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FOREWORD to
INSIGHTS INTO REGIONAL DEVELOPMENT
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Dear readers,

As an expert of NATO Science and Technology Organization (STO) I want to express my cordial support to attempts of the international scientific community to immerse into peculiarities of regional development, which would lead to an understanding of contemporary patterns showing developing trajectories and directions.

NATO Science and Technology Organization (STO) delivers innovation, advice, and scientific solutions to meet the Alliance's ever-changing needs. The STO is the world's largest collaborative research forum in the field of defence and security. It nurtures a community of more than 6,000 actively engaged scientists. The STO network draws upon the expertise of more than 200,000 people in Allied and partner nations.

Therefore, a wide range of cooperation and collaboration with a variety of stakeholders, engaged in regional development issues is seen as fruitful and mutually beneficial in the path, which leads to overall peace and prosperity of all nations worldwide.

With my respectful greetings,

NATO
OTAN

Tomas PLĖTA
NATO Expert

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AWARENESS OF FORESIGHT THROUGH EDUCATION IN EGYPT: A CASE STUDY FROM EGYPTIAN UNIVERSITY*

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Abstract. Egypt has extensive expertise and experience in future centres through cooperation between independent research institutes and its external partners. The important step forward will be the combination of this experience and the competence of Egyptian institutions to eventually develop a bottom-up regional community of connected educators, scientists, students, practitioners, policymakers and local communities for future foresight. This paper examines the current state of foresight of future and practices among Egyptian universities' faculty members and students, proposing to increase public awareness and comprehension of foresight of future promotion performance in Egypt. A questionnaire designed based on an intensive online project-based bootcamp was done by entrepreneurship club at Cairo University to increase the participants' awareness of the foresight. The questionnaire was distributed to 173 students and participants who attended the camp from 10 faculties of Cairo University and other Egyptian universities. The findings revealed that students were unaware of the Framework Foresight (FF) program and had poor knowledge. Students' awareness of the FF program correlated positively with educational level, age, gender, and specialization. This work provides an approach to understanding the quality of foresight knowledge used or generated throughout the foresight exercises and their significance in sustainable development challenges.

Keywords: Awareness; Foresight of Future; Egypt, Egyptian universities; Sustainable Development; Education

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1. Introduction

Strategic foresight, also known as future studies, helps companies anticipate opportunities and challenges and then adopt strategies to benefit competitively (Rohrbeck *et al*., 2007). The ability of foresight techniques to expand the variety of futures addressed (Uruea, 2019) and improve future understanding is often recognised (Rhisiart, Miller, & Brooks, 2015; Edgar, Abouzeedan, & Hedner, 2011; Urueña, 2019; Rezk et al., 2020).

According to **(**Polak 1971, 1973), "the picture of the future is constructed of the memories and expectations involved. It is a set of long-term goals that emphasize an individual's endless possibilities. An image of the future can therefore be characterized as a mental structure that addresses possible states. It consists of a blend of thoughts, beliefs, and wishes and observations and current information. This impacts both consciously and unconsciously a person's choice and derives both from the truth and from fantasy. It ultimately directs one's decisions and behaviours". Reflecting on the intended impact of these images on how our present actions and our attitude towards the future are determined, therefore, enables us to recognize the necessity for a systemic method to analyze these images.

The science of future foresight is considered one of the most promising sciences in planning, and the world has begun to pay attention to it, especially after the coronavirus pandemic emerged (Mastio & Dovey, 2021; Aichouni et al., 2021; Lu et al., 2021; Torres & Pena, 2021; Chen et al., 2021; Bourmistrov & Amo, 2022) . Thinking about foresight began institutionally in the RAND Corporation in the 1950s in the military field, and in the 1970s, foresight began to be used in Japan in science and technology and the economic field within the Shell Company.
Over time, there were some Arab attempts to teach foresight from time to time, but it was not taught in Egyptian public universities on a continuous, permanent basis. Foresight is a science with methodology and methods to shape the future, search for opportunities and exploit them, and avoid risks and dealings (Rene-rohrbeck.de, 2021)

It is a systematic way of thinking, discussing, and shaping the future, and it has more than 33 ways around the world (Popper, 2008). Foresight is the first step before the planning process. It is the so-called process of forward-thinking, and we always discover and build the future with a span of 10 to 30 years. What is meant by the future here is not a single future that we discover and build, but several futures, including a preferred future, a bad future, a future in a state of stability of the current situation and a catastrophic future. Also, foresight is not limited to a specific field but extends to all fields such as the scientific, economic, political, and educational research fields (Vecchiato & Roveda, 2010; Schoemaker & Day, 2021; van Veen & Ortt, 2021; Robinson et al., 2021; Vinayavekhin et al. 2021) discovering future technology and the status of institutions or countries and other fields (Amniattalab & Ansari, 2016; Sarpong & Maclean, 2016; Sarpong & Hartman, 2018; Haarhaus & Liening, 2020; Burt & Nair, 2020). As mentioned previously, this paper aims to raise awareness among faculty members and students in thinking about the future and building it and using future foresight.

Foresight Education embodies a systematic process that moves students from open-ended inquiry, through rigorous research, which then opens again to reveal creative solutions based on logical, valid conclusions (Foresigh education, 2021).

An intensive online boot camp for three days, based on a project, was created to dive the participants into the fundamental aspects of foresight work. This hands-on method combines theory, exercises, and conversations in a sample project through our framework foresight process. The participants receive a textbook, reflect on the future, accompanying worksheets and a certificate of completion in advance. Foresight studies inform one about various parts of thinking about how the world operates, such as the study of causes and effects through systems thought,

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societal change, and scenario planning. The curriculum is intended to immerse participants in future research and foresight analysis.

The program aims to help build capacity for up-and-coming public sector leaders to have the foresight and make decisions under uncertain conditions and risk. At the same time, the program will inspire participants to take desirable futures into their own hands, lead a life with a purpose, and enhance their self-esteem. To answer research questions on how students and participants share in the future, purposeful sampling has been used, and semi-structured online interviews have been conducted.

The following steps are followed to shift students and faculty members from thinking about the present to thinking about the future.

1.1. Defining future foresight and its importance

Since the term "future foresight" was not used before in practical or educational life, many students and faculty members did not touch on that term. Here the methodology relied on simplifying the concept of future foresight through examples of the future of emerging technologies that can change the future and presenting some successful experiences for several institutions to use foresight and how foresight aims to shape the future and the difference between it and planning. The concept of foresight was introduced without going into the traditional theories but was presented as a method that aims to discover future opportunities.

1.2. Resist thinking about past and present problems

One of the most important obstacles focused on raising awareness among students and faculty members in overcoming the resistance to thinking about the past and the present problems (e Cunha, Palma, & da Costa, 2006). That is considered an obstacle to thinking about the future because students or faculty members are not accustomed to thinking about the future beyond 10 years regardless of current problems. It may also be due to some people's lack of interest in the distant future and the finding that the most time we think ahead is about is 5 years as a maximum. This point was challenged during their participation in the camp using letters from the future that were sent after 20 years describing it from various social, technological, and even work-related angles.

1.3. Training to think about the future by studying the present and the past to learn from it

The methodology also focused on preparing for the future by knowing the topic's current status to be foreseen. Many models of interest to students and faculty members were presented to know the topic's future and differed according to the personal interests of each participant, but there was a common goal to know all the factors that affect the topic, and the intended participants were trained in some ways that is used in current situation studies such as social, environmental, political, legal, technological, and economic case studies, which is known as (PESTEL, STEEP) analysis (Acar, 2015).

This step is considered important to identify the driving or changing forces for the future of the case to be foreseen, and it allowed the participants to identify those forces that could affect the future. At the same time, it shares the uncertainty or a degree of ambiguity about the trends, whether positive or negative.

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1.4. Drawing future pictures and writing scenarios

Drawing future pictures is the penultimate step in writing scenarios, and it was completed under the direction of students and faculty members to know and shape the future. This stage relied on the driving forces for change identified by the participants, and at the same time, it reflects the experience and background of each participant. Each picture of the future is a desirable and preferred image and, at the same time, a rational expectation that it can happen. Negative images have also been extracted, which can also happen if things go wrong in the future. The participants wrote the reasons that could lead to achieving that future image, as this step aims to extract both innovative and traditional ideas to reach the desired future and to avoid negative images of the future. The participants were trained in the methods of writing the script through a compilation of images and future events that are expected to occur and writing them into a personal narrative or through the descriptive narration method of the future, about the current situation that has led to the arrival of the future picture. All of these qualities will help transformative groom participants with future thinking skills that Egypt needs through:

1. Energizing the creativity
2. Expanding the connections
3. Exposure to potential future
4. Encouragement to be more aware
5. Enabling the thinking processes to expand
6. Education in different aspects of thinking

2. Methodology

This study used a survey questionnaire to get primary data. Given the positive nature of the research, an in-depth assessment of the existing foresight of future knowledge and practices was initially carried out. A questionnaire online was developed for the collection of data using the Google survey tool. As mentioned below, the study procedure has been divided into three steps: survey design, data collection, and data analysis.

