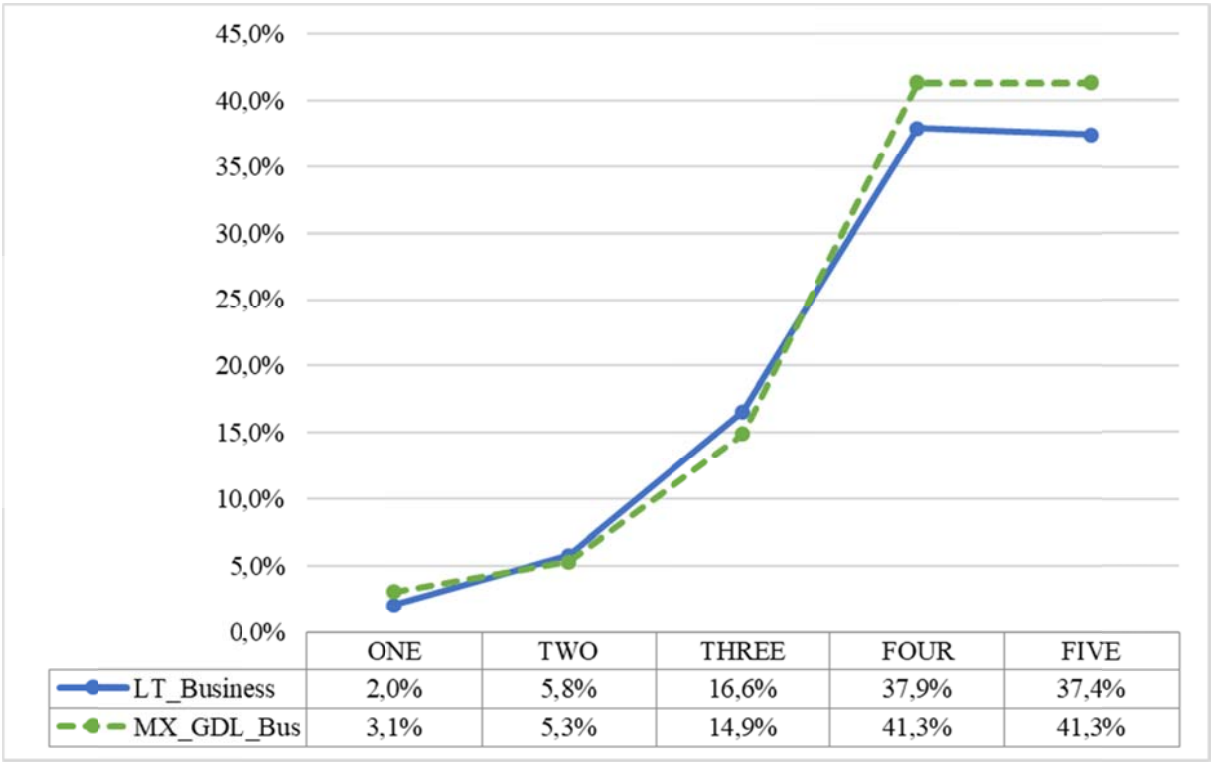
We observed a Pattern A (presented in Figure 4) which exhibits a tendency observed to use "4" (Often) rather than "5" (Always), as the upper limit on preference, and a similar pattern is observed in Pattern B (Figure 5), but to a lesser degree.

Figure 4: response Sets: Pattern A: USA-North Dakota & New Zealand



	ONE	TWO	THREE	FOUR	FIVE
US_ND_Bus	2,9%	7,2%	20,2%	41,1%	26,1%
NZ_Bus	1,5%	5,6%	18,3%	47,9%	30,5%

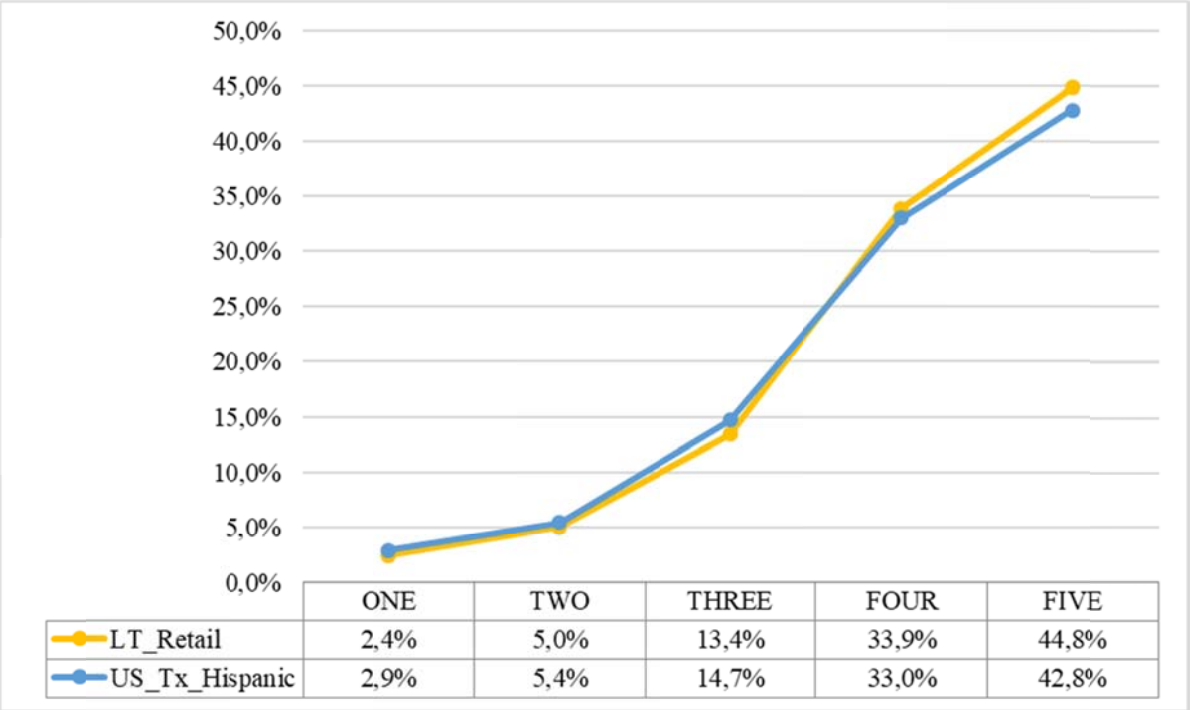
Figure 5: Response Sets: Pattern B: Lithuania & Mexico



	ONE	TWO	THREE	FOUR	FIVE
LT_Business	2,0%	5,8%	16,6%	37,9%	37,4%
MX_GDL_Bus	3,1%	5,3%	14,9%	41,3%	41,3%

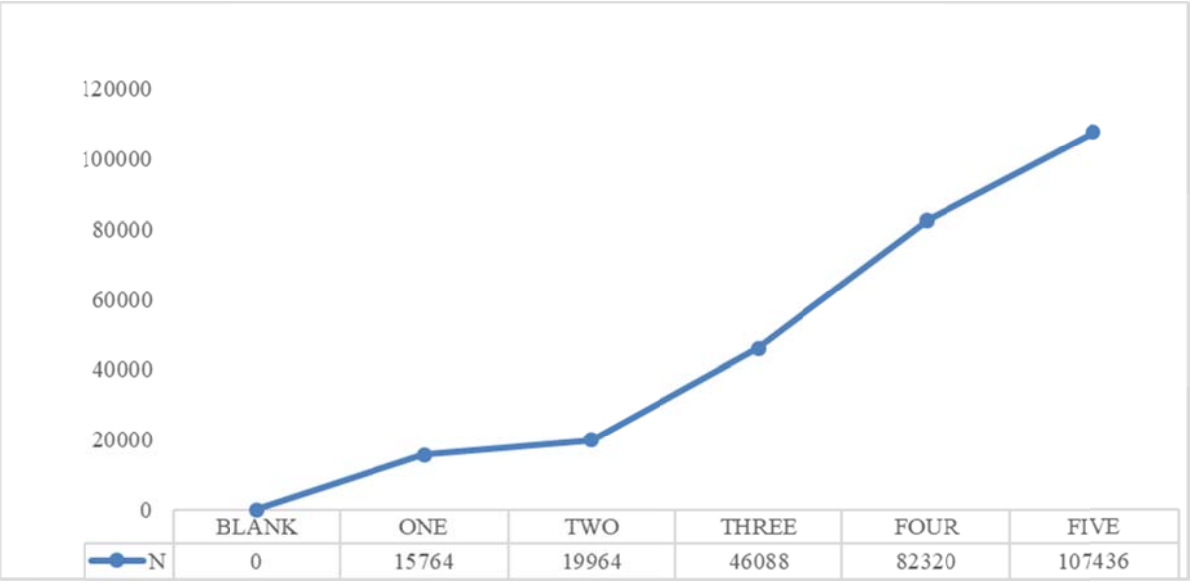
For response set Pattern C (Figures 6 and 7), we see the respondents generally using the full range of anchors. In Figure 3, we see no pattern of cultural value dimensions supporting this use. These propensities cannot be really termed "bias" but are indicators of differences in perception and use of Likert-type rating systems. There can be quite a number of reasons for these kinds of distributions, which will be investigated further by our research consortium.

Figure 6: Response Sets: Pattern C: Lithuania & US Texas Hispanic



	ONE	TWO	THREE	FOUR	FIVE
LT_Retail	2,4%	5,0%	13,4%	33,9%	44,8%
US_Tx_Hispanic	2,9%	5,4%	14,7%	33,0%	42,8%

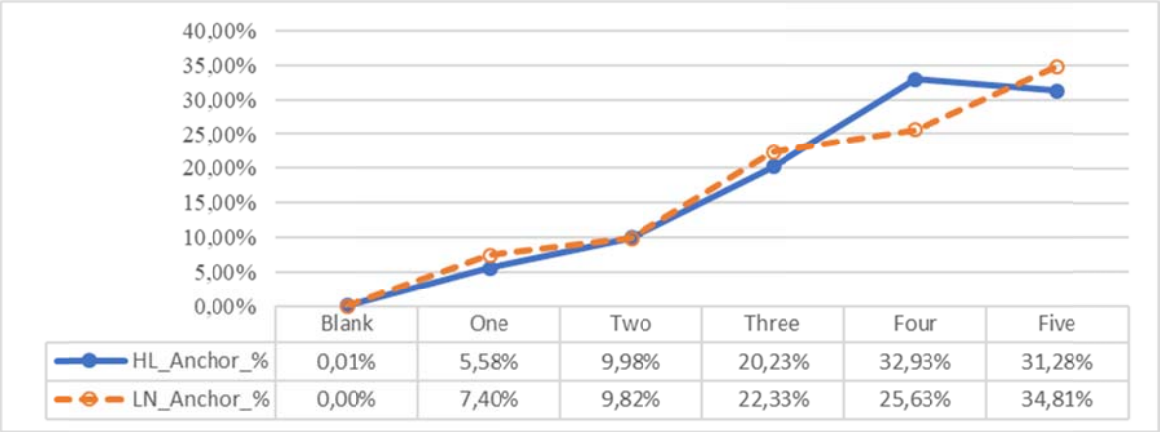
Figure 7: Response Set Pattern C – Zambia (2022)



	BLANK	ONE	TWO	THREE	FOUR	FIVE
N	0	15764	19964	46088	82320	107436

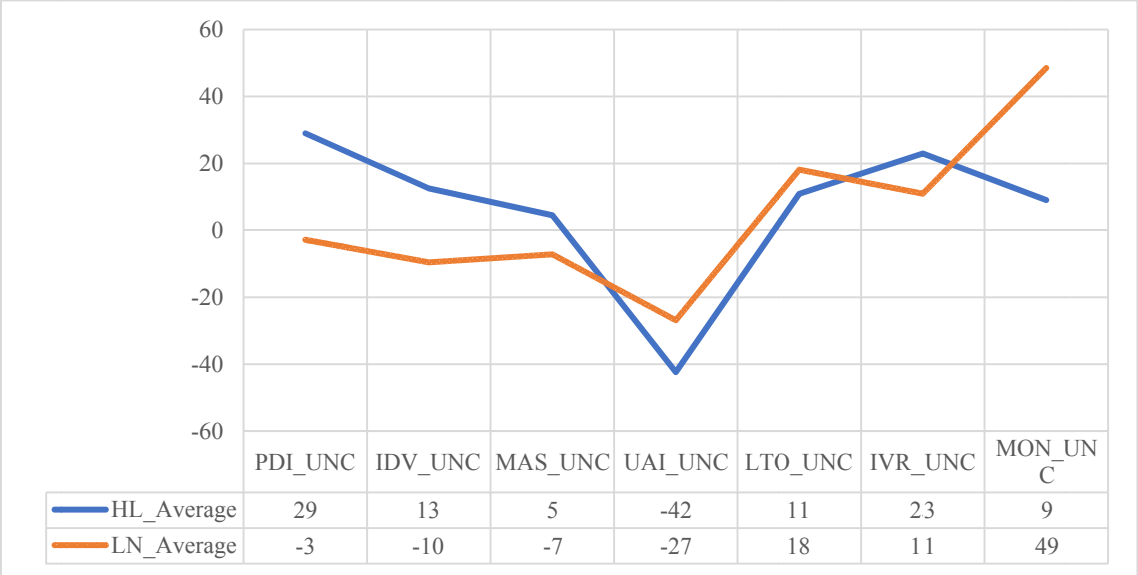
For these two samples from China (see Figure 8 below), the survey included Hofstede's 7-dimensional Values Survey Module-08 (See http://geerthofstede.com/research-and-vsm/vsm-08/; see Figure 9 below). Our raw, non-standardized scores indicate the Heilongjiang sample has a much higher average for Power Distance. Power Distance refers to the degree to which people accept centralized authority and status differences in society and their organizations. Future studies should extend the study to a broader range of countries.

Figure 8: Response Sets: China: Heilongjiang / Liaoning Samples



	Blank	One	Two	Three	Four	Five
HL_Anchor_%	0,01%	5,58%	9,98%	20,23%	32,93%	31,28%
LN_Anchor_%	0,00%	7,40%	9,82%	22,33%	25,63%	34,81%

Figure 9: Hofstede 7D Dimension Scores for Heilongjiang / Liaoning Samples



	PDI_UNC	IDV_UNC	MAS_UNC	UAI_UNC	LTO_UNC	IVR_UNC	MON_UNC
HL_Average	29	13	5	-42	11	23	9
LN_Average	-3	-10	-7	-27	18	11	49

UNC indicates raw scores, not scaled 0-100

6. DISCUSSION & CONCLUSION

The purpose of our study was to investigate consistent differences across cultures in the interpretation and utilization of the different anchor points on Likert-type response scales. We applied data from a global leadership study to showcase these biases and test our hypotheses. Our results provide partial support for our hypotheses.

In the first and second hypotheses we assumed that acquiescent responding style may be more prevalent in datasets from countries ranking high on Collectivism and Power Distance. As may be seen in Figures 7 and 8, datasets from China and Zambia, countries ranking relatively high in Collectivism and Power Distance (see figures 3 and 9 for cultural value profiles of countries), did indicate positive response acquiescence, *confirming these hypotheses*. In the third hypothesis, we argued mid-range responding style to be prevalent in datasets obtain in countries low on Power Distance. As may be seen in Figure 4, datasets from the US (North

Dakota) and New Zealand, scoring relatively low on Power Distance, did display this tendency as may be seen in the highest frequencies of respondents selecting anchors 3 and 4 of the Likert scale in the LBDQXII, *supporting this hypothesis*. In the fourth hypothesis we argued that extreme responding will be prevalent in datasets from cultures high on Masculinity. *This hypothesis was not supported* as datasets from countries ranking high on this dimension, such as New Zealand, did not exhibit this tendency (see Figure 4). In the fifth hypothesis, we assumed that mid-range responding style would be more prevalent in datasets from cultures high in Femininity. Our results *did not provide support for this hypothesis* as Lithuania (see Figure 2) and China, the Liaoning sample in particular (see Figure 8), did not exhibit this responding style. In the sixth hypothesis, we argued for the prevalence of mid-range response style in cultures high in Collectivism. However, *this hypothesis was not supported in our study* as datasets from countries ranking high on Collectivism such as Zambia and China did not exhibit this responding style (see Figure 7 for Zambia and Figure 8 for China). Finally, in the last, seventh hypothesis, we assumed that extreme responding will be more prevalent in datasets from cultures high in Uncertainty Avoidance. *This hypothesis was supported in our study* as Lithuania and China, with high Uncertainty Avoidance scores, did indicate high positive scores.

These results indicate that the items defining the factors are sensitive to cultural differences. However, the partial support for our hypotheses also implies that response set is motivated by influences we have not entailed in our study, such as those mentioned earlier, i.e. dispositional and situational. For instance, personality traits, as dispositional or individual factors have been shown to influence response sets to Likert-type survey items across cultures. Research showed that people who are high in neuroticism are more likely to endorse extreme responses, people who are high in extraversion and agreeableness are more likely to agree with statements in general, and that people who are high in conscientiousness are more likely to choose middle responses (Johnson, Shavitt, & Holbrook, 2005; Hui & Triandis, 1989; Van Herk, Poortinga & Verhallen, 2004; Weech-Maldonado, Abad, & Navas, 2008; Warnecke, Johnson, & Shavitt, 1997). In addition, cultural factors can moderate the relationship between personality and response set. For example, in cultures with high power distance, people who are high in neuroticism may be more likely to agree with statements, even if they do not actually agree with them. This is because they may be reluctant to disagree with someone in a position of authority.

Finally, it is important to note that the response styles vary depending on the numerous dispositional, situational and contextual factors and much more research is needed to better understand these relationships. In this regard, we will continue to collect data using the standard version of the LBDQXII in English and in translations in order to identify and analyze clusters of national cultures preferring similar sets of explicit leader behavior. Additionally, a collaborative project is underway collecting information necessary to revise the LBDQXII to enhance reliability and, hopefully, to reduce the number of items, as collaborators have raised issues with the extensive use of US English slang and idioms, the fact that some items refer to traits rather than behaviors, and the length of the survey. The results of our first efforts in this project are discussed in Warner-Söderholm et al. (2020).

BIBLIOGRAPHY

Au, K., and Cheung, M.W.L., (2002): **Consequences of intracultural variation: An exploratory study of job autonomy in 42 nations,** In P. Boski, F. J. R. van deVijver, and A. M. Chodynicka (Eds), ***New directions in cross-cultural psychology,*** pp. 261-278. Warsaw, Poland: Polish Psychological Association.

Ayçan, Z., Kanungo, R. N., Mendonca, M., Yu, K., Deller, J., Stahl, G., et al., (2001): **Impact of culture on human resource management practices: A 10-country comparison**. ***Applied Psychology, An International Review***, 49: 192-211.

Baumgartner, H. & Steenkamp, J-B.E.M., (2001): **Response styles in marketing research: a cross-national investigation**, ***Journal of Marketing Research***, 38(2): 143-156.

Cheung, G. W. & Rensvold, R. B., (2000): **Assessing extreme and acquiescence response sets in cross-cultural research using structural equations modeling**. ***Journal of Cross-Cultural Psychology***, 31, 187-212.

Chinese Culture Connection, (1987): **Chinese values and the search for culture-free dimensions of culture,** ***Journal of Cross-Cultural Psychology***, 18: 143164.

Clarke III, I., (2000): **Extreme Response Style in Cross-Cultural Research: An Empirical Investigation**, ***Journal of Social Behavior and Personality***, 15(1): 137-152.

Cronbach, L. J., (1946): **Response sets and test design,** ***Educational and Psychological Measurement***, 6, 475-494.

Dorfman, P.W., Howell, J.P., Hibino, S., Lee, J.K., Tate, U. & Bautista, A. (1997): **Leadership in Western and Asian countries: Commonalities in effective leadership processes across cultures,** ***Leadership Quarterly***, 8(3): 233-274.

Drees, D., (n.d.): 8 **types of response bias and how to avoid them in your surveys**. Austin, Texas, USA: wynter.com (a survey research consulting company), https://wynter.com/post/response-bias

Fischer, R., (2004): **Standardization to Account for Cross-Cultural Response Bias: A Classification of Score Adjustment Procedures and Review of Research in JCCP**, ***Journal of Cross-Cultural Psychology***, 35(3): 263-282.

Fleishman, E. A., (1989b): **Supervisory Behavior Description Questionnaire (SBD) examiner's manual.** Park Ridge, IL: Science Research Associates.

Fleishman, E. A., (1995): **Consideration and structure: Another look at their role in leadership research**. In F. Dansereau & F. J. Yammarino (Eds.), ***Leadership: The multiple-level approaches,*** Stamford, CT: JAI Press, pp. 51–60.

Halpin, A. W., (1957a): **Manual for the Leader Behavior Description Questionnaire.** Columbus, OH: Bureau of Business Research, Ohio State University.

Halpin, A. W., (1957b): **The leader behavior and effectiveness of aircraft commanders**. In R. M. Stogdill & A. E. Coons (Eds.), ***Leader behavior: Its description and measurement*** (pp. 52–64): Columbus, OH: Bureau of Business Research.

Harzing, A-W. & Maznevski, M., (2002): **The interaction between language and culture: A test of the cultural accommodation hypothesis in seven countries**. ***Language and Intercultural Communication***. 2(2): 120-139.

Heine, S. J., Lehman, D. R., Peng, K. P., & Greenholz, J., (2002): **What's wrong with cross-cultural comparisons of subjective Likert scales? The reference group effect,** ***Journal of Personality and Social Psychology,*** 82: 903-918.

Herche, J. & Engelland, B. (1996): **Reversed polarity items and scale unidimensionality**, **J*ournal of the Academy of Marketing Science***, 24(4), 366-374.

Hofstede, G. (1980a): **Culture's consequences: International studies of work-related values**. Newbury Park, CA: Sage.

Hofstede, G. (1980b): **Motivation, Leadership and Organization: Do American Theories Apply Abroad?,** ***Organizational Dynamics***, 9(1): 42-63.

Hofstede, G. (1986): **Cultural Differences In Teaching And Learning**, ***International Journal Of Intercultural Relations***, 10: 301-320.

Hofstede, G. (1989): **Organising for cultural diversity**, ***European Management Journal***, *7*(4), 390-397.

Hofstede, G. (1991): **Cultures and Organizations: Software of the Mind**, McGraw-Hill Book Company, London, UK.

Hofstede, G. (1994): **The Business Of International Business Is Culture, I*nternational Business Review***, 3(1): 1-14.

Hofstede, G. (2001): **Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations**. Thousand Oaks, CA: Sage.

House, R.J. & Aditya, R. (1997): **The social scientific study of leadership: quo vadis?,** ***Journal of Management***, 23(3), 409-473.

House, Robert J., Wright, N. & Aditya, R.N. (1997): **Cross cultural research on organizational leadership: a critical analysis and a proposed theory**. In P.C. Earley & M. Erez Eds. ***New Perspectives on International Industrial and Organizational Psychology***, San Francisco, CA: Jossey-Bass.

Hui, C. H., & Triandis, H. C. (1989): **Effects of culture and response format on extreme response style,** ***Journal of Cross-Cultural Psychology***, 20: 296-309.

Ibrahim, A.M. (2001): **Differential responding to positive and negative items: the case of a negative item in a questionnaire for course and faculty evaluation.** ***Psychological Reports***, 88(2): 497-500.

Johnson, T., Kulesa, P., Cho, Y. I., & Shavitt, S. (2005): **The relation between culture and response styles: Evidence from 19 countries,** ***Journal of Cross-cultural psychology***, *36*(2): 264-277.

Judge, T.A., Piccolo, R.F., & Ilies, R. (2004): **The forgotten ones? The validity of consideration and initiating structure in leadership research,** ***Journal of Applied Psychology***, 89(1): 36–51.

Kerr, S., Schriesheim, C.A., Murphy, C.J., & Stogdill, R. H. (1974): **Toward a contingency theory of leadership based upon the consideration and initiating structure literature, *Organizational Behavior and Human Performance***, 12: 62-82.

Leung, K., & Bond, M. H. (1989): **On the empirical identification of dimensions for cross-cultural comparison, *Journal of Cross-Cultural Psychology***, 20: 133-151.

Likert, R. (1961): **New patterns of management.** New York: McGraw-Hill.

Littrell, R.F. & Valentin, L.N. (2005): **Preferred leadership behaviours: Exploratory results from Romania, Germany, and the UK, *The Journal of Management Development***, 24(5): 421-442

Littrell, R.F. (2002a): **Desirable leadership behaviors of multi-cultural managers in China, *The Journal of Management Development.*** 21(1): 5-74.

Littrell, R.F. (2002b): **Comparative analysis of management styles: Desirable leader traits across cultures, *Proceedings Academy of International Business Southeast Asia and Australia Regional Conference*** CD, ISBN 962-8134-05-1. July 18 – 20, 2002, Shanghai, China, Hong Kong Institute of Business Studies, Lingnan University, Tuen Mun, Hong Kong, http://www.ln.edu.hk/hkibs/

Littrell, R.F. (2003): **Corporate and National Cultures: Influence of the Cross-Cultural Composition of the Management Team on Leadership Preferences in a Chinese Organisation, A Longitudinal Study**, Proceedings of the ***2003 International Human Resources Management Conference***, University of Limerick, Limerick, Ireland, (available at http://www.romielittrellpubs.homestead.com)

Littrell, R.F. and Nkomo, S.M., (2005): **Gender and race differences in leader behaviour preferences in South Africa, *Women in Management Review***, *20*(8): 562-580.

Littrell, R.F.; Ahmadi, Y.; Dalati, S.; Kuskova, V.V.; Minelgaite, I. & Warner-Søderholm, G. (2016): **Validity Testing of the Leader Behavior Description Questionnaire XII for Use Across National Cultures**. Centre for Cross Cultural Comparisons working paper CCCC WP 2016.1 at http://crossculturalcentre.homestead.com/WorkingPapers.html

Ljubica, J., Littrell, R.F., Warner-Søderholm, G. and Minelgaite, I. (2022): **Empower me or not? Influence of societal culture**, ***Cross Cultural & Strategic Management***, 29(1): 114-146.

Lucas, P.R., Messner, P.E., Ryan, C.W. & Sturm, G.P. (1992): **Preferred leadership style differences: perceptions of defense industry labor and management, *Leadership and Organization Development Journal***, 13(7): 19-22.

Mann, F.C. (1965): **Toward an understanding of the leadership role in formal organization. In R. Dublin (Ed.), *Leadership and Productivity***. San Francisco: Chandler, pp. 68-103.

Marin, G., Gamba, R. J., & Marin, B.V. (1992): **Extreme response style and acquiescence among Hispanics, *Journal of Cross-Cultural Psychology***, *23:* 498-509.

Marsh, H. W. (1996): **Positive and negative global self-esteem: A substantively meaningful distinction or artifacts?, *Journal of Personality and Social Psychology***, 70(4): 810-819.

Mook, J., Kleijn, W. C., & Ploeg, H. M. (1992): **Positively and negatively worded items in a self-report measure of dispositional optimism, *Psychological Reports***, 71: 275-78.

Morris, M.W.,Williams, K. Y., Leung K., Larrick, R., Mendoza, M., Bhatnagar, D. et al. (1998): **Conflict management style: accounting for cross-national differences, *Journal of International Business Studies***, 29: 729-748.

Nakata, C. & Sivakumar, K. (2001): **Instituting the Marketing Concept in a Multinational Setting: The Role of National Culture, *Academy of Marketing Science***, 29(3): 255-276.

Northouse, P. G. (1997): **Leadership: Theory and practice.** Thousand Oaks, CA: Sage.

Nunnaly, J. C. (1967): **Psychometric Theory**. New York: McGraw Hill.

Patel, C., Harrison, G.L. & McKinnon, J.L. (2002): **Cultural influences on judgments of professional accountants in auditor-client conflict resolution, *Journal of International Financial Management and Accounting*,** 13(1): 1-31.

Peterson, Robert A (1994): **A meta-analysis of Cronbach's coefficient alpha, *Journal of Consumer Research***, 21: 381-391.

Piccolo, R. (2004): **Personal communication concerning reverse-scored survey items**.

Popper, K.R. (1959): **The Logic of Scientific Discovery.** London: Hutchinson.

Poynor, L. (2004): **Personal communication concerning scaling of item scores for standardization.**

Ralston, D.A., Cunniff, M.K. & Gustafson, D.J. (1995): **Cultural accommodation: The effect of language on the responses of bilingual Hong Kong Chinese managers, *Journal of Cross - Cultural Psychology***, 26(6): 714-727.

Richins, M.L. & Dawson, S. (1992): **A consumer values orientation for materialism and its measurement: scale development and validation, *Journal of Consumer Research***, 19(December): 303-316.

Roberts, R. E., Lewinsohn, P. M., & Seeley, J. R. (1993): **A brief measure of loneliness suitable for use with adolescents, *Psychological Reports***, 72: 1379-1391.

Rupp, A.A.; Zumbo, B.D. (2004): **A Note on How to Quantify and Report Whether Irt Parameter Invariance Holds: When Pearson Correlations are Not Enough, *Educational and Psychological Measurement***, 64(4): 588-599.

Sashkin, M. (1979): **A review of Ralph M. Stogdill's Leader Behavior Description Questionnaire – Form XII, *Group and Organizational Studie*s**, 4(2): 247-250.

Schermerhorn, J.R. & Bond, M.H. (1991): **Upward and downward influence tactics in managerial networks: A comparative study of Hong Kong Chinese and Americans,** ***Asia Pacific Journal of Management***, 8: 147-158.

Schmitt, N. & Stults, D. M. (1985): **Factors defined by negatively keyed items: The result of careless respondents?,** ***Applied Psychological Measurement***, 9(4): 367-373.

Schneider, J. & Littrell, R.F. (2003): **Leadership Preferences of German and English Managers,** ***The Journal of Management Development***, 22(2), 130-148.

Schriesheim, C. A., & Kerr, S. (1974): **Psychometric properties of the Ohio State leadership scales.** ***Psychological Bulletin,*** 81: 756–765.

Schwartz, S. H. (1994): **Beyond individualism/collectivism: New cultural dimensions of values**. In U. Kim, H. C. Triandis, C. Kagitçibasi, S.C. Choi, & G. Yoon (Eds.), ***Individualism and collectivism: Theory, method and applications,*** pp. 85-119. Thousand Oaks, CA: Sage.

Schwartz, S.H., Verkasalo, M., Antonovsky, A., & Sagiv, L. (1997): **Value priorities and social desirability: Much substance, some style,** ***British Journal of Social Psychology, 36,*** 3-18.

Segall, M. H. (1986): **Assessment of social behavior. In W. J. Lonner & J.W. Berry (Eds.),** ***Field methods in cross cultural research,*** pp. 265-290. Beverly Hills, CA: Sage.

Selmer, J. (1997): **Differences in leadership behavior between expatriate and local bosses as perceived by their host country national subordinates,** ***Leadership and Organizational Development Journal,*** (18)1: 13-22.

Selmer, J. (2004): **Personal communication concerning reverse-scored survey items**.

Smith, P. B. (2004): **Acquiescent response bias as an aspect of cultural communications style,** ***Journal of Cross-Cultural Psychology, 35,*** 50-61.

Smith, P. B., Peterson, M. F., Schwartz, S. H., Ahmad, A. H., Akande, D., Anderson, J. A., et al. (2002): **Cultural values, sources of guidance and their relevance to managerial behaviors: A 47 nation study,** ***Journal of Cross-Cultural Psychology***, 33, 188-208.

Smith, P.B. (2004a): **Acquiescent Response Bias as an Aspect of Cultural Communication Style,** ***Journal of Cross-Cultural Psychology***, 35(1): 50-61.

Smith, P.B. (2004b): **Nations, Cultures, and Individuals: New Perspectives and Old Dilemmas,** ***Journal of Cross-Cultural Psychology***, 35(1): 6-12.

Smith, P.B., Peterson, M.F., & Schwartz, S.H. (2002): **Cultural values, sources of guidance, and their relevance to managerial behavior,** ***Journal of Cross - Cultural Psychology,*** 33(2): 188-208.

Stogdill, R.M. & Coons, A.E. (1957): **Leader behavior: Its description and measurement**. Columbus, OH: Bureau of Business Research.

Stogdill, R.M. (1948): **Personal factors associated with leadership: A survey of the literature,** ***Journal of Psychology***, 25: 35-71.

Stogdill, R.M. (1950): **Leadership, membership, and organization,** ***Psychological Bulletin, 47,*** 1–14.

Stogdill, R.M. (1959): **Individual behavior and group achievement**. New York: Oxford University Press.

Stogdill, R.M. (1963): **Manual for the Leader Behavior Description Questionnaire-Form XII**. Columbus: Ohio State University, Bureau of Business Research.

Stogdill, R.M. (1974): **Handbook of leadership: A survey of theory and research**. New York: The Free Press.

Sundqvist, S., Frank, L., & Puumalainen, K. (2001): **Cross-Cultural Adoption of Wireless Communications: Effects of Cultural Distance and Country Characteristics**, http://marketing.byu.edu/htmlpages/ccrs/proceedings01/papers/Sundqvist-Frank-Puumalainen.doc, accessed 31 July 2003.

Taylor, J.C. & Bowers, D.G. (1972): **The survey of organizations**. Ann Arbor, MI: Institute for Social Research, The University of Michigan.

Timm, F., Brownell, S., Cobbs, J., & Keller, J. (1999): **Romania**, Georgia State Institute for International Business. http://www-cba.gsu.edu/wwwiib/Romania.htm, (accessed 31 July 2003):

Triandis, H.C. (1976): **Methodological problems of comparative research,** ***International Journal of Psychology***, 11(3): 155-159.

van de Vijver, F. and Leung, K. (1997): **Methods and data analysis for cross-cultural research**. Thousand Oaks, CA: Sage.

Van Herk, H., Poortinga, Y.H.; Verhallen, T.M.M. (2004): **Response Styles in Rating Scales: Evidence of Method Bias in Data from Six EU Countries,** ***Journal of Cross-cultural Psychology,*** 35(3): 346-360.

Warnecke, R. B., Johnson, T. P., & Shavitt, S. (1997): **The influence of culture and personality on response styles in attitude measurement,** ***Journal of Cross-Cultural Psychology***, 28(4), 454-471.

Warner-Søderholm, G., Minelgaite, I., & Littrell, R. F. (2020): **From LBDQXII to LBDQ50: preferred leader behavior measurement across cultures,** ***Journal of Management Development***, 39(1), 68-81.

Watkins, D. & Cheung, S. (1995): **Culture, gender, and response bias: An analysis of responses to the self-description questionnaire,** ***Journal of Cross-Cultural Psychology***, 26(5): 490-504.

Weissenberg, P., & Kavanagh, M. J. (1972): **The independence of initiating structure and consideration: A review of the evidence,** ***Personnel Psychology***, 25: 119–130.

Weech-Maldonado, R., Abad, P. I., & Navas, M. (2008): **Patient ratings of medical care across cultures: The role of response style,** ***Medical Care***, 46(11), 1137-1142.

Wong, N. Rindfleisch, A. & Burroughs. J.E. (2003): **Do reverse-worded items confound measures in cross-cultural consumer research? The case of the material values scale,** ***Journal of Consumer Research***, 30(1): 72-91.

Yang, K.S. & Bond, M.H. (1980): **Ethnic affirmation by Chinese bilinguals,** ***Journal of Cross-Cultural Psychology***, 11: 411-425.

Yukl, G. (1998): **Leadership in organizations.** Upper Saddle River, NJ: Prentice Hall.

Yukl, G., & Van Fleet, D. D. (1992): **Theory and research on leadership in organizations**. In M. D. Dunnette & L. M. Hough (Eds.), ***Handbook of Industrial and Organizational Psychology,*** 2: 147–197. Palo Alto, CA: Consulting Psychologists Press.

Yunker, G.W. & Hunt. J.G. (1976): **An empirical comparison of the Michigan four-factor and Ohio State LBDQ leadership scales,** ***Organizational Behavior and Human Performanc*****e**, 17: 45-65.

TOWARDS CONSUMER BEHAVIOUR OUTCOMES AND BRAND IDENTIFICATION THROUGH CONSUMER BRAND ENGAGEMENT (CBE)

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JEL codes: *M21, M31*

ABSTRACT

The concept of consumer brand engagement (CBE) is a domain that recently started gaining importance. The main purpose of this paper was to determine the significance of CBE, and its dimensions/interactions for the behavioural outcomes, such as the spent and planned amounts for the selected brand, and self-brand identification.

The research was conducted via an online questionnaire on a convenient sample of 204 respondents. The results showed differences in the CBE and its dimensions concerning the selected brands and product categories. In addition, the results provided insights into a higher significance of an overall (net) CBE relative to its dimensions individually. Specifically, total CBE is positively associated with the amount spent and planned and with brand identification. On the other hand, the cognitive and affective CBE dimensions do not significantly impact the amount spent and planned but are positively related to brand identification. The behavioural CBE dimension is positively related to the amounts spent, planned, and brand identification. The obtained results have valuable theoretical and practical implications for companies and marketers.

1. INTRODUCTION

In the last few years, the significance of the relationship between the consumer and the brand has been emphasized more and more, given the importance of consumer-brand interaction and emotional connection creation (Paton, 2022). The concept of consumer brand engagement (from now on referred to as CBE) is gaining more and more interest and importance (Cheung et al., 2020; Brodie et al., 2019; Hollebeek et al., 2019). CBE is a concept that refers to the consumer's "connection", more precisely interaction, with the brand and its role in the development of the brand, which increases the customer's loyalty to a particular brand as well as the probability of repeat purchase (Fernandes & Moreira, 2019). Hollebeek (2011) defines CBE as a combination of a consumer's cognitive, emotional and behavioural investment in brand interaction. Merrilees (2016) defines customer/consumer engagement as the result of repeated interactions that strengthen the customer's emotional, psychological and physical investment concerning the brand. In addition, the CBE concept is becoming of great interest to marketers, given its insufficient research but great importance for consumer behaviour. Moreover, brands are of great importance for creating one's own identity (self-brand identity), which leads to different behavioural outcomes. Namely, identifying with a brand arises due to the need to strengthen one's ideas about oneself (Bradvica, 2019), while the same applies to the links that consumers create between the brand and their own identity, and the stronger this link is, the more the consumer will buy products and brands. Also, brands with a story that the consumer can relate to have a higher probability of success in the market (Harrigan et al., 2018). Thus, it can be concluded that identifying with the brand is extremely important for the CBE context.

Hollebeek et al. (2014) emphasize that CBE, i.e. customer engagement, as a psychological state, occurs based on an interactive and co-creative (co-creation) relationship with the brand. They add that CBE is the result of perceived active, not passive, roles and behaviour of consumers in the processes related to the brand. Malciute and Carysochou (2013) also indicate that CBE is a psychological process that customers go through to become loyal to a brand, highlighting CBE as a state of sustained attention or preoccupation with something. Maurya and Mishra (2012) claim that brands have become ubiquitous, that is, they penetrate every aspect of consumers' lives: economic, cultural, social, but also religious, pointing to the importance of product segmentation and differentiation by companies. According to Krupka and Škvorc (2014), the process of creating a brand is very complex and time-consuming and requires a high level of involvement of all company employees and loyal customers of the brand. Therefore, in creating a strong brand, the CBE concept and its importance are being considered more and more often.

Solem (2016) states that there are companies that consider customers as co-creators, i.e. "partners", and not as external figures, given that consumers get involved and participate in certain activities, whereby this participation is manifested through interaction, i.e. engagement. This is precisely where the strength of the CBE concept lies and its significance for consumer behaviour. The most important thing for a company is to create a satisfied customer, that is, a customer for whom the value obtained from the product is at least equal to or greater than the expected value (Kumar & Reinartz, 2006). Kovačević (2017) states that, in most cases, satisfied customers will continue to buy the product of a particular brand, which will ultimately lead to customer loyalty and even customer involvement in the creation or development of the brand. The focus is on valuable customers, retention and continuous contact with customers (Kumar & Reinartz, 2006). Thus, it can be concluded that CBE, precisely because of consumer engagement, i.e. consumer interaction with the brand, is essential for maintaining relations with the company. Considering the previous notions, this

paper will define the CBE concept in more detail and describe its dimensions important for consumer behaviour and, hence, its importance for companies. For this purpose, CBE will be examined through three dimensions, or interactions, namely: cognitive, affective and behavioural interaction/dimensions, relying on the insights of relevant authors (e.g., Hollebeek, 2011; Hollebeek et al., 2014, 2019; Cheung et al., 2020).

The scientific contribution of the research is reflected in a better understanding of the CBE concept and its importance for consumer behaviour and, consequently, business entities. To date, the CBE concept still needs to be researched, and most authors in their works emphasize the lack of empirical research on this topic (Molina-Prados et al., 2022), which reflects the scientific contribution of this particular work. Furthermore, a lot was recently said about CBE in terms of the particular fields, such as, social media (Hollebeek et al., 2019), fashion (Molina-Prados et al., 2022), online banking (Khan et al., 2016), while less is known about the insights and perceptions from consumers given their preferred brand choices across the variety of product categories while encompassing overall CBE and particularly its dimensions. Thus, this paper will close this gap by exploring the CBE concept given the consumers' insights and the variety of their preferred brands and product categories through three CBE dimensions: cognitive, affective and behavioural. This research will also provide a more detailed insight into the effect of each of the aforementioned dimensions of CBE on individual product categories, as well as the effect of CBE and its dimensions on brand identification and the spent and planned amounts on purchasing particular product brands. This has been noticed as an unexplored area in the existing literature. In addition to the scientific, this work also has a practical contribution. Namely, in accordance with the obtained results, guidelines for practice will be given, for example, in terms of strengthening communication with consumers and, as a result, interaction, i.e. CBE.

2. LITERATURE OVERVIEW

Leckie et al. (2016) highlight the opinion of numerous authors that CBE is a new and attractive topic in strategic marketing and branding. Obilo et al. (2021) argue that the marketing discipline has developed a customer management approach, moving from the transactional era to the era of relationship marketing and adapting to the latest era of customer engagement. They also note that marketing practice and research currently reflect a customer engagement perspective, given that this perspective is crucial in gaining a competitive advantage. The consumer-brand relationship paradigm has generated much academic interest in understanding the different forms of consumer-brand relationships. The concept of consumer engagement concerning a brand, that is, the CBE concept, has mainly stood out in recent years and is gaining considerable importance among academics and practitioners due to its potential to influence consumer behaviour. Therefore, the scholars suggest further development of the CBE concept (Dwivedi, 2015). Vivek (2009) believes that practitioners view customer engagement as activities that facilitate interactions and strengthen the customer's emotional, psychological or physical investment in the brand, while academics perceive engagement as the intensity of customer participation in exchanging knowledge with representatives of the organization and other customers.

Creating a strong brand is the goal of almost every company in the market, and certain brands offer unique benefits to consumers that they cannot get from some other brands. The advantage of brands lies in their value to their consumers, be it functional or psychological value. For brands to be sold and create value for consumers, it is necessary to consider consumers' needs and desires, and one of the approaches to achieve this is the involvement of consumers in brand management. Consumers engaged in brand management provide the

necessary information but also help companies to create brands that meet consumer needs (Kuvykaite & Piligrimiene, 2014). Because of this, the CBE concept has gained more and more importance in the last few years. However, according to scholars, not enough academic research has been conducted so far, which has led to insufficient understanding of the concept until today. Kuvykaire and Piligrimiene (2014) state that consumers are active participants in brand value creation, with the company and consumers playing different roles in value creation. According to them, the involvement of consumers in creating a brand still needs to be developed, and research is needed. Literature suggests that the CBE concept is expected to contribute to understanding the customer experience and retention dynamics (Hollebeek, 2011; Hollebeek et al., 2014). According to Kuvykaite and Piligrimiene (2014), companies seeking success in the market must understand the role of the consumer as an active partner. Kuvykaite and Piligrimiene (2014) believe that engaged consumers attach greater emotional, functional and social value to the brand while the brand creates more positive associations for them, ultimately resulting in increased brand loyalty. According to Hollebeek (2011), CBE is determined by combining the three mentioned dimensions: cognitive, affective and behavioural dimensions, i.e. the consumer's level of cognitive, affective and behavioural investment in interaction with the brand. The scholars name the cognitive dimension "immersion", the affective dimension "passion", and the behavioural dimension "activation" (Kaure et al., 2020; Hollebeek et al., 2019; Kabadayi & Price, 2014; Hollebeek, 2011).

The cognitive dimension called "immersion" refers to the customer's awareness of a specific brand and knowledge and interest in the brand. Dwivedi (2015) calls the cognitive dimension "absorption" and concludes that consumers' cognitive evaluations measure quality and value. Hepola et al. (2017) combine several terms used by different authors to describe the cognitive dimension: immersion, absorption and attention. In their work, Harrigan et al. (2018) convey Hollebeek's (2011) definition that describes in detail the cognitive dimension of CBE, which emphasizes that the cognitive dimension is "the consumer's level of processing and elaboration of thoughts related to the brand". The same definition is given in their work by Leckie et al. (2016). Brodie et al. (2011) state some authors' opinions that engagement consists of four dimensions. One of them is "absorption", which reflects the cognitive dimension of engagement. Brodie et al. (2011) describe the mentioned dimension as the level of customer concentration on the object of engagement, which can be a brand or an organization. Hollebeek (2011) calls the affective dimension "passion" and describes it as consumers' emotional attachment to brands. A similar definition of the affective dimension will be used in this paper. Thus, the affective dimension/interaction refers to the customer's emotional investment in the relationship with the brand, i.e., according to Hollebeek (2011), consumer's enthusiasm and obsession that occurs when buying or using a product of a certain brand. Leckie et al. (2016) describe the mentioned dimension as the degree to which the consumer positively influences the brand in the interaction the customer has with the brand. In addition, the affective dimension describes everything the customer feels when using the brand, which ultimately positively affects the brand. Brodie et al. (2011) call the emotional or affective dimension of engagement "commitment" and describe it as the customer's sense of belonging to the brand or organization.

The behavioral dimension/interaction that Hollebeek (2011) calls "activation" refers to the activities the customer undertakes concerning a brand. This may include engaging with the brand through traditional or digital channels through which the interaction is made. Harrigan et al. (2018) claim that the behavioural dimension represents the consumer's level, energy, effort and time spent interacting with the brand. Brodie et al. (2011) state that two dimensions, "power" and "interaction" reflect the behavioural dimension. According to Brodie

et al. (2011) "power" is the level of energy and mental strength of the consumer in the interaction with the object of engagement, while the interaction is the two-way communication between the consumer and the object of engagement. In addition to the interaction with the brand itself, the interaction between consumers that can lead to a purchase is also extremely important.

In addition to CBE being extremely important for consumer behaviour, multiple dimensions also indicate its importance for creating one's own identity, i.e. consumer identification with the brand. Therefore, for studying the CBE concept and its significance for consumer behaviour, all three mentioned dimensions are very important, considering that consumer engagement should not be observed exclusively through only cognitive or affective interaction, but requires a comprehensive approach to all dimensions of CBE. Thus, through this paper, based on the selected preferred or loved brand by the respondent/consumer, an effort will be made to investigate the significance of the CBE dimension/interaction for consumer behaviour in the form of influence on purchases and significance for creating one's own identity.

3. HYPOTHESES DEVELOPMENT

Due to their characteristics, different product categories generate different levels of CBE according to that category (Bowden, 2009). Bowden (2009) claims that the consumer becomes more familiar with the brand over time and develops certain knowledge related to the brand and a different psychological framework when evaluating the brand compared to consumers who have a "lower level of experience" with the brand. For this reason, the author above emphasizes the importance of further research to study how and why different levels of brand experience influence "brand shaping". In this case, the product category means products with the same or similar characteristics and the same or similar application and belonging to different brands. Thus, product categories such as cosmetics, sportswear, technology, furniture, etc. can stimulate the development of different levels of CBE among consumers (Hollebeek, 2011). Hollebeek et al. (2014) indicate the importance of products that respondents use regularly and with which they have a developed CBE, that is, they are engaged. Thus, Hollebeek et al. (2014) argue that respondents for certain products have a significantly lower willingness to engage in cognitive, emotional and behavioural activities in interaction with the brand compared to some other products. According to Fernandes and Moreira (2019), engagement can be influenced by the characteristics of the product category itself, but also by the characteristics of the consumers who use them. Some consumers have a greater propensity to engage in CBE with some product categories and some less (Bowden, 2009). Hence, it can be concluded that CBE generally differs for different brands and product categories. Therefore we propose the following hypothesis:

> ***H1**: The total (net) CBE varies depending on the selected brands or product categories.*

We assume that different dimensions of CBE may prevail within different product categories. Namely, although they believe that some brands have greater potential for the development of CBE while others have limited potential, scholars (for example, Moreira and Fernandes, 2019) claim that previous research has not dealt in detail with the question of which brands or product categories have more characteristics or interactions that would make consumers connect with them. According to the mentioned authors, consumers connect with brands that have greater potential, most often on an emotional level, that is, through affective interaction. However, what kind of potential each brand and product category will have depends on the

consumers themselves. For instance, according to Hollebeek (2011), consumers with a developed affective dimension ("passion") have a developed CBE with the car category, while they do not have a developed CBE with some other categories. Given that the CBE concept recognizes several types of interactions precisely, this paper will investigate which CBE dimension/interaction is relevant and how it is related to the brand chosen by the consumer/respondent. In this context, it is necessary to investigate all dimensions, i.e., affective, cognitive and behavioural interactions. We should also recognize the possibility of a situation in which all three dimensions are equally represented or one or two CBE dimensions dominate depending on the selected brand. Vivek (2009) states that the researcher must know that consumers can be engaged not only with particular products like beer or jewellery but also with everyday products like mobile phones or service providers. The author also points out that all companies, regardless of their field/industry, should focus on strengthening consumer engagement, i.e. stimulating their interaction. Hence, the CBE concept is important for both consumers and companies, encompassing the overall CBE and the CBE dimensions. This is especially vital for companies to focus their marketing activities on strengthening the necessary CBE dimensions. Therefore,

***H2**: There are variations in the dimensions/interactions of CBE depending on the selected brands or product categories.*

The money spent on a specific product refers to the amount the customer spent on the favourite brand. It can be assumed that the development of CBE has certain consequences for companies, which in most cases are positive and measurable. This is precisely why researching the CBE concept and dimensions in the context of financial outcomes seems necessary. Namely, Bowden (2008) claims that companies rely on customer satisfaction in the belief that a high level of satisfaction can lead to increased customer loyalty, purchase intention, positive word-of-mouth, higher market share, and thus higher expenses. This statement indicates that an increased level of CBE might encourage the customer to increase the amount spent on a particular brand. Furthermore, Malciute and Chrysochou (2013) claim that the potential consequences of CBE should lead to a better relationship with customers, increased loyalty and a higher chance of recommending the brand to other customers. The mentioned authors also state that CBE is vital in achieving the ultimate business goal of increasing sales. Hence, each CBE dimension can be observed separately in this context. More precisely, the impact of each of the CBE dimensions on the amount spent by consumers can be measured. The aforementioned behavioural outcome was not studied so far as a researched area in the CBE context, which is a largely unexplored concept. Therefore, in this way, we want to contribute to new scientific and practical knowledge. Hence,

***H3**: Total CBE is positively related to the amount spent on a particular brand.*

***H4**: The dimensions of CBE, i.e. cognitive (H4a), affective (H4b) and behavioural (H4c) dimensions, are positively related to the amount spent on a particular brand.*

Making a purchase decision and planning the amount to be spent on a certain brand is a process in which the consumers consider their needs, choose the most favourable solution and realize the purchase (Grbac & Lončarić, 2010). Therefore, the consumer must have the intention to buy to realize the purchase. Hence, given the previous authors, we distinguish between a fully planned purchase, a partially planned purchase and an unplanned purchase, whereby a thoroughly planned purchase is considered to be the result of high consumer involvement and a complex decision-making process. This knowledge suggests that

consumers who have developed CBE with a certain brand could know how much they plan to spend on that brand in the future, that is, that CBE could be positively related to the outcome of consumer behaviour in the form of the planned amount. Additionally, Samala and Katkam (2019) state that consumer engagement concerning the brand affects increasing awareness of the product and service and the intention to purchase the product or service. Furthermore, Vivek (2014) emphasizes that one of the fundamental consequences of CBE is future purchase planning. Therefore, we propose the following hypotheses:

***H5**: Total CBE is positively related to the planned amount for a specific brand.*

***H6**: The dimensions of CBE, i.e. cognitive (H6a), affective (H6b) and behavioural (H6c) dimensions, are positively related to the planned amount for a specific brand.*

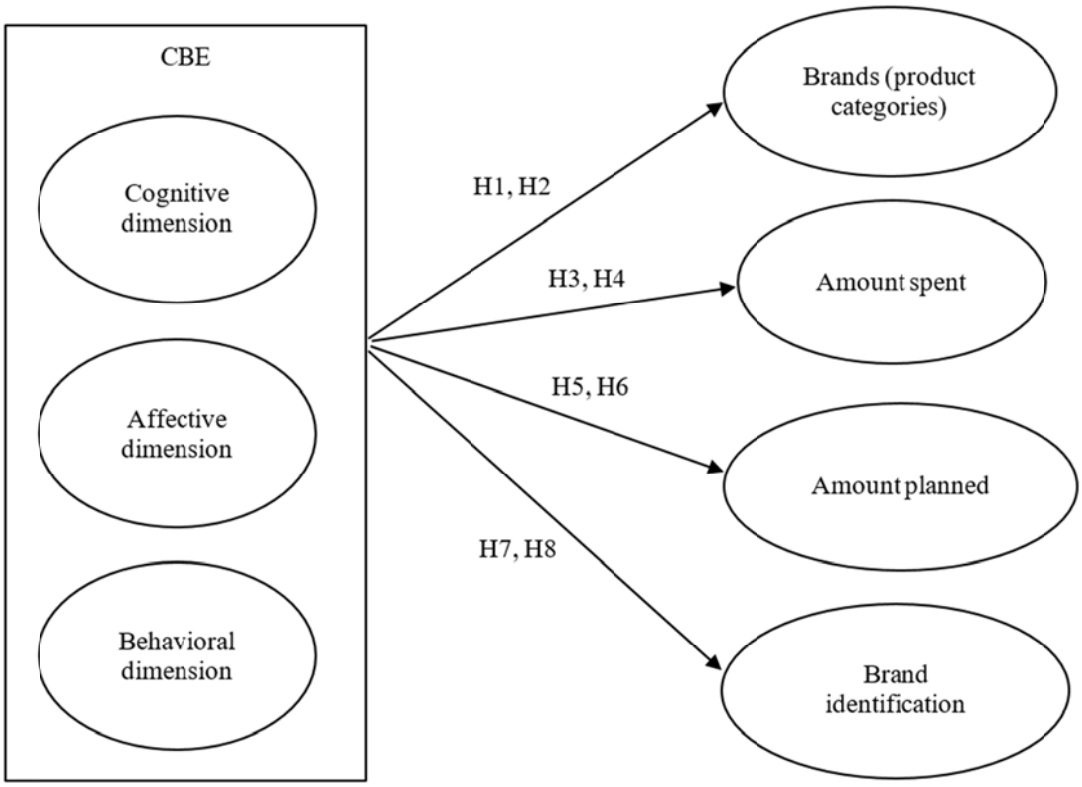
Scientists claim that the identification process with a brand significantly impacts consumer behaviour, including purchase decisions, consumer loyalty, belonging to a brand community, consumer satisfaction, and word of mouth (Tuškej et al., 2013). However, there is little empirical research into the factors influencing the customer's identification with the brand, particularly concerning engagement and its dimensions. Hollebeek et al. (2014) believe there is a positive relationship between cognitive processing, liking and activation, i.e. cognitive, affective and behavioural interaction and identification with the brand. Their research findings indicate that the "affection" dimension might significantly influence brand identification, meaning that the CBE concept might explain the emergence of brand identification. CBE is closely related to brand identification. Namely, identification might occur due to CBE development (Harrigan et al., 2018). The theory of social identity, according to Rather (2018), provides the basis for identification, i.e. states that people classify themselves in different social categories to define their "own self". More precisely, the authors above emphasize that identifying with a brand stems from social identity theory. Acknowledging this theory, So et al. (2013) emphasize that the concept of customer identification with the brand is based on the assumptions of the theory above, while Rather (2018) state that customers can identify with a brand in several different ways, that is, they can have multiple identities. Therefore, it is understandable that each of the previously mentioned dimensions of CBE might be strong but also differently related to the consumer's identification with the brand. In addition, Tuškej et al. (2013) state that brands help consumers to emphasize their uniqueness and thus show and develop their identity supposing that consumers tend to identify with the brand early in life. Hence, brands play an essential role in the consumers' lives, whereby consumers can in some way animate and personalize the brand, thus perceiving the brand's characteristics as their own. Therefore, we propose the following:

H7: There is a positive relationship between total CBE and consumer brand identification.

H8: There is a positive relationship between the dimensions of CBE, namely the cognitive (H8a), affective (H8b) and behavioural (H8c) dimensions, and consumer identification with the brand.

Based on the previously elaborated hypotheses we present the research model (Figure 1).

Figure 1. Research model of CBE dimensions and outcomes.



Source: Authors

4. SAMPLE AND DATA COLLECTION

The research was conducted in July 2021 on a random sample of initially 208, and finally 204 respondents with the help of a survey questionnaire that was designed using the Google Forms tool. The survey questionnaire was distributed through the variety of social networks (e.g., Facebook, Instagram, Viber, WhatsApp) and email addresses.

The sample included people of different age groups, different levels of education, interests and preferences. According to the gender structure of respondents, there are more female respondents. The most significant number of respondents is between 18 and 25, while the smallest number is 66 and older. Regarding the educational structure, most respondents have completed graduate studies. Besides the questions related to the demographic characteristics, the respondents had to indicate the brand they like (they buy most often, they trust the most, is their favourite brand) and the product category to which that brand belongs. The survey questionnaire consisted of 36 questions that were divided into three sections. In the first section, respondents were asked to provide their demographic information and to select the brand they prefer/most often use/most trust/most often buy, as well as the product category to which that brand belongs. The second section consisted of 25 questions in the form of statements related to the previously selected brand and product category. The statements from the questionnaire related to CBE, i.e. its dimensions, were adapted from the relevant authors (Hollebeek, 2011; Hollebeek et al., 2014; Hollebeek et al., 2019). The respondents' task was to determine the degree of agreement or disagreement with each statement by choosing a score from one to five, where 1-completely disagree, 2-disagree, 3-neither agree nor agree, 4-

agree and 5-completely agree. The third section consisted of six multiple-choice questions related to the frequency of purchase of the selected brand and the amount respondents spent on and plan for the selected brand and product category.

5. RESULTS

We analysed the obtained data using the SPSS 21 software package. Considering the nature of the hypotheses, we assessed the first two hypotheses (H1, H2) using descriptive analyses (Crosstabs) and correlations, while we tested the rest of the hypotheses (H3-H8) using linear regression analyses.

5.1. **Descriptive data and correlations**

Considering the relevant research constructs and mean values (min. 1 and max. value 5), the results suggest a positive inclination towards brand engagement, i.e., net CBE and CBE dimensions, and brand identification (Table 1).

Table 1. Descriptive statistics.

Constructs	Mean	St.dev.
CBE Cognitive dimension	3.334	0.893
CBE Affective dimension	3.823	0.959
CBE Behavioural dimension	3.791	0.942
CBE net	3.649	0.848
Brand identification	3.425	1.100

Source: Research

When it comes to frequency of purchasing favourite brands, the results show that 31.9% of respondents purchase several times per year, 19.6% purchase once a month, 17.2% several times per week, 14.2% once a year, 13.2% several times per month, 3.4% once a week and 0.5% buy once per year. In addition, similar results are gained when it comes to the money amount they plan to spend on their favourite brand in the next three months. Namely, 39.7% of the respondents said they plan to spend up to 500 kn (66 euros), and 32.4% plan to spend from 500 to 1500 kn (66 to 199 euros). Furthermore, most respondents (37.7%) spent up to 500 kn (66 euros) and 31.9% of them spent 500-1500 kn (66 to 199 euros) on their favourite brand in the last three months. A substantial proportion of the respondents (71.6%) stated that the amount spent on their favourite brand is more considerable than on other brands. The analysis also shows that 64.2% of respondents have bought their favourite brand product/item even though they have not planned to buy it. This suggests a strong effect a favourite brand can have on consumers.

The correlations among the variables are shown in Table 2. The results indicate significant associations between the variables, especially among the CBE dimensions and brand identification. The correlations exist among the transactional outcomes of amounts spent and planned and CBE dimensions and brand identification, although weaker. In contrast, the correlation between the amount spent and planned is slightly stronger.

Table 2. Correlations.

Variable	Cognitive dimension	Affective dimension	Behavioural dimension	Brand identification	Amount spent	Amount planned
Cognitive dimension	1					
Affective dimension	0.653*	1				
Behavioural dimension	0.621*	0.702*	1			
Brand identification	0.646*	0.695*	0.707*	1		
Amount spent	0.221*	0.225*	0.262*	0.367*	1	
Amount planned	0.253*	0.265*	0.329*	0.398*	0.534*	1

*correlation is significant at the 0.01 level (2-tailed)

Source: Research

In addition to correlation, concerning the robustness and relevant literature (e.g. Pallant, 2011; Tabachnick & Fidell, 2007), the analyses showed that data exhibits adequate values of skewness and kurtosis, as well multicollinearity (Tolerance, VIF). Furthermore, the initial sample included 208 respondents, while four univariate outliers were found, and thus these respondents were excluded (N=204). Also, no multivariate outliers (given Mahalanobis distance) were found. Hence, the normality is ensured. Moreover, the sample size is adequate, given the number of independent variables. Hence, robustness is ensured on different angles, including sample size, no outliers, and two-tailed tests (Tabachnick & Fidell, 2007).

5.2. **CBE across brands/product categories**

The results, obtained through the descriptive analysis of Crosstabs, show that the most significant number of respondents are engaged when it comes to clothing, that is, the largest number of respondents listed the brand of clothing as the brand they love the most. The answers of the respondents who answered the statements related to the overall CBE with a rating higher than 3.0 were added up, and in this way the product category that "attracts" the respondents the most, that is, with which the largest number of respondents have developed a CBE, was obtained. The results (Table 3) show that the most significant number of respondents have developed CBE with a brand belonging to the clothing category, footwear, sports equipment and fashion accessories. At the same time, significantly lower consumer engagement regarding net CBE was observed in other categories. These results suggest variations of net CBE across chosen brands, i.e., product categories. Thus, hypothesis H1 can be supported.

Table 3. Net CBE across brands/product categories.

Product category	Frequency	Share
Clothing	55	26.96
Footwear	45	22.05
Sports equipment	25	12.25
Fashion accesories	12	5.88
Hygiene supplies	16	7.8
Decorative cosmetics	6	2.94
Groceries and daily necessities	26	12.74
Ready meals	3	1.47
Fast food	3	1.47
Cars	13	6.37
Furniture	5	2.5
Electronics	11	5.39
Cigarettes	3	1.47
Jewellery	1	0.5
Perfumes	1	0.5
Beer	3	1.47
Household utensils	2	1
Taxi	1	0.5
Other	1	0.5

Source: Research

Given previously determined net CBE variations across brands and product categories, we also wanted to check the correlation significance and intensity in the CBE dimensions and brand/product categories. The results show that CBE dimensions are positively correlated with the chosen (favourite brand) and category. In contrast, this effect is higher regarding the behavioural dimension, followed by cognitive and affective ones (Table 4).

Table 4. Correlation between CBE dimensions and brands/product categories.

Correlation between CBE dimensions and brands/product categories	Pearson correlation coefficient	p-value
Cognitive dimension	0.398	0.001
Affective dimension	0.369	0.001
Behavioural dimension	0.439	0.001

Source: Research

In addition, variations in terms of CBE dimensions are determined predominantly in the categories of clothes and shoes. In contrast, the corresponding shares for a cognitive dimension are 24%:20.6%, for an affective dimension 30.9%:22.5%, and for a behavioural dimension 32.3%:25.5%. Thus, the analysis indicates CBE dimension (cognitive, affective and behavioural) variations regarding the favourite brands/product categories. Hence, hypothesis H2 can be supported.

5.3. **Measurement scales reliability**

Cronbach's Alpha coefficient was used to test the measurement scales' reliability. According to Pallant (2011), this is one of the most frequently used indicators of the reliability of the measurement scales. To conclude that the measurement scale is reliable and valid, Cronbach's Alpha coefficient should be greater than 0.7. In this research, the reliability of five measurement scales (the total CBE, the cognitive dimension of CBE, the affective dimension

of CBE, the behavioural dimension of CBE and identification with the brand) was tested and achieved. Reliability values are shown in Table 5.

Table 5. Reliability (Cronbach alpha).

Constructs	**Cronbach alpha**
CBE Cognitive dimension	0.839
CBE Affective dimension	0.882
CBE Behavioural dimension	0.873
CBE net	0.940
Brand identification	0.939

Source: Research

5.4. **Measurement scales validity**

For the purpose of assessing the validity of the measurement scales confirmatory factor analysis was employed. The anaylsis showed that all factor loadings were significant. In addition, CR (construct reliability) and AVE (average variance extracted) values were adequate given the suggested thresholds, while the square roots of AVE were greater than the intercorrelations of the factors. Hence, it can be stated that the measurement scales exhibit the characteristics of convergent and discriminant validity (Table 6).