2.1. Survey Design

The survey questionnaire was meant to help students learn about the future and validate the 2016 Rashid and Lieder model (Lieder et al. 2017) (environmental impact, resource scarcity, and economic benefits). After experts had verified the questionnaire prepared by the researchers, the researchers updated it in response to the experts' criticism. The survey questionnaire, which was divided into three sections, featured questions on the following topics: (1) the demographic characteristics of respondents, (2) their awareness of the foresight of future, and (3) foresight behaviours, covered in 18 questions.

2.2. Data Collection

A Google-based online survey questionnaire was produced and disseminated to participants from various institutions and faculties. During a 15-day sampling period, around 173 faculty members and students and participants from various universities were contacted. Following the initial invites, a follow-up email reminder was sent to respondents once during the data collecting period. A total of 173 completed responses were gathered at a response rate of 100%. To guarantee informed consent and provide participants with the option to decline participation, the survey's initial page included an informational booklet about the research and data usage.

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2. 3. Data Analysis

The last stage was to analyze the tools and procedures utilized to interpret the results. SPSS 24.0 was used to analyze the survey data. Owing to the study's exploratory nature, which was presented primarily through charts and diagrams, a *Cronbach Alpha* test was used to determine the instrument's reliability. Correlation and regression analyses were used to determine Lieder and Rashid's three-pillar, model (Lieder, Asif & Rashid, 2017).

3. Findings and Discussion

3.1. Demographics

The survey's demographic questions provided an understanding of the faculty members and students, their location, and their experience in the field (Figure 1). The more significant percentage (78%) of students came from 10 faculties at Cairo University and 22% from other higher education institutions, such as Ain Shams University and Alexandria University.The age of participants ranged between 19 and 70, with a mean age of approximately 28 years and a standard deviation of 10.69 years. Of the participants, 126 were females, and 47 were males; 79 were students, 77 were graduates, and 17 did not mention any occupational role.

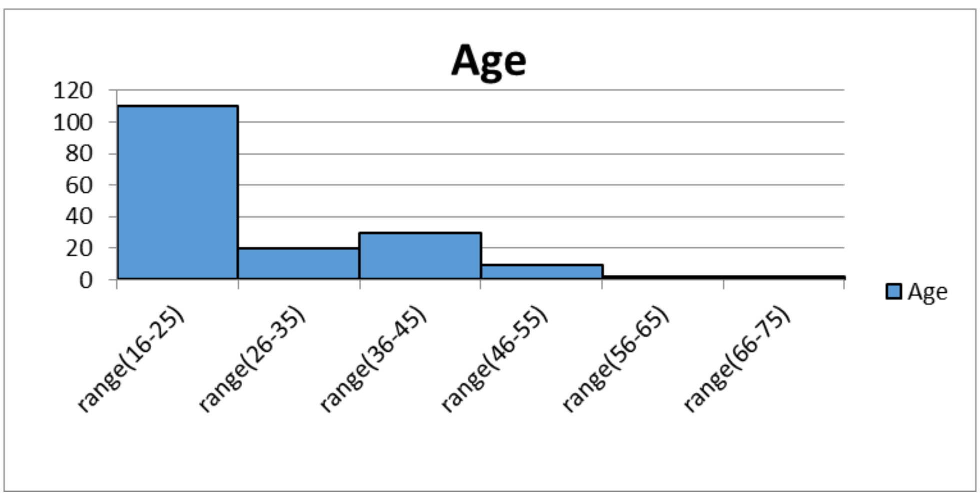

Figure 1. Participants' age

Of the participants, 122 were from Cairo University, 10 were from Al Azhar University, and the rest were from different universities; 125 participants were from the faculty of science, 12 were from the faculty of agriculture, 10 were studying home economics, and the rest were from other faculties. Twenty-two participants specialized in biochemistry, 17 in chemistry and zoology, 15 in biophysics, 13 in chemistry and microbiology, and the rest were from other disciplines role (Fig 2, 3, 4).

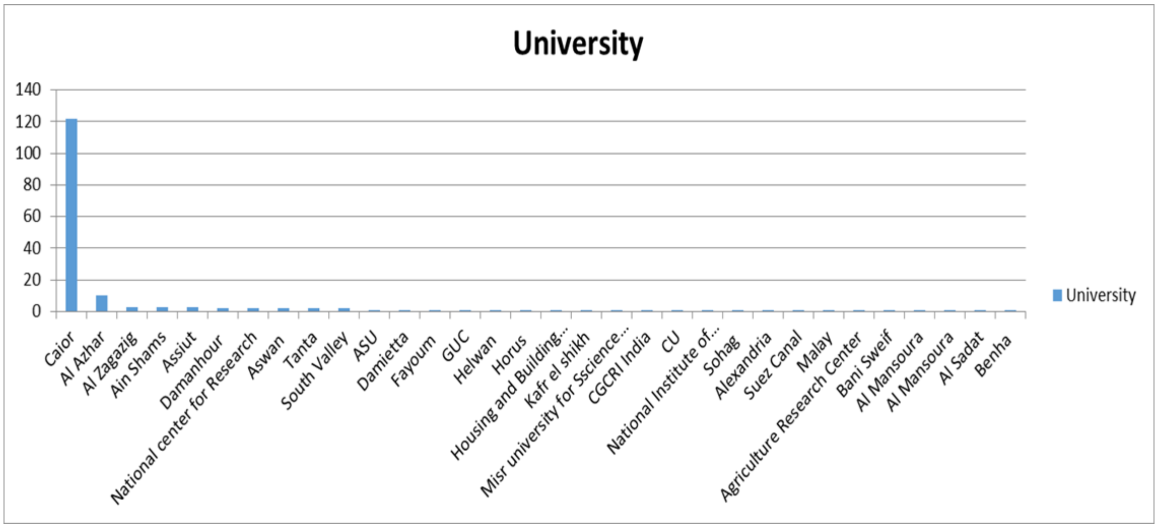

Figure 2. Participating Universities in survey

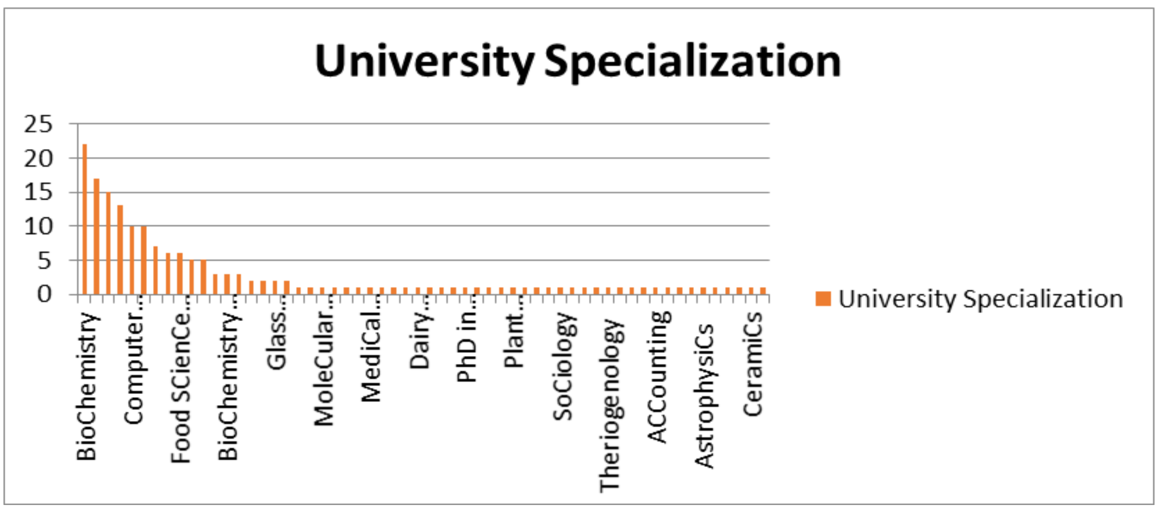

Figure 3. Participating survey University Specialization

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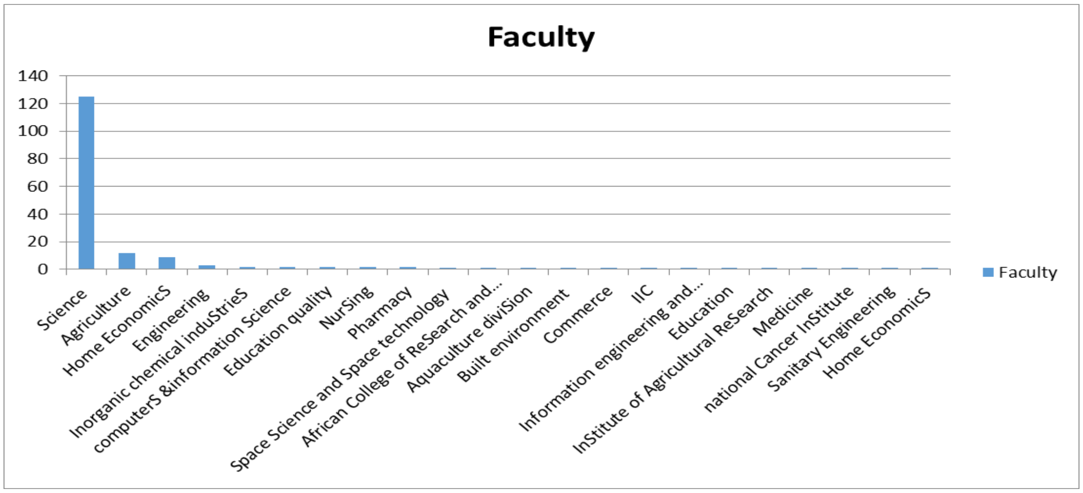