Table 6. Factor loadings, CR and AVE.

Factor	**Factor loading**	**CR**	**AVE**
Cognitive dimension		0.853	0.50
Using this/my brand gets me to think about it intensely.	0.640		
When using this/my brand I constantly think about it.	0.732		
Using this/my brand stimulates my interest to learn more about it. (C3)	0.705		
Considering buying/using this brand, I am always focused on what it represents. (C4)	0.721		
This my brand always occupies all my attention. (C5	0.695		
I always think that this/my brand is much better than others.	0.714		
Affective dimension		0.870	0.530
I have positive emotions when using this/my brand.	0.626		
I feel happy when I use this/my brand.	0.727		
I feel very good when I use this/my brand.	0.736		
I am proud to use this/my brand.	0.720		
I have always been crazy about this/my brand.	0.722		
I feel passionate about this/my brand.	0.823		
Behavioral dimension		0.873	0.535
I spend a lot of time using this/my brand, compared to other brands.	0.739		
Whenever I need to buy/use this type of a product, it will always be this/my brand.	0.779		

This/my brand is the brand that I will use/buy whenever I need or want this category/type of product.	0.739		
I spend a lot of time researching information, offers or news about this/my brand.	0.691		
If this/my brand is unavailable for some reason, I will always wait for it to be available before looking for another/similar brand.	0.761		
I would gladly recommend this/my brand to my friends, family members, acquaintances before any other.	0.672		
Brand identification		0.936	0.677
This brand reflects who I am.	0.777		
I can identify myself with this brand.	0.842		
I feel a personal connection with this brand.	0.898		
I use this brand to communicate with others who I am.	0.860		
I believe this brand can help me become a person that I want to be.	0.845		
This brand is just "tailor-made" for me.	0.705		
At the mention of this brand, I think, "that is me".	0.820		

Source: Research

5.5. **Regression analysis**

Regression analysis was employed to test the rest of the hypotheses (H3-H8). Prior to regression analyses, the data was checked for multicollinearity issues. In contrast, it was determined that no such issues exists given the VIF and Tolerance values that were aligned with the relevant tresholds. Regression analysis results are shown in Table 7.

Table 7. Regression analysis results.

Hypothesis	**Regression coefficient**	**Status**
H3: Net CBE is positively related with the amount spent on the favourite brand.	0.261*	Supported
H4: CBE dimensions are positively related with the amount spent on the favourite brand.		Partially supported
H4a: cognitive dimension and amount spent	0.063	Rejected
H4b: affective dimension and amount spent	0.022	Rejected
H4c: behavioural dimension and amount spent	0.202**	Supported
H5: Net CBE is positively related with the amount planned for the favourite brand.	0.313*	Supported
H6: CBE dimensions are positively related with the amount planned for the favourite brand.		Partially supported
H6a: cognitive dimension and amount planned	0.046	Rejected
H6b: affective dimension and amount planned	0.007	Rejected
H6c: behavioural dimension and amount planned	0.291**	Supported
H7: There is a positive relationship between the net CBE and brand identification.	0.825*	Supported
H8: There are positive relationships between CBE dimensions and brand identification.		Supported
H8a: cognitive dimension and brand identification	0.253*	Supported

H8b: affective dimension and brand identification	0.273*	Supported
H8c: behavioural dimension and brand identification	0.379*	Supported

Note: *significant at p-value 0.001; **significant at p-value 0.05

Source: Research

The regression analysis results show that the overall (net) CBE is positively related to the money spent and planned regarding the favourite brands. In contrast, this relationship is slightly stronger regarding the planned money amount. However, given the CBE dimensions, unlike the cognitive and affective dimensions, the positive impact was determined for the behavioural brand engagement dimension and money amounts (spent and planned). Furthermore, the analysis indicates the positive impact of net CBE and CBE dimensions on brand identification. In contrast, regarding the CBE dimensions, this impact is stronger for the behavioural dimension, followed by the affective and cognitive ones.

6. DISCUSSION AND IMPLICATIONS

The results of the conducted research show differences in CBE, in total and by dimensions, with regard to the selected brands or product categories. This means that certain brands and categories of products have characteristics that encourage consumers to love and connect with them, unlike some brands and categories that do not have these characteristics. For example, most respondents answered that their favourite brand belongs to the clothing category, and the brands most represented among the answers were Zara, Adidas and Nike. The reason respondents are most engaged when it comes to clothes may be their need to "express themselves" through the clothes they wear and communicate to others who they are. Furthermore, consumers with a developed cognitive, affective and behavioural engagement concerning a particular brand are more inclined to buy that brand or product category in relation to other brands or product categories. Although Moreira and Fernandes (2019) claim that consumers connect with brands that have tremendous potential on an emotional, i.e. affective level, the results of this research suggest that the behavioural dimension of CBE has the most significant influence on choosing a brand and a product category, compared to the cognitive and affective dimensions.

The results of the research also suggest that the total CBE has a much more significant influence on the amount spent, the planned amount and identification with the brand, compared to the influence of the individual dimensions of CBE. In the case of the spent and planned amount for purchasing a favourite brand and CBE dimensions, only the behavioural CBE dimension has a significant impact. Therefore, awareness and knowledge about the brand and emotional attachment do not have as much influence on the spent and planned amount for buying a favourite brand as the interaction with the brand itself. Considering the identification with a brand, the situation is somewhat different. Namely, the results show that the total CBE and all three of its dimensions (cognitive, affective and behavioural) significantly and positively influence consumer identification with the brand. The above can be interpreted by knowledge (for example, Tuškej et al., 2013) whereby brands play an essential role in consumers' lives. Therefore consumers perceive the characteristics of the brand they like the most as their personal characteristics. It is also possible that the brand helps consumers build their own identity, and they want to present themselves as such to their surroundings.

This paper primarily states the theoretical determinants of CBE, defined through its three dimensions. The theoretical contribution of the work is reflected in a better understanding of

the overall CBE concept and its dimensions that are still underexplored. Also, unexplored areas are the outcomes concerning CBE, especially the transactional outcomes, which have significance for both consumers and companies. The obtained results, in addition to the scientific ones, also have a practical contribution. Namely, marketers can better understand the overall engagement of consumers with their brand, but also engagement through cognitive, affective and behavioural dimensions. The results suggest that companies aiming to achieve brand "desirability" in the market and create relationships with consumers should consider all dimensions of CBE with particular emphasis on behavioural interaction. For this purpose, companies can strive to design different forms of communication, or interaction, with consumers so that they, for example, spend a lot of time buying and using the brand. Furthermore, it is advisable to design the interaction with brands online, including social networks, offering not only ads, videos but potentially applications and some forms of entertainment (for example, quizzes, stickers, and games). In this way, the consumers can interact with the brand, i.e. so that the brand is continuously present in the minds of consumers. Moreover, various forms of entertainment and interaction with the brand, including content generation, could also be offered within separate virtual brand communities, i.e. web platforms dedicated only to that/their brand. Therefore, the focus is on creating and ensuring consumer engagement with the brand to create added value. Those mentioned above would also result in more significant purchases, the spread of positive word-of-mouth communication, and loyalty.

It is also recommended that companies continuously research the representation and importance of CBE dimensions in terms of their brand. This is important as they are subject to change depending on potential changes in consumer attitudes, trends in consumer behaviour (for example, communication channels), and marketing and communication efforts that the company invests in when advertising its brands. This concretely means that with time it is necessary to give equal emphasis to different CBE dimensions. For example, an emphasis on behavioural and affective interaction or an emphasis on cognitive dimension depending on the product characteristics and consumer reactions directly related to the appeals needed to communicate at a given moment (emotional vs. rational). This is necessary because of the brand strengthening among consumers, given the importance of all CBE dimensions for the consumer's identification with the brand.

7. CONCLUSIONS, LIMITATIONS AND FUTURE RESEARCH

The primary purpose of this paper was to explain in more detail the concept of consumer engagement concerning the brand through its three dimensions (cognitive, affective, behavioural), as well as its influence on consumer behaviour outcomes. The three main outcomes observed in the paper are the amount spent for a certain brand, the planned amount and consumer identification with the brand. In addition, the paper describes the influence of CBE and its dimensions on the selection of a brand or product category. The research results show differences in CBE and its dimensions regarding the selected brands or product categories. Also, based on the conducted research, the result was that the overall CBE is essential for all outcomes. At the same time, the significance of its dimensions, for instance, the behavioural dimension, can be determined for transactional outcomes (spent and planned amounts). In addition, the research results suggest that all dimensions (cognitive, affective and behavioural) significantly impact consumer identification with the brand.

Recently, CBE has become extremely attractive to researchers because it encompasses the consumer's relationship with the brand, the influence of the brand on the consumer, and the influence of the consumer on the brand. Through this research, it can be concluded that CBE

is a concept integrating almost every aspect of the consumer-brand relationship, and that cognitive, affective and behavioural aspects are important. The contribution of this research is reflected in exploring the CBE differences and particularly CBE dimensions regarding the selected product characteristics, which have not been fully investigated so far. Furthermore, two unexplored transactional outcomes of behaviour were studied in the paper: the amount spent and the amount planned. In addition, the paper also explored consumer identification with the brand, which is recognized as an important factor in consumer behaviour and brand engagement, and for which the existing literature indicates that it is insufficiently studied in terms of its relevance.

A limitation of this research can be considered the sample of respondents that was convenient, which means that the respondents were not selected in the sample by probability, but those respondents who were available responded. The recommendation for future research is to use a representative sample. It is also recommended to investigate the impact of CBE on other factors, such as the intention to use the brand, brand loyalty, word of mouth, and CBE within the various channels used by the company. Additionally, it would be interesting to examine the impact of CBE on (non)transactional outcomes through the indirect and/or moderating influence of consumer identification with the brand to approach potential variations of the examined links, taking into account the vital determinant of brand identification.

BIBLIOGRAPHY

Bowden, J. L. H., (2009): **The process of customer engagement: A conceptual framework**, ***Journal of marketing theory and practice***, 17(1): 63-74.

Bradvica, B., (2019), **Poistovjećivanje mladih s markom u procesu donošenja odluke o kupnji**, University of Zagreb, Faculty of Economics and Business, Department of Marketing, Doctoral dissertation.

Brodie, R. J., Hollebeek, L. D., Jurić, B., & Ilić, A., (2011): **Customer engagement: Conceptual domain, fundamental propositions, and implications for research,** ***Journal of service research***, 14(3): 252-271.

Brodie, R. J., Fehrer, J. A., Jaakkola, E., & Conduit, J., (2019): **Actor engagement in networks: Defining the conceptual domain,** ***Journal of Service Research***, 22(2): 173-188.

Cheung, M. L., Pires, G., & Rosenberger, P. J., (2020): **The influence of perceived social media marketing elements on consumer–brand engagement and brand knowledge,** ***Asia Pacific Journal of Marketing and Logistics***, 32(3): 695-720.

Dwivedi, A., (2015): **A higher-order model of consumer brand engagement and its impact on loyalty intentions,** ***Journal of Retailing and Consumer Services***, 24: 100-109.

Fernandes, T., & Moreira, M., (2019): **Consumer brand engagement, satisfaction and brand loyalty: a comparative study between functional and emotional brand relationships,** ***Journal of Product & Brand Management***, 28(2): 274-286.

Grbac, B., & Lončarić, D., (2010): **Ponašanje potrošača na tržištu krajnje i poslovne potrošnje-Osobitosti, reakcije, izazovi, ograničenja**, Rijeka: Ekonomski fakultet Sveučilišta u Rijeci

Harrigan, P., Evers, U., Miles, M. P., & Daly, T., (2018): **Customer engagement and the relationship between involvement, engagement, self-brand connection and brand usage intent,** ***Journal of Business Research***, 88: 388-396.

Hepola, J., Karlajuoto, H., Hintikka, A., (2017): **The effect of sensory brand experience and involvement on brand equity directly and indirectly through consumer brand engagement,** ***Journal of Product & Brand Management,*** 26(3):282-293.

Hollebeek, L., (2011): **Exploring customer brand engagement: definition and themes,** ***Journal of Strategic Marketing***, 19(7): 555-573.

Hollebeek, L. D., Glynn, M. S., & Brodie, R. J., (2014): **Consumer brand engagement in social media: Conceptualization, scale development and validation,** ***Journal of interactive marketing***, 28(2): 149-165.

Hollebeek, L.D., Srivastava, R.K., & Chen, T., (2019): **SD logic–informed customer engagement: integrative framework, revised fundamental propositions, and application to CRM, Journal of the Academy of Marketing Science**, 47(1): 161-185.

Kabadayi, S., & Price, K., (2014): **Consumer–brand engagement on Facebook: liking and commenting behaviors,** ***Journal of research in interactive marketing***, 8(3): 203-223.

Kaur, H., Paruthi, M., Islam, J., & Hollebeek, L. D., (2020): **The role of brand community identification and reward on consumer brand engagement and brand loyalty in virtual brand communities,** ***Telematics and Informatics***, 46: 101321.

Khan, I., Rahman, Z., & Fatma, M., (2016): **The role of customer brand engagement and brand experience in online banking,** ***International Journal of Bank Marketing***, 34(7): 1025-1041.

Kovačević, T., (2017) **Zadovoljstvo poslovnih korisnika sustavom isporuke vrijednosti tvrtke „Swing Consulting" d.o.o. i utjecaj na lojalnost** https://repozitorij.efst.unist.hr/islandora/object/efst%3A989/datastream/PDF/view [Accessed 15.12.2022.]

Krupka, Z., & Škvorc, A., (2014): **Važnost identiteta snažne marke u stvaranju lojalnosti i povjerenja potrošača,** ***Zbornik ekonomskog fakulteta u Zagrebu***, 12(1): 113-125.

Kumar, V., & Reinartz, W. J., (2006): **Customer relationship management: A databased approach**. Hoboken, NJ: Wiley.

Kuvykaite, R., & Piligrimiene, Z., (2014): **Consumer engagement into brand equity creation,** ***Procedia-Social and Behavioral Sciences***, 156: 479-483.

Leckie, C., Nyadzayo, M., & Johnson, L., (2016): **Antecedents of consumer brand engagement and brand loyalty,** ***Journal of Marketing Management***, 32(5-6): 558-578.

Malciute, J., & Chrysochou, P., (2012): **Customer brand engagement on online social media platforms: A conceptual model and empirical analysis**, Unpublished Master Thesis, Aarhus University, Aarhus.

Maurya, U. K., & Mishra, P., (2012): **What is a brand? A Perspective on Brand Meaning,** ***European Journal of Business and Management***, 4(3): 122-133.

Merrilees, B., (2016): **Interactive brand experience pathways to customer-brand engagement and value co-creation,** ***Journal of Product & Brand Management***, 25(5): 402-408.

Molina-Prados, A., Munoz-Leiva, F., & Prados-Peña, M. B., (2022): **The role of customer brand engagement in the use of Instagram as a "shop window" for fashion-industry social commerce,** ***Journal of Fashion Marketing and Management: An International Journal***, 26(3): 495-515.

Obilo, O. O., Chefor, E., & Saleh, A., (2021): **Revisiting the consumer brand engagement concept,** ***Journal of Business Research***, 126: 634-643.

Pallant, J., (2011): **SPSS survival manual**, Maidenhead. *UK:* McGraw-Hill International.

Paton, J., (2022): **What is customer engagement and why is it important?** https://dotdigital.com/blog/what-is-customer-engagement-and-why-is-it-important/ [Accessed 02.02.2023.]

Rather, R. A., (2018): **Investigating the impact of customer brand identification on hospitality brand loyalty: A social identity perspective,** ***Journal of Hospitality Marketing & Management***, 27(5): 487-513.

Samala, N., & Katkam, B. S., (2020): **Fashion brands are engaging the millennials: a moderated-mediation model of customer-brand engagement, participation, and involvement,** ***Young Consumers***, 21(2): 233-253.

So, K. K. F., King, C., Sparks, B. A., & Wang, Y., (2013): **The influence of customer brand identification on hotel brand evaluation and loyalty development,** ***International journal of hospitality management***, 34: 31-41.

Solem, A. B. A., (2016): **Influences of customer participation and customer brand engagement on brand loyalty,** ***Journal of Consumer Marketing***, 33(5): 332-342.

Tabachnick, B. G., & Fidell, L. S. (2007). **Using multivariate statistics**, 5th edition, Boston. MA: Pearson Education.

Tuškej, U., Golob, U., & Podnar, K., (2013): **The role of consumer–brand identification in building brand relationships,** ***Journal of Business Research***, 66(1): 53-59.

Vivek, S. D., (2009): **A scale of consumer engagement**, The University of Alabama, Doctoral dissertation.

ATTITUDE TOWARDS TATTOOED EMPLOYEES IN THE WORKPLACE: RESULTS OF A SLOVAKIAN QUESTIONNAIRE SURVEY

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Key words: *Labour Market, Discrimination, Tattoo, Tattooed Employee, Slovakia*
JEL codes: *J24, J15*

ABSTRACT

Tattoos are very popular nowadays regardless of age or gender. Tattoos have an impact not only on private life but also on the judgments of employees in the workplace. In the past, tattoos had a negative meaning because they were a symbol of a social class that belonged to criminals. In economic life, having a tattoo was often a disadvantage, and it was no different in the workplace. Based on a questionnaire survey, this research analyses the main characteristics of attitudes towards tattooed employees in Slovakia. A total of 274 employees participated in the questionnaire survey. According to the results of the research, we can conclude that the visibility, motives, and meanings of employee tattoos influence attitudes toward tattooed employees. Overall, it can be said that although the judgments of tattoos in the workplace has changed a lot in the past period, tattooed employees are still often met with negative attitudes during their daily work lives.

1. INTRODUCTION

Finding a job is by no means easy, employers have a number of criteria for potential candidates. In addition to the skills of the worker, the physical appearance of the worker is also a decisive factor in finding a job. In the labour market, tattoos as a means of expressing identity still entail stereotypical behaviour. People with tattoos are seen as distrustful and are associated with deviant behaviours, compared to their non-tattooed counterparts (Hamilton, 2019). This form of body adornment has an intense impact on the judgment of the wearer's personality and behaviour, as well as on social and economic acceptance. In many cases, the stereotyping of people with tattoos leads to social rejection and passivity (Miller et al., 2009). The acceptance of tattoos in the labour market varies by industry. A significant percentage of companies have strict rules for tattooed employees, while others do not discriminate between tattooed and non-tattooed employees in the name of cultural diversity (Coleman et al., 2017). In addition to emphasising social belonging, tattoos have cultural characteristics, some see it as an image-shaping tool, others see it as a social deviance (Morello et al., 2021).

The reasons for getting a tattoo vary depending on the person, on the one hand it is aesthetic, on the other hand it embodies the individual's desire to communicate to the outside world (Swanger, 2006). Tattoos used to be part of ancient rituals. In the lives of indigenous peoples, it provided both protection and a sense of belonging, and also a means of communicating messages (Kanyó & Lőwi, 2021). Captain James Cook was first introduced to the art of tattooing when he successfully explored Tahiti. From Cook comes the name "tatau", which means to mark something, to record something. In Europe, the figures began to decorate the bodies of sailors and soldiers. Over time, the free flow of body decoration for the purpose of providing an aesthetic experience has been achieved, mobilising the masses to acquire a motif (Wroblewski, 2004). A tattoo is essentially ink that is injected into the pigments of the human skin with continuous, rapid needle sticks. The purpose of tattoos is extremely diverse, including promoting a sense of uniqueness, a means of self-expression (Adisa et al., 2021). Tattooing enjoyed a renaissance in the second half of the 20th century, when it began to be referred to as an art. It has become an extremely rapidly developing service sector, which was also facilitated by the tattoos and media appearances of well-known persons (Flanagan & Lewis, 2019).

The aim of this study was to assess the impact of workplace attitudes towards employees with tattoos. In order to achieve the research goal, we primarily examined the tattooing motivation of the employees. Afterward, we analysed the workplace judgments of tattooed employees. The present research focuses on the Slovak labour market. From a theoretical point of view, the significance of present research is increased by the fact that very few studies have been published on the chosen topic, so our results can fill the gaps and enrich the literature with new knowledge. From a practical point of view, the results of our research can be useful for both employers and employees of the next generation. Employers can gain deeper insight into tattooed employees' motivations, thus avoiding negative discrimination and prejudice. When the employees learn about the results of the research, they may use the tattoo services more consciously, and think about their future and their labour market opportunities.

2. LITERATURE REVIEW AND HYPOTHESES

All business organizations strive to create the best possible image of themselves in the marketplace, so it is important that the physical appearance of the employee matches the profile of the company, especially for jobs that require constant customer service (Barbosa et al., 2016). During recruitment, the external characteristics of the employee influence the

employer's decision. A tidy and well-groomed exterior gives a pleasing aesthetic appearance, while an untidy and unkempt or unusual appearance is off-putting (Woodford et al., 2022). Looking and presenting yourself confidently at a job interview has a positive impact on decision-making, and ensures better career prospects in the future (Shapir & Shtudiner, 2022). Doleac and Stein (2013), focus on discrimination in the workplace. Discrimination is a global problem, and discrimination against individuals and groups, whether for advantage or disadvantage, can be seen in social and economic terms (Vrchota et al., 2014). Examining the causes of discrimination in the workplace is crucial, as it threatens the sustainability of jobs. Discrimination against workers is a global barrier to economic development. For some visible or invisible reason, workers are squeezed out of the labour market, increasing unemployment and reducing productivity (Stanila et al., 2020). Countering discrimination in the labour market curbs social inequalities (Kamasheva et al., 2013). Discrimination in the workplace damages the sense of responsibility and performance of tattooed employees and limits their employment opportunities. Most employers and HR professionals are reluctant to hire tattooed employees (Flanagan & Lewis, 2019). When screening applicants, assessors may give negative marks to those with visible tattoos (Antonellis et al., 2017). The social and economic impact of tattooing is still controversial. Tattoos are at a disadvantage in finding a job (Dillingh et al., 2020). The social acceptance of tattooed workers is not clear. The skills of employees take a back seat to external impressions, which influence employment decisions (Jibuti, 2018; Simpson & Pullen, 2018). Larsen et al. (2014) in their research analyse unequal treatment in the workplace, arguing that discrimination against others can lead to social and psychological problems. Jobs requiring continuous personal interaction (for example customer relations officer position) are less likely to employ workers with tattoos (Fallah & Orosz, 2014). In their research, Burgass and Clark (2010) concluded that first impressions based on appearance affect the categorisation of individuals. Individuals with visible tattoos are in a vulnerable position, which also hinders their personal development. In their study, they concluded that tattoos can be differentiated, so they can convey both positive and negative content. It has been shown that workers who wear less conspicuous and soft motifs have almost the same social perception as those without tattoos. However, ritualistic tribal or rebellion motifs symbols the individual in a negative light. Naudé et al. (2017) identify tattooing as both a visual experience and an expressive means of non-verbal communication. Tattoos can have many social and psychological reasons: a means of self-realization, a sense of freedom and uniqueness, the preservation of memory, the influence of others, belonging to a culture, emphasizing religious affiliation, fashion, and rebellion. In the context of stigmatisation, the negative judgments of visible or invisible characteristics changes the individual's relationship with society (Ojeda et al., 2022; Ojeda et al., 2023). In many cases, employers expect employees with visible tattoos to cover up their tattoos. However, for companies operating in a modern and more youthful atmosphere, tattooing is not necessarily frowned upon. Employees also need to understand that the size, meaning, content and location of a tattoo can affect their employment prospects (Baumann et al., 2016; Timming et al., 2017). That is why they often have tattoos on parts of their bodies that they can hide or are not visible to others (Hamilton, 2019). Employers can set criteria for potential employees in recruitment and hiring procedures (Swanger, 2006). Allred (2016) approaches the problem from the employer's point of view, looking at the legal liability that may be incurred if an employer rejects a tattooed candidate. The situation must be consistently thought through in line with organizational objectives, but it is important that the rights of the employee are not compromised.

Based on the international literature and research in the present study two hypotheses were formulated:

H1: *There is a relationship between visible tattoos and the judgment of employees in the workplace.*

H2: *The meaning of the tattoo affects the attitude towards the tattooed employee in the workplace.*

3. RESEARCH METHODOLOGY AND SAMPLE

The aim of this study was to analyse the workplace attitudes towards tattooed workers. The primary data collection was carried out using a quantitative research method, in the form of a questionnaire survey. The sampling method snowball method was, during which the potential respondent could send the questionnaire to other acquaintances. The target group of the questionnaire survey was those employed in the Slovakian labour market. The questionnaire survey was carried out in electronic form, with the help of the Google. The questionnaires were collected end of 2022 and the beginning of 2023. We used our own structured questionnaire, which consisted of 20 questions. The first group analysed demographic data. For the demographic questions, we analysed the variables of gender, age, education, and position. The second group consisted of questions based on the respondents' motivation for tattooing. The third group consisted of questions about the workplace judgment of tattooed employees. The questions assessing tattoo motivation were multiple-choice questions, where more than one answer option could be selected. The questions assessing the respondents' workplace judgment were Likert-type questions. Likert-type questions were measured based on the respondent's order of preference on a scale from 1 to 5 (1-not at all, 5-completely). Demographic data is illustrated with simple descriptive statistics via a frequency table. During the data collection, we evaluated a total of 274 completed questionnaires. Data were analysed statistically using IBM SPSS Statistics 23. We did a normality test on the data, which enables parametric statistical tests to be performed.

Table 1 presents the demographic data using simple descriptive statistics. 74,2% of the respondents were female and 25,8% were male. Most of the respondents (56,7%) belonged to the 21-30 age group. 26,5% of the respondents had an elementary school education, 56,0% of respondents had a high school graduation, and 17,5% had a university degree. In terms of employment, 34,3% of respondents have a blue-collar work position and 25% have a white-collar position. 29,8% of the respondents were students (with work experience), 2,5% were unemployed, 1,8% were retired, 2,6% were on maternity leave and 4% were housewives during the survey.

Table 1. Demographic data (descriptive statistics, frequency table)

N=274, Total=100%, Missing=0	**Frequency**	**Valid Percent**
		%
Gender (Female)	204	74,2
Gender (Male)	70	25,8
Age (18-20 age group)	31	11,3
Age (21-30 age group)	156	56,7
Age (31-40 age group)	51	18,5
Age (41-50 age group)	16	5,8
Age (51-60 age group)	14	5,1
Age (60+ age group)	6	2,6
Completed highest educational level (Elementary school)	72	26,5
Completed highest educational level (High school graduation)	154	56,0
Completed highest educational level (University)	48	17,5
Position (Blue-collar work)	94	34,3

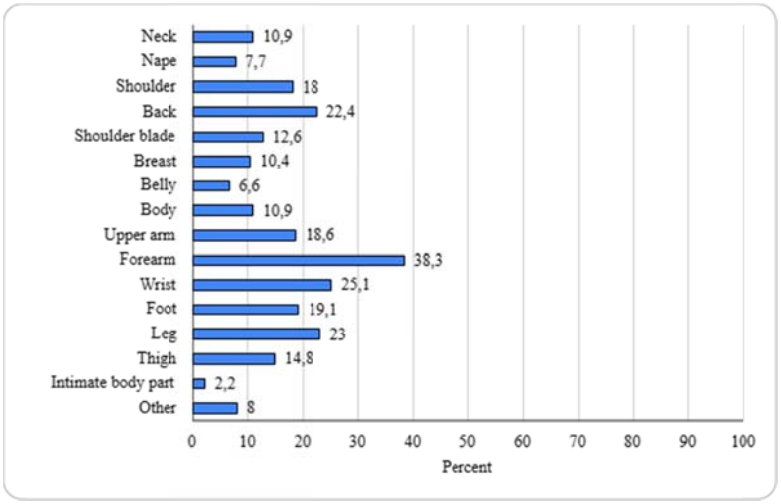
N=274, Total=100%, Missing=0	Frequency	Valid Percent
Position (White-collar work)	69	25,0
Unemployed	7	2,5
Student (with work experience)	82	29,8
Retired	5	1,8
Maternity leave	7	2,6
Housewife	10	4

Source: Own research (2022)

4. RESEARCH RESULTS

Figure 1 shows the percentage distribution of respondents' preferred body parts for tattooing. The largest percentage of respondents prefers tattoos on the forearm (38,3%) and the wrist (25,1%), while the smallest percentage of respondents prefers tattoos on the belly (6,6%) and the intimate area (2,2%). Based on the data received, it is important for the respondents to easily cover up their tattoos if the situation so requires.

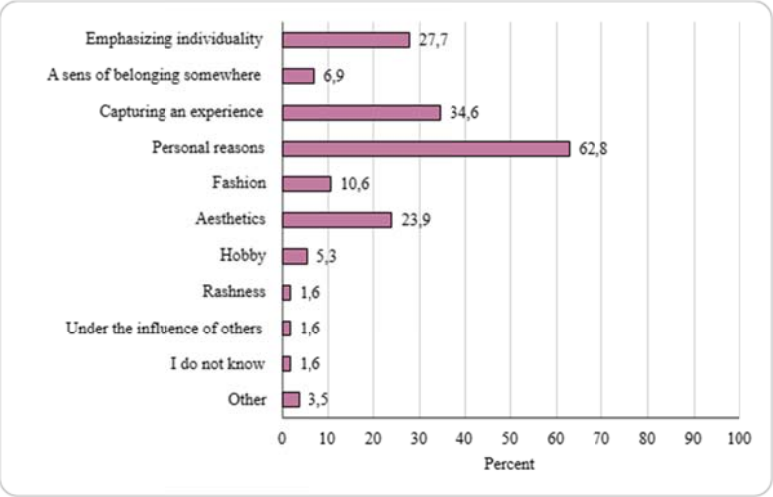
Figure 1. On which part of your body do you have a tattoo? (Multiple answers are possible)



Source: Own research (2022)

Figure 2 shows the reasons for tattooing. 62,8% of the respondents got tattoos for personal reasons, 34,6% to remember their experiences, and 27,7% to emphasize their individuality. 1,6% of the respondents got tattoos under the influence of others, and 1,6% could not explain why they did it. The other alternative was chosen by 3,5% of the respondents, saying that their tattoos helped to close the past, or they were motivated by grief, or they wanted to preserve the memory of their loved ones.

Figure 2. Why did you get a tattoo? (Multiple answers are possible)



Source: Own research (2022)

We chose as our independent variable visible tattoos on the body, and we assumed that this would influence the judgments of the employee. We performed an analysis of variance to prove the first hypothesis in Table 2. The test for homogeneity is based on Levene's Test (1,157), so the variances are homogeneous, and we use the ANOVA test. The p-value is 0,005, which is less than 0,05, indicating a significant relationship between the variables. To examine differences between group means, a post hoc analysis is required, for which Hochberg's GT2 test was performed to detect larger differences. Each row in the table shows a comparison of a pair of categories. The first column shows the difference between the means, the second the standard error and the third the significance level. There is a significant difference between the first category (visible tattoos) and the second category (not visible tattoos), with a p value (0,012) <0,05. Those who have tattoos in a visible place and those who have tattoos in a non-visible place differ by an average of 0,553 absolute differences in the level of change in workplace judgments. There is a significant difference between the first category (visible) and the third category (can be covered), with a p value of (0,039) <0,05. Those who have visible tattoos and those whose tattoos can be covered differ by an average of 0,598 absolute differences in the level of change in workplace judgments. Following the significance of the relationship, the strength of the effect (r value) was quantified using the following model:

$$R=\sqrt{\frac{Sum\ of\ Squares\ (between\ groups)}{Sum\ of\ Squares\ (total)}}=\sqrt{\frac{13{,}637}{251{,}905}}=0{,}2326=0{,}23$$

The r value is 0,23, indicating a weak, but significant relationship. Based on the results, our hypothesis H1 is accepted, with significant differences between the groups. When employees have visible tattoos, they are much more affected by judgments in the workplace. These judgments are mostly negative and have an impact on their professional development and career opportunities.

Table 2. Hypothesis testing (ANOVA)

	Levene Statistic	**df1**	**df2**	**Sig.**	
Test of Homogeneity of Variances	0,825	4	270	,510	
	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Between groups	13,637		3,409	3,863	,005
Within groups	238,268	270	,882		
Total	251,905	274			
		Multiple comparisons			
Hochberg					
Dependent variable:	Workplace judgments				
Independent variable:					
(I) Tattoos on the employee's body	(J) Workplace judgments	**Mean difference (I-J)**	**Std. Error**	**Sig.**	
1 (visible tattoos)	2 (not visible tattoos)	-,553*	,169	**,012**	
	3 (can be covered)	-,598*	,206	**,039**	
2 (not visible tattoos)	1 (visible tattoos)	,553*	,169	**,012**	
	3 (can be covered)	-,046	,216	1,000	
3 (can be covered)	1 (visible tattoos)	-,598*	,206	**,039**	
	2 (not visible)	-,046	,216	1,000	
* The mean difference is significant at the 0.05 level.					