Figure 4. Participating survey Faculty Specialization

By analysis of survey, the results showed the following:

1. Of the 173 participants, 54 (31%) were familiar with the foresight concept, while 119 (69%) participants have never heard it before.
2. Ninety-seven participants (56%) agreed that foresight aims at spotting alternatives to the targeted future, 5 (3%) disagreed, and 71 (41%) were not sure.
3. One hundred sixteen participants (91%) agreed the university leadership is concerned about foresight to achieve Egypt Vision of 2030, while 11 (9%) disagreed.
4. Eighty-nine participants (83%) agreed the university leadership is concerned about foresight to address transformations created by trade, while 18 participants (9%) disagreed.
5. Thirty-five participants (20%) knew that the university encompasses a department or a project team responsible for FF, 33 (19%) disagreed, and 105 participants (61%) were not sure.
6. Fifty-five participants (79%) knew that the university developed a method to enhance trade technologies and the human capital capabilities for the Egypt Vision of 2030, while 16 (20%) disagreed.
7. Sixty-one participants (67%) agreed that the university provides coaching in foresight to its leaders and workers, while 30 (33%) disagreed. Sixty-one participants (35%) agreed that the university has a clear policy to build a network of foresight specialists, while 30 (17%) disagreed.
8. One hundred twenty-five participants (72%) agreed that foresight starts from leaders and experts and then is enforced through a systematic process in the university, while 5 (28%) disagreed.
9. One hundred thirty-six participants (79%) agreed that successful foresight identifies and exploits new future opportunities by investing in the experience of specialists, decision-makers, and business house owners, 5 (3%) disagreed, and 31 (18%) were not sure.
10. One hundred twenty-five participants (72%) agreed that the university encompasses a department or an individual responsible for quality assurance, 5 (3%) disagreed, and 42 (24%) were not sure.
11. One hundred thirteen participants (65%) agreed that the university has an associate degree ISO-certified management system, 5 (3%) disagreed, and 51 (29%) were not sure.

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12. Ninety-nine participants (57%) agreed that the university encompasses a strategic arrangement in line with the 2030 Egypt Vision, 9 (5%) disagreed, and 65(37%) were not sure.
13. One hundred sixty-four participants (94%) supported determining foresight departments or centres in Egyptian universities, while 9 (5%) disagreed.
14. Thirty-one participants (65%) knew that the university encompasses a department or an individual responsible for foresight, 30(3%) disagreed, and 112(29%) were not sure.
15. Twenty-two participants knew that their university had performed a foresight study before, 21 stated their university has not, and 110 were unsure.
16. Twenty-six participants have attended courses on future foresight before, while 147 have not.

Table 1. The list of survey questions and answers

Statements and Questions	Yes	No	I do not know
1. Have you ever heard of the concept of foresight?	54	119	0
2. The objective of foresight is to spot the alternatives of a targeted future.	97	5	71
3. The University's leadership regarding worries is bothered about foresight to attain the goals of the 2030 Egypt Vision	116	11	46
4. The University's leadership regarding worries is bothered about foresight to address transformations created by trade.	89	18	66
5. The University encompasses a department or experts liable for foresight	35	33	105
6. The University developed a method to make human capital capabilities needed by the 2030 Egypt Vision and also the trade technologies	59	16	98
7. The University provides coaching to its leadership and workers in areas of foresight.	61	30	82
8. The University developed a method to draw in competencies within foresight and futures studies.	55	16	102
9. the university may develop a clear policy to form a network of foresight specialists.	39	22	112
10. Foresight starts from people (Leadership and experts) and will be enforced through systematic processes within the university.	125	5	43
11. Successful foresight identifies and exploits new future opportunities by investing in the experience of specialists, decision-makers, and business owners.	136	5	31
12. The university encompasses a department or an individual liable for quality.	125	6	42
13. The university has an associate degree ISO-certified management system.	113	9	51
14. The university encompasses a strategic arrangement in line with the 2030 Egypt Vision.	99	9	65
15. Does one support the choice to determine foresight departments or centres in Egyptian universities?	164	9	0
16. The university encompasses a department or an individual liable for foresight.	31	30	112
17. Did your university perform a foresight study previously?	22	41	110
18. Have you ever attended any courses on future foresight?	26	147	0

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4. Conclusions and Recommendations

Social foresight is vital, and, as indicated previously, new programmes are readily available to provide an FF approach by applying future skills. The following activities are recommended if the education sector is to become a strong and central role in the establishment of social foresight:
1. Universities already active in FF must become leaders in the mentorship of others, strengthen their learning and aid others. A determined university leadership could do this.
2. The outstanding work previously shown in universities during this study needs to be broadly promoted through a conference on "Futures in education" wherever FF practitioners present their work.
3. The construction of national and qualified FF bodies shaped by existing competent organizations would alter current skills learning through journals, conferences, networking and professional growth and so on.
4. Collaboration between institutions and the local community could effectively make students feel hopeful and committed to their future.

The creation of social foresight was the guiding framework for this endeavour. It is quite obvious that education plays an important role in this through a thorough FF approach. By incorporating Future thinking, tools, concepts and language into the thinking pattern of students and teachers, present and future generations, powerful thinking and development tools are provided to imagine, create, and understand the future in ways to free up the imagination of what is possible and worthwhile to work towards. It fights and provides alternatives to the reduction of the collective imagination. Often this is the ideal of social prospects.

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COMMUNITY PARTICIPATION: A PRAGMATIC SOLUTION TO NEGATIVE IMPACTS OF COVID-19 ON HOUSEHOLDS' SOCIOECONOMIC LIVES

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Abstract. The worldwide outbreak of COVID-19 and its impacts have become an academic concern. The concern has generated a plethora of studies and reports that have identified a number of negative impacts of COVID-19 on household socioeconomic lives in Nigeria. Therefore, Nigerian governments at different levels in conjunction with several international organisations have tried to deal with these impacts; however, the expected result is far below the reality. Advocacy of adopting bottom-top approaches to solving various community problems and the grand relevance of Community-Based Organisations (CBOs), as a form of community participation, prompted this study. The specific objective of the study was to investigate the roles of CBOs in complementing the governments' efforts to alleviate the negative impacts on household socioeconomic lives. The location of the study was Ife-East Local Government Area of Osun State, Nigeria where there existed a number of various CBOs as in other part of the country. The study was cross-sectional and exploratory in nature while a qualitative method, in-depth face-to-face interview, was employed to collect the primary data for this study. The study covered all the 10 electoral wards that exist in the study location. Via purposive sampling method, 5 CBOs were selected in each of the 10 wards, making a total size of 50 CBOs. To obtain the primary data, 2 CBO leaders (a man and a woman) and 4 CBO members (2 men and 2 women) among the 5 selected CBOs in each of the wards were purposively selected, making a total sample size of 60 from all the electoral wards for the in-depths face-to-face interview. Both thematic and contents analyses were utilized to analyze the collected data. The study found that the CBOs rendered economic support in forms of pooling resources together for fund provision, purchasing goods in large quantities at lower prices, creating platforms to attract loans, assistance and to invite experts for empowerment programmes for their members. The study further found that the CBO members benefited social support in form of provision of platforms to share their experiences, to boost members' morale to avert psychological challenges that tended to generate committing suicide and to invite medical experts on sensitization programmes about COVID-19 and its effects. As this study solely focused on ways that several aspects of households' socioeconomic lives were shielded from the negative impacts of the pandemic through community participation via various CBOs, this study solicited future studies that shall focus mainly on the challenges that the CBOs encounter in realizing this goal and the means of coping with the highlighted challenges.

Keywords community participation; community-based organisations; negative impacts of COVID-19; socioeconomic lives

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1. Introduction

The worldwide outbreak of Corona virus, also known as COVID-19, and the danger the virus poses to humanity has swayed various international organisations via their agencies, government at different levels and varieties of non-governmental organizations into various actions to curtail the spread of the deadly virus and the menace the virus possesses. For instance, the danger and the rate at which the virus spreads throughout the world within a short period of time between 2019 and 2020 have prompted the Word Health Organization (2020) to declare that the virus is pandemic. Moreover, the World Bank, as the financial institution of the United Nations, has earmarked a large sum of money to finance research to discover ways and medications to curtail the menace of the disease and the negative economic impact of the virus (UNDP, 2020; Yuri, 2020). In the same vein, the concern about the healthy condition of Nigerians has prompted the government of the country to take a range of actions to contain the spread of the disease, this include the declarations of border closure to prevent movement of people in and out of the country, total lockdown to restrict movement of people in the country and introduction of different phases of the lockdown removal (Adegboye, Adekunle and Gayawan, 2020; Adnan, 2020; Umerie and Nnamok, 2020). All these series of actions were adopted in most of the countries that the disease ravages.