Source: Own research (2022)

Table 3 shows the second hypothesis using Pearson correlation analysis. Correlation analysis provides an answer to the existence and intensity of the relationship between two variables. We examine the existence of a relationship between the meaning of the employee's tattoo and the change in workplace attitude towards the employee. The correlation coefficient value (,191**) indicates a positive relationship between the variables. Hypothesis H_2 is accepted. The meaning of the tattoo affects the workplace attitude towards the tattooed employee. If the employee chooses a tattoo that has an ostentatious or offensive meaning, then his relations with colleagues often change in a negative direction.

Table 3. Hypothesis testing (Pearson's correlation)

		Changing workplace attitudes	Meaning of employee's tattoos
Changing workplace attitudes	Pearson correlation	1	**,191****
	Sig. (2-tailed)		**,001**
	N	274	274
Meaning of employee's tattoos	Pearson correlation	**,191****	1
	Sig. (2-tailed)	**,001**	
	N	274	274

** Correlation is significant at the 0.01 level (2-tailed)

Source: Own research (2022)

5. DISCUSSION, LIMITATIONS AND POSSIBLE FUTURE RESEARCH DIRECTIONS

This study addresses a research problem that affects millions of employee around the world. There was a limited amount of research on the chosen topic, so we found it worthwhile to deal with the topic in depth. While there has been much sociological research on tattooing as body decoration, little research has been published on the effect of tattooing on employment. Naudé et al. (2017) and Swanger (2006) in their research found that, tattoos were a way of emphasising an individual's identity. People mostly get tattoos for personal reasons, they want to record their memories, or just for aesthetics. Ojeda et al. (2022) and Ojeda et al. (2023) found that people can be categorized in society regarding their tattoos. The social affiliation has a significant impact on the role of the individual in the economy. However, the fate of tattooed workers is primarily decided by the employer, with no legal or policy restrictions on the willingness to tattoo. In their research on the Dutch labour market, Dillingh et al. (2020) showed that tattooing is associated with lower educational attainment, which is supported by our own research results, as 56% of respondents had a secondary education and 26,5% had a primary education. Adisa et al. (2021) showed in their research that workers with visible tattoos feel excluded from the Nigerian labour market. In their study, Timming et al. (2017) showed that workers with tattoos are limited in their labour market opportunities. During the hypothesis test, we proved that workplace attitudes toward employees can change due to visible tattoos. However, without thorough depth knowledge of the employee's personality we cannot judge his work motivation or behaviour based on a tattoo. In the Hungarian labour market, Fallah and Orosz (2014) confirmed that those with tattoos start from a much greater disadvantage in workplace careers than those without visible tattoos. Regarding Burgess and Clark (2010) the meaning of tattoos can affect the judgment of the employee in the labour market, which we also proved in our own research. Baumann et al. (2016) and Timming et al. (2017) also came to the conclusion that the location, size, and meaning of tattoos on the body have a significant impact on changing workplace attitudes towards the employee. It was also proven from the conversations conducted during the research and the answers to the questionnaires that a very important aspect is where the employee's tattoo is located and what is the meaning of the tattoo. There are workplaces where aggressive, provocative, or disgraceful tattoos are not accepted by employees. That is why future generations should consider where and what they get tattooed because a bad decision at a young age can have an impact on their future employment and career opportunities.

Among the limitations of the research, it should be highlighted that the research concerned only one country, Slovakia. Furthermore, from a demographic point of view, we primarily focused on the younger generations, as tattoos are popular in their case based on international literature. Also, the research didn't divide the employees regarding sectors, the study examined Slovakian employees generally. We would like to examine the tattooed employee's situation breakdown by sector in the next scientific research.

A potential future research opportunity could be to investigate the labour market situation of tattooed workers by industry. It would be worthwhile to examine the factors influencing the motivation of tattooed employees to seek employment, and a comparative analysis could be carried out to compare both the employee and employer sides. Furthermore, research would be to study the attitudes and willingness to cooperate of employees without tattoos towards tattooed employees. In addition, it would be worthwhile to extend the research to more countries, to compare the perceived similarities and differences.

BIBLIOGRAPHY

Adisa, T. A., Adekoya, O. D., & Sani, K. F., (2021): **Stigma hurts: exploring employer and employee perceptions of tattoos and body piercings in Nigeria,** ***Career Development International,*** 26(2): 217-237.

Allred, S. (2016): **Rejecting the Tattooed applicant, Disciplining the Tattooed employee: What are the Risks?,** ***Labor Law Journal***, 475.

Antonellis Jr, P. J., Berry, G., & Silsbee, R. (2017): **Employment Interview Screening: Is The Ink Worth It?,** ***Global Journal of Human Resource Management***, 5(2): 38.

Barbosa, F. L. S., dos Santos Brito, A., & de Almeida Bizarria, F. P. (2016): **Tatuagens, Piercings e Diversidade Cultural: o que gestores dizem sobre esse tema?,** ***Teoria e Prática em Administração (TPA)***, 6(2): 78-106.

Baumann, C., Timming, A. R., & Gollan, P. J. (2016): **Taboo tattoos? A study of the gendered effects of body art on consumers' attitudes toward visibly tattooed front line staff,** ***Journal of Retailing and Consumer Services***, 29: 31-39.

Burgess, M., & Clark, L. (2010): **Do the "savage origins" of tattoos cast a prejudicial shadow on contemporary tattooed individuals?,** ***Journal of Applied Social Psychology,*** 40(3): 746-764.

Coleman, L. J., Cote, L. E., Gu, J., & Nicolau, V. (2017): **Getting my tat on… and off: Consumer explanation of tattoos' roles in presentation-of-self in everyday life,** ***Journal of Global Scholars of Marketing Science***, 27(1): 46-59. http://dx.doi.org/10.1080/21639159.2016.1265320

Dillingh, R., Kooreman, P., & Potters, J. (2020): **Tattoos, lifestyle, and the labor market,** ***Labour***, 34(2): 191-214. DOI: 10.1111/labr.12167

Doleac, J. L., & Stein, L. C. (2013): **The visible hand: Race and online market outcomes,** ***The Economic Journal***, 123(572): F469-F492. DOI: 10.1111/ecoj.12082

Fallah, N., & Orosz, G. (2014): **Szituatív és egyéni tényezők hatása egy testmódosított munkatárs megítélésére,** ***Pszichológia***, 34(3): 225-238. DOI: 10.1556/Pszicho.34.2014.3.2

Flanagan, J. L., & Lewis, V. J. (2019): **Marked inside and out: an exploration of perceived stigma of the tattooed in the workplace,** ***Equality, Diversity and Inclusion: An International Journal,*** 38(1): 87-106. DOI 10.1108/EDI-06-2018-0101

Hamilton, M. (2019): **Tattoos in the Workplace,** Undergraduate Psychology Research ***Methods Journal***, 1(21): 4.

Jibuti, D. (2018): **Discrimination against workers with visible tattoos: Experimental evidence from Germany,** CERGE-EI Working Paper Series, (628):

Kamasheva, A., Kolesnikova, J., Karasik, E. & Salyakhov, E. (2013): **Discrimination and Inequality in the Labor Market,** ***International Conference on Applied Economics (ICOAE)***, 386-392. DOI: 10.1016/S2212-5671(13)00046-4

Kanyó, M. & Lőwi, I. (2021): **The Universal Value Preserving Role of Symbols,** ***Hadtudományi Szemle,*** 14(2): 101-114. DOI: 10.32563/hsz.2021.2.8

Larsen, G., Patterson, M. and Markham, L. (2014): **'A deviant art: tattoo-related stigma in an era of commodication.',** ***Psychology and marketing***, 31 (8), 670-681.

Miller, B. K., Nicols, K. M., & Eure, J. (2009): **Body art in the workplace: piercing the prejudice?,** Personnel Review, 38(6): 621-640. DOI 10.1108/00483480910992247

Morello, SJ, Gustavo, Mikayla Sanchez, Diego Moreno, Jack Engelmann, and Alexis Evangel. (2021): **Women, Tattoos, and Religion an Exploration into Women's Inner Life,** ***Religions***, 12: 517. DOI: https://doi.org/ 10.3390/rel12070517

Naudé, L., Jordaan, J., & Bergh, L. (2017): **"My body is my journal, and my tattoos are my story": South African psychology students' reflections on tattoo practices,** ***Current Psychology,*** 38, 177-186. DOI: 10.1007/s12144-017-9603-y

Ojeda, V. D., Magana, C., Shalakhti, O., Vargas-Ojeda, A. C., & Burgos, J. L. (2022): **Tattoo discrimination in Mexico motivates interest in tattoo removal among structurally vulnerable adults,** ***Frontiers in Public Health***, 10, DOI 10.3389/fpubh.2022.894486

Ojeda, V. D., Magana, C., Hiller-Venegas, S., Romero, L. S., & Ortiz, A. (2023): **Motivations for seeking laser tattoo removal and perceived outcomes as reported by justice involved adults,** ***International Journal of Offender Therapy and Comparative Criminology***, 67(1): 126-145. https://doi.org/10.1177/0306624X221102807

Shapir, O. M. & Shtudiner, Z. (2022): **Beauty is in the eye of the employer: Labor market discrimination of accountants,** ***Front. Psychol***., 13, https://doi.org/10.3389/fpsyg.2022.928451

Simpson, R. & Pullen, A. (2018): **'Cool' Meanings: Tattoo Artists, Body Work and Organizational 'Bodyscape',** ***Work, Employment and Society***, 32(1): 169-185. DOI 10.1177/0950017017741239

Stanila, L., Vasilescu, M. D., & Militaru, E. (2020): **Investigating Labor Market Discrimination in Romania,** Sustainability, 12(12): 4983. doi:10.3390/su12124983

Swanger, N. (2006): **Visible body modification (VBM): Evidence from human resource managers and recruiters and the effects on employment,** ***International Journal of Hospitality Management***, 25(1): 154-158. doi:10.1016/j.ijhm.2004.12.004

Timming, A., Nickson, D., Re, D., & Perrett, D. (2017): **What do you think of my ink? Assessing the effects of body art on employment chances,** ***Human Resource Management***, 56 (1): 133-149. http://dx. doi. org/10.1002/hrm. 21770.

Vrchota, J., Švárová, M. & Kubešová, K. (2014): **Discrimination in the labor market in the region of South Bohemia,** ***XVII. mezinárodní kolokvium o regionálních vědách Hustopeče*** 18.–20. 6. 2014, 355-361. DOI: 10.5817/CZ.MUNI.P210-6840-2014-44

Woodford, S. D., Wordsworth, R., & Malinen, S. (2022): **Does My Tattoo Matter? Impact of tattoos in Employee Selection,** ***NZJHRM***, 22(1): 1-14.

Wroblewski, Ch. (2004): **Skin Shows: The Tattoo Bible,** Budapest: TOTEM Kiadó, 392.

CHARACTERISTICS AND TRENDS OF CREDIT INDEBTEDNESS OF HOUSEHOLDS IN CROATIA[14]

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Key words: *Bank Loans, Over-Indebtedness, Personal Finance, Financial Literacy, Croatia*
JEL codes: *G33, H31, I32*

ABSTRACT

Financial liberalization, the reduction in credit constraints and improvement in supply of financial services at the end of 1990s, enabled citizens much easier access to bank loans than before, but also created a danger of personal over-indebtedness. Debt is needed to sustain a desired consumption level, and to support economic growth. It is a widely accepted opinion that efficient and accessible financial services have a vital role in promoting economic development.

The analysis of private use of bank loans in the period from 1995 to 2021 can be divided into two subperiods. In the first period from 1995 to 2008, there is a strong increase of a total value of household bank loans. Due to the financial and economic crisis, there was an obvious slowed-down in 2008 and after that a stagnation of household borrowing during a period 2009-2011. Afterward there was a decrease which lasted until 2017. Positive economic trends, relatively high GDP growth and optimistic situation on the labour market again encouraged borrowing in 2018 and 2019. Significant changes of economic indicators and a fear of losing a job caused by the COVID-19 pandemic, decreased a household borrowing in 2020 and 2021.

[14] Acknowledgement: This text is a part of the Project „Partnership for prevention of over-indebtedness", 101055238 - PPOI – SMP -CONS-2021-DA, financed by the European Commission

1. INTRODUCTION

In Croatia, political transformation, proclamation of independence, the end of the Homeland War and huge inflation rates in the first part of 1990s and bank consolidation and privatisation in the second part of 1990s were followed by wider access to credit. In late 1990s the process of bank privatization began in Croatia and banks were sold to the principal regional banks from Italy and Austria. Consequently, 90% of Croatia's total banking system assets became part of foreign banks' equity portfolios. This led also to financial liberalization, whose most noteworthy positive impact was the reduction in credit constraints and a significant improvement in a supply of financial services.

Debt is essential to sustain a required consumption level, and to enhance the economic growth. It is a widely accepted opinion that efficient and accessible finance services have an important role in promoting economic development (Cecchetti et al. 2011). Underlying the importance of financial sector, King and Levine (1993) remind on the problem with the measurement of financial development. There is a need to have in mind that banks are not the only financial intermediaries that provide risk management, information collection, analysis, acquisition, and monitoring services. Furthermore, in many countries, the relationship between banks and central banks may be misty; and the various measurement of household debt do not always correctly allocate to whom the financial system is allotting credit. Moreover, in the EU there is no officially accepted definition of over-indebtedness and thus, there is no set of harmonised and standardised statistics on its scope and characteristics (European Commission, 2008).

Various countries define over-indebtedness differently. For example, personal indebtedness in Germany has been demarcated as a situation where household income ‘in spite of a reduction of the living standard, is insufficient to discharge all payment obligations over a long period of time (Haas, 2006), while in the UK, the attention is on arrears in paying regular bills. Within various definitions, almost always as one of criteria used is a number of credits which a household currently have. Usually, 3 credits can be a signal of personal over-indebtedness. In this text, we analyse the characteristics and trends of private credit debt in Croatia, fully aware that this can be misleading, because three or four credits for rich household may not be a problem, while one or two for relatively poor household can be an unsurmountable problem. Of course, potential personal over-indebtedness depends on the amount of credit. All people indebted to landlords, utility companies, credit card companies and others, but the size of such debt is usually not significant.

Better insight into the personal over-indebtedness in Croatia can be achieved by the Household Consumption Survey and/or the EU-SILC Survey. However, such data do not exist for Croatia for a longer period or significant changes in the methodology unable their use and comparison. Therefore, we use the data by the Croatian National Bank on household bank loans, fully aware of all limitation of such approach. The biggest benefit of this approach is unique methodology for the whole period, which can be very useful as a proxy indicator for personal over-indebtedness.

From the available data it is noticeable that for the analysis of the period from 1995 to 2021 can be divided into two subperiods. While in the first period from 1995 to 2008, there is a strong increase of a total value of household bank loans expressed in Croatian previous currency *kuna* (HRK worth €0.13). Due to the financial and economic crisis, there was an obvious slowed-down in 2008 and after that a stagnation of household borrowing during a period 2009-2011. After that there was a decrease which lasted until 2017. Positive economic

trends, relatively high GDP growth and optimistic situation on the labour market again encouraged borrowing in 2018 and 2019. Significant changes of economic indicators and a fear of unemployment caused by the COVID-19 pandemic, decreased a household borrowing in 2020 and 2021.

After this introduction, Section 2 deals with the literature review on the link between household borrowing and personal indebtedness. The period 1995 to 2008 is described in Section 3, while years after 2009 henceforth are described in the Section 4. Whenever was possible, according to the available data, we also comment the impact of household borrowing to personal indebtedness, but in Section 5 we gave an overview on the number and characteristics of indebted persons in Croatia. The text finishes with conclusion and recommendations.

2. LITERATURE REVIEW ON THE LINK BETWEEN HOUSEHOLD BORROWING AND PERSONAL INDEBTEDNESS

According to Modigliani and Brumberg (1954), persons decide on debt in order to equalise their consumption having in mind increases and decreases of available income. In that way they preserve a relatively stable level of consumption during the various periods in life. Consequently, it is probable that younger persons in the earlier phase of life and work will have a higher amount of debt in comparison with their available income, which allows them to increase consumption above the level they can finance with their available income. Therefore, households' debt to bank can be separated into two main groups: mortgage (collateralised with residential real estate) debt, which is typically repaid in a period of 20 to 30 years, and consumer debt (non-mortgage), which is mostly of short or medium term duration up to 5 or 7 years.

However, people quite often wrongly estimate their future revenues and/or they face unexpected events on the personal level like sickness, unemployment, divorce or on national level, like natural disasters, inflation pressure which leads to drop in the real value of income, economic crisis and reduced employment possibilities etc. Therefore, debtors are not any more in position to repay their loans to the banks, which could easily cause domino effect and endanger the macro-economic stability. Outstanding household credit increased pointedly relative to disposable income in nearly all EU Member States from 1995 on, though the rate of growth slowed, Debts can take many forms, and can for instance relate to consumer credit, mortgages, informal loans with friends or family, utility bills, or mobile phone bills (Eurofound 2011; 2012; 2013). These debts may not be a problem as such, but when people for longer period are not able to make payments related to these debts, they become a problem.

Causes and consequences of household over-indebtedness are complex and interlinked (Eurofound, 2010). Some population groups are more likely to have debt problems (younger people, lower income households, working poor), and characteristics of the problem often differ for instance between low income groups (more utility bill problems) and high-income households (more mortgage problems). However, over-indebtedness can hit anybody with debts. Situation with personal over-indebtedness also varies in different countries, so according to European Commission (2013), the most alarming situation was in Spain, Romania, Cyprus, Latvia, Hungary and Bulgaria, while it is quite unfavourable in Slovenia, Greece, Italy, Lithuania and Poland.

There are also significant changes in the world of work. Banks were in the past very reliant on people who had stable wages, particularly civil servants or employees with indefinite period employment contract. It was quite easy for them to obtain the bank loan and there were even special types of mortgages offered for such population. Such type of jobs are disappearing, more and more people are working with the definite period employment contract, on projects, part-time or are self-employed. For them it is quite demanding or even impossible to obtain regular bank loan, so they are forced to take credit on informal financial market, where conditions are incomparably less favourable. These people are of course particularly vulnerable and for them what was an affordable amount of bank credit in the past is now rather almost unaffordable (Eurofound 2012; 2013).

Furthermore, not only in Croatia, but also in many new Member States, like Poland, Slovak Republic and Hungary, due to better conditions and lower interest rate, banks often recommended credits denominated in Swiss Francs (CHF). Because of changes in exchange rates, borrowers had to pay significantly more to compensate their credits. This is an important cause for the growth in the number of over-indebted households in many East and Central Europe countries.

However, this does not mean that there are no problems in old Member States. European Central Bank (Rinaldi and Sanchis-Arellano, 2006), analysed the determinants of non-performing loans in the period from 1989 to 2004 in seven Member States which accepted euro. These are Belgium, France, Finland, Ireland, Italy, Portugal and Spain. The researchers concluded that in the long-term, a surge in the ratio of indebtedness to available income is related to higher levels of arrears. Nevertheless, if the increase in the debt ratio is accompanied by a growth in real available income and other factors being equal, the negative effect is offset. Pronounced rises in the debt ratio sets households in a riskier financial situation.

The research by Jappelli, Pagano, and Di Maggio (2008) using cross-country, EU-SILC survey and time series data, supports this attitude. Analysis of the datasets confirms for the included Member States a one-way causality between debt and insolvencies, as well as between joblessness and insolvencies. The author through panel study also concluded that European countries which experienced comparatively fast personal debt increase, also have larger growth in insolvency rates. In such situation, the financial fragility of households is impacted both by the level of indebtedness itself and by institutional variables - information sharing (e.g. through credit agencies) and judicial efficiency attenuate the impact of economic shocks and indebtedness on arrears.

The first Household Finance and Consumption Survey (HFCS) in Croatia was realised in spring 2017. The acquired data permit the assessment of economic and sociodemographic traits of indebted households in Croatia. According to the HFCS, almost 41% of households in Croatia in 2016 were indebted, and the share is mostly in non-mortgage loans. 33% of indebted households only had non-mortgage debt, 5% only had mortgage debt and approximately 4% of households had both types of debt. Regarding the age, the largest share of debt is recorded by the younger middle age persons between 35 and 44. After that the share of debt declines and reaches the lowest levels in old age. The situation changed just slightly in the following researches of the HFCS.

Zauder and Rosan (2022) analyse the structure of household debt holdings and identify three types of bank debt: secured debt, non-collateralized loans, as well as overdrafts and/or credit card debt. The authors underline that i) middle-aged heads of households participate more and

hold larger amounts of all three debt types; ii) credit-constrained households are more likely to take non-collateralized loans; and iii) inability to finance consumption and willingness to take risks when deciding on saving and investing contribute to participation in overdrafts and/or credit card debt.

3. HOUSEHOLD BORROWING AND PERSONAL INDEBTEDNESS IN THE PERIOD 1995 TO 2008

According to the Croatian National Bank data, the credit indebtedness of the population in Croatia increased from 3.9% of GDP at the beginning of 1995 to 12.7% at the beginning of 2000. At that time household debt levels were relatively low, mostly as a result of the banking industry's undercapitalization and the high cost of borrowing (Kraft and Jankov, 2005). A particular strong increase has been recorded during 1996 for 93.6%, so household loans to dispoible income increased from 7.2% at the beginning of 1996 to 12.6% year later. Plentiful loan supply, based on almost unlimited foreign financial sources, regarding absorbing capacity of the domestic market, more favourable conditions for bank loans and citizens' hunger for consumption goods, spurred credit demand. Therefore, the household sector became the banks' major client. The disproportionate bank reliance on lending to households has had an adverse impact effect on investments and economic growth. While loans to households are mostly used for financing personal consumption, loans to the corporate sector are primarily directed to financing investments which are the most important factor of economic growth (Croatian National Bank. 2006).

For a number of years, debt owed to banks remained the most significant loan category, making up around 95% of all household debt. This was helped in 2006 and 2007 by the persistent increase in the supply of bank loans that were getting cheaper and cheaper, especially those that were in Swiss francs. The sharp increase in the level of household debt was stopped in 2008 by the slowdown in debt growth. The exposure of households to currency and interest rates increased at the same time. Unfavourable labour market trends also substantially reduced households' ability to make timely payments on their debt.

Table 1a: Household Credit Indebtedness in Croatia 1995-2001

Beginning of year	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**
Household Debt in Billion HRK	4.7	6.5	12.6	17.5	19.0	23.0	31.2
as % of GDP	3.9	5.0	8.5	10.7	11.3	12.7	16.1
as % of gross disposable income	6.3	7.2	12.6	15.7	15.6	17.3	22.5
Annual growth (%)	NA	39.5	93.6	38.4	8.7	21.1	35.9
Household loans as % of total bank loans	14.0	17.0	22.7	27.9	31.6	31.8	32.2

Source: Croatian National Bank

Table 1b: Household Credit Indebtedness in Croatia 2001-2008

	2002	2003	2004	2005	2006	2007	2008
Household Debt in Billion HRK	45.2	57.1	67.9	81.6	99.7	118.5	131.5
as % of GDP	21.2	25.0	27.4	30.6	34.3	37.2	38.3
as % of gross disposable income	30.4	50.4	56.1	64.3	72.2	79.4	82.4
Annual growth (%)	44.8	27.7	18.8	20.2	22.2	18.9	10.9
Household loans as % of total bank loans	38.2	48.4	50.8	50.8	50.6	52.7	51.7

Source: Croatian National Bank

It is really hard to believe, but a relatively low household credit indebtedness of HRK 4.7 billion in 1995 increased 29 times to HRK 131.5 billion in 2008. Therefore, the share of household credit indebtedness in GDP in the observed period increased from 3.9% in 1995 to 38.3% in 2008, while in the same period its share in a gross disposable income augmented from 6.3% to 82.4%. The share of household loans as percentage of total bank loans had constantly increased - except in 2006 and 2008 when slightly decreased - from approximately one seventh to more than a half in the period after 2004.

Croatia has a comparatively low annual rate of growth in its bank debt compared to other at the time prospective EU members and the majority of new EU members. Average debt per employed person in Croatia has steadily climbed, from around HRK 23 thousand at the end of 2001 to roughly HRK 49 thousand at the end of 2004, and to over HRK 100 thousand at the end of 2008. This increase is mostly due to the substantial development in the offer of favourable loans by business banks. Citizens incurred debt mostly for consumption, while overdrafts on current accounts and other consumption-related loans dominated the debt structure. These loans did not, however, have the quickest growth; instead, housing loans experienced the fastest growth, even at 37% per year even if these loans have the biggest monthly instalments. Adverse labour market trends also substantially reduced households' ability to make timely payments on their debt.

In the conditions of the economic and financial crises in 2008, the biggest part of borrowers with under the average income have serious debt payment problems, which disproportionately affected lower-income families. The income of the deprived persons with low income does not permit them to save, so only 4% of the them have some savings, and very often they do not have access to borrowing from the official banking system. As they mostly do not save and do not have possibility to borrow in formal credit markets, particularly during the economic shocks and significant income fluctuations, the poor have been forced to rely more on loan-sharking and high interest rates. In that way they are seriously vulnerable to the personal over-indebtedness with a slight chance to resolve their financial problems. The situation with household borrowing and personal indebtedness in the period after 2008 significantly changed, as explained in the next Section.

4. HOUSEHOLD BORROWING AND PERSONAL INDEBTEDNESS IN THE PERIOD AFTER 2008

While the household debt during the period 1995-2008 constantly increased in absolute amount and in its shares in GDP or in gross disposable income, for the first time in 2009 was recorded a decrease in its absolute amount. In six of next eight years, a decline has been recorded, while in the remaining two years - 2010 and 2011 - only a slight increase of 4.1% and 0.2% has been noted. In the period after 2008, the share of household credit indebtedness in Croatia in GDP reached a peak at the beginning of 2010 (42.9%), while the lowest level of 33.5% was recorded at the beginning of 2017 and 2018.

Table 2a: Household Credit Indebtedness in Croatia 2009-2015

Beginning of year	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Household Debt in Billion HRK	131.6	137.1	137.4	135.4	133.0	132.1	129.8
as % of GDP	39.3	41.1	40.5	40.3	39.5	39.3	37.7
as % of gross disposable income	63.6	66.0	66.0	66.3	64.6	64.9	62.4
Annual growth (%)	-2.4	4.1	0.2	-1.4	-1.8	-0.6	-1.8
Household loans as % of total bank loans	45.3	44.2	42.6	43.3	42.2	42.2	41.9

Source: Croatian National Bank, for 2022 September

Table 2b: Household Credit Indebtedness in Croatia 2016-2021

Beginning of year	2016	2017	2018	2019	2020	2021	2022
Household Debt in Billion HRK	123.2	125.2	131.1	140.1	143.3	149.2	150.7
as % of GDP	34.5	33.5	33.5	33.9	37.7	34.0	33.9
as % of gross disposable income	57.5	56.1	55.9	56.9	58.2	55.1	n.a.
Annual growth (%)	-5.1	1.6	4.7	6.9	2.3	4.1	5.9
Household loans as % of total bank loans	42.4	45.9	46.7	49.7	47.4	48.8	49.4

Source: Croatian National Bank, for 2022 September

After household indebtedness indicators improved in 2009, things became worse in 2010 as a result of a higher Swiss Franc exchange rate and a decline in family income. However, because of the financial crisis, households became aware that their future revenues would be lower, so they limited their personal expenditure and reduced needs for indebtedness. Since mid-2009, households have constantly been trying to reduce their indebtedness, even though their debt in 2010 nominally increased due to higher exchange rate of the Swiss Franc. Approximately one third of all bank loans to households in Croatia were granted in this currency (Croatian National Bank, 2010). In 2009, the share of household loans in total bank loans had decreased, what was the beginning of the trend which lasted until 2017.

The debt of the household sector during 2011 stagnated, while in the period 2012-2016 it decreased. Mild nominal increase of household debt in 2011 was primarily caused by the depreciation of the HRK exchange rate against CHF and EUR. While the number of newly

allowed short-term loans continued to decrease in 2011, there was a modest escalation of new debt that was observed, especially in the segment of newly issued long-term loans. The fall in interest rates on these loans, as well as the slowdown of unfavourable trends in the labour market, which limited personal consumption and decreased needs for debt, promoted this rise in the proportion of long-term loans in the total amount of newly granted loans (Croatian National Bank, 2012). Sugawara and Zalduendo (2011), using data from the Household Budget Survey, conclude that very few households in Croatia are at risk as a result of the shocks experienced over the past few years. They calculate that new vulnerable households represent about 2% of all households, 6% of households are with debt and 2–3% of aggregate banking system assets. The low levels of vulnerable households and debt incidence, advocate that household debt is unlikely to become a drag on aggregate economic activity and that financial stability risks remain under control.

The process of decreasing indebtedness intensified during 2012, so the household debt at the beginning of 2013 dropped below the level of 40% GDP, while the annual growth rate was negative (-1.8%). In 2013 households continued to increase their savings in banks and housing savings banks (by average 4.1%), which considerably contributed to the rise in their overall liquid financial assets (Croatian National Bank, 2013). Therefore, the ratio of debt to these household savings types, which had been declining for years, additionally improved by the beginning of 2014. Reduced indebtedness was primarily reflected in lower exposure towards banks, while the household debt towards other financial operators was quite stable. Regardless of the mention, at the end of January 2014, there were 307,406 citizens in the blockade due to unpaid financial obligation, of which 54.1% refers to debt to banks (iusinfo.hr, 2014).

At the beginning of 2015, the strident appreciation of the Swiss franc increased the household sector indebtedness (the Croatian National Bank, 2015). However, the fixing of the exchange rate between the Swiss and the Croatia currency at the previous level, neutralised the short-term effects on the debt repayment burden of some households, transferring the entire burden to the banking sector. The reactivation of good economic indicators at the start of 2014 did not provide a powerful enough stimulus for the restoration of eroded household optimism and a rise in the demand for bank loans. Therefore, household credit indebtedness at the beginning of 2016 was for 5.1% lower in comparison with the situation in 2015.

The number of employees in Croatia has increased since 2016, what with wage growth enabled an augmentation in the wage bill and demand for bank loans, primarily for mortgages. Such bigger demand contributed to the increase in real estate prices, what on the one hand might discourage the household for taking mortgages, but on the other side may also enhance household borrowing capacity and the readiness of banks to grant loans due to higher collateral value. However, because of the continued decrease in real income and the clear shift in consumer behaviour brought on by the protracted recession, demand for new loans – particularly long-term loans - was comparatively weak. The breakdown of household debt by currency and potential interest rate changes in 2016 indicated that consumers were highly exposed to interest rate and exchange rate risk. Due to the increase in the percentage of loans made in local currency (which increased to 30% at the end of September 2015 from 27% at the end of January 2015), the exchange rate risk decreased marginally.

The Act on Amendments to the Consumer Credit Act (OG 52/16) adopted in September 2015 stipulated the conversion of all housing and other consumer loans indexed to the Swiss franc into loans indexed to the euro. Thus, the majority of the loans were indexed to the currency whose exchange rate stability is one of the main indirect objectives of the monetary policy.

Despite the continued high exposure to exchange rate risk, this minimised the impact of abrupt exchange rate fluctuations. Loans indexed to the Swiss franc were statistically categorized as having variable interest rates. However, due to the temporary cap on the interest rate amount applied only in situations where the exchange rate appreciated significantly (by more than 20%), these loans were actually fixed and had no effect on interest rate risk.

New housing borrowing at fixed interest rates in periods shorter than a loan's maturity intensified in 2016. The share of such loans at the end of 2016 was 47%. Such trends advocate higher client consciousness regarding the possibility of increased interest rate (Croatian National Bank, 2017). In the period since 2016, there has been a growth in demand for bank loans, primarily for mortgages due to favourable conditions on the labour market. Mentioned growth rate was more pronounced at the beginning of 2018 and particularly at 2019 when it was 4.7% and 6.9% respectively.

After the volatility in financial markets that had characterised this period, there was growing uncertainty regarding the strength of the economic slowdown in the World and the possible recession in the most developed countries. On the other side in Croatia, economic recovery, positive trends on the labour market and low interest rates influenced strong consumer optimism which led to increase of housing loans (Croatian National Bank, 2019). Thus, their share in total bank loans grew from 41.9% in 2015 to 49.7% in 2019.

With the outbreak of the COVID-19 pandemic, ceased the growth in household debt to banks. The balance of household loans increased in the first two months of 2020, but from the end of February to May 2020, it largely stagnated. Because current loan repayments were more than those for new loans, the net transactions decreased the balance of household loans. In comparison to the same period in 2019, the annual growth rate of household loans (transaction-based) at the beginning of 2020 was fairly low (2.3%). Larger amounts of renewed agreements caused that the average debt maturity steadily increased.

Due in part to higher quantities of renewal agreements that relieved the strain of existing debt servicing, the average debt maturity climbed steadily. The greatest part of the renewed agreements have been related to the deferral and rescheduling of loans that banks allowed because loan users due the pandemic conditions suffered from illiquidity and loan repayment difficulties Payment deferrals and the growing share of housing loans lengthened the original maturity of household loans, which may lower current debt payments for some debtors (Croatian National Bank, 2021).

The real estate sector was quite resilient to the crisis caused by the COVID-19 pandemic. Total household debt grew slightly in 2021, but its ratio to GDP decreased as a result of fast economic recovery, returning to pre-pandemic levels. The recovery in the number of transactions and the sustained growth in the prices of residential real estate in 2021 and 2022 caused an increase in realised household borrowing. Growing real estate prices and increased household borrowing are the main causes of growing of cyclical risks. The largest part of household lending are mortgage credits and, as in the earlier years, they continued to cause the accumulation of risks related to the real estate market. With the aim to provide further assurance, the Croatian National Bank at the beginning of 2022, announced it would increase the countercyclical capital buffer rate (Croatian National Bank, 2022). Applicable since March 2023, the raised rate has additionally strengthened the resilience of credit institutions to possible losses related to cyclical systemic risks or a sudden economic and financial crisis.

5. THE NUMBER AND CHARACTERISTICS OF INDEBTED PERSONS IN CROATIA

The exact number and characteristics of indebted persons in Croatia cannot be obtained from the data on banking credits by Croatian National Bank, but can be reached from *Results of Households Budget Survey* – HBS (Croatian Bureau of Statistics, various years). The HBS is a realised on a sample of private households and collects data on household consumption expenditures, socio-economic features of households, data on housing conditions, availability of durables, etc. The Survey only covers private households, while institutional households (population residing in institutions such as homes for the elderly population, institutions for long-term care, prisons and similar) as well as the consumption realised by foreign tourists are not included. The Survey is adjusted to Eurostat's methodological recommendations and international standards and classifications.

Until 2011, the Survey was conducted as an annual survey, after which it was changed into a multi-year survey. The basic group of households is divided into ten equal parts, or deciles, by calculating the average expenditures for each household, classifying each household according to the amount of expenditures (from lowest to highest), and then assigning each household from the basic group to the corresponding decile. In the first decile, there are households with the lowest annual expenditures, while in the second one, there are households with annual expenditures higher than those in the first decile and so on. The households in the tenth decile have the highest annual expenditures. The HBS sample was selected in two stages with around 5,000 dwellings occupied by private households. However, Rosan and Zauder (2020) stress that the HBS's coverage of debt related variables is somewhat limited, and most likely not regularly collected.

The analysis shows that the situation has not been changed significantly in the last 20 years. If the data from the HSB are projected on the whole population, it comes out that 480 thousand or one third of all households is in debt. Largest part of debt payment is from the sixth to the eight income decile, which covers younger and more educated population with higher demand for loans and a relatively low-level of savings. For example, population of up to fifth decile according to available income saves almost as much as the population within the sixth and seventh decile, but in the same time has several times less debts. The richest segment of people, within ninth and tenth disposable income decile, was less burdened with debt payment and had the biggest savings.

Regarding the educational attainment, the level of indebtedness also increases with the level of education. Thus, only one fifth of households in which the householder has completed school or less are indebted, while for the other parts of population the share is twice as high. Unmarried people are less likely to be in debt than the rest of the population. Regarding the type of credits, the shares of debtors with mortgages have increased for almost all groups, while the shares of debtors with other loans mostly have decreased for the majority of the groups. Rosan and Zauder (2020) distinguish three types of debt: secured debt, non-collateralized loans as well as overdrafts and/or credit card debt According to their data, based on d HBS for 2017, households with middle aged heads tend to participate more and hold larger amounts of all three debt types. Households with perceived credit restrictions are more likely to take non-collateralized loans, while those citizens who are not able to finance consumption and are ready to take risks when making saving and investment quite often have overdrafts and/or credit card debt. The three debt instruments differ with respect to the share of households holding them. Participation in secured debt is less than 10%, reflecting the traditionally high homeownership in Croatia. Moreover, only recently has credit-financed

home acquisition (mortgages) become more accepted with the liberalization of the credit market at the beginning of 2000s, resulting in a modest share of households holding these loans. Somewhat higher participation is present with respect to non-collateralized loans, amounting above 10%. Finally, overdrafts and credit card debt are more and more widespread, with around 30% of households using these instruments.

6. CONCLUSION AND RECOMMENDATIONS

It is not at all an easy task to find an appropriate balance between allowing enough bank loans for the household so that they do not get into over-indebtedness and the danger that the loans will not be repaid, which could threaten economic development and personal well-being. Improvement of financial literacy and enhancement of information flow on banking system towards citizens from are certainly important, but these are not sufficient. It is therefore necessary and vital to secure clear incentives so that citizens can have an easily access to loans, but to avoid the danger of them falling into over-indebtedness. The main drivers behind debt accumulation over the last decades were loose credit conditions and uninformed customers.

There is no single definition of financial literacy, but it can be conditionally defined as the ability to make informed judgments and take effective actions regarding the use and management of money. Financial literacy includes the ability to read, analyse and communicate personal financial conditions that affect material well-being; includes the ability to discern financial choices, discuss money and financial matters without feeling uncomfortable, and plan for the future and respond readily to life changes that affect every day financial decisions, including general economic events. At the same time, knowledge alone is not enough, but it is also important how skilful citizens are in its application, which one can conditionally deemed as financial skills. They represent a practical component of financial literacy but also require the necessary level of security that is necessary to turn certain abilities into action.

According to HANFA (2017), Croats are generally financially responsible and risk-averse, so more than sixty percent of Croatian citizens carefully take care of their financial affairs, expenses, financial behaviour and timely payment of bills and debts. However, such caution could mean that Croats do not risk too much with their money, avoiding "negative risks", the same applies to "positive" ones such as investments, which even citizens with higher incomes are not prone to. The weak correlation between financial knowledge and financial behaviour shows that Croatian population, primarily young, do not always apply such knowledge in everyday life, and it would be desirable if all education had a positive effect on financial behaviour in real life as well.

Financial literacy in Croatia was not introduced as a special content in primary schools, while in secondary schools it is mostly found in vocational programmes related to the subject Economy and Trade sector. Furthermore, the adopted cross-curricular theme Entrepreneurship, just like the others, was not systematically introduced into the Croatian educational system. Numerous non-governmental, academic and private sector initiatives offer programmes under the umbrella of 'financial literacy' which schools then include in their school curricula. Without doubt such activities should be strengthened.

Therefore, one can propose to the government and financial institutions to organise education and financial experts to offer independent, free of charge and trustworthy services on financial planning and debt counselling. They can provide advice and support to citizens who have

fallen into financial problems and who do not possess enough knowledge to deal with the intricate range of financial products available on the market. Many debtors manage their financial assets badly with insufficient attention and easily find themselves again into pecuniary problems. Better knowledge of financial issues motivates citizens to seek support and advice related to personal finance which contribute to improved confidence in one's own money management skills. The explanation for this link could be manifold. Firstly, more knowledgeable and confident individuals better understand the benefits associated with good financial advice. Secondly, more knowledgeable and confident consumers would be more inclined to search for advice to avoid costs associated with poor financial decisions. Thirdly, better informed customers are fully aware how financial market issues and risks on it are complex and therefore they are not scared or shamed to ask for advice.

The debtor should be completely aware of the necessity to develop sound financial habits as well as efficient skills in order to avoid getting trapped in personal over-indebtedness. People that are financially literate and disciplined make informed decisions and should successfully avoid becoming caught in debt traps. Therefore, it is useful to improve one's financial literacy and manage possible credit temptations.

LITERATURE

Bejaković, P. (2008), **Over-indebtedness in Croatia: situation, problems and possible solutions**, in G. Yasen, ed.: ***Private Indebtedness in Bulgaria - Trends and Comparisons with Central and South East European Countries***, Sofia: Economic Policy Institute.

Cecchetti SG, Mohanty MS, Zampolli F (2011), **The Real Effects of Debt. Basel: Bank for International Settlement**, Working Papers, No. 352.

Croatian Bureau of Statistics (various years), **Results of Households Budget Survey**, Zagreb: Croatian Bureau of Statistics, https://podaci.dzs.hr/hr/arhiva/osobna-potrosnja-i-pokazatelji-siromastva/rezultati-ankete-o-potrosnji-kucanstava/

Croatian National Bank (2006), **Analysis of the External Debt of the Republic of Croatia**, Zagreb: Croatian National Bank, https://www.hnb.hr/documents/20182/121519/e-analiza-inozemne-zaduzenosti-rh.pdf/4ddf54e1-70a0-46b8-9f9c-642c739127f0 [Accessed 7.2.2023]

Croatian National Bank (2010), **Financial Stability no.6**, Zagreb: Croatian National Bank.

Croatian National Bank (2011), **Financial Stability no. 8**, Zagreb: Croatian National Bank.

Croatian National Bank (2013), **Financial Stability, no. 10**, Zagreb: Croatian National Bank.

Croatian National Bank (2015), **Financial Stability, no. 14**, Zagreb: Croatian National Bank.

Croatian National Bank (2016), **Financial Stability, no. 16**, Zagreb: Croatian National Bank.

Croatian National Bank (2017), **Financial Stability, no. 18**, Zagreb: Croatian National Bank.

Croatian National Bank (2019), **Financial Stability, no. 20**, Zagreb: Croatian National Bank.

Croatian National Bank (2020), **Financial Stability, no. 21**, Zagreb: Croatian National Bank.

Croatian National Bank (2021), **Financial Stability, no. 22**, Zagreb: Croatian National Bank.

Croatian National Bank (2022), **Financial Stability, no. 23**, Zagreb: Croatian National Bank.

Eurofound (2011), **Managing household debts: Social service provision in the EU**, Dublin: Eurofound.

Eurofound (2012), **Household debt advisory services in the European Union**, https://www.eurofound.europa.eu/publications/report/2012/quality-of-life/household-debt-advisory-services-in-the-european-union [Accessed 7.2.2023]

Eurofound (2013), **Household over-indebtedness in the EU: The role of informal debts**, https://www.eurofound.europa.eu/publications/foundation-findings/2013/quality-of-life/foundation-findings-household-over-indebtedness-in-the-eu-the-role-of-informal-debts [Accessed 7.2.2023]

Eurofound (2018), **Social insecurities and resilience**, https://www.eurofound.europa.eu/publications/policy-brief/2018/social-insecurities-and-resilience [Accessed 7.2.2023]

European Commission (2008), **Towards a common operational European definition of over-indebtedness**. European Commission. Brussels: European Commission.

European Commission, (2013), **The over-indebtedness of European households: Updated mapping of the situation, nature and causes, effects and initiatives for alleviating its impact**, Brussels: DG Health and Consumers. Part 1 Synthesis of Finding, http://ec.europa.eu/consumers/financial_services/reference_studies_documents/docs/part_1_synthesis_of_findings_en.pdf [Accessed 7.2.2023]

Haas, O.J., (2006), **Over-indebtedness in Germany**, Geneva: International Labour Office.

HANFA (2017), **Predstavljeni rezultati istraživanja Mjerenje financijske pismenosti** (Presented results of the research Measuring financial literacy), Zagreb: HANFA, https://www.hanfa.hr/vijesti/04022016-predstavljeni-rezultati-istrazivanja-mjerenje-financijske-pismenosti [Accessed 25.2.2023]

Kraft, E., Jankov, L. (2005), **Does speed kill? Lending booms and their consequences in Croatia.** ***Journal of Banking and Finance***, 29(1): 105–121.

Iusinfo.hr (2014), **Fina: građani najviše duguju bankama, najčešće blokade zbog duga manjeg od 10 tisuća kuna** (Fina: citizens owe the most to banks, the most frequent blockages due to debts of less than HRK 10,000), 19 March 2014, https://www.iusinfo.hr/aktualno/dnevne-novosti/fina-gra%C4%91ani-najvise-duguju-bankama-najcesce-blokade-zbog-duga-manjeg-od-10-tisuca-kuna-17964 https://www.eurofound.europa.eu/publications/policy-brief/2018/social-insecurities-and-resilience [Accessed 3.8.2023]

Jappelli, T., Pagano, M., Di Maggio, M. (2008), **Household's indebtedness and financial fragility, Naples: Centre for Studies in Economics and Finance**, CSEF Working Paper no. 208.

King, RG, Levine, R (1993), **Finance and growth: Schumpeter might be right.** ***The Quarterly Journal of Economics,*** 108(3): 717-737

Modigliani, F., Brumberg, R. H. (1954), **Utility analysis and the consumption function**, in K. K., Kurihara, (ed.), ***Post Keynesian Economics***. New Brunswick: Rutgers University Press, pp. 388-436.

Rosan, M., Zauder, K. (2020), **Which Loans do We Take? A Micro-Level Analysis of Croatian Households' Debt Participation,** ***Croatian National Bank Working Papers*** *W-61*, Zagreb: Croatian National Bank.

Sugawara, N., Zalduendo, J., (2011), **Stress-Testing Croatian Households with Debt - Implications for Financial Stability**, Washington DC. The World Bank Europe and Central Asia Region Office of the Chief Economist, Policy Research Working Paper 5906.

Zauder, K., Rosan, M. (2022), **Which Loans Do We Take? A Micro-Level Analysis of Croatian Households' Debt Participation,** ***Croatian Economic Survey***, 24(1): 5-41.

TECHNIQUES FOR ECONOMIC EVALUATION OF HEALTH CARE SYSTEMS AND PROGRAMS

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Key words: *Economic Evaluation, Health Care System, Health Care Program*
JEL codes: *C52, H43, H75, I18*

ABSTRACT

Evaluations are social research methods that explore the effectiveness of social involvement programs with the goal to inform and improve social action. Evaluations of health care programs are needed if decision makers want to know how best to intervene with the aim to improve health conditions. A crucial role of economic evaluation is to reduce the probabilities of exclusion of an important alternative from consideration.

There are various types of evaluations dependent on an explicit focus, purpose, and set of skills. The techniques have a length history in health economics and the related literature has developed in the past years. However, an expanded framework incorporating a wider range of approaches is needed.

1. INTRODUCTION

Quod gratis asseritur, gratis negatur. Latin proverb
Translation: What is asserted without evidence may be denied in the same way.

The intention of evaluation is to measure the results of a programs against a set of pre-determined goals in order to contribute to following decision-making about the programs. On the other hand, evaluation can be defined as "the use of social research methods to systematically investigate the effectiveness of social intervention programs in ways that are adapted to their political and organizational environments and are designed to inform social action to improve social conditions" (Rossi, Lipsey, & Freeman, 2004, p. 16). Herman, Morris, and Fitz-Gibbon (1987, p. 6) have defined "evaluation as judging how well policies and procedures are functioning or as estimating the quality of a program".

Evaluations of health care programs are needed if society and policy decision makers want to know how best to intervene with the intention to enhance health care and social development. Evaluation processes enable an insight into how change happens, what was not in order and what is efficient within given circumstances. Evaluations are required if stakeholders wish to know how not to repeat mistakes and in which way to refine programmatic approaches. Evaluation survey is designed to judge the overall influence of a program, mostly against an explicit set of earlier defined objectives.

According to Drummond et al. (2015), economic evaluations have two main characteristics. First, they deal with both the input and output elements, which are the prices and effects of alternative modes of action. People are not willing to pay for a package with unknown contents, or even if its elements are known and desired, potential buyers want to know the asking price. In any cases, it is the relation of what has to be paid and the total expected benefits that allows the users to make the decision. Second, economic evaluation deals with choices. Available financial and organizational resources are always limited, and therefore incapacity to achieve all desired yields, demands to decide on choices. These choices are based on multiple criteria, which can be explicit and implicit, especially when decisions are made on our own behalf and using our own resources. As advances in genomics make genome sequencing more affordable, the availability of personalized medicine evaluation tools will increase (Mattick et al, 2014).

2. IMPORTANCE OF ECONOMIC EVALUATIONS OF HEALTH CARE SYSTEM AND PROGRAMS

There are many reasons why economic evaluations of health care systems and programs are important (Drummond et al, 2015, Bell and Aggleton, 2020). Without systematic research and examination, it is almost impossible to undoubtedly recognize the appropriate substitutes. For example, in a decision to introduce a new program, quite often insufficient or no effort at all is invested into the analysis of existing activities as an alternative program to which the new proposal must be compared. A crucial influence of economic evaluation is to reduce the probabilities of exclusion of a significant alternative from consideration. Relatively often, a new program is compared to a baseline which is not the most cost-effective. As nicely said by McPake and Normand (2008, p. 86) "Costing is not a simple technical exercise - it is too important to leave to accountants alone. Understanding the services provided as well as the financial data and analysis is important." Evaluations are needed in order to comprehend the costs and understanding why intended result was or was not achieved, and assess how and why result was affected by different explicit actions. Evaluations should capture if and why

there were unintended results or consequences. They should also clarify implementation processes, successes or failures that happen at all levels.

The accepted perspective in research is important, so a program that is not attractive from one standpoint may be quite significant and more interesting when other perspectives are taken into consideration (Drummond et al, 2015). Without some effort at quantification, informal assessment of planned activities can be misleading. The real cost of any health care program is not the number of monetary units on the program outlays, but rather the value of the obtained benefits achievable. Evaluations can enable lessons, illuminate accomplishments and potential, as well as provide specific recommendations for improvement and reform.

According to various authors (particularly Morra Imas and Rist, 2009; Khandker, Koolwal and Samad, 2010; Drummond et al, 2015) evaluations can be a useful tool in focusing on:

- the broad strategy and design issues - a question: "Are we doing the right things?"
- implementation and operational issues - a question: "Are we doing things in the right way?"
- credibility and usefulness of the program - a question: "Are the targets and outcomes relevant?"
- achieved effectiveness and efficiency of the program - a question: "How effectively and efficiently are they being achieved?"
- an analysis of unintended consequences of the program - a question: "What unanticipated effects have been caused by the intervention?"
- cost-effectiveness and sustainability issues of the program - a question: "Does the intervention represent the most cost-effective and sustainable strategy of the program for addressing a specific set of needs?"
- whether there are some other of better ways of approaching the problem - a question: "What are we learning?"

Although they are not equal, quite often there is a confusion between monitoring and evaluation, so the following text explains the differences between these two concepts.

3. DIFFERENCES BETWEEN MONITORING AND EVALUATION

In discussions and in the literature, monitoring and evaluation are quite often confused and/or equated. Batliwala and Pittman (2010) differentiate monitoring and evaluation. While monitoring is an ongoing program activity which assessed the implementation of measures and progress made toward achieving of the desired outcomes, evaluation is the systematic collection and interpretation of data with the goal to discover if, how and why a particular activity worked efficiently and effectively. Evaluations are usually conducted less frequently than monitoring, as they are more demanding and comprehensive and try to capture the big picture of impact at particular moments in time.

Morra Imas and Rist (2009) explain slightly different the divergence between the results-based monitoring (RBM) and the results-based evaluation (RBE). The RBM is the continuous

process of collecting and analysing information on the most important indicators and comparing actual achieved results with expected results. Its goal is to measure progress toward explicit short-, intermediate-, and long-term effects by tracking evidence of movement to the achievement of specific earlier defined targets. Results-based monitoring can provide information on progress (or the lack thereof) to all included and responsible institutions and persons, who can use the information in various ways to improve performance. On the other hand, the RBE is an assessment of a planned, ongoing, or completed intervention to designate its REEIS - **R**elevance, **E**fficiency, **E**ffectiveness, **I**mpact, and **S**ustainability. The purpose is to provide information that is credible and useful, enabling lessons learned to be incorporated into the decision-making process. Evaluation usually takes a broader view of an intervention, necessary if progress toward the defined target or explicit result is caused by the intervention or if there are some other explanations for the changes.

Related to monitoring and evaluation, are frameworks (usually referred as M&E frameworks), which are the broad conceptual approaches that try to collect ideas about how a change intervention should be followed and how its outcomes should be assessed or measured. Linear frameworks are mostly oriented to measuring performance against desired goals and planned activities. Therefore, the only thing that can be said at the end of a project cycle is whether those goals were achieved or not, but it is not possible to say how and in which way real change was achieved. Furthermore, many frameworks and tools measure performance, rather than real impact or change. This is somewhat surprising since an implied objective of most M&E activities is to discover the right "formula" for change so that it can be copied or applied in different circumstances and locations.

Another related challenge is to recognise what to measure, particularly having in mind the expectations or theory of desired change. An additional critical issue, embedded in most M&E methods, is the capacity of the final users. In most cases, M&E specialists or other experts, rather than employees or other stakeholders in the health care system, have developed the majority of the applied evaluation tools. Such conditions require high levels of training and skill for the effective comprehension and use of evaluation tools, which are mostly not available to non-specialists. Furthermore, specialists and experts almost regularly assume that their logic and conceptual foundations can be universally applied, rather than adjusted to culture and region specificities. Consequently, it should not be a surprise that relatively rarely do M&E frameworks actually enable decision makers to understand how change happens or how relations in health care have been altered (Husereau et al. 2013). The situation has changed during the time, what is presented in the following Section dedicated to the history of evaluations in health care systems.

4. A SHORT HISTORY OF EVALUATIONS IN HEALTH CARE SYSTEM

Guba and Lincoln (1987) present the concise history of evaluations by proposing generational divisions based on traits of a particular generation of performed evaluation that started in the USA. They named the first generation of evaluations in the early 1900s "the technical generation." During this period, promising scientific management and research methodologies were applied to control program interventions in the health care system.

The second generation evaluations in place up until around the 1960s were predominantly descriptive. The experts were oriented on using goals and ideas as the basis for evaluation, according to the current objectives of managerial trend. This was the time of the introduction of numerous federal social service and health care programs in the USA, like *Medicare*, *Medicaid*, and *Head Start*. There was an increased consciousness of the need to find out

whether such social measures were having any effect on citizens. Mentioned programs needed to be judged on their merits, efficiency and effectiveness and so second generation evaluations were encouraged to examine quantifying effects. Although the scientific and methodological consistency of evaluations improved, their expediency remained relatively limited.

The third generation of evaluations - often named "the responsiveness generation" - appeared at the beginning of the 1980s. During this generation, evaluators started to recognise that they were not autonomous and that their activities had to respond to the needs of those being evaluated. As an outcome of this recognition, several lineages have appeared. Issel (2014) believes that these lineages within the responsiveness generation caused the current diversity in types, prominences, and philosophies related to program evaluation. One lineage is utilization-focused evaluation, while another is outcome-focused evaluations (more about these types is available in the following text).

The fourth generation of evaluation, conditionally called "meta-evaluation," emerged in the mid-1990s. These evaluations of evaluations are done across similar programs. This new generation became possible because the health services fully accepted a culture of evaluation and huge data sets are available for analysis in the meta-evaluations. The culture of evaluation is most evident in the explicit demands of various state organisations and governmental agencies that finance or organise different health programs to prepare evaluations of different health care programs. Despite the complexities involved in this latest stage of evaluation, most people usually have an intuitive sense of what evaluation is, but it is always useful to remind stakeholders on different types of economic evaluations in health care system.

5. MAIN TYPES AND CHARACTERISTICS OF ECONOMIC EVALUATIONS IN HEALTH CARE SYSTEM

There are various types of evaluations depending on a specific focus, purpose and set of skills (Issel, 2014). We explain the characteristics of the most important types. As mentioned earlier, one of the typologies of evaluation deems that there are two main types of evaluations: *utilization-focused evaluation*, while another is *outcome-focused evaluations*. In the first type, the evaluator's main concern is with application methods and developing a performance method that will be used by the stakeholders. Utilization-focused evaluations based on the concern for real use of the evaluation are aimed at the interests and needs of the users. Evaluation findings are important for decisions related to program improvements and future program development. A participatory or empowerment approach includes a wide scope of stakeholders into the activity of planning and evaluation, providing those participants with the skills, experiences and knowledge to contribute substantively to the activities and fostering their sense of ownership of the product. It has internal audience consisting mostly of program people and included funders, while prevailing research methods are participatory and active permanent inclusion of stakeholders. The second type is outcome-focused evaluations, whose primary purpose is to show program effect. Its main audience consists of funders, researchers and experts, while more attention is given to external evaluators and there is a limited inclusion of stakeholders (Issel, 2014).

Further typology distinguishes *community needs assessment* or community health assessment and *process evaluations* or monitoring evaluations. The first type is an evaluation that primarily collects and analyse data about the health problems of a certain group. The collected data are used to adapt the health program to the needs and specific traits of that group. A community needs assessment is a major component of program planning, usually done at an

early stage in the program planning and evaluation cycle. Additionally, community assessments are usually completed on a regular basis, for example over a period each 5 or 10 years. Process evaluations often begin at the same time as the program starts and follow the quality of its implementation.

Regarding their relation to the program, evaluations can be conducted before (ex-ante), during (developmental), and after (ex-post) an intervention is implemented. According to OECD (2002), evaluations can be *formative*, *summative*, or *prospective*. Formative evaluations intend to improve performance, and are most often realised during the implementation phase of projects or programs. Formative evaluations may also be performed for other reasons, such as acquiescence, legal demands and/or as part of a larger evaluation activity. Summative evaluation is often conducted at the end of an intervention (or a phase of that intervention) to determine the extent to which anticipated outcomes were produced. Summative evaluation is envisioned to provide information about the worth of a program.

The next approach to evaluation typology is based on the relationship towards the effects of the program. Therefore, there are evaluations that seek to *determine the effect of the program*, to identify or demonstrate the program's effect on the program's participants. A key question by effect evaluations is: "Did the program make a difference?" (Issel, 2014). Experts in such evaluations mostly use rigorous and robust designs, methods, and various statistical, mathematical and econometrical methods. The program is reorganized using the findings from effect evaluations, which may also be employed in the activities that come after the initial program planning. Typically, result or impact evaluations are used to describe effect evaluations. Impact evaluations primarily have a long-term focus, while outcome evaluations focus more on the program's immediate impacts. However, it appears that "impact evaluation" and "outcome evaluation" are used synonymously in evaluation literature.

A large number of evaluations focus on the effectiveness and associated costs of the initiatives. Cost evaluations include a number of more focused cost-related assessments, such as cost-utility, cost-benefit, and cost-effectiveness evaluations (or studies). Because they require specialized knowledge in finance, these evaluations are typically carried out by professionals and researchers in economics. In cost-effectiveness evaluations (CEE), one sort of impact that is quantified in the same way in both programs is typically compared to the expenses of two programs. The programs are then contrasted based on the cost per unit of outcome using this method. Program planners may find it helpful to consult cost-effectiveness reports when choosing which interventions to put into place during the program planning phase.

Comparing two different programs whose outcomes are valued in monetary units is known as a cost-benefit analysis. The programs in this type of analysis don't always deal with the same health issue. Along with the results and consequences of the program, greater societal benefits are used to compare the results. The program being considered is frequently contrasted with the option to do nothing. During the planning stage, a review of previous cost-benefit studies may be helpful in selecting a program.

The outcomes and values of health programs are measured using preference-based measures of health, such as quality adjusted life years or disability adjusted life years, in a subset of cost-effectiveness analyses known as cost utility analysis (Husereau et al., 2013). Programs are contrasted based on their utility, or cost per unit of preference (Issel, 2014). With this method, it is possible to evaluate the opportunity cost (on the budget) of implementing programs and compare programs in various medical specialties, such as cancer therapies. In

the literature, the term *utility* is mostly used in a general sense to refer to the preferences persons or society may have for any specific set of health outcomes, for example for a certain health state, or a profile of health states through time. In cost-utility evaluations, measurement or valuation of consequences are usually expressed as healthy years, mostly as quality-adjusted life-years (Drummond et al., 2015).

Cost evaluations are typically realised late in the planning and evaluation cycle, thus their findings are probably not going to be available in time to implement program changes or enhancements. Instead, these assessments are frequently utilised in the later stages of planning to gather data for ranking program possibilities.

Issel (2014) distinguishes *comprehensive evaluations*, a sort of evaluation that includes data on process requirements assessment, analysis and impact evaluation data, and cost evaluation data as a set of data. A thorough evaluation can be quite difficult and expensive, making it less likely to be scheduled as an evaluation activity for larger, more demanding, and complicated health initiatives. If the data from the existing process and effect assessments are sufficient, it is sometimes possible to produce a thorough evaluation. Comprehensive evaluations are mostly realised for model or prototype programs, as a point of reference and to confirm the value of the program.

The purpose of *meta-evaluations* is to obtain insights into which of the numerous programmatic methods has had the most effect and to determine the maximum effect that a specific method has had on the health situation. Such evaluations are done by collecting the findings from previous outcome evaluations of several programs for the almost same or very similar health problem. This kind of evaluation is based on the application of a certain set of methodological and statistical processes, as well as the availability of existing information concerning evaluations. Because they show which programmatic interventions are more likely to be successful in having a beneficial influence on the participants, published meta-evaluations are particularly helpful in program development. Published meta-evaluations can be especially helpful in defining and influencing decisions about health care funding and policy.

Summative evaluations are realised at the final stage of a program to make available a conclusive statement regarding program effects. These evaluations are quite often contrasted with formative evaluations. The term formative evaluation refers to program assessments that are performed at the early stage in the implementation of the program and are used to make changes to the program. Formative evaluations might include elements of process evaluation and preliminary effect evaluations.

The final classification of evaluations is on mandatory and voluntary. *A mandatory evaluation* of a program is mostly linked to the institution which finance the program. It can be a governmental body or an organisation. If an evaluation is mandated, then the contract for the program funding will contain the detail parameters and timeline for the mandated evaluation. The mandate for an evaluation may stipulate whether the evaluation will be realised by external evaluators or project staff or both (Issel, 2014). There are numerous evaluation methods applicable for health care systems and health care programs, presented in the following text.

6. VARIOUS EVALUATION METHODS IN HEALTH CARE SYSTEMS AND HEALTH CARE PROGRAMS

In diverse health care systems and health care programs, there are considerable differences in organisation, finance, service quality, and accountable entities. The way that services are organised is heavily influenced by tradition. Numerous aspects of healthcare owe more to historical accident than to thoughtful and deliberate planning. Consequently, knowing what inputs are actually necessary is of utmost importance. For instance, immunisation programs may be rationalised by combining many delivered doses of vaccinations (McPake and Normand, 2008). One motivation for doing this may be to free up some of the included employees, but it is unlikely that the immunisation levels of the employees will be changed immediately and directly. After some period, it might be obvious that there are more staff in the immunisation program than in another activities, and therefore a part of the employees might be reallocated.

Each part of the evaluation process is very demanding and requires various methods. For example, in data collection and sampling selection, there are two types of methods: *non-probability* and *probability sampling*. The decision on the optimal approach mostly depends on the availability of a survey frame, which, in evaluation of a health care program, is a list of a particular unit in the population. If the mentioned survey frame is not available, then there is a need to apply probability sampling, which means select randomly a sample from that existing list. By definition, probability sampling is a process in which particular unit of the population has a determined probability of being selected from the sample. Reliable inferences can then be made about the population, which is quite demanding. "Common methods of probability sampling are simple random sampling, systematic sampling, stratified sampling and cluster sampling" (more in Josselin and Le Maux, 2017).

There are multiple reasons why costs of health care for various patients may be very different, but we present only three of the most important. First, there may be features of the patient - like type of illness - that lead more interventions and/or to longer hospital stays, and consequently higher costs. Second, health care institutions may use various technologies and equipment for some services, and this probably leads to differences in cost. For instance, smaller hospitals in rural regions may not have all the specialised equipment required, forcing them to employ more labour-intensive procedures. Third, the efficiency of the healthcare service providers may vary, which will affect the unit cost of any given service. When doing the evaluation, all of these elements have to be taken into consideration (McPake and Normand, 2008).

Impact evaluation methods scrutinise whether health care program effects can be acknowledged. They try to comprehend whether changes in such outcomes as health can be ascribed to the program itself and not to some other reason. The quantitative methods are mostly applied in ex post impact evaluations of programs and policies. Randomized evaluations try to recognise a program's effect by categorising a group of subjects sharing similar detected traits, such as across age and educational attainment categories, is given the therapy at random. To imitate counterfactual outcomes, the untreated participants are used as a reference group. With this approach, the issue of selection bias due to unobserved traits is avoided (Josselin and Le Maux, 2017).

However, it is not always possible to use randomised evaluations. In such cases, evaluators apply various non-experimental methods. The major problem with a non-experimental approach is that most participants are not randomly assigned to programs, and as a result,

there is selection bias in the program impact evaluation. There are some possibilities to avoid this issue. One of them is propensity score matching methods which reduces bias by matching treatment and control participants using the basis of observable covariates. Such methods presuppose that selection bias is caused only because of observed characteristics and cannot be justified by disregarded heterogeneity in sample. There is a possibility to comprehend more if results are followed for both participants and non-participants over a sufficient period of time (Khandker, Koolwal and Samad, 2010).