These actions, as a means of containing the spread of the virus, constituted a hindrance to normal daily activities of people around the globe. Within few months, the pandemic that started a health issue metamorphosed into socio-economic challenges, hence, both foreign and indigenous studies have indicated an academic concern on the negative effects of these activities on livelihood of people in the world (Mofijur, Fattah, Alam, Islam, Ong, Rahman, Najafi, Ahmed, Uddin, Mahlia, 2021; Jacob, Abigeal, Lydia, 2020; Inegbedion, 2021; Leslie, Fadaak, Davies, Davies, Blaak, Forest, Green and Conly, 2020; Singh and Singh, 2020; Umerie and Nnamok, 2020). The concern has generated a plethora of studies that have identified several negative socio-economic impacts of COVID-19 among households in Nigeria as in the other countries as well (Ajibo, 2020; Akanni and Gabriel, 2020; Ashraf, 2020; Kazeem, 2020; Nicola, 2020; Olu and Irabor, 2020; Orhero and Oghuvbu, 2020).

Moreover, Nigerian governments at different levels have tried to deal with these impacts by provision and distribution of food stuff as well as rendering financial assistance to people in Nigeria as a way to support their purchasing power as short-term palliatives during the lockdown. However, the expected result is far below the reality. In complementing the efforts of Nigerian government to promote development at the grassroots level and to solve varieties of community problems, a plethora of studies have advocated adopting bottom-top approaches and this advocacy further emphasizes the grand relevance of Community-Based Organisations (CBOs) as a platform for community participation (Ajani and Fakunle, 2021; Blandon and Jaramillo, 2020; Brunton, James, Alison, Farah, Sandy, Josephine, 2017; Okinono, Salleh and Badariah, 2015). Therefore, from the vantage point of health, illness and behavioural studies as well as change and development, this current study set out with the sole and specific objective of investigating the roles of CBOs, as a platform for community participation, in complementing government’s efforts to manage or alleviate the negative impacts of COVID-19 on household socioeconomic lives.

1.1 Research aim
The sole aim of the study was to explore the roles of CBOs in alleviating the negative impacts of COVID-19 on household socioeconomic lives of the members of these CBOs

1.2 Research question
What were the roles of CBOs in supporting members on alleviation of negative impacts of COVID-19 on household socioeconomic lives?

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2. Review of Relevant Literature

In physical sciences, extensive empirical studies have been carried out on the adverse effect of corona virus in the body of the infected persons. Also, at the global level, the World Health Organisation (2020) has embarked on sensitization programmes and published a series of articles on the spread, effects, containment of corona virus, while at the national level, the Nigeria Centre for Disease Control (NCDC) as the government agency in the country has continued to enlighten the general public on the state of the disease, the precautionary measures to take to avoid being infected and ways to manage the disease being contacted (Kazeem, 2020; Umerie and Nnamok, 2020). Moreover, this agency has continued to publish the number of the infected people in the country according to the States of residents of the infected.

An astronomical increase in the number of the infected people in Nigeria published by NCDC swayed Nigeria government into imposition of movement restriction into and within the country as well as a ban on all kinds of social activities that involves the gathering of people. As these activities constituted a means of taking precautions to curtail the spread of the virus, on the other hand, they also denotes the origin of additional socio-economic challenges for the households in the country as this is also the situation in some other countries (Akanni and Gabriel, 2020; Nicola, 2020; Singh and Singh, 2020). Studies have asserted that the global outbreak of COVID-19 and different measures which government has taken to curb the widespread of the disease have generated both positive and negative impacts while reports further established that the negative impact of the disease manifested mainly in social and economic lives among the households in Nigeria (Ajibo, 2020; Olu and Irabor, 2020; Orhero and Oghuvbu, 2020). For instance, according to Adnan (2020) and Jacob, *et al*. (2020), curtailing the spread of corona virus across the countries threatened a lager proportion of social life of the masses as there was postponement or total cancellation of social engagements, festivals and ceremonies, while recreation centres, both privately and publicly owned institutions of learning, super markets and religion places or worship centres were closed.

Moreover, the economic implication of the cancellation and closure tended to manifest in reduction in household income level of the people whose sources of income were in these centres. However, the introduction of social/physical distancing and quarantine, as among the measures to contain the spread of the virus, has prompted people to devise means of working from home as a way to survive the lockdown. Hence, this suggestion assumed that people still maintained their sources of income during the lockdown. Contrary to this suggestion, a number of indigenous studies in Nigeria have found that the lockdown has adversely affected the sources of income of the larger proportion of the masses and this further has negative implications on the livelihood of the households in the country (Inegbedion, 2021; Akanni and Gabriel, 2020). Also, reports have indicated that the pandemic generated disruptions in economic sectors, in particular informal job market, as a larger proportion of people that are self-employed and solely rely on daily source of income become totally unemployed (Olu and Irabor, 2020; UNDP, 2020). Studies have further highlighted depression, anxiety about survival, loneliness, as several negative impacts of the lockdown in the life people as social beings (Umerie and Nnamok, 2020; Stickley and Koyanagi, 2016; WHO, 2020)

In addition, Singh and Singh (2020) indicated that the propensity for the survival of human beings, as social animals, in a long-time lockdown is in doubt; hence, ensuring the survival necessitates devising means of supporting households in the lockdown. Moreover, UNDP (2020) asserted that the lockdown generated a significant reduction the number of new investors while many people that were employed in various private economic sectors were faced with "no work, no salary" in the country and this added to the complexities involved in surviving the lockdown and beyond. Also, reports on monitoring the social impacts of the pandemic have established that the impacts, felt by the people, are in various degrees depending on different social classes that people belong to (WHO, 2020). In other words, various classes of people are invariably vulnerable to the impact

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of the disease in different degrees. For instance, UNDP (2020) reported that minority ethnic groups and people that are physically challenged belong to the social classes are more negatively affected by the disease.

In addition to global incidents of untimely death of people, the pandemic has exposed a number of people to abject poverty in particular in sub-Saharan Africa that has been ravaged by poor standard of living coupled with high cost of living (Akanni and Gabriel, 2020; Ashraf, B. N. 2020). Reports have further indicated that a large number of small-medium enterprise and privately owned organisations are faced with the threat of extinction as another result of the pandemic (Akanni and Gabriel, 2020; UNDP, 2020; Adeniran and Sidiq, 2018). These reports further added that larger percentage of these private enterprise and millions of cottage industries are not indemnified at all, let alone against the incidents of natural disaster such as the pandemic. In Nigeria context, Orhero and Oghuvbu (2020) added that the households of the people living below the poverty line are the most vulnerable group that the pandemic affects. In the same vein, as one of the indirect resultant calamities of corona virus, reports indicated a downturn in the business and investment of a number of people, while bouncing back to might take a long period of time with a rare chance without making provision for intervention programmes for them (Olu and Irabor, 2020).

As a result of this, Nigerian government, in line with the recommendation of the UNDP (2020), reduced tax rate, in particular, on goods that are essential for the survival of the masses during the pandemic while the salary of public workers was duly paid, food stuff as a palliative was distributed and the Central Bank of Nigeria (CBN) announced a large amount of money earmarked to empower the economy of the country to withstand the pandemic. Moreover, governments in Nigeria, via the CBN announced setting up a special fund as the package for the households and small-medium enterprises to alleviate the negative socio-economic impacts of the pandemic. Also, the thinking faculty and behaviour of people during the pandemic and in the post pandemic period are among the major concerns of the social scientists. Even before the pandemic, there have been reports that express concerns for an increase in the incidence of suicide as one of the results of the measures taken to curtail the ubiquitous spread of the disease in the world (Akanni and Gabriel, 2020; UNDP, 2020; Adeniran and Sidiq, 2018; Gunnell and Chang, 2016; Stickley and Koyanagi, 2016). These reports further cited maintaining social distancing, restriction in movement of people, self-isolation, frequent hand-washing and mouth covering as the activities that tend to encourage suicide, in particular among people that find or consider these acts inconvenient.

Literature has however indicated that the expected outcome of all these efforts of government to alleviate the unwanted effects of the pandemic, in particular, on the households among the masses has not been realized (Inegbedion, 2021; Umerie and Nnamok, 2020; UNDP, 2020). The discrepancy between the expectation and the reality further strengthens the idea of applying bottom-top approach in alleviating the negative effects of the pandemic in the country. Studies have emphasized the significance of the CBOs in enhancing development and realizing the betterment of people's livelihood in their communities (Ajani and Fakunle, 2021; Abegunde, 2017). These studies further asserted that realizing the purpose of government's efforts at the grassroots largely is deeply rooted in the cooperation and involvement of the community. Ajani and Fakunle (2021) noted that the relevance of the CBOs in communities in Nigeria has been felt by their members and other people concerned from the pre-colonial period where socio-economic lives was contingent upon the support of their CBOs.

Also, Abegunde (2017) added that the CBOs provide the platforms for people to get social and economic support and to extend their potentials via self-help projects. The summary of the roles of the CBOs, according to the previous studies, manifests in the different kinds of support they render to their members and the whole community as well as the influence they have on the policies that the government formulates. These roles suggest that the relevance of the CBOs in both the pandemic and the post pandemic is imperative, in particular among the masses. A plethora of indigenous studies have highlighted the negative impacts of COVID-19 on household socioeconomic lives in Nigeria while other studies and reports have focused on government and international

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bodies' efforts to alleviate the negative impacts. The notable gap that was found in these studies and reports manifested in the sole and specific objective of this current study, which is to investigate the roles of CBOs, as a platform for community participation, in complementing government's efforts to manage or alleviate the negative impacts of COVID-19 on household socioeconomic lives. This, therefore, constitutes the novelty value of this empirical study.

3. Theoretical framework

In the current study, social innovation theory was employed. The main focus of the theory is on adoption of a new way to achieve a particular goal in society. The theory, contrary to how it sounds, is not concerned with technology. The theory emphasizes innovations that include novel ideas, directions and practices that for people that seek to achieve a common goal (Ajani and Fakunle, 2021; Logue, 2019). This study, from the vantage point of social innovation theory, assumed that exploration and utilization of CBOs' potency in complementing government's efforts to manage or alleviate the negative impacts of COVID-19 on household socioeconomic lives denotes a new dimension. Therefore, the theory serves as the cornerstone for the assumption of this study that the CBOs have significant roles they play in the in complementing government's efforts to manage or alleviate the negative impacts of COVID-19 on household socioeconomic lives, contrary to the old perception of sole reliance on government for every need of people

4. Methodology

4.1 Study location

The location of the study was Ife-East Local Government Area of Osun State, Nigeria. The study location is situated in the South-West Zone, mainly a Yoruba speaking area, of the country. Low-income residential areas constitute the larger part of the study location while the majority of the residents worked in informal sectors. The study location, also, accommodates cottage industries, farming, commercial and entertainment activities while social engagements and ceremonies such as marriage, burial and a series of traditional and religious festivals, all of which conventionally require the gathering of people, are embedded their lifestyles. Moreover, there are various CBOs that the adult residents belong to while the presence and impacts of these CBOs are felt whenever there is any ceremony in the study location. Therefore, this study considered that CBOs are also capable of complementing government's efforts to man or alleviate the negative impacts of COVID-19 on household socioeconomic lives.

4.2 The sampling techniques, sample size, methods of data collection and analysis

The study was cross-sectional and exploratory in nature while a qualitative method, in-depth face-to-face interview, was employed to collect the primary data for this study. Also, multi-stage non-probability sampling method was employed in the study. There were 10 electoral wards in Ife-East Local Government Area. The study covered all the 10 electoral wards. Via purposive sampling method, 5 CBOs were selected in each of the 10 wards, making a total size of 50 CBOs. To obtain the primary data, 2 CBO leaders (a man and a woman) and 4 CBO members (2 men and 2 women) among the 5 selected CBOs in each of the wards were purposively selected, making a total sample size of 60 from all the electoral wards for the in-depths face-to-face interview. Both thematic and contents analyses were utilized to analyze the collected data. This study was conducted between December 2020 and March 2021 in Ife East Local Government Area, Nigeria.

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5. Findings and discussion

5.1 Socioeconomic characteristics of the key-informants

This study purposely maintained gender balance; however, investigating any gender issue was not included in the study, only to maintain the reliability of the information provided by the key informants. Therefore, half of the key informants for this study were composed of men and women respectively. The middle age people constituted most (47.1 per cent) of the key informants as 30 per cent and 20 per cent of the key informants were within the age groups of 30-39 and 50 years and above respectively, while about 8 per cent of the informants were within the age group 20-29. Data on socio-economic characteristics of the key informants is presented in Table 1 below.

Table 1: presenting age and gender distribution of the key informants

Socio-economic status	Frequency	Percentages
Gender distribution		
Male	30	50.0
Female	30	50.0
Total	60	100
Age-group distribution		
20-29	5	8.3
30-39 years	18	30.0
40-49 years	25	41.7
50 years and above	12	20.0
Total	60	100
Marital status		
Single	14	23.3
Married	32	53.3
Divorced	12	20.0
Widow	2	3.4
Total	60	100
Highest level of educational status		
No schooling	6	10.0
Primary school education	15	25.0
Secondary school education	25	41.7
Tertiary institution	14	23.3
Total	60	100
Employer		
Public sector	14	23.3
Private sector	20	33.4
Self-employed	26	43.3
Total	100	100

Source: *Authors' field survey (December 2020-March 2021)*

Data on the marital status of the key informants indicated that the majority (53.3 per cent) of them were married and still maintained marital relationship with their spouses, as about 23 per cent of the informants were yet to get married while 20 per cent of the informants were married but no longer living with their spouses. About 3 per cent of the informants were widower or widow. According to the marital composition, the majority of the informants (the married people) belonged to households that contained at least two people and this tended to indicate that their standard of living is greater influenced than other marital categories during the pandemic where, in particular a reduction in income level sets in. On various levels of formal education of the key informants, the collected data revealed that most (41.7 per cent) of the informants had secondary education, one quarters of them had primary

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education while about 23 per cent of the people had tertiary education. However, one tenth of the informants had no formal education. On various occupations of the key informants, the study found that most (43.3 per cent) of the people were self-employed and this presented the true picture of the occupational distribution of the people in the study location. However, about 33 per cent and 23 per cent of the people worked in private sectors and public sectors respectively. The table 1 above also presents this information.

5.2 Roles of CBOs in supporting members on alleviation of negative impacts of COVID-19 on household socioeconomic lives in the study location

The current study, via the qualitative data collected, found that the members of the CBOs have enjoyed financial and social supports from their respective CBOs, during and after the pandemic, via the several activities among the functions of their CBOs. These benefits were discussed below.

5.2.1 Financial/economic support

5.2.1.1 Pooling resources together and provision of fund for members

The majority (96 per cent) of the CBOs involved in this study have incorporated the act of receiving regular contributions of a certain amount of money respectively from their members into their functions. Therefore, the current study found that these CBOs have provided a viable platform for saving as this function has encouraged the CBO members to imbibe the act of keeping a certain amount of money for the time of need in the future. Therefore, in 2020 when total lockdown was declared in Nigeria, the concerned members of the CBOs were able to access the fund for the survival of their respective household as this reflected in extracts presented below:

Extract 1: IDI/48-year-old/Woman/January 2021

"The association I belong to exists in the street I live. The main purpose of the association is to discuss the issues affecting our street, in particular the safety of lives and property. However, in case there might be a need for things that would require money, or importantly, execution of any self-developed project, the members of the association have agreed to be paying a sum of one thousand Nigerian Naira each time we come for our normal regular meeting, and this meeting takes places once a month. With the advent of corona virus, when the lockdown was declared, all of us (the association members) decided to embark on the money we have contributed to be shared for our survival. However, this was not our initial or original plan on the money; we accept that survival should come first. Therefore, this association has immensely contributed to the survival of my household both during and after the lockdown. Meanwhile the pandemic is yet to be over, therefore, I belief the association is still capable of helping us (the members)."

Also the situation was also confirmed by another adult male resident of the community as below:

Extract 2: IDI/53-year-old/Man/December 2020

"I am not an indigene of this Local Government Area (i.e. the study location); however, I resided here. We, people from my home town formed an association here to keep in touch with one another and to maintain our cordial relationship all because of the same cultural background we have. We meet first Sunday of every month. In our meetings, we mainly discuss the welfare all of us as a collective group and an individual member respectively. Every member saves a certain amount of money with main purpose of embarking on it when the need arrives. I must be candid; the money we regularly save is to be given to any member that we observe has a challenge that is beyond such a member's capability. Also, when anyone among us has an occasion such as child naming, marriage or burial, we take from that savings and give it to the member in form of a gift or aid. But things change a bit when the incident of corona virus erupted; we had to embark on the money we contributed to ensure our survival because majority of us are self-employed, and our occupations were greatly affected by the outbreak of the disease."

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5.2.1.2 Purchase of goods in large quantities

The current study found that the CBOs' members have benefited from the platforms that their respective CBO has provided to purchase goods in large quantities directly from the producers and redistributed the goods to the members in wholesale price as one of the ways to shield the concerned members from exploitation of retailers. This has constituted another aspect of the CBOs' functions that the current study found that has assisted the households of the CBOs' members to cope with the pandemic as this was expressed in the extracts below:

Extract 3: IDI/39-year-old/Woman/February 2021

"I am very happy that I belong to my association. This is because it has helped me a lot in terms to buying goods at cheaper price compared to the shop (retailed) price I should have bought these items. Anyway, this act is not new, because even before the outbreak of the coronas virus, at the end of every year, the resources we pooled together were used to purchase items in a large quantity then these items were shared accordingly among us (the members), this has helped a lot to reduce the amount of money spent to acquire these items and meanwhile the quality of these items are reliable because they are directly obtained from the producers. Also, when the incidents of the global outbreak of the disease (COVID-19) occurred and the shop (retail) price of goods became exorbitant, I felt more impact of the large quantity of items I acquired at lower price in particular in my household."