Applying the double-difference approach, also known as the difference-in-difference method, is another option for non-experimental assessment. This method presumes that findings for both groups of participants and non-participants, if studied for an appropriate amount of time, would provide a solid foundation for determining the program effect. The observed changes over time for non-participants therefore serve as the counterfactual for participants when using the twofold difference approach. Unobserved heterogeneity, according to double-difference approaches, is real and stable throughout time. As a result, the difference in effects between the treatment and control groups before and after the program intervention serves as a measure of the treatment outcome.

An instrumental variable method recognises exogenous variation in treatment by using a third variable that impacts only the treatment but not unnoticed factors. Such approach lessens norms about the time-invariant traits of unnoticed heterogeneity. These tactics can be used to cross-section or panel data, and in the latter case they permit selection bias on unnoticed characteristics that change with time. Instruments might be developed from program proposal - for example, if the program of interest was randomized and/or from exogenous rules in defining who was eligible for the participation in the program - as well as from other exogenous characteristics that are not correlated with the consequences of interest.

In fact, non-experimental approaches are used very frequently even though experimental methods are arguably the optimal strategy for effect evaluation in principle. The reason may be that the program's overseers and evaluators are not particularly eager to randomly exclude significant portions of the population from an intervention, or that a randomized approach is inappropriate for a rapid-action project where there is not enough time to plan an experiment. The effectiveness of evaluative impact analysis, even with an experimental design, ultimately depends on how it is created and carried out. Clean identification of program effects from randomization is frequently threatened by a number of issues, including compliance issues, spillovers, and unobserved sample bias. The mechanisms underlying the program's results can be greatly aided by considering differences in program outcomes, either through models of market interactions or across income groups, as well as by lowering expenditures by concentrating the attention of program responsible bodies on areas where impacts are potentially greater.

In applying evaluation methods there are some golden rules of scientific rigour that should be respected (Herman, Morris, and Fitz-Gibbon, 1987, Drummond et al, 2015). The first one is ***Credibility* or *internal validity***. It refers to achievement of the confidence in the truth of the findings. The second is ***Transferability***, which implies that the obtained results ought to have applicability to other circumstances and respondents. The third is ***Dependability,*** which means that other evaluators ought to achieve the same results if they repeat the study or analyse the same set of data. The fourth ***Confirmability*** or objectivity, implying that the findings are really from the respondents, rather than presenting the researcher's opinion or impression. There are many ways on how to achieve the respect of these rules (more in Issel, 2014, page 497-499) but the most important is the use of a variety of techniques to document

the researcher's biases, impressions and interpretations, as well as honesty of all included stakeholders. Application of such techniques contributes to the confirmability of the obtained findings by providing greater guarantee that the analysis has taken all necessary activities in preventing the bias approach and misinterpretation of results.

Evidence-based health policy and funding decisions are guided by *Health technology assessment* (HTA), which was instituted in the 1980s (Baghbanian et al, 2020). HTA is a multidisciplinary procedure that systematically, transparently, unbiasedly, and robustly analyses information regarding medical, social, economic, and ethical problems linked to the use of health technology. "While policymaking is used in the broad sense to include decisions made at, e.g., the individual or patient level, the level of the health care provider or institution, or at the regional, national and international levels. HTA may address the direct and intended consequences of technologies as well as their indirect and unintended consequences. HTA is conducted by interdisciplinary groups using explicit analytical frameworks, drawing from a variety of methods" (Goodman, 2014, pp. 14). Already, it has assisted patients in getting the most cost-effective health-boosting technology and also supports the return on investment concerning health resources. In addition to the increased use of HTA methodologies, complex interventions (CIs) are also being examined. Yet, guidelines and clarification are required for how CIs should be evaluated to influence public financing decisions in healthcare.

A radically new stage in the way medical services is delivered and treatment diseases is personalized medicine. Personalized medicine considers each patient's unique characteristics at every stage of care, from prevention through recovering after treatment. It is a method of customizing medical care to a specific individual in terms of diagnostics, medical treatments, and applied healthcare products. Personalized medicine is "a medical model using characterization of individuals' phenotypes and genotypes (e.g., molecular profiling, medical imaging, lifestyle data) for tailoring the right therapeutic strategy for the right person at the right time, and/or to determine the predisposition to disease and/or to deliver timely and targeted prevention" (European Council, 2015, p. 3).

Today several factors are accelerating the growth of personalized medicine, like advances in genomics, completion of human genome project, development of targeted diagnostic and cetera. However, the economic issues and policy making still present a serious hurdle. To justify the implementation of personalized medicine and "omics-technologies", clear benefits to society must be shown. The complexity of this phenomenon must be comprehended and evaluated, keeping in mind that the decision to introduce personalized medicine into the public health-care system lies upon a range of stakeholders in society. The personalized medicine approach calls for a new taxonomy of health and disease and a redefinition of health care evaluation methods which includes the potential added value and human capital approach. While cost-effectiveness is often a key concept to evaluate the cost and quality of care, it may not be the most appropriate decision - making tool. Consideration of only selected stakeholders would lead to underestimation.

7. CONCLUSION AND RECOMMENDATIONS FOR IMPROVEMENT

The number of published health economic evaluations constantly increases, while the possibilities of various methods continues to grow. In such circumstances there is a particular need to take care of transparency of analysis and unbiased reporting of findings with the goal to improve application and the quality of the researches. The further development of evaluations should be realised in accordance with various recommendations and other widely

accepted guidelines. However, in economics evaluations there is an obvious need to allow evaluators the freedom to choose from the various, most appropriate methods.

The main conclusion from the practice of impact evaluation is that an application of particular methods can be deemed as a sacrosanct fact, but there is a need to be aware of all possible methodological benefits and disadvantages. However, it is crucial to realise various evaluation attempts because the effects of choosing one sequence of action over another will not only have impacts on health, but also on health care resources as well as other effects outside healthcare, while informing health care decisions requires consideration of costs and benefits.

Acknowledgments:
The contribution of Predrag Bejaković is a part of the project of the Digital Literacy Network Project in Croatia - Digitalna.hr. Code of the project is UP.04.2.1.06.0055. More on the Project is available on https://pdb.irb.hr/project/irb:007957. The project is co-funded by the European Union from the European Social Fund.

BIBLIOGRAPHY

Baghbanian, A., Merlin, T., Carter, D., Wang, S. (2020), **Methods for the health technology assessment of complex interventions: a protocol for a scoping review**, BMJ Open; doi: 10.1136/bmjopen-2020-039263

Batliwala, S., Pittman, A. (2010), **Capturing Change in Women's Realities: A critical overview of current monitoring and evaluation frameworks and approaches**, Toronto: AWID.

Bell, S., Aggleton, P. (Ed.) (2020), **Monitoring and Evaluation in Health and Social Development Interpretive and ethnographic perspectives**, Abingdon: Routledge.

Bodiroga-Vukobrat, N., Horak, H. (2016), **Challenges of Personalized Medicine: Socio-Legal Disputes and Possible Solutions**, in N., Bodiroga-Vukobrat, D. Rukavina, K., Pavelić, G. G., Sander, eds. ***Personalized Medicine A New Medical and Social Challenge, New York: Springer International Publishing*****,** pp. 31-52.

Bodiroga-Vukobrat, N., Rukavina, D. Pavelić, K., Sander, G. G., eds. (2019), **Personalized Medicine in Health care Systems Legal, Medical and Economic Implications**, New York: Springer International Publishing.

Briggs, A., Claxton. K., Sculpher, M. (2006), **Decision modelling for health economic evaluation**, Oxford: Oxford University Press.

Chaari, L. (ed.) (2019), **Digital Health Approach for Predictive, Preventive, Personalised and Participatory Medicine**, New York: Springer International Publishing.

Drummond, M. F., Sculpher, M. J., Claxton, K., Stoddart, G. L., Torrance, G. W. (2015), **Methods for the Economic Evaluation of Health Care Programs**, Oxford: Oxford University Press.

European Council (2015), **Council conclusions on personalised medicine for patients, 2015/C 421/03**, Bruxelles: European Council.

Flores, M., Glusman, G., Brogaard, K., Price, N.D., Hood, L., (2013), **P4 medicine: how systems medicine will transform the health care sector and society**, ***Personalised Medicine***, 10 (6): 565-576.

Freemantle, N., Barbour, R., Johnson, R., Marchment, M., Kennedy, A. (1997), **The use of statins: a case of misleading priorities**, BMJ, 315 (7112): 826-828

Goodman, C. (2014), **HTA 101: Acknowledgments. Bethesda: National Information Center on Health Services Research and Health Care Technology (NICHSR).** https://www.nlm.nih.gov/nichsr/hta101/ta10101.html [Accessed 17.2.2023]

Guba, E. G., Lincoln, Y. S. (1987), **Fourth generation evaluation**, in D. J. Palumbo, ed. ***The politics of program evaluation***, Newbury Park, CA: Sage, pp. 202 – 204.

Herman, J. L., Morris, L. L., Fitz-Gibbon, C. T. (1987), **Evaluators' handbook**. Newbury Park, CA: Sage Publications.

Husereau, D., Drummond, M., Petrou, S., Carswell, C., Moher, D., Greenberg, D., Greenberg, D., Augustovski, F., Briggs, A.H., Mauskopf, J., and Loder, E. (2013), **Consolidated Health Economic Evaluation Reporting Standards (CHEERS) Statement**, ***International Journal of Technology Assessment in Health Care***, 29 (2): 117-122.

Issel, L. M. (2014), **Health program planning and evaluation: a practical, systematic approach for community health**, Burlington, MA: Jones & Bartlett Learning.

Josselin, J.-M., Le Maux, B. (2017), **Statistical Tools for Program Evaluation: Methods and Applications to Economic Policy, Public Health, and Education**, Cham: Springer International Publishing.

Khandker, S. R., Koolwal, G. B., Samad, H. A. (2010), **Handbook on impact evaluation: quantitative methods and practices**, Washington DC: The International Bank for Reconstruction and Development and The World Bank.

Mance, D., Mance, D., Vitezić, D. (2019), **Personalized Medicine and Personalized Pricing: Degrees of Price Discrimination**, in N., Bodiroga-Vukobrat, D., Rukavina, K., Pavelić, G. G. Sander, eds. ***Personalized Medicine in Health care Systems Legal, Medical and Economic Implications***, New York: Springer International Publishing. pp. 171-180.

Mattick, J. S., Dziadek, M. A., Terrill, B. N., Kaplan, W., Spigelman, A. D., Bowling, F. G., Dinger, M. E. (2014), **The impact of genomics on the future of medicine and health**, ***The Medical Journal of Australia***, 201(1): 17-20

McPake, B., Normand, C. (2008), **Health Economics: An international perspective**, London: Routledge.

Morra Imas, L. G., Rist, R. C. (2009),. **The road to results: designing and conducting effective development evaluations**, Washington DC: The International Bank for Reconstruction and Development and The World Bank.

Organisation for Economic Co-operation and Development - OECD (2002), **OECD Glossary of Key Terms in Evaluation and Results Based Management**. Paris: Organisation

for Economic Co-operation and Development, Development Co-operation Directorate and Development Assistance Committee.

Rossi, P. H., Lipsey, M. W., Freeman, H. E. (2004), **Evaluation: A systematic approach (7th ed.)**, Newbury Park, CA: Sage.

IS MODERN PROTECTIONISM EFFECTIVE? OVERVIEW OF POSSIBLE ECONOMIC IMPLICATIONS OF THE EU SANCTIONS AGAINST RUSSIA

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Key words: *Trade, Trade Sanctions, EU, Russia, Energy*
JEL codes: *F13, F51*

ABSTRACT

The research addresses a hot economic issue - the effectiveness and consequences of trade measures implemented against Russia. Starting from February 2022, trade sanctions have been gradually introduced and expanded (the 10th package of measures is now in place). This paper aims to present a systematic review of a preliminary analysis of the expected effects of trade policy measures imposed against Russia on both the EU and the Russian economy. It is especially focused on energy because of EU's strong dependence on import from Russia. In such circumstances, the rationale behind the trade measures (due to the Russian retaliation) and their effectiveness can be questionable. The results indicate no uniform and clear conclusion about the intensity of the effects of the sanctions on both the Russian and the EU economy, because of the high resilience of Russian economy (and its reorientation towards other partners). For the EU, the sanctions have reduced the energy import dependency and also pushed and fostered the renewable energy transition.

1. INTRODUCTION

Trade policy is characterised by more than 70 years of the liberalization process (since the signing of the General Agreement on Tariffs and Trade, GATT) with some temporary protectionist episodes. In early 2020, the world was first faced with the COVID-19 pandemic that brought about certain restrictive trade measures (to protect the domestic population and to ensure enough medicines and COVID-19-related products) and then, starting from February 2022, it has been faced with the war between Russia and Ukraine. With its Western partners (and the international organizations), the EU has imposed protectionist measures on import from Russia aiming to minimize import. This was not the first time the relations with Russia were strained: a similar situation occurred in 2014 after the annexation of Crimea. This time, the imposing of tariffs is motivated by the goal to disable Russia from earning the money invested in military actions, i.e. to prevent war operations. The EU participated in the framework of WTO in introducing restrictive trade measures. The process of restricting trade was not a one-off event but took place through a number of adopted packages of measures. In early 2023, the EU implemented the 10th package of sanctions.

Although it was believed the situation would follow the theoretical models on the effects of trade barriers, the reality is slightly different because of EU's high energy dependency on import from Russia. Energy trade between the European Union (EU) and Russia is significant, since Russia is a major supplier of natural gas and oil for the EU. Political tensions starting in 2014 have impacted the energy relationship between the EU and Russia. It motivates the EU to diversify its energy sources and to reduce its dependence on Russia. The EU plans are: to reduce its reliance on Russian gas by two thirds by the end of 2022 and to become independent of Russian fossil fuels by 2030 (European Council, 2023).

The new wave of protectionism is a recent occurrence (from February 2022), so it is difficult to quantify its real effects. Therefore, the methodological approach in this paper means focusing on the secondary data analysis and a systematic review of the preliminary analysis. This paper aims to give a systematic review of the preliminary analysis of the expected consequences of trade policy measures imposed against Russia on the EU economy and on the Russian economy in the short, medium and long term. These projections will then be supplemented with the first statistical results for 2022. A special emphasis is on the import of energy - oil and gas from Russia in the context of the EU energy policy. The issue is quite new and can be considered a new wave of protectionism in the very limited conditions of the trade partners' high trade dependency (EU's dependence on energy import from Russia and Russian dependence on the import of many intermediates from the EU). This research contributes to summarizing and comparing the expected and actual effects of imposed protectionist measures against Russia. This kind of protectionism can be observed as "partial" protectionism since there are countries that have not implemented any trade restriction measures. In other words, Russia has the possibility to refocus on other trade partners (redirect its trade flows). The real effects will depend on its ability and successfulness to do so. As the topic is ongoing, not many analyses have been made, and this research aims to contribute to the scarce literature.

The paper is structured as follows. Section 2 presents the analysis of trade and trade policy between the EU and Russia; Section 3 provides a systematic review of researches; Section 4 provides recent secondary data and the projections for the EU and Russia, while Section 5 offers the conclusion and policy recommendations.

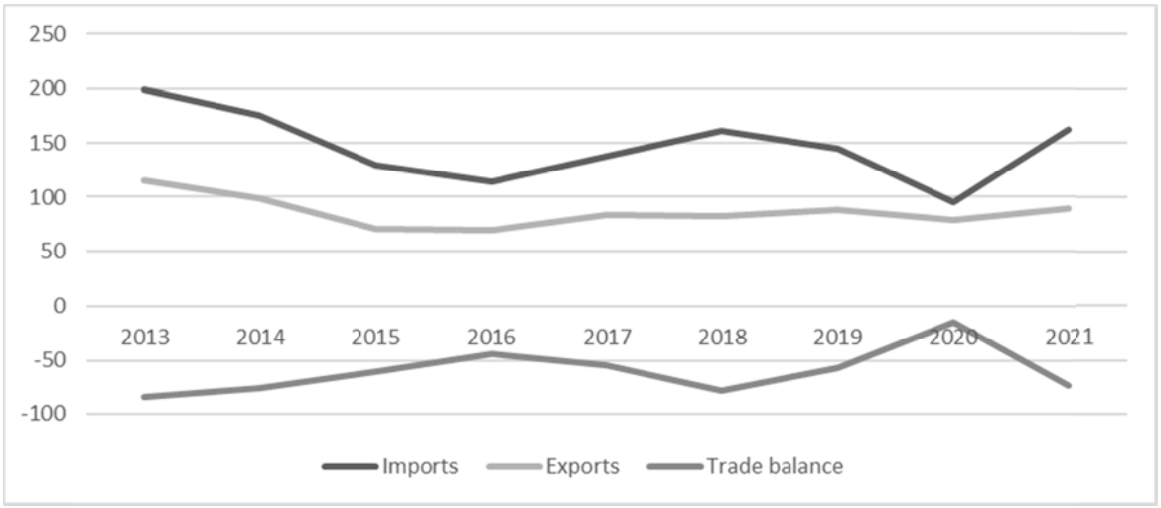
2. TRADE AND TRADE POLICY BETWEEN EU AND RUSSIA - THE CASE OF ENERGY

The European Green Deal is one of the six European Commission priorities for the 2019-2024 period. This plan represents the framework and the ambition of the EU to become climate neutral by 2050. It strives for: no net greenhouse gas emissions by 2050; economic growth decoupled from resource use leaving no person and no place behind (European Commission, 2022). This priority is closely connected with the situation of the trade policy (sanctions) with Russia. Russia has the richest deposits of energy resources, and it is a major producer and exporter of almost all fossil fuels on the global energy market. On the global market, Russia was the second largest oil and natural gas producer in 2019, just behind China and the United States. In 2022, Russia was responsible for approximately 10 % of the global energy production (IEA, 2020; Dale, 2022)

Since 2013, all 27 EU member states are net importers of energy. The energy import dependency is not homogenous in the EU - it varies from 97.6 % (Malta) to 33.5 % (Sweden) (Eurostat, 2022).

Russia was the fifth trade partner of the EU, representing 4.1 % of extra-EU exports (€89 billion) and the third largest partner for EU goods imports, representing 7.5 % of extra-EU imports, (€158 billion)) in 2021 (Eurostat, 2022). EU recorded a deficit in the trade with Russia during the 2013-2021 decade, which was at its lowest in 2020 (EUR 16 bil.) and increased to EUR 69 bil. 2021.

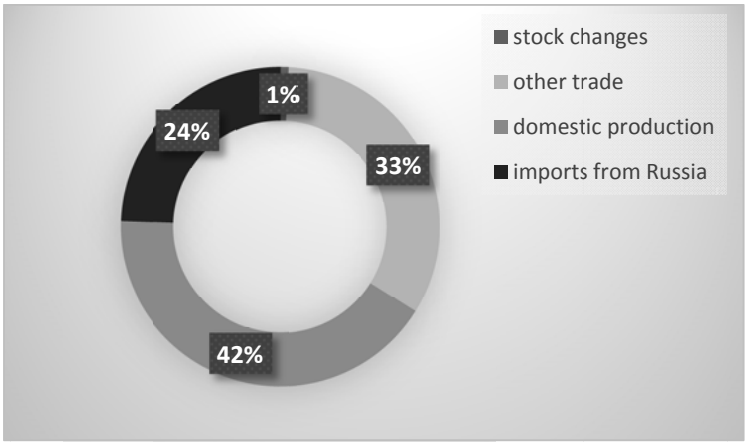
Figure 1. EU trade in goods with Russia 2013-2021 in EUR bil.



Source: Eurostat (2022).

Importance of Russia is especially high for the EU in the sectors: coal, gas and especially oil. Around 50% of EU's fuel and 75% of its crude oil came from Russia in 2020 (European Parliamentary Research Service, 2022). In 2021, the EU imported energy worth EUR 99 bil. from Russia (62 % of EU imports from Russia) but this import had a decreasing trend (i.e. in 2012, the import was EUR 157 bil.) (WEF, 2022).

Figure 2. Gross available energy in the EU and its sources (%, in 2020)



Source: Eurostat, 2022.

Regarding the energy, Figure 2 shows high levels of energy imported from Russia, i.e. out of the total of 57745 petajoules, 24.4 % came from Russia.

Figure 3. EU import of gas (partner shares in %)

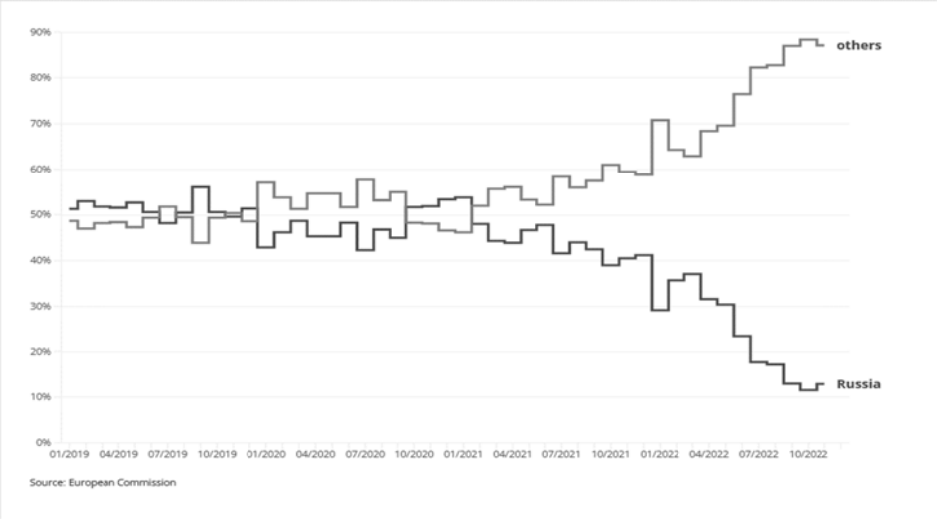


Figure 3 indicates the changes of Russian position as gas suppliers of the EU. Russia enjoyed a dominant position (market share of 50 %) until the second half of 2021 when it started to rapidly decline as market shares of other suppliers grew. In November 2022, Russia's share of EU gas imports was 12.9 %. It was accompanied by the growing importance of other suppliers: Norway, Algeria, LNG import (from US, Qatar and Nigeria).

Partnership and Cooperation Agreement between the EU and Russia (signed in 2012) defines the rules of the bilateral trade policy. It was disrupted by the restrictions from 2014 (Russian annexation of Crimea), and after the beginning of the Russian invasion on Ukraine in 2022.

The European Commission has applied trade restriction measures in the form of import and export bans on two countries (Russia and Belarus) under the common foreign and security policy. These measures are related to imposing import bans on some Russian and Belarussian steel products, coal, cement, rubber products and wood; on Russian spirits, alcohol and seafood; and on Belarusian potash products. They also include export bans on luxury goods

preferred by Russian elites, and on products worth an annual €10 billion for which Russia is highly dependent on EU imports, including quantum computing, advanced semiconductors, sensitive machinery, transport and chemicals.

After the 10th package of sanctions, the export ban on EU-made goods and technology is worth EUR 43.9 billion and includes microchips, drones, trucks, chemicals, radio systems and banknotes. The value of import under restrictions is EUR 91.2 billion and covers products like oil, coal, gold, steel, cement, rubber, vodka and caviar. It also prohibits the export of luxury products worth at least 300 EUR each. Almost 49 % of the EU export to Russia and on 58 % of imported goods from Russia are under special measures. On the other hand, some key Russian products like gas, uranium and diamonds have remained intact (Euronews, 2023)
A detailed list of implemented measures through 10 packages is provided by the European Commission (2023). In September 2022, Russia cut off most of the natural gas flows to Europe, Russia's largest customer. On the other hand, the EU imposed a ban on most Russian oil imports, as well as a price cap on Russian oil.

The first impact of trade sanctions is on the price of imported energy. As a result, in 2022, consumer electricity prices were 35 % higher than in 2021. The EU reacted with three main measures: (1) reducing electricity use by 10 %; (2) capping revenues of electricity suppliers to 180 EUR per MWh and (3) securing a solidarity contribution from fossil fuels businesses (profit increase more than 20 %). (European Council, 2022)

3. THE EFFECTS OF TRADE SANCTIONS - REVIEW (EXPECTATIONS)

Focusing on the EU's high import dependency and war circumstances, here is a short overview of research areas that cover subjects from significance (rationale) of protectionism measures to their effects on the EU and Russian economies.

The analysis of the imposed high tariffs on import from Russia is not new, it started in 2014 after the annexation of Crimea. Veebel and Markus (2015) were sceptical about the purposefulness of economic sanctions in the long run. Even if such measures can be effective in the short run, because the affected countries adapt to the new situation, they eventually become less important. Larch et al (2022) researched the impact of sanctions on mining products on trade. By employing gravity models, they found that the imposed trade restrictions will result in decline of about 44 % in mining trade. The estimations of the effects indicate the sanctions had a negative, large and significant impact on the Russia-EU trade. However, on the other hand, the analysis has not established a significant impact of the sanctions on the trade between Russia and other countries, indicating that the effects of sanctions can be heterogenous. Garashchuk et al (2022) analysed the EU-Russia bilateral trade in the context of sanctions. They focused on the sanctions from 2014 (annexation of Crimea) when EU and Western partners imposed some restrictions on trade and investment in Russia. They tried to isolate Russia from its principal institutions and restrict access to its financial resources. Russia has adjusted by reorienting to import from other countries (BRICs, Belarus, Armenia, Kyrgyzstan, Serbia, Georgia, Turkey), but also by increasing domestic production. Trade restrictions did not go one way only - Russia also imposed restrictions on the import from the EU, which affected the EU agricultural products (export) the most. The estimation indicated the loss for the EU was EUR 40 bil. in 2014 and EUR 50 bil. in 2015, while Russia's losses were 20 and 30 billion, respectively (European Parliament Report, 2015; Havlik; 2015). The authors implemented the gravity equation for estimation of trade between EU member states and Russia and they found different results for EU member states, i.e. some members faced a negative trade balance and some of them reached trade surpluses.

They have also discussed the results in terms of the connection of the increase of oil prices and the devaluation of the Russian rouble. Based on that period and the previously introduced measures, Russia has gained experience on how to find solutions in such situations.

The circumstances in 2022 were somewhat different than in 2014. Energy is still the most important, but it is necessary to consider changes in the EU policy in that sector. The goal of European Green Deal is that he EU should become climate neutral which consequently implies reducing the consumption of oil and gas and increasing the amount of energy from renewable sources. In May 2022, the European Commission issued the communication "REPowerEU" in which it presented the plan to reduce the energy dependence on Russia. In such uncertain times, the idea of intensifying import of electricity from other partners has arisen, especially from North African countries (van del Zwaan, et al., 2021) and some authors also pointed out the importance of Ukraine for the energy policy in the EU (Council of Geostrategy (2022).

Osička and Černoch (2022) discussed the EU energy policy in the circumstances of the Russia-Ukraine war and they agree that the unavailability and high prices of natural gas (caused by the war), coupled with uncertainty, will push the European energy transition and faster decarbonization. The Council of Geostrategy (2022) discussed the high energy dependence of the EU on Russia, emphasizing the possibility of increasing the import of gas and renewable energy from Ukraine. Ukraine can act as a stable and secure supplier of energy to the EU. Russia's revenues from selling fossil fuels increased from EUR 155.2 to 1,021 billion in the period 2011-2021. These revenues thus represented 1/16 of Russian GDP; 1/3 of Russian general government budget and 2/3 of Russian annual defence expenditures. Jing (2023) discussed the implications of the Russia-Ukraine war on the energy supply disruption and the increase of prices of gas and fuel. He also provides the possible strategies for the EU energy policy, pointing out the fostering of the transition to renewable energy sources (but also postponing the phase-out of coal, stricter conservation requirements in housing and transportation sectors). Tajoli (2022) analysed the EU energy dependence on the import from Russia (import from Russia represents 29 % of total crude oil import; 43 % of natural gas imports and 54 % of solid fossil fuel import), but also underlined the importance of the EU and UK markets for the Russian energy export (they represent 63 % of Russia's fossil fuels export). Due to the high dependency rate, and by employing CGE models (Computable General Equilibrium), some authors (Chepeliev, 2020 and Chepeliev et al., 2022) assess the impact on both the Russian and the EU economy, estimating that it will be strong in the short term (due to the energy price increase, drop of the real income) and weaken in the long run.
The issue of energy cannot be viewed separately, but it has broader impacts. Blanchard & Pisani-Ferry (2022) presented an overview of different aspects of the Russia-Ukraine war on EU economy and emphasized three challenges for the macroeconomic policymakers: (1) how to create appropriate models of sanctions to deter Russia, limiting at the same time the adverse impact on EU economy; (2) how to deal with the decrease in real income in the EU due to increased prices of energy import; (3) how to deal with the increase in inflation as a result of higher energy and food prices. They also indicated the challenges for fiscal and monetary policy in the EU. Winkler et al. (2022) focused its research on the consequences of the war for the global value chains. The analysis includes the sectoral approach, i.e. Russian export and import in specific sectors, such as energy, metal products, transport and business services (as the seller), and of electronics, transport equipment, and business services (as the buyer). She found that some of Russia's key export products (e.g. rare metals) are difficult to replace in the short run, so the expected effect on GVCs can be strong. "Power relations also matter, with certain GVCs consisting of many competing suppliers globally (e.g., apparel),

while in others, global suppliers have strong market power (e.g., semiconductors)" (p. 60). The impact on the other countries depends on the substitutability of inputs from Russia. When it comes to the energy sector, Bulgaria, Lithuania and Finland had the highest share of import of energy from Russia in their total import from Russia). Borin, et al. (2022) pointed out that welfare loss will occur in those European countries that are more integrated with the Russian economy (Bulgaria, Latvia, Lithuania) in the short run and that it will depend on the countries' capabilities to substitute the import from Russia. For the other countries, the expected effect is modest. The loss for the Russian economy is a consequence of trade disruptions, and restrictive measures on energy exports will further amplify this loss. Assuming low elasticity of demand for oil and gas as well as low substitutivity, the effects on the European countries' welfare loss will be higher (6 % GDP decrease).

Latipov et al. (2022) focused their research on the sectoral implications of tariff bans. On the aggregate level, they found that the imposed tariffs would affect USD 10.8 billion of trade (or 6.1 % of total EU imports from Russia in 2021, or 20.4 % of all non-energy imports). Additionally, they extracted ten sectors most affected by the trade policy bans which represent USD 671 million of Russian welfare losses and USD 147 million in losses for the EU. Bubnova (2022) emphasized and analysed the Russian economy sectors which are strongly affected by the sanctions: oil and gas industry, metallurgy, financial (freezing the Russian Central Bank's reserves held abroad (more than $300 billion) and private assets of Russian clients connected with the Russian policy in Ukraine; cutting off many Russian banks from the SWIFT system), automotive (half of the automotive production in Russia depended on European supplies), transport (international companies suspended their activities in Russia). She also discussed the significance of introduced measures against Russia when some EU countries faced the negative consequences (i.e. Germany, as the largest EU economy, is on the verge of recession) and, at the same time, Russia continue with its military operation in Ukraine.

Estrada and Koutronas (2022) estimated the effects of the Russian-Ukraine war on the EU-Russia trade and investments. They found that the trade suffocation rate for the European Union and the Russian Federation is 0.60 and 0.99, respectively, where, in the short run, the reciprocal sanctions substantially affect the factors of production with negative implications on social welfare. "Changes in the prices of imported goods represent shifts in the composition of current consumption, altering the intertemporal allocation of aggregate consumption" (p.11). The overall investment desgrowth for the European Union and the Russian Federation is − 0.73 and − 0.47.

Demertzis, et al. (2022) analysed the war effect on the Russian economy indicating that Russian fiscal revenues haven't suffered from sanctions enough to shorten the duration of the war; the Bank of Russia has prevented financial instability and also prevented the real economy, but they warn about the negative impact of sanctions being visible in the medium to long term (due to the departure of many foreign companies; lower energy import in the EU). Bachmann et all (2022) estimated a GDP decline of 0.5-3 % in 2022 in Germany in the case of a cut-off from Russian energy imports. Evenett and Muendler (2022) found that restrictions against import from Russia would decrease Russian GDP by 0.58 % in the medium to long term while these impacts on the sanctioning nations are expected at the level of 0.04 %. They also calculated that the number of lost jobs is more than 574,000 (0.8 percent of the total labour force) in Russia, and 116,000 jobs (0.05 % of the total labour force) in the EU (WB, 2022).