In addition, the current study found that before the pandemic, there were several CBOs, among those involved in this study, whose aim was not to purchase goods in large quantities for their members; however, the outbreak of COVID-19 has prompted them to adopt this idea as one of the means to cope the pandemic. The extract below reflected the example of this situation.

Extract 4: IDI/47-year-old/Man/March 2021

"I belong to two different local associations in my community. We (the members of the two associations) made contribution only for the progress of our associations respectively. For instance, the contribution we made in most of the time is for developing self-help project in our community and to ensure the safety of lives and properties in our street. But with the incident of corona virus outbreak, in these two associations, we (the members) sat down to reconsider few things and among them was inclusion of pooling resources together to purchase household goods in large quantities because of the current hike price of these items. At least, this act adds to one of the ways to survive not only in the lockdown or pandemic but also after the lockdown or pandemic."

5.2.1.3 Provision of platforms to attract financial institutions' loans and local authority's assistance

This study discovered that the involved CBOs have provided platforms for their members to attract loans financial institutions such as micro finance banks which might be impossible for an individual member to acquire. Moreover, the data indicated that the majority of these CBOs have provided platforms for their members to express their need to the government in their locality and this has helped in attracting the attention of the local authority to their needs even before the pandemic. The extracts below reflected the examples of these situations.

Extract 5: IDI/29-year-old/Small scale business Man/March 2021

"In the local association I belong to, because the association is registered at the Local Government, there has been several occasions we are in need of money, and there is a certain micro finance institution called LAPO the we summon their financial assistance where we obtain loans with a low rate of interest. I personally might not be able to obtain any loan from this financial institution because the small scale business I have, and I personally do not possess any property that is worth presenting as the collateral for a loan. But my association has enabled me to gain access to obtain a loan to sustain my business and myself."

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Extract 6: IDI/67-year-old/Man/Retiree/February 2021

"I belong to an association we formed in the community I reside. We meet every third Saturday of every month in the morning; the main purpose of the association is to seek the welfare of the whole community via regular meeting with local government officials and agencies. But when the outbreak of COVID-19 occurred, in particular during the lockdown, we (the members) went to the local authority and the politicians we know to solicit their financial assistance to cope and they granted us our requests in their capacities. This, I believe would not have happened without the influence of the association I belong to, nobody would even listen to me as a person, an ordinary old retiree (smiles)."

5.2.1.4 Provision of platforms to invite experts for empowerment programmes

Also, the current study found that via the CBOs, there have been platforms for the members to invite experts to enlighten them on genuine economic empowerment. The majority of the key-informants interviewed indicated that they have benefited economically through a series of empowerment programme that their associations have provided the platform for. For instance, some of the informants cited the knowledge they gained on legitimate ways to use mobile phone to generate additional income such as recharge card selling, subscribing data for customers, while several others cited the knowledge they attained on fowl and snail keeping and production of household utilities such as bar soup, candle, antiseptic for sterilization, among others. The study discovered that these empowerment programmes have been in place before the outbreak of corona virus in 2019, the interested members seized the opportunity of the lockdown to practise these activities they have learnt. The extracts below reflected the examples of these situations.

Extract 7: IDI/25-year-old/Woman/January 2021

"The association I belong was mainly founded to give the members regular updates on the goods we sell. We that sell peppers, tomatoes, onions, and the likes, are the members. When the issue of lockdown set in, it became cumbersome for us to travel to far places where we buy goods, therefore, our association thought about empowering the members by finding other things that can be done with our primary assignment (i.e. selling peppers). For instance, I opted for learning basic knowledge on buying and selling recharge cards with the peppers normally I sell, and this in conjunction with the little my husband provided further helped in keeping the body and soul of our household together."

Extract 8: IDI/43-year-old/Man/December 2020

"I am a teacher. I teach in one of these private colleges in my community. We the youths in my street formed as association with the main purpose of making regular contributions in form of (money) savings and this has been in place before the worldwide outbreak of corona virus. When Nigerian government observed that the virus was in ravaging the country, lockdown was introduced and implemented. Therefore, almost all businesses and schools were shutdown. This significantly affected me and my household because teaching has been my only source of income. I have to embark on the savings I made in our association. Moreover, we invited experts in various fields such agricultural practices and others to come and teach us crop production and animal rearing as a way to survive during the lockdown. At least, more food could be supply through that process and it really worked. I now own fowls and snails I rear; in addition, I learnt home utilities such as candle, bar soap, detergent, antiseptic and even sanitizer making and I'm really grateful I did as up till now after the lockdown, I still earn gains from them."

5.3 The social support

5.3.1 Provision of platforms to share experience

Among the social support that the current study found that the CBOs provided for their member is the provision of platform to share their individual experiences in the lockdown, in particular, and the pandemic, in general. This study discovered that these members gathered together and related their experiences about how they were coping with the given measures such as social distancing and the lockdown, to curb the spread of the disease and ways to deal with these experiences were discussed while all the members learned via this process. The extract below reflected the example of this situation.

Extract 9: IDI/67-year-old/Woman/March 2021

"I am fond of going for the meetings of a particular association I joined when I was young. Most of us in that association are now becoming old however we still enjoy keeping the company of one another. When the virus was discovered and lockdown was declared in Nigeria, I was afraid. That mere fear alone nearly took my life. Because the association is in my street, we managed to maintain our meetings during the lockdown, even though we knew this might be against the recommendation of the government as a measure against the spread of the disease. In our meetings during the lockdown, each of us narrated how we felt and discussed it thoroughly. In the course of our discussion I discovered I have nothing to fear about the virus, only to be cautious and strictly follow the instructions such frequent hand washing, mouth covering and maintenance of rules about social distancing. Since then I have been living fine with peace of mind."

5.3.2 Provision of platforms to boost members' morale to avert psychological challenges (such as suicide)

The current study explored the influence of the regular meetings of the CBOs' members on their thoughts and the behavioural psychology. The study findings indicated that via the discussions of these members during their regular meetings, they derived a great deal of pleasure, where pleasantries were exchanged and humorous remarks were made, even about the experiences of an individual during the lockdown and the pandemic. This has been one of the ways to manage the psychological effects that the lockdown tended to have on these members. In the same vein, the findings indicated that none of the members of the CBOs involved in this study attempted to committed suicide. The extract below reflected the examples of these situations.

Extract 10: IDI/40-year-old/Man/February 2020

"I belong to one of the associations that consist of only the youth. I am a commercial driver; I used to travel most of the time as this is my profession. When I first heard about corona virus sometime in January 2020, then it was yet to be discovered in Nigeria, I was just praying that it should not enter our country (Nigeria) but to my surprise sometime around February or March 2020, cases began to be discovered in the country, then I know I am in trouble. This is because we had heard about the lockdown case in foreign land and I just imagined what that could mean on my profession. Eventually, lockdown was pronounced in Nigeria and I was like how would my family survive. I was devastated and dejected, I thought about the survival of my household. But I am really grateful that I belong to this association because via our regular meetings which did not stop even during the lockdown, as most of the members are residing in the same street, we joked, played and related our experiences and talked about the way forward. Perhaps, without the significant impact of my association, the thought of suicide might have come into my mind, to be candid."

5.3.3 Platform to invite medical experts on sensitization programmes about COVID-19 and its effects

Moreover, the study findings revealed that several CBOs have summoned medical experts to further sensitize their members on the spread of COVID-19, measures to avoid being contracted, the symptoms of the disease, its effects and how to manage it. The findings further indicated that not only the members gained from these sensitization programmes but also their individual household as these member further sensitize their respective family members accordingly. The extract below reflected the examples of these situations.

Extract 11: IDI/66-year-old/Man/December 2020

"There was a time; a rumour that the combination of salt and warm water is able to kill corona virus was circulated in my community. But since we had already summoned a medical expert for a sensitization programme in our association, I decided to wait to seek advice for the medical expert. I was highly surprised when this rumour was debunked. And the announcement as later made on the radio that using the combination of salt and

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warm water disproportionately is dangerous to our health, I was like wow! Thanks to our association that provided the platform to have conversations with the medical expert; otherwise, who knows what could have happened. I also ensured that my whole household and people that are close to me know about this rumour"

All these findings further portray the importance of the local associations that people form to the members and the communities in Ife-East Local Government Area in complementing government's efforts to ensure the well being of people in the pandemic. Moreover, these findings are indications that CBOs have significant roles to play to ensure the success of the majority of the projects that government embarks in particular at the grassroots level.

6. Conclusion and prospects for future research

This study concluded that the CBOs in the study location have immensely contributed to the survival of their members as well as their households during the lockdown in the current pandemic of COVID-19. The functions of these CBOs manifested in their various activities to ensure that the negative impacts of the disease on socioeconomic lives of their members are alleviated and these functions indicated that the CBOs are capable of complementing the governments' efforts in promoting development at the grassroots level. This study focused solely on the capability of the CBOs while the challenges they faced were not included in this study; therefore, this empirical study solicited future studies that shall focus mainly on the challenges that the CBOs encounter and the means of coping with any highlighted challenges.

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THE IMPACT OF COVID-19 ON THE FINANCIAL PERFORMANCE: A CASE STUDY OF THE LITHUANIAN TRANSPORT SECTOR

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Abstract. The changing global situation due to the outbreaks of COVID-19 is causing a crisis, not only in terms of healthcare but also in economic terms. Companies are faced with hasty decisions to avoid financial problems or even bankruptcy. Both in theory and practice, there are often more negative than positive effects of the coronavirus outbreak on transport sector business, but this topic has not yet been sufficiently explored due to the novelty of the situation and the divergent opinions of authors on some matters. The most significant impact is emphasised in the case of air transport, and the least studied area is road transport activity, which in Lithuania comprises the largest share of all modes of transport. It is observed that transport companies experience a decline in profitability indicators during the first wave of COVID-19. In the course of the investigation, the expert survey identified the most affected profitability and liquidity indicators of road transport companies. Relative financial indicators and a study of the financial results of coronavirus-related quarantine carried out using paired correlation analysis showed that there is an unequal connection between the number of days of quarantine in Lithuania and the relative financial indicators of road transport companies. Therefore, the crisis caused by COVID-19 is likely to have a positive or negative impact on the financial performance of a company, depending on the company's activity. However, in some cases, there may be no impact at all. The monitoring of the constantly changing coronavirus crisis and the corresponding economic situation is an important immediate and continuous participation in the monitoring and control of the financial situation of companies.

Keywords: coronavirus, COVID-19, financial indicators, transport sector; road transport companies, economic crisis.

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JEL Classifications: A10, C10, C83, M20

1. Introduction

In early 2020, the whole world was faced with an emergency due to the sudden spread of coronavirus, which causes COVID-19, a serious infectious disease. The disease spreads rapidly and is very contagious; thus, the existence of this virus changes the daily lives of people and also affects global supply chains, consumer demand, and financial markets; tourism activities change, businesses fail, economic growth stops, oil prices change, etc. The transport sector is one of the sectors that is affected in one way or another by this coronavirus crisis. According to the data of the Department of Statistics of Lithuania, in 2020 the revenue of transport and storage companies decreased by 1.67%, while profit before taxation decreased by as much as 41.03%, and 79 companies

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operating in the transport sector ceased their activities (Department of Statistics of Lithuania, 2021). Nearly all companies experienced financial difficulties during the first wave of coronavirus. Global financial problems caused by coronavirus are unexpected; therefore, dealing with difficulties is a difficult, labour-intensive task for governments and company management authorities alike. Scientists conduct theoretical and practical research, predict possible scenarios, and look for measures to solve arising problems. It is important to determine how the transport sector is affected by the coronavirus outbreak according to the latest financial data of Lithuanian transport companies.

The research question is how to assess the impact of the coronavirus outbreak on the financial results of the transport sector properly?

The research object is the financial results of Lithuanian road transport companies.

The research goal is to justify and assess theoretically the impact of the coronavirus outbreak on the financial results of undertakings in the transport sector.

Tasks:
1. To study scientific literature on the impact of the coronavirus outbreak on the transport sector.
2. To review the methods used to determine the impact of the coronavirus outbreak on the financial results of the transport sector.
3. To conduct empirical research to determine the financial indicators of Lithuanian road transport companies most affected by the coronavirus outbreak.

The *hypothesis* is that the coronavirus outbreak affects the financial results of Lithuanian road transport companies differently.

The article consists of the introduction, five sections, conclusions, and references. The first part describes the transport sector, its market, and the most important financial indicators. The focus of the theoretical part is on the crisis caused by the coronavirus outbreak, its impact on the economy and on the transport sector. The second methodological part deals with research methods used to assess the impact of coronavirus on the financial results of road transport companies and presents research assumptions and characteristics of the data sample. Sections 3–5 identify the impact of the coronavirus outbreak on the financial results of road transport companies. Conclusions are presented at the end of the article.

2. The theoretical impact of coronavirus on the transport sector

In scientific literature, the economic impact of coronavirus is assessed differently and it is emphasised that a more accurate assessment requires analysis of individual sectors; however, there is a shared opinion that the virus outbreak interferes with economic growth and causes problems in many areas. Disruptions in supply chains and international trade, decreased employment and slowed economic growth are the main first consequences noticed by scientists as early as during the first wave of coronavirus (Ajam, 2020), (Nicola et al., 2020), (Maryla et al., 2020). Demand for essential and non-essential goods changed fundamentally. The demand for essential goods increased dramatically because people began creating stocks, fearing that quarantine or illness will prevent them from leaving the house, while the demand for non-essential and luxury goods decreased significantly (Sahoo & Ashwani, 2020). One of the indicators assessing the level of economic development, gross domestic product (GDP), decreased even in highly developed countries. In countries such as China or the US, a decrease in GDP growth rate is observed. In Lithuania, based on economic indicators, public debt increased, GDP decreased, and unemployment increased (Poteliūnienė et al., 2020). These are only a few general problems that emerged in spring 2020, occurred again in autumn of the same year and continued in 2021, affecting almost all sectors. Science states that this unprecedented situation caused not only a social, but also an economic crisis, which,

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depending on the location and sector of activity, is expressed differently. It is predicted that coronavirus may cause 5 or more global outbreaks (Barua, 2020).

At the beginning of 2020, the transport sector faced a sudden change in the supply and demand of services due to the coronavirus outbreak. The unbalanced market led to urgent decisions, which caused some companies to cope quite well with the difficulties encountered, while other companies suffered huge losses or even closed their businesses. An overview of scientific sources shows that the coronavirus crisis has a different effect on individual modes of transport. As early as during the first month of the coronavirus outbreak, air transport faced a sharp decline in demand for passenger transport caused by the closure of national borders and the resulting suspension of flights. The recorded decrease in the number of passengers during quarantine was the most significant in the history of aviation (Petryk, 2020). Meanwhile, freight air transport faced the opposite challenges: demand for cargo flights increased by ~12% in spring 2020 (ICAO, 2020). Airlines took advantage of the situation when aircraft were stored at airports and adapted passenger aircraft for cargo transportation, thereby increasing the capacity of cargo aircraft (Serrano & Kazda, 2020). However, although there were enough aircraft for cargo transportation, the costs of such flights increased several times, and, in some cases, a dozen times. In some countries, governments apply a support policy to companies affected by COVID-19, including airlines (Abate et al., 2020).

Similar effect is felt on all public transport, which becomes the location of COVID-19 spread and infection. The study on public transport changes in Stockholm monitored public transport indicators in the first half of 2020 and showed that in March, COVID-19 regulations introduced the country reduced the number of passengers in public transport by about 60% (Jenelius & Cebecauer, 2020). Public transport companies' revenues were falling, while costs were rising because it was impossible to completely abandon public transport in many locations. There is also a strong correlation between the spread of coronavirus and the demand for public transport because not only coronavirus has a negative impact on public transport activities, but also the use of public transport poses a threat to the accelerated spread of the virus (Ozaydin & Ulengin, 2020). Reduced demand for public transport encourages the use of private cars and bicycles and motivates walking short distances.

In the context of the effects of coronavirus, road and maritime transport are analysed less often, but this does not mean that the effect on these modes is negligible. The demand for maritime cargo from and to China decreased as a result of the pandemic and the closure of some factories in China (Tardivo et al., 2020). Some maritime cargo was transported by rail. However, this trend is not the same in all countries and mostly applies to East Asia. Rail transport is the least negatively affected by coronavirus. While passenger movement decreased, railways became more important and more in demand for cargo transportation (Ozaydin & Ulengin, 2020). This mode of transport is superior to maritime transport in terms of service speed, and superior to air transport in terms of prices.

Scientists are less focused on determining the effects of coronavirus on road transport companies. After quarantine was imposed in China, some roads in the country were closed (Liu et al., 2020), but this caused a disruption in the movement of goods in the country. European countries implemented border closures and border checks, which resulted in queues at border sections and problems in the transportation of urgent and perishable goods (Loske, 2020). In Lithuania, road transport companies comprise the largest share in comparison to other modes of transport (Lietuvos statistikos departamentas, 2021), while the total transport sector in the country accounts for about 12-13% of GDP, making it one of the most important sectors. The transportation of passengers and cargo by road during the first wave of COVID-19 was restricted for security purposes. The number of passenger intercity routes decreased in order to reduce unnecessary domestic travel. Freight transport was temporarily confronted with self-isolation of drivers who had returned from trips abroad, but this restriction was quickly removed due to its negative impact on company activities. COVID-19 encouraged road transport companies to look for safer ways of carrying out their activities regardless of the pandemic, thus encouraging the development of no-contact deliveries and automated vehicle unloading/loading stations in order to reduce the

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number of physical contacts. There is currently a lack of research in scientific literature into specific changes in financial results in the road transport sector.