Table 1. Overview of possible effects of trade measures imposed against Russia in 2022

Authors	Methodology	Indicators	EU	Russia
Chepeliev, et al. (2022)	ENVISAGE global computable general equilibrium model	Households' real income	decline by 0.7 to 1.7 percent (short-term) to 0.04 percent over the 2022–2030 period (the growth rate will be 2.14% per year in the EU instead of 2.18%)	10.4-11.7% decline in real income Cumulative loss 1364 billion USD (decline of export of fuel, oil, gas and coal) (till 2030) Cumulative loss in household income 1162 billion USD (till 2030)
Demertzis, et al. (2022)		GDP growth		GDP reduction 5%- 6% (less than first estimates that was 12-15% (Hilgenstock and Ribakova, 2022)
Evenett and Muendler (2022)			GDP decline for 0.04 percent	GDP decrease by 0.58% in the medium- to long-term run
IMF (2022, October)		GDP growth		in 2022 Russia's economy would contract by 3%, less than half of its economic disruption during the global financial crisis of 2008-2010
Baqaee, et al. (2022)	Multi□Sector Multi□Country Model (Baqaee & Farhi, 2022)		Impact on the EU member states will be of heterogenic magnitude: France – decrease 0,15-0,3% in GNI Germany- decrease 0.3-3% of GNI Lithuania, Bulgaria, Slovakia, Finland or the Czech Republic -decline of between 1 and 5% of GNI. The contraction in the EU member states will be greater in the case of total embargo (pessimistic scenario).	

Latipov et al. (2022)		Trade; welfare	Imposed tariffs would affect trade of 10.8 billion USD (or 6.1% of total EU imports from Russia in 2021, or 20.4% of all non-energy imports). The loss for the EU would be 150 million USD per year.	996 million USD per year welfare loss
Bachmann et al. (2022)	multi-sectoral open economy model following Baqaae and Farhi (2022)	GDP growth	GDP decline between 0.5-3% in 2022 in Germany	
Estrada et al. (2022)	Intraregional Trade Disruption from War Simulator (ITDW-Simulator)	International trade and GVC		Introducing the new concepts of trade suffocation, and investment desgrowth15 investment desgrowth for the EU is -0.73 and the Russian Federation is − 0.47. (FDI desgrowth is -0.97 for the EU and -0.88 for the Russia) Trade suffocation rate is 0.60 for the EU and 0.99 for Russia
Mahlstein et al. (2022)	computable general equilibrium modelling	GDP growth	real GDP losses between 0.1% and 1.6% for aliened economies (highest decline will be in Germany 1.20% and the Netherlands 1.57%)	losses higher of 14% of real GDP in the short run as a result of FDI withdraw.
Liu et al. (2023)	global computable general equilibrium model	Emission of CO2 GDP growth	10% reduction of CO2 emissions in the EU 2% of GDP losses	5% of GDP losses

Source: author's selection.

[15] "Trade Suffocation is "full or partial trade and investment sanctions imposed by a nation or a group of nations on another country to punish for its belligerent behavior toward a nation or group of nations that endanger international peace and security." Investment desgrowth corresponds to a country's exports and FDI losses in lieu of sanctions" (Estrada et al., 2022, p. 8-11)

4. REALITY - SANCTIONS AGAINST RUSSIA - WHAT DO THE PRELIMINARY DATA SAY?

The effectiveness of trade restrictions i.e. embargoes, that should result in lower revenues for Russia, is crucial for the outcome of the war in Ukraine. Unfortunately, the sanctions have not produced the desirable effects. The Russian economy proved resilience and its ability to redirect the trade to other partners, China primarily. Here, we will present some statistical data, but there can be a problem with the reliability of the data due to the fact that Russia has greatly reduced the transparency of its economy, as it stopped publishing some vital statistics and corporate data. Milov (2022) warns that the focus on traditional macro indicators is wrong and misleading. A more sophisticated toolkit is required to really understand the most important current trends of the Russian economy.

The challenges for the Russian economy might lie in the decline of imports of Western-made components which is affecting manufacturing. The consequences will also not occur simultaneously - they will be felt gradually, because consequences for different sectors and industries will be dispersed over time. KSE (2022) highlights the high exposure of some sectors in Russia: manufacturing of transportation equipment, chemicals, food products and IT services due to the high import contents from the EU. EU's forthcoming embargo on Russian petroleum products will be more complex and more disruptive than the measures during 2022. Milov (2022) also pointed out "instruments like 'import substitution' and 'pivot to Asia' are only working to a very limited extent and have no capacity to substitute the extent of de-globalization of Russia inflicted by the Western sanctions". Many European companies have closed their subsidiaries (enterprises) in Russia, for example in the automotive industry where all European manufacturers had their subsidiaries after the sanctions, there are 14 car brands, three are Russian and 11 are Chinese. Russia was faced with a drop in production in electronics and machinery and at the same time, imports of Chinese vehicles have ballooned (Yale, 2022). The sanctions also affected the suspension of air traffic between Russia and Western countries. there are also significant consequences on transport networks.

According to the official statistics, Russia's current account was in surplus of $198 billion in the period Jan-Sept 2022 (Bank of Russia, Demertzis et al., 2022). Russia has benefited from the increase in the price of crude oil (more than 15 %), gas (more than 50 %), fuels (more than 15 %) which contributed to export values. Imports are reduced and the national currency, the rouble, is strong (although it dropped when the sanctions were imposed from 70-75 roubles per dollar to 140 per dollar; however, by April 2022, the exchange rate returned to below pre-invasion levels (Ribakova, 2022).

The way to overcome the imposed sanctions on the export of certain goods from Russia to the EU is to export through intermediary companies in other countries that issue a certificate of origin of the goods. For example, in this way, timber products are exported from Russia to the EU (through Turkish companies). Furthermore, the companies from Europe and North America (more than 1400 firms) decided to temporarily or permanently halt activities, and higher shares of foreign companies remained in industries such as energy and materials, compared to IT services, real estate and communications (Yale, 2022).

The interesting point is the success in preserving the stability of the rouble exchange rate. Although the volumes of roubles traded fell to about a third of the level before the war, the economic policymakers found a way how to ensure roubles stability. There are few measures of Bank of Russia:

- imposed strict capital controls, according to which banks could not sell foreign currency to retail clients and the amount had a cap (firstly at $10000 and then $ 1 million on a monthly basis), but the supply of foreign currency was limited and withdrawals can take some time. Additionally, the central bank initially required the exporters to convert 80 % (later it was lowered to the level of 50 %) of their revenues into roubles which helped mitigate the concerns about the rouble being weak. Foreign exchange liquidity subsided (Reuters, 2022).

- A requirement (of Bank of Russia) that foreign countries- importers (i.e. EU, US, etc.) should pay for the imported gas in roubles. In that way the funds received by Russia for gas could not be frozen in the accounts of European or U.S. banks. Such a scheme implies the counterparty to open a rouble account in the Russian Gazprombank, which would convert the payments it received into roubles (Bubnova, 2022).

The problem with the rouble exchange rate appeared at the beginning of August 2023, when the exchange rate of 100 roubles to the dollar was broken again (depreciation of rouble form 25% from the beginning of 2023). The Russian central bank reacted by raising interest rates (from 8.5 to 12 percent) and selling foreign currency (The Bank of Russia announced selling foreign currency in the equivalent of 21.4 billion roubles ($218.5 million) every day in the period September 14 and 22, which represents increase of 10 times (in comparison with usual transactions) (Alarabiya news, 2023).

Table 2. Economic situation in 2022 and forecasts for 2023 and 2024

	EU (Euro-area)			**Russia**		
	2022	2023	2024	2022	2023	2024
GDP growth in %	3.5	0.9	1.5	-2.1	1.5	1.3
Inflation	8.5	5.6	3.0	13.8	7.0	4.6
Current account (% GDP)	–0.7	0.6	0.9	13.6	3.6	3.2
Unemployment (%)	6.8	6.8	6.8	3.9	3.6	4.3

*For the EU, data refers to extra-EU export (import)

Source: IMF (2023).

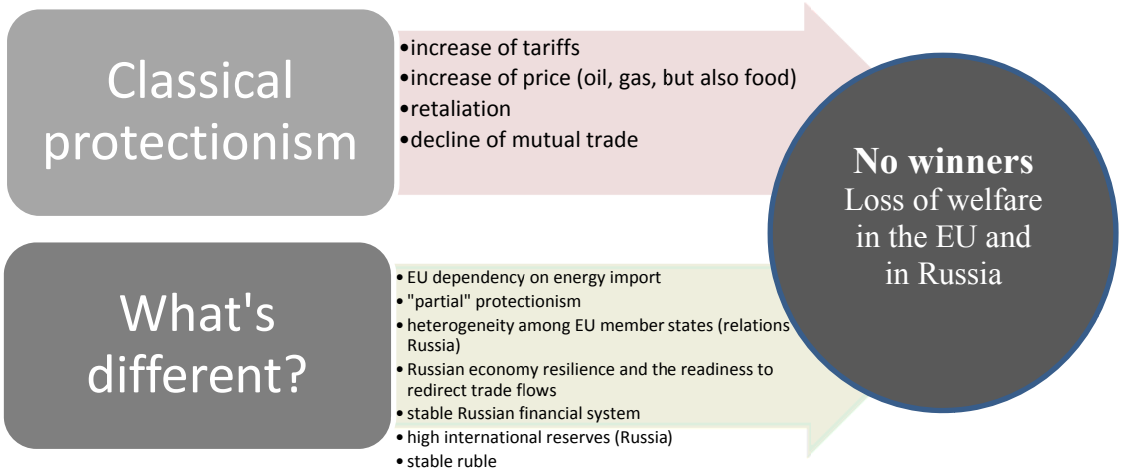
Figure 4. Oil prices for Russian export (USD per barrel)

Source: BBC (2023).

Prices of oil from Russia showed an increasing trend from 2020 to the first half of 2022, and Russia benefited from oil exports. Urals oil refers to the oil exported to the European destination by sea. The price decline for Urals oil is higher than for brent due to the EU imposed sanctions. Russia's exports to China and India have increased.

All these sanctions will cause the Russian economy to contract, but to a lesser extent than expected; inflation will also decline significantly in 2023 and in 2024. Export will decrease, but the current account will still be in the surplus. The detailed analysis provided by Sapir (2023) shows that Russia is experiencing economic and industrial growth. The data for May-June 2023 were better than for the 2021 (pre-war; pre-sanction year).

Figure 5. The repercussion of trade sanctions; EU-Russia case



Source: authors

In the highly interconnected international economic relations, but also in the circumstances where countries are not coordinated in imposing the sanctions against Russia, it is difficult to make a specific conclusion about the effectiveness of the measures. The presented projections

and secondary data indicate that no side comes out from the imposing of protectionist measures as a winner, but that all parties will have a decreased economic welfare.

5. CONCLUSION AND POLICY IMPLICATIONS

This research addresses a hot economic issue - the effectiveness of trade measures (embargo) implemented against Russia. That protectionism is a reaction to the Russian aggression on Ukraine, aiming to reduce the amount of money Russia can earn and its ability to finance the war.

Trade measures have been gradually introduced and enlarged and now the 10th package of measures is in place. The trade policy logic is overridden by the fact that EU was highly dependent on imports of energy from Russia. In such circumstances, the effectiveness of trade measures (also expecting Russian retaliation) is questionable.

Although only one year has passed since the beginning of the war, wherefore it is difficult to predict the extent of the damage to the EU and Russian economy, in this research we have listed relevant articles that refer to the estimates of losses, primarily welfare loss, caused by the sanctions imposed on Russia. Expectations were negative for the Russian economy more than the actual data show. Due to the previous practice[16], Russia had enough time to prepare well for the imposed restrictions. Of course, the data should be taken cautiously, given that it is difficult to say how reliable and objective they are. The fact is that Russia quickly adapted to the new circumstances and sanctions, redirected trade to countries that did not impose tariffs against it, and introduced capital controls to prevent the depreciation of the national currency. The presented data refer to the first effects of the sanctions, i.e. we see that the short-term effects of the sanctions are negative, but the Russian economy is not facing major problems and has successfully redirected trade towards countries that did not impose sanctions. The real negative effects will be visible in medium and long-term, at the sectoral level in those sectors whose production depends on import inputs from the EU.

It is impossible to draw a uniform and clear conclusion from the analysed articles and statistical data about the extent of the effects of the sanctions on both the Russian and the EU economy which was largely dependent on the import of energy from Russia. Based on comparation of the projection of GDP growth and inflation in the EU and in Russia, no conclusions can be drawn about a highly negative impact on Russia. Given that more significant impacts are expected at the sectoral level in Russian economy, it is necessary to investigate in more detail the production, employment, export and import of individual sectors that were previously significantly dependent on imports from the EU.

For the EU, it is vital to decrease the dependency on energy sources from Russia, and, from the beginning of 2023, to implement a total embargo on imports of gas from Russia as a way of pushing and fostering transition to renewable sources of energy. Moreover, it will bring the EU closer to its 2030 and 2050 goals set in the Green Deal.

BIBLIOGRAPHY

Alarabiya news (2023), **Russia intends to boost the weakening ruble** , https://english.alarabiya.net/business/banking-and-finance/2023/09/06/Russia-intends-to-boost-the-weakening-ruble [Accessed 7.09.2023]

[16] The first sanctions against the Russian economy go back to 2014, following the annexation of Crimea.

Baqaee, D.; Moll, B.; Landais, C. and Martin, P. (2022) **The Economic Consequences of a Stop of Energy Imports from Russia, Focus**. https://policycommons.net/artifacts/2331255/focus-the-economic-consequences-of-a-stop-of-energy-imports-from-russia-david-baqaee-benjamin-moll-camille-landais-and-philippe-martin/3091880/ on 20 Feb 2023. CID: 20.500.12592/v4v304. [Accessed 7.02.2023]

Baqaee, D., and E. Farhi. (2022), **Networks, Barriers, and Trade**, NMER Working Paper, No. 26108. https://www.nber.org/system/files/working_papers/w26108/w26108.pdf [Accessed 1.02.2023]

Bachmann, R., Baqaee, D., Bayer, C., Kuhn, M., Löschel, A., Moll, B., Peichl, A., Pittel, K., and Schularick, M., (2022), **What if? The Economic Effects for Germany of a Stop of Energy Imports from Russia**, CESifo, No. 36. https://www.cesifo.org/en/publications/2022/working-paper/what-if-economic-effects-germany-stop-energy-imports-russia [Accessed 7.02.2023]

Bank of Russia (2023). **Monetary Policy Report No. 1**, February, https://www.cbr.ru/Collection/Collection/File/43776/2023_01_ddcp_e.pdf [Accessed 17.02.2023]

BBC (2023) **Russia sanctions: What impact have they had on its oil and gas exports?**, https://www.bbc.com/news/58888451 [Accessed 25.02.2023]

Blanchard, O. J., & Pisani-Ferry, J. (2022), **Fiscal support and monetary vigilance: Economic policy implications of the Russia-Ukraine war for the European Union**, Peterson Institute for International Economics, Policy Brief, No. 5.

Borin, A.; Conteduca, F.P, Di Stefano, E.; Gunnella, V.; Mancini, M.and Panon, L- (2022), **Quantitative Assessment of the Economic Impact of the Trade Disruptions Following the Russian Invasion of Ukraine**, Bank of Italy Occasional Paper, No. 700, https://ssrn.com/abstract=4223361 or http://dx.doi.org/10.2139/ssrn.4223361 https://www.bancaditalia.it/pubblicazioni/qef/2022-0700/QEF_700_22.pdf?language_id=1 [Accessed 12.2.2023]

Bubnova, N.I. (2022), **Total Sanctions in the Context of "Integrated Deterrence": Western Countries' Response to Russia's Special Military Operation in Ukraine (2022).. 92** ***Herald of the Russian Academy of Sciences***, 92:S1230–S1239 (Suppl 13), https://doi.org/10.1134/S1019331622190054

Chepeliev, M. (2020): **GTAP-power data base: Version 10**. ***Journal of Global Economic Analysis***. https:// doi. org/ 10. 21642/ JGEA. 05020 3SM1F [Accessed 1.2.2023]

Chepeliev, M., Hertel T., & van der Mensbrugghe, D. (2022): **Cutting Russia's fossil fuel exports: Short-term pain for long-term gain**, ***The World Economy***. 45:3314–3343, doi: 10.1111/twec.13301

Council of Geostrategy (2022), **A new energy policy for Europe: The significance of Ukraine**, Report Geopolitics Programme, No. GPR01.

Dale, S. (2022). **BP Statistical Review of World Energy**. BP Plc, London, United Kingdom. p.15-23.

Demertzis, M., B. Hilgenstock, B. McWilliams, E. Ribakova and S. Tagliapietra (2022), **How have sanctions impacted Russia?**, Policy Contribution, No. 18.

Estrada, M.A.R. and Koutronas, E. (2022): **The impact of the Russian Aggression against Ukraine on the Russia-EU Trade,** ***Journal of Policy Modelling***, https://doi.org/10.1016/j.jpolmod.2022.06.004i

European Commission (2022) **A European Green Deal, Striving to be the first climate-neutral continent**, https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en [Accessed 7.2.2023]

European Commission (2023) **Winter 2023 Economic Forecast: EU Economy set to avoid recession, but headwinds persist**, https://economy-finance.ec.europa.eu/system/files/2023-02/statistical_annex_en.pdf [Accessed 7.2.2023]

European Council (2023) **Timeline - EU response to Russia's invasion of Ukraine**, https://www.consilium.europa.eu/en/policies/eu-response-ukraine-invasion/timeline-eu-response-ukraine-invasion/ [Accessed 7.2.2023]

European Council (2022) Infographic - Energy crisis: Three EU-coordinated measures to cut down bills, https://www.consilium.europa.eu/en/infographics/eu-measures-to-cut-down-energy-bills/ [Accessed 25.2.2023]

European Parliament Report (2015.) https://www.stat.gov.rs/media/2823/serbia-report-2015. [Accessed 7.2.2023]

European Parliamentary Research Service (2022) **Russia's war on Ukraine: EU trade policy**, https://epthinktank.eu/2022/05/16/russias-war-on-ukraine-eu-trade-policy/[Accessed 7.2.2023]

Eurostat (2022) **Energy represented 62% of EU imports from Russia**, https://ec.europa.eu/eurostat/en/web/products-eurostat-news/-/ddn-20220307-1 [Accessed 7.2.2023]

Evenett, S.J., & Muendler M.-A. (2022), **Making Moscow Pay –How Much Extra Bite Will G7 & EU Trade Sanctions have?**, UC San Diego cBrief, No. 1, https://www.ifw-kiel.de/publi cations/kiel-working-papers/2022/cutti ng-through-the-value-chain-the-long-run-effects-of-decoupling-the-east-from-the-west-17087/ [Accessed 7.2.2023]

Garashchuk, A.; Isla Castillo, F.; Podadera Rivera, P. (2022): **The Empirical Evidence of EU–Russia Bilateral Trade under Sanctions and Oil Price Shocks**. ***Sustainability,*** 14. https://doi.org/10.3390/su14137528 [Accessed 7.2.2023]

Havlik, P. (2014), **Economic Consequences of the Ukraine Conflict**. WIIW Policy Notes and Reports; WIIW: Vienna.

Hilgenstock, B. and E. Ribakova (2022), **Russia – Economy to Contract Sharply in 2022**, Institute of International Finance, No. 23, https://www.lemonde.fr/en/les-decodeurs/article/2022/10/04/how-has-the-russian-economy-withstood-the-effects-of-sanctions_5999030_8.html [Accessed 7.2.2023]

IEA (2020), **Key world energy statistics 2020**. IEA, Paris. https://www.iea.org/reports/key-worldenergy-statistics-2020. [Accessed 7.2.2023]

IMF (2023), World Economic Outlook, https://www.imf.org/en/Publications/WEO/Issues/2023/07/10/world-economic-outlook-update-july-2023 [Accessed 7.9.2023]

Jing, X. (2023), **The Russia-Ukraine War and Energy Security: Impact and Policies, From a European Perspective**, ***Highlights in Business, Economics and Management***, 3: 215-222 https://drpress.org/ojs/index.php/HBEM/issue/view/v3, [Accessed 7.2.2023]

KSE (2022), **SelfSanctions / LeaveRussia**, Kyiv School of Economics, https://kse.ua/selfsanctions-kse-institute/ [Accessed 7.2.2023]

Larch, M. & Shikher, S. & Syropoulos, C. & Yotov, Y.V. (2022). **Quantifying the impact of economic sanctions on international trade in the energy and mining sectors,** ***Economic Inquiry***, 60(3): 1038-1063.

Latipov, O.; Lau, C.; Mahlsetin, K. and Schropp, S. (2022), **The economic effects of potential EU tariff sanctions on Russia**, VoxEU/CEPR Debate.

Liu, LJ.; Jiang, H.D.; (...); Wei, Y.M. (2023), **Carbon emissions and economic impact of EU's embargoing Russian fossil fuels**. *Natural climate change*, 13(3), https://doi.org/10.21203/rs.3.rs-1683339/v1.

Mahlstein, K., Mcdaniel, C., Schropp, S., Tsigas, M. (2022), **Estimating the economic effects of sanctions on Russia: an allied trade embargo**, EUI RSC, No./36, Global Governance Programme-470, [Global Economics] http://hdl.handle.net/1814/74493 [Accessed 7.2.2023]

Milov, V. (2022), **Yes, It Hurts: Measuring the Effects of Western Sanctions Against Russia**, https://www.globsec.org/what-we-do/press-releases/yes-it-hurts-measuring-effects-western-sanctions-against-russia [Accessed 7.2.2023]

Osička, J. and Černoch, F. (2022**), European energy politics after Ukraine: The road ahead**, ***Energy Research & Social Science***, 91:102757, DOI: 10.1016/j.erss.2022.102757

Ribakova, E. (2022), **The Ruble Rally Is Real, Sanctions Are a Moving Target**, Barrons, , https://www.barrons.com/articles/the-ruble-rally-is-real-sanctions-are-a-moving-target-51649708830. [Accessed 7.2.2023]

Reuters (2022) **Russia hikes rates, introduces capital controls as sanctions bite**, 28 February 2022, https://www.reuters.com/markets/europe/russian-central-bank-scrambles-contain-fallout sanctions-2022-02-28/, and Reuters, **Russia cuts mandatory FX conversion level for exporters to 50%**, 23 May 2022, https://www.reuters.com/markets/europe/russia-cuts-mandatory-fx-conversion-level-exporters-50-2022-05-23/. [Accessed 7.2.2023]

Sapir, J. (2023) **The Real Impact of Western Sanctions Upon Russia and 2023/24 Forecasts**, https://www.russia-briefing.com/news/the-real-impact-of-western-sanctions-upon-russia-and-2023-24-forecasts.html/ [Accessed 7.9.2023]

Tajoli, L. (2022), **Too much of a good thing? Russia-EU international trade relations at times of war, *Journal of Industrial and Business Economics***, 49(4), 807-834. DOI: 10.1007/s40812-022-00232-2.

van der Zwaan, B. & Lamboo, S. & Dalla Longa, F., (2021), **Timmermans' dream: An electricity and hydrogen partnership between Europe and North Africa, *Energy Policy***,159(C). https://ideas.repec.org/a/eee/enepol/v159y2021ics0301421521004791.html, DOI: 10.1016/j.enpol.2021.112613[Accessed 7.2.2023]

Veebel, V.; Markus, R. (2015), **Lessons from EU-Russia Sanctions 2014-2015. *Balt. J. Law Politics***, 8: 165–194.

WEF (2022), **How much energy does the EU import from Russia?,** https://www.weforum.org/agenda/2022/03/eu-energy-russia-oil-gas-import. [Accessed 7.2.2023]

Winkler, D., Wuester, L. and Knight, D. (2022), **The Effects of Russia's global value-chain participation,** in M. Ruta, ed.: **The Impact of the War in Ukraine on Global Trade and Investment,** World Bank, 57-70, https://documents1.worldbank.org/curated/en/099750104252216595/pdf/IDU0008eed66007300452c0beb208e8903183c39.pdf [Accessed 7.2.2023]

World Bank (2022). **Labor force**, total. https://data.worldbank.org/indicator/SL.TLF.TOTL.IN [Accessed 7.2.2023]

Yale (2022) **Over 1,000 Companies Have Curtailed Operations in Russia—But Some Remain**, Chief Executive Leadership Institute, Yale School of Management, https://som.yale.edu/story/0/over-000-companies-have-curtailed-operations-russia-some-remain [Accessed 7.2.2023]

ECONOMIC EVALUATIONS OF CULTURAL HERITAGE: RESEARCH POTENTIAL BASED ON BIBLIOMETRIC REVIEW[17]

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Key words: *Cultural Heritage, Economic Evaluations, Valuation, Bibliometrics, Web Of Science*
JEL codes: *A12, H43, Z1*

ABSTRACT

Using a new lens to analyse the existing literature on economic evaluations of cultural heritage, we apply a bibliometric analysis of the literature to examine trends in academic research across different fields and review the methods used in these studies. We identify motor, niche, and fundamental themes in the field. We show that different fields approach economic evaluation differently and that financial support from policymakers is critical to the development of a particular research area and topic. Our review shows that there is a gap in studies that examine heritage impacts beyond the local context or more comprehensively consider all types of impacts, i.e. economic, cultural, environmental, and societal impacts. We also indicate a need to collect additional primary data (or make better use of existing secondary data), and the potential to use a mixed methods approach to examine emerging issues in cultural heritage.

[17] **Acknowledgement:** This research has been supported by the Slovenian Research and Innovation Agency (#J7-4641).

1. INTRODUCTION

In recent decades, interest in cultural heritage (CH) and its conservation has grown in many academic fields, including architecture, geography, natural sciences, sociology and economics. An economic valuation of cultural heritage is one of the pillars in this endeavour. Heritage consists of a vast and diversified array of past events, personalities, folk memory, mythology, literary associations, physical relics of the past as well as places to which they can be symbolically linked (Ashworth et al., 2007). Jagodinska et al. (2015) recognize heritage as being dynamic in nature, interpreted and changed depending on the passage of time, the change of context, and the public's experiences and expectations. Cultural heritage, more specifically, refers to tangible and intangible expressions of human identity and creativity. The definition of cultural heritage in the European Council's Faro Convention (2005) considers cultural heritage as a whole, i.e. does not differentiate between movable and immovable, tangible and intangible. Cultural heritage is thus a group of resources inherited from the past, which people identify independently of ownership, as a reflection and expression of their constantly evolving values, beliefs, knowledge and traditions. It includes all aspects of the environment, resulting from the interaction between people and places through time (Council of Europe, 2005).

Consensus has been reached in the relevant literature that the value of CH consists of four elements: cultural, social, environmental and economic value (Jagodzińska et al., 2015; Throsby, 2012; Vernieres et al., 2012). Cultural value is inherent to CH and includes several components such as aesthetic, symbolic, spiritual, historical component, authenticity, and scientific value. The social value of CH results from the creation of shared connections and shared identity in the community. The environmental value of CH comes from the preservation of CH in its natural environment, such as landscapes and parks, and through the adaptive reuse of CH by reducing the consumption of natural resources and generation of waste. In economic terms, CH has been recognised as a special type of capital that adds economic value and creates jobs. As a cultural capital, CH has a use value and a non-use value. Use value represents direct value to consumers of cultural heritage as a private good, while non-use value is related to the consumption of cultural heritage as a public good, e.g. the appreciation of the existence of cultural heritage, the desire to preserve it for the future, and pass it on to future generations (Throsby, 2012). Cultural heritage value cannot be fully reflected in market price; and even if the value is expressed in monetary terms, it does not necessarily reflect the actual value because externalities, spillover effects and societal value cannot be fully taken into account (Bowitz & Ibenholt, 2009).

Cultural heritage hence needs to be studied with an interdisciplinary approach (Bowitz & Ibenholt, 2009). However, studies on this topic have been conducted from many different academic perspectives, but predominantly with a one-sided approach to the topic, i.e. from the cultural, economic, or environmental viewpoint (Jagodzińska et al., 2015). The relevant literature is currently fragmented across different academic fields using different methodologies and terminologies. This leads to incoherence, misunderstandings and gaps among scholars from different fields, thus preventing the progress of each discipline as well as underestimation of CH's total impact on society. Consequently, this results in insufficient investment in the maintenance, conservation, upgrading or adaptive reuse of CH (Throsby, 2012). Our paper, therefore, aims to improve the understanding and comparability of the results of different studies by reviewing the existing literature and looking for commonalities.
We use a bibliometric approach to identify the population of relevant studies (on economic evaluations of cultural heritage), explore the trends of academic research across different fields, and review the methods used in these studies. A bibliometric review has several

advantages over traditional systematic literature review and meta-analysis, in particular when coupled with science mapping (Batistič & der Laken, 2019). Science mapping consists of the classification and visualisation of previous research (Small, 1999), resulting in spatial representations of overlapping knowledge domains. As the economic evaluations of cultural heritage span over different research domains, this approach is particularly useful for our research. Contrary to the systematic review, bibliometric analysis allows us to summarise a large quantity of literature to present the evolution and state of the intellectual structure in a certain field. Unlike meta-analysis, bibliometric analysis can focus on broad content, interdisciplinary research and a heterogeneous methodological approach (Donthu et al., 2021). Existing bibliometric studies in the field are scarce and not focused on economic evaluations of cultural heritage. For example, Christodulaki & Slogett (2017) use bibliometric analysis to report a survey of peer-reviewed publications about cultural materials conservation, while Kepakisan et al (2021) use it to analyse research on the reconstruction of historical buildings. Khanra et al. (2021) capture cultural heritage in the context of bibliometric analysis of publications about ecotourism. Katrakazis et al. (2018) discuss the research impact of heritage science through a bibliometric profile of publications.

By using a new lens to analyse the existent literature we provide two main contributions to the cultural heritage literature. We study the development of the topic, most important themes and methodological approaches and hence identify several research opportunities that can fill the gaps in our understanding of this topic. We detect the research gap from the methodological aspect but also recognise the need for more comprehensive studies of the effects of cultural heritage that would cover all - the economic, cultural, environmental and societal impacts. The rest of the paper is structured as follows. First, we describe bibliometric analysis as a quantitative method for literature review. In the next section, we present and interpret the results of the analysis and we wrap the paper with a discussion of findings and concluding remarks.

2. METHOD

To identify the primary research papers on cultural heritage and economic evaluations, we searched the ISI Web of Knowledge bibliographic database with the broadest possible selection of keywords: "economic evaluations" and "cultural heritage" (see Appendix 1 for details) in the publication's title, abstract, author's keywords in keywords plus[18]. Web of Science (WoS) database has been acknowledged as the most reliable database for bibliometric research (Batistič & der Laken, 2019). As our goal is to capture all research domains where economic evaluations have been applied for cultural heritage research, we did not limit the range of relevant domains nor the searched time period.

2.1. **Sample description**

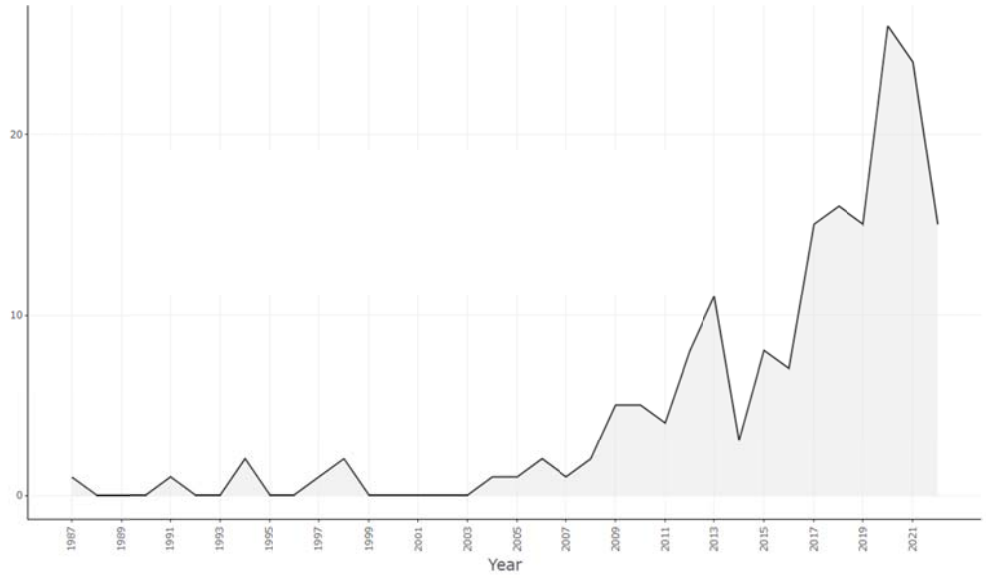
This retrieved 237 primary documents, which we narrowed down to 180 units by limiting the document type to articles, books, book chapters and early access documents. Those 180 documents were published from 1987 to 2022 by 468 different authors in 134 different sources and represent the sample for our analysis.

Figure 1 shows the time pattern of research published on the economic evaluations of cultural heritage. Clearly, throughout the period, search on this topic gained interest, in particular over

[18] Key words plus are generated by an automatic computer algorithm, are words or phrases that appear frequently in the titles of an article's references and not necessarily in the title of the article or as Author Keywords (Zhang et al., 2016).

the last decade, when 148, i.e. more than 80% of the retrieved documents have been published. The most productive years were 2020 and 2021 when 26 and 24 documents have been published, respectively. This coincides with cultural heritage gaining a more prominent role in global strategic initiatives such as the UN Agenda 2030 as well as several EU programme schemes for the 2022-2027 period.

Figure 1. A number of retrieved primary documents in the 1987-2022 period.



Source: own work.

Based on the WoS categories, Figure 2 demonstrates that economic evaluations of cultural heritage are very fragmented across 10 scientific fields. The most pronounced interest in economic valuation is found in environmental sciences and studies. Other scientific fields with such studies are economics, green technology, humanities, art, tourism, materials science, geosciences and archaeology.

Figure 2. Distribution of primary documents across scientific fields.

Source: own work.

Two authors independently read the abstracts and coded the papers based on the following criteria: i) cultural heritage topic (economic evaluation or not), ii) unit of analysis (single or multiple case study, industry or market, region or country), iii) geographical scope (local, regional, national, international or global), iv) data collection (primary, secondary or mixed) and v) data analysis (quantitative, qualitative, mixed). Based on the comparison and discussion of cases where individual assessments differed, all three authors completed the classification of papers.

Among the 180 documents, we classified 63 papers (35%) as economic evaluations, the other papers discussed cultural heritage from different perspectives. Among 103 papers (57%) where we could extract the unit of analysis from the abstract, we found 73 (41%) single case studies, 8 (4%) multiple case studies, 15 (8%) industry or market studies, 4 (2%) region studies and 3 (2%) country studies. For 104 papers (58%), we were able to identify the geographical scope from the abstract: 48 (27%) of these papers examined cultural heritage in a local geographical context, 27 (15%) in a regional context, 15 (8%) in a national context and 14 (8%) in an international or global context). Data collection is described in 97 papers (54%), of which 64 (36%) studies collected primary data, 20 (11%) used secondary data and 13 (7%) used mixed data. We were able to code the approach to data analysis for 101 papers (56%), with 51 (28%) papers using quantitative methods, 34 (19%) using qualitative methods and 16 (9%) using a mixed approach.

Following recommendations by Donthu et al. (2021), our analysis was performed in two steps. First, we conducted performance analysis, followed by science mapping. Performance analysis is the hallmark of bibliometric studies (Donthu et al., 2020) and descriptively presents the background and the performance of research constituents (e.g. authors, intuitions, countries and journals). This method deals with publication- and citation-related metrics. Within science mapping, our research includes citation analysis to analyse relationships among primary publications to highlight the most influential publications (Appio et al., 2014) and bibliographic coupling, where we analysed relationships among primary publications (citing publications) (Zupic & Čater, 2014).

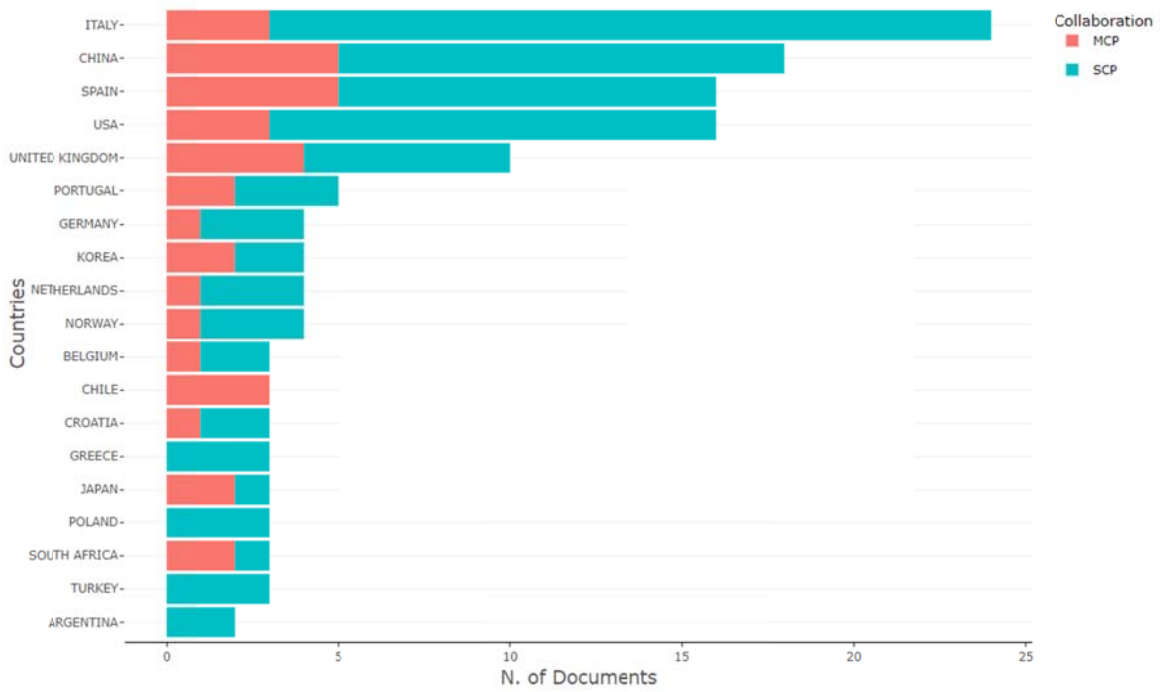
3. RESULTS AND DISCUSSION

We use the "biblioshiny" module in RStudio (Aria & Cuccurullo, 2017) to analyse the retrieved sample of primary documents.

3.1. **Performance analysis**

Within our sample of 180 documents and 468 authors, the author of the highest number of publications is Peter Nijkamp (3 documents). Further, 17 authors have two published documents, while the rest have only one publication. The majority of primary documents are prepared in co-authorship with 2.71 authors on average and only 54 documents have a single author. As demonstrated in Figure 3, Italian authors and co-authors lead in a number of publications, especially in the number of single authorships. Authors from China, Spain, the USA, and the UK also contribute a lot to the field. Publications are almost exclusively written in the English language (95%).

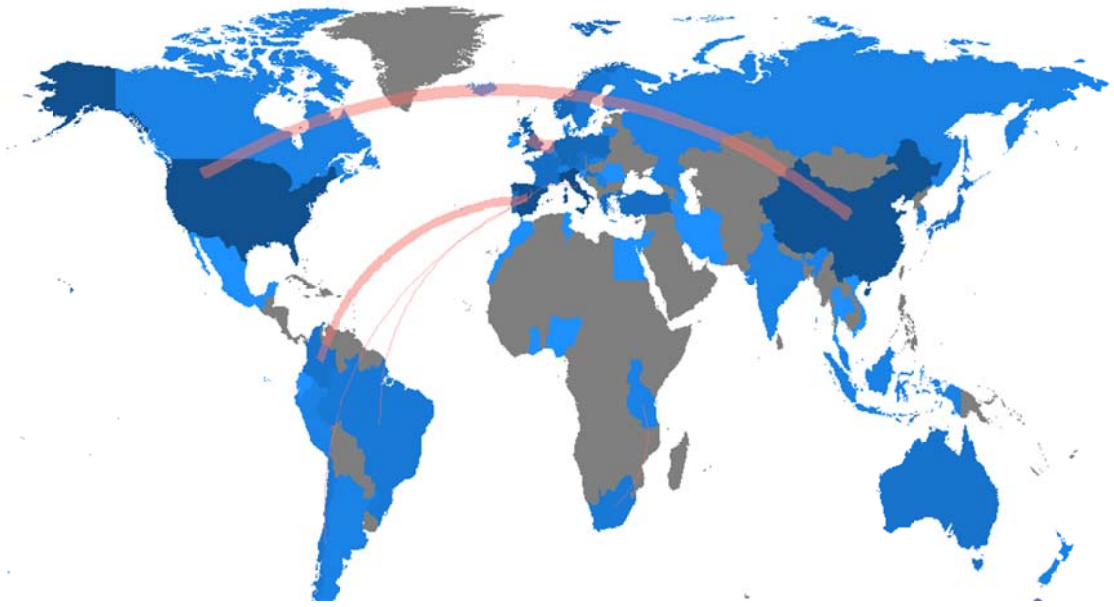
Figure 3. Publications by country of corresponding author's affiliation.



Source: own work.

Moreover, roughly one-third of publications are a result of international collaboration. Most of the retrieved primary documents are published as articles in journals (176), book (1), book chapters (13) and early access documents (5). In Figure 4, we show the established collaboration networks among authors in the field. The strongest networks have developed between researchers from the US and China, between Spain and several Latin American countries, and within European countries, mostly northern countries.

Figure 4. Countries' collaboration world map.



Source: own work.

The distribution of retrieved primary documents across the ten most relevant publication sources is presented in Table 1. Not surprisingly, the highest number of economic evaluation studies on cultural heritage was in the Journal of Cultural Heritage (JCH) and Sustainability. The two journals are very different in their level of field specialisation. While JCH is highly specialised with a narrow focus on cultural heritage, Sustainability is much broader in terms of scope. Four studies are published in the book Economics of Uniqueness (Licciardi & Amirtahmasebi, 2012). Economic evaluations of cultural heritage are published also in journals from the areas of cultural economics, heritage and tourism.

Table 1. Most relevant publication sources.

Sources	Articles
Journal of Cultural Heritage	11
Sustainability	11
Journal of Cultural Heritage Management and Sustainable Development	6
Economics of Uniqueness: Investing in historic city cores and cultural heritage assets for sustainable development	4
Journal of Cultural Economics	4
Tourism Management	4
International Journal of Heritage Studies	3
Tourism Economics	3
Ecosystem Services	2
European Planning Studies	2

Source: own work.

Citation analysis is aimed at discovering the most influential publications based on relationships among publications, where the impact of a publication is determined by the number of citations that it receives (Donthu et al., 2021). Table 2 shows the most cited publications from the retrieved sample. Leading with 129 citations is the study by Bowitz & Ibenholt (2009) in JCH. The paper distinguishes between different types of direct (turnover, employment, value added) and indirect effects of cultural heritage (input-output, multiplier, acceleration effects, derived and gravitational effects, and additional visitor spending). In this paper, they also point out that estimates of the impact of investment in culture are often unrealistically high and calculated for specific places. Two other studies that have been cited more than 100 times focus on approaches to economic valuation, in particular, the use of choice modelling (Choi et al., 2010), and the contingent valuation method (Kim et al., 2007).

Table 2. The most cited studies.

Paper	Total citations	TC per year	Normalized TC
Bowitz & Ibenholt (2009)	129	9.21	1.91
Choi et al. (2010)	128	9.85	2.91
Kim et al. (2007)	113	7.06	1.00
Bartoli et al. (2013)	83	8.30	3.46
Vejre et al. (2010)	73	5.62	1.66
Ciegis et al. (2009)	69	4.93	1.02
Holtorf (2015)	68	8.50	2.89
Vásquez et al. (2014)	66	7.33	2.00
Licciardi & Amirtahmasebi (2012)	59	5.36	4.41

Source: own work.

The most influential author according to h-index (3) is Peter Nijkamp, while the most cited author is Andy S. Choi with 134 citations (Table 3).

Table 3. Most influential authors ranked by h-index.

Paper	H_index	G_index	M_index	TC	NP	PY_start
Nijkamp P.	3	3	0.250	40	3	2011
Aguado L. F.	2	2	0.200	27	2	2013
Barreca A.	2	2	0.333	9	2	2017
Berg S.K.	2	2	0.333	19	2	2017
Choi A.S.	2	2	0.154	134	2	2010
Curto R.	2	2	0.333	9	2	2017
Giannakopoulou S.	2	2	0.286	9	2	2016
Kaliampakos D.	2	2	0.286	9	2	2016
Nestico A.	2	2	0.500	61	2	2019
Rolando D.	2	2	0.333	9	2	2017

Source: own work.

3.2. **Science mapping**

Within science mapping, we carried out co-citation analysis and bibliographic coupling. Co-citation analysis aims to discover thematic clusters based on the cited publications. Within this analysis, two of the primary documents are connected if they are co-cited in the reference list of another publication. Hence, co-citation analysis identifies well the seminal publications in the field. The deficiency of this method is that it leaves out recent publications and niche publications (Donthu et al., 2021). In Figure 5 we show the thematic map which is based on the centrality and density measures. The centrality measure is calculated based on Callon's Centrality index and shows the intensity of links between clusters. The value can be represented as a measure of the importance of a theme of the cluster in the whole network (Aria & Cuccurullo, 2017). Density indicates the internal strength of a cluster based on the strength of the links that connect keywords in the cluster (Yu & Muñoz-Justicia, 2020). More cohesive and integrated topics are characterised by higher density values. Accordingly, the map is divided into four quadrants. The upper-right quadrant represents very well-developed so-called "motor" themes. Value and valuation of cultural heritage are the motor themes of the studied documents. Niche themes, such as non-market and multi-criteria assessments of cultural heritage sites and buildings, are in the upper left themes, as they have strong internal but weak external links. Lower-left themes from the map are either emerging or losing the interest of the researchers. In the studied sample of documents, SWOT analysis and cultural institutions are recognised in this quadrant, as they are no longer in the research focus. In the lower-right quadrant, fundamental and general themes, such as cultural heritage economics and management, sustainability and tourism, are depicted

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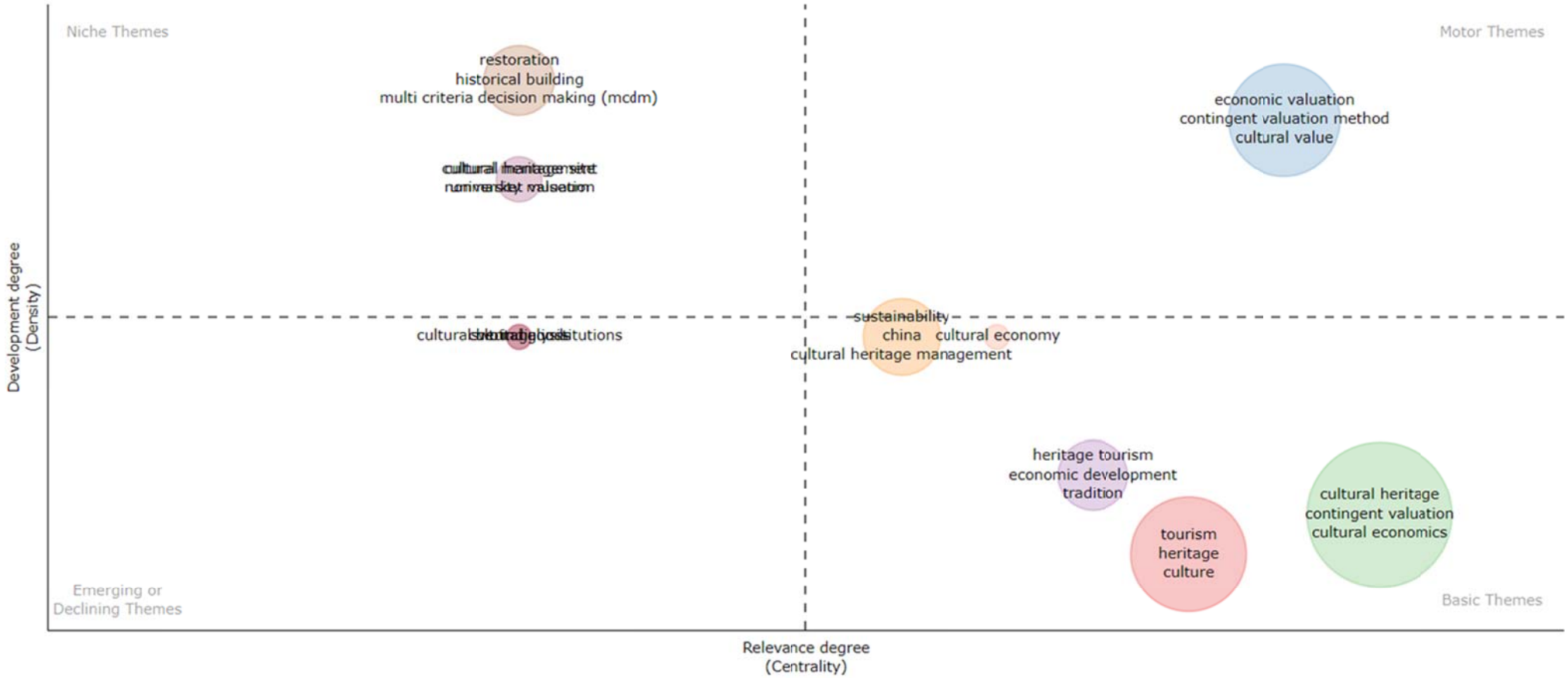
Figure 5. Thematic map.



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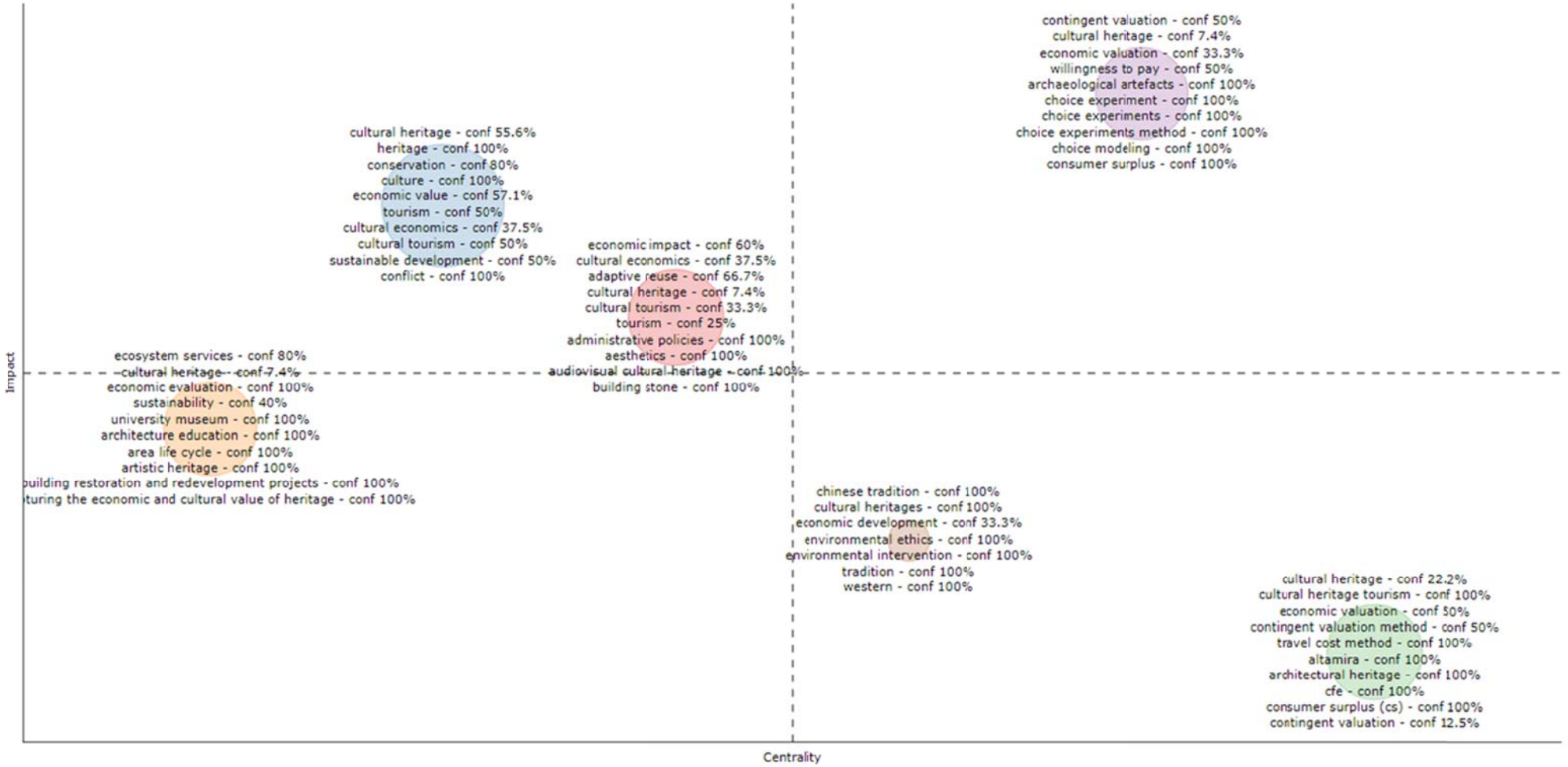
Another analysis that uncovers thematic clusters is bibliographic coupling. Contrary to co-citation analysis, the thematic clusters are based on the citing publications that are shared references of the primary documents (Donthu et al., 2021). This approach is based on measures of centrality and impact, where the impact measure depends on the total number of local citations of the document in the cluster. As this method captures also recent and niche publications, it enables us to discover trends and developments in the literature. Although 181 primary documents were retrieved, only 120 shared references in the same network. Reference lists of other publications were unconnected and were thus automatically removed. Based on their shared references, the 120 primary documents formed seven clusters, five of which are shown in Figure 6. Each of the other two remaining clusters contains just two documents and they are not illustrated in Figure 6. Impact measure depends on the total number of local citations of the document in the cluster.

Cluster 1 includes 21 documents in which the economic impact of cultural heritage is studied most directly, hence we label it the “economic impact of cultural heritage” cluster. These documents come from very different research areas, from prevailing business and economics to archaeology and art on one side and computer sciences on the other. In Cluster 2, 32 documents mostly discuss the value of cultural heritage from non-economic perspectives, such as architecture, arts and humanities, but also science and technology. We label this cluster as “value of cultural heritage”. Cluster 3 includes 19 documents that mostly deal with decision-making, based on various tools, such as AHD (analytical hierarchy process) and MDMC (multi-dimensional, multi-criteria analysis). Twelve documents related to applied economic studies of cultural heritage based on econometric techniques, form Cluster 4. In Cluster 5 we classify 28 economic evaluations, based on choice modelling techniques. Three documents from Cluster 6 study the impact of agriculture on cultural heritage, while Cluster 7 includes two conceptual papers dealing with ethical issues related to cultural heritage.

Figure 6. Bibliographic coupling clusters.



Source: own work.

3.3. **Characteristics of economic evaluations**

We classified 63 papers (35%) as being an economic evaluation of cultural heritage; other papers discuss cultural heritage from different angles. A single case study is a prevailing unit of analysis in economic evaluations (used in 47 papers, 75%) which are therefore mostly focused on the local geographical scope (31 papers, 49%). Most economic evaluations collected primary data (39 papers, 62%) and used quantitative methods (42 papers, 67%).

As evident from the thematic map in Figure 5, economic evaluation is already a developed part of cultural heritage research. The review of the analysed document highlights a prominent differentiation between economic evaluation studies and studies of heritage value. Economic evaluation studies consider benefits as well as costs which are measured as flows. Studies of heritage value consider value as a stock of benefits generated by cultural heritage, while costs are not accounted for.

The mainstream approaches of economic evaluation are contingent valuation methods, such as econometric techniques and choice modelling. Emerging valuation methods can be found in both types of studies and include multi-dimension multi-criteria methods, analytical hierarchy process methods as well as other non-parametric approaches. Strategic and other managerial tools are a part of the fundamentals of cultural heritage literature. A strong connection between cultural heritage and tourism is evident as the economic impact of cultural heritage is often manifested in tourism.

4. RECOMMENDATIONS AND CONCLUSIONS

The topic of economic valuation of cultural heritage is still a work in progress, experiencing significant growth. This paper aimed to provide a review of the literature on cultural heritage from the perspective of studying its economic impact. Using a bibliometric approach, we were able to provide a historical context of the field as well as a systematic overview of the main documents, authors, journals, and countries.

We identified five major clusters of documents dealing with the economic impact of cultural heritage, the value of cultural heritage, cultural heritage decision making, various economic evaluation methods and valuation techniques, the impact of other industries on cultural heritage, and some related ethical issues. In addition, we have identified heritage value and heritage valuation as the motor themes in the field, as well as niche themes such as non-market and multi-criteria assessments of cultural heritage sites and buildings. We recognised the economics and management of cultural heritage, along with tourism, as fundamental themes. Although the volume of research has expanded significantly in recent years, it is not expected to slow down, as cultural heritage has become an important area on the EU policy agenda and as such receives much attention and financial support. The importance of institutional support for the development of a particular research area is also reflected in the time pattern of publications from our sample.

Our analysis clearly shows that different fields approach economic evaluation differently; economists understand economic evaluation differently than other scientific fields. In terms of research, this review reveals a lacuna of studies that would examine the impact of cultural heritage beyond the local context, the need to collect additional data on cultural heritage (or to make better use of existing secondary data), and the opportunity to use a mixed methods approach to investigate novel topics in cultural heritage. Currently, contingent valuation methods dominate, while there is room for further development of other methods, such as

multicriteria methods, analytical hierarchy process methods, and other nonparametric approaches. In addition, a large number of publications has emerged on the economic impacts of the cultural heritage linked to tourism, while the economic effects of cultural heritage in other areas (environmental, social, and other economic sectors) have not yet been adequately studied. Thus, we recognise the need for more comprehensive studies of cultural heritage impacts that would cover all - economic, cultural, environmental, and social impacts.

The limitations of our study lie primarily in the fact that we obtained all of our data only from the Web of Science database, which means that our results are sample-specific and some selection bias may be present in our findings. Nevertheless, we believe our results provide important insights for researchers aiming to further develop the field.

BIBLIOGRAPHY

Appio, F. P., Cesaroni, F., & di Minin, A. (2014). **Visualizing the structure and bridges of the intellectual property management and strategy literature: A document co-citation analysis.** ***Scientometrics***, *101*(1), 623–661. https://doi.org/10.1007/s11192-014-1329-0

Aria, M., & Cuccurullo, C. (2017): **bibliometrix: An R-tool for comprehensive science mapping analysis.** ***Journal of Informetrics***, *11*(4), 959–975. https://doi.org/10.1016/j.joi.2017.08.007

Ashworth, G. J., Graham, B., & Tunbridge, J. E. (2007): ***Pluralising pasts: Heritage, identity and place in multicultural societies***. Pluto Press.

Bartoli, G., Betti, M., & Giordano, S. (2013): **In situ static and dynamic investigations on the " Torre Grossa" masonry tower.** ***Engineering Structures***, *52*, 718–733. https://doi.org/10.1016/j.engstruct.2013.01.030

Batistič, S., & der Laken, P. (2019): **History, evolution and future of big data and analytics: A bibliometric analysis of its relationship to performance in organizations.** ***British Journal of Management***, *30*(2), 229–251. https://doi.org/10.1111/1467-8551.12340

Bowitz, E., & Ibenholt, K. (2009): **Economic impacts of cultural heritage: Research and perspectives.** ***Journal of Cultural Heritage***, *10*(1), 1–8. https://doi.org/10.1016/j.culher.2008.09.002

Choi, A. S., Ritchie, B. W., Papandrea, F., & Bennett, J. (2010): **Economic valuation of cultural heritage sites: A choice modeling approach.** ***Tourism Management***, *31*(2), 213–220. https://doi.org/10.1016/j.tourman.2009.02.014

Christodulaki, M., & Sloggett, R. (2017): **Reporting on a survey of peer-reviewed publishing in cultural materials conservation: Perceptions, preferences, and decision-making.** ***Studies in Conservation***, *62*(6), 354–370. https://doi.org/10.1080/00393630.2016.1151098

Ciegis, R., Ramanauskiene, J., & Startiene, G. (2009): **Theoretical reasoning of the use of indicators and indices for sustainable development assessment.** ***Engineering Economics***, *3*(63), 33–40.

Council of Europe. (2005): ***Framework convention on the value of cultural heritage for society (Faro Convention).*** https://www.coe.int/en/web/culture-and-heritage/faro-convention

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021): **How to conduct a bibliometric analysis: An overview and guidelines.** ***Journal of Business Research***, *133*(March), 285–296. https://doi.org/10.1016/j.jbusres.2021.04.070

Donthu, N., Kumar, S., & Pattnaik, D. (2020): **Forty-five years of Journal of Business Research: A bibliometric analysis.** ***Journal of Business Research***, *109*(October 2019), 1–14. https://doi.org/10.1016/j.jbusres.2019.10.039

Holtorf, C. (2015): **Averting loss aversion in cultural heritage.** ***International Journal of Heritage Studies***, *21*(4), 405–421. https://doi.org/10.1080/13527258.2014.938766

Jagodzińska, K., Sanetra-Szeliga, J., Purchla, J., van Balen, K., Thys, C., Vandesande, A., & van der Auwera, S. (2015): ***Cultural heritage counts for Europe: Full report***.

Katrakazis, T., Heritage, A., Dillon, C., Juvan, P., & Golfomitsou, S. (2018**): Enhancing research impact in heritage conservation.** ***Studies in Conservation***, *63*(8), 450–465. https://doi.org/10.1080/00393630.2018.1491719

Kepakisan, I. W., Paturusi, S. A., Dwijendra, N. K. A., & Putra, I. D. G. A. D. (2021): **Research on reconstruction of historical buildings: Bibliometric studies in international journals.** ***International Journal of Engineering and Emerging Technology***, *6*(2), 32–39. https://doi.org/https://doi.org/10.24843/IJEET.2021.v06.i01.p06

Khanra, S., Dhir, A., Kaur, P., & Mäntymäki, M. (2021): **Bibliometric analysis and literature review of ecotourism: Toward sustainable development.** ***Tourism Management Perspectives***, *37*(October 2020), 1–15. https://doi.org/10.1016/j.tmp.2020.100777

Kim, S. S., Wong, K. K. F., & Cho, M. (2007): **Assessing the economic value of a world heritage site and willingness-to-pay determinants: A case of Changdeok Palace.** ***Tourism Management***, *28*(1), 317–322. https://doi.org/10.1016/j.tourman.2005.12.024

Licciardi, G., & Amirtahmasebi, R. (Eds.), (2012): ***The economics of uniqueness: Investing in historic city cores and cultural heritage assets for sustainable development***. World Bank Publications.

Small, H. (1999): **Visualizing science by citation mapping.** ***Journal of the American Society for Information Science***, *50*(9), 799–813. https://doi.org/10.1002/(SICI)1097-4571(1999)50:9<799::AID-ASI9>3.0.CO;2-G

Throsby, D. (2012): **Heritage economics: A conceptual framework.** In G. Licciardi & R. Amirtahmasebi (Eds.)**,** ***The Economics of Uniqueness: Investing in historic city cores and cultural heritage assets for sustainable development*** (pp. 45–74). World Bank.

Vásquez, J. A., Zuñiga, S., Tala, F., Piaget, N., Rodríguez, D. C., & Vega, J. M. A. (2014): **Economic valuation of kelp forests in northern Chile: values of goods and services of the ecosystem.** ***Journal of Applied Phycology***, *26*(2), 1081–1088. https://doi.org/10.1007/s10811-013-0173-6

Vejre, H., Jensen, F. S., & Thorsen, B. J. (2010): **Demonstrating the importance of intangible ecosystem services from peri-urban landscapes.** ***Ecological Complexity***, *7*(3), 338–348. https://doi.org/10.1016/j.ecocom.2009.09.005

Vernieres, M., Patin, V., Mengin, C., Geronimi, V., Dalmas, L., Noel, J.-F., Tsang, J., & Sang, K. (2012): ***Methods for the economic valuation of urban heritage: A sustainability-based approach***.

Yu, J., & Muñoz-Justicia, J. (2020): **A bibliometric overview of twitter-related studies indexed in Web of Science.** ***Future Internet***, *12*(5), 91. https://doi.org/10.3390/fi12050091

Zhang, J., Yu, Q., Zheng, F., Long, C., Lu, Z., & Duan, Z. (2016): **Comparing keywords plus of WOS and author keywords: A case study of patient adherence research.** ***Journal of the Association for Information Science and Technology***, *67*(4), 967–972. https://doi.org/10.1002/asi.23437

Zupic, I., & Čater, T. (2014): **Bibliometric methods in management and organization.** ***Organizational Research Methods***, *18*(3), 1–44. https://doi.org/10.1177/1094428114562629

APPENDIX 1. SEARCH QUERY

AB=("Cultural heritage" AND ("economics" OR "economic analysis" OR "economic impact" OR "economic value" OR "economic evaluation")) OR TI=("Cultural heritage" AND ("economics" OR "economic analysis" OR "economic impact" OR "economic value" OR "economic evaluation")) OR AK=("Cultural heritage" AND ("economics" OR "economic analysis" OR "economic impact" OR "economic value" OR "economic evaluation")) OR KP=("Cultural heritage" AND ("economics" OR "economic analysis" OR "economic impact" OR "economic value" OR "economic evaluation"))

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