As regards the impact of COVID-19 on the financial results of companies, the results of companies operating in different sectors were studied in China and one of the most important indicators—return on assets (ROA)—was emphasised. The study shows that there is a strong negative impact on the ROA indicator in tourism and transport companies in China (Rababah et al., 2020). In other sectors, the negative dependence of this indicator on COVID-19 is observed as well (Hu & Zhang, 2021). Changes in income and costs are important, too. There is a noticeable decrease in sales revenue caused by lower demand or changing prices on the market (Shen et al., 2020). However, the impact of COVID-19 on financial results cannot be considered to be exclusively negative because impact on individual sectors of the economy may vary. A study carried out in Malaysia analysed different financial indicators showing that some of the companies analysed had improved their financial results in the presence of COVID-19 (Khatib & Nour, 2021). The authors consider the following indicators to be particularly significant: ROA (return on assets) and ROE (return on equity). Studies stress that, due to the novelty of the situation, more in-depth research is needed after more time has passed since the start of the pandemic, so there is no consensus on how COVID-19 affects financial indicators of companies.

Analysis of scientific literature shows that the coronavirus crisis may have different effects on the activities of companies engaging in different modes of transport. It is obvious that during the coronavirus pandemic the impact will change and it will cause more different problems. In this case, it is important to investigate the impact of coronavirus on the financial results of Lithuanian transport sector companies in 2020.

3. Methodology for studying the impact of the coronavirus crisis on financial results

In order to study how and what financial indicators are affected by the coronavirus crisis, it was decided to conduct an expert survey, to check the compatibility and reliability of expert opinions, and to calculate financial relative indicators and the paired correlational relationship between the number of quarantine days in Lithuania (dependent variable) and financial relative indicators (independent variables) based on the results of the expert survey. It is assumed that in Lithuania, only COVID-19 could have caused the most significant changes in financial results, while other economic factors remained unchanged. The methodological chart is shown in Figure 1.

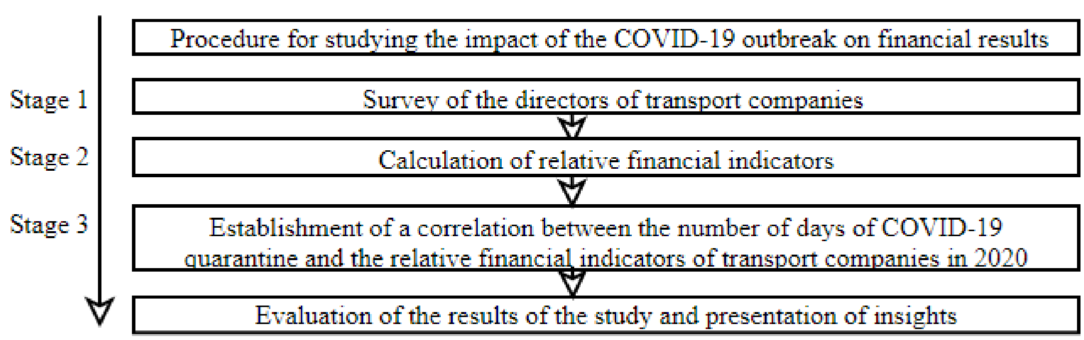

Figure 1. Methodology for the impact of the coronavirus crisis on financial results

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The study starts with an expert survey using an anonymous written survey. The expert evaluation is carried out in several stages:
1. A questionnaire-based survey is created (see Annex 1).
2. Respondents are selected and interviewed.
3. The compatibility and reliability of expert opinions is calculated.
4. The weight of the indicators to be assessed is calculated.

The experts were asked to answer questions by selecting choices (questions 1-7, 9-10), to rank certain financial indicators (question 8), and to assess the situation from the perspective of the represented company in open questions (questions 11-12). For questionnaire replies in question 8, a ranking scale is provided for arranging answers in ascending or descending order (Kardelis, 2017). This question is crucial for the follow-up of the study: calculations of the weight of indicators, the compatibility and reliability of expert opinions. When performing an expert survey, it is important to select respondents who have competence in the subject being investigated (Baležentis & Žalimaitė, 2011). Ten experts who work or lead road transport companies, have at least five years of experience in the transport sector, know the company's finances and work in 2020-2021 during the COVID-19 pandemic were selected. The quality of the study and the reliability of the results obtained depend on the competence of the experts selected.

The calculation of the compatibility of experts is a necessary step because further study decisions are taken on the basis of expert opinions (Podvezko, 2004). The experts' compatibility is checked according to the coefficient of concordance, also known as Kendall's coefficient (Kendall, 1970). Formula for Kendall's coefficient of concordance:

$$W = \frac{12\bar{S}}{k^2(n^3-n)}, \tag{1}$$

where: W is the coefficient of concordance; S is the sum of squared average ranks; k is the number of experts; n is the number of indicators being compared.

When the value of the coefficient of concordance is close to one, expert opinions are considered to be compatible, and if the value is close to zero, opinions vary significantly (Podvezko, 2004). When n is more than 7, it is necessary to determine the weight of the coefficient of concordance, or reliability, which is assessed using the Pearson criterion – X^2 (Bilevičienė & Jonušauskas, 2011). It is a random value distributed on the X^2 distribution with the degree of freedom $v=n-1$ and the selected weight level $\alpha=0.05$. This is the basis for finding a critical value. For the coefficient of concordance to be significant, X^2 must be higher than the X_{kr}^2 value. The Pearson criterion X^2 is calculated according to the formula (2):

$$X^2 = W \times k \times (n-1), \tag{2}$$

where: W is the coefficient of concordance; k is the number of experts; n is the number of indicators being compared.

In this case, the coefficient of concordance and its reliability apply only to question 8 of the survey, where experts rank financial indicators from unaffected (value equals 1) to highly affected (value equals 10) by COVID-19, without assessing positive or negative effects. The same rank can be assigned to more than one indicator.

Since the goal of the expert survey is to identify the financial indicators of road transport companies that were affected by the coronavirus crisis the most, it is appropriate to set weighting coefficients for each of the indicators according to the results of the questionnaire. In other words, their weight is determined as follows:
1. The average value of indicators assessment is calculated:

$$\bar{t_j} = \frac{\sum_{k=1}^{r} t_{jk}}{r}, \tag{3}$$

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2. The weight of the indicators is calculated:

$$w = \frac{\sum_{j=1}^{n} \bar{t}_j}{t_j}, \tag{4}$$

where: *w* is the weight of the indicator; t_j is the values of the estimates; *r* is the number of experts.

The sum of the weight of all indicators must be equal to 1. The weight of an indicator is the weighting coefficient w, which helps to rank the financial indicators: in this case, from the most affected to the least affected by the quarantine. The use of the expert evaluation is valuable in combination with other methods, for confirming or refuting the results obtained by the survey.

Financial relative indicators allow assessing the financial activity of companies more objectively and more comprehensively; using this method, it is possible to compare several companies of different sizes in the same sector (Bliekienė & Stundžienė, 2012; Kazakevičius & Jakštas, 2018). Many different indicators may be calculated according to financial statements, so the expert survey helps to select indicators relevant to the problem under investigation better. There is no goal to calculate all possible relative indicators because too many of them may not show and not highlight the real situation (Mackevičius & Valkauskas, 2010). The study uses seven relative indicators that are part of profitability (GPR, NPR, ROA, ROE), liquidity (CLR, TSR), and debt (TDR) groups of indicators. The indicators are shown in Table 1.

Table 1. Relative indicators and their formulas

Name	*Code*	*Formula*
Gross profitability	GPR	*GPR = GP / SR*
Net profitability	NPR	*NPR = NP / SR*
Return on assets	ROA	*ROA = NP / A*
Return on equity	ROE	*ROE = NP / EC*
Total debt ratio	TDR	*TDR = L / A*
Current liquidity ratio	CLR	*CLR = CA / CL*
Total solvency ratio	TSR	*TSR = EC / L*

Source: compiled by the authors, based on (Delen et al., 2013; Fenyves et al., 2020; Kadim et al., 2020; Kazakevičius & Jakštas, 2018; Linares-Mustarós et al., 2018; Thacker et al., 2020). Notes: In the table, *GP* is gross profit, *SR* is sales revenue, *NP* is net profit, *A* is assets, *EC* is equity capital, *L* is liabilities, *CA* is current assets, and *CL* is current liabilities.

An important aspect of the analysis of the financial situation according to relative indicators is the use of absolute indicators expressed in the same units, obtained from the same period and by using the same methodology. For the purpose of the study, the financial data of five Lithuanian road transport companies from profit (loss) and balance sheets from 2015 to 2020 are used. Companies refuse to make their names public, so they are assigned random letters: “J”, “R”, “B”, “N” and “K”. It is assumed that the only factor contributing to substantial changes is the restrictions caused by COVID-19 quarantine. In order to obtain the most accurate results of the study, the method of calculating the relative indicators is combined with paired correlation analysis.

The last stage of empirical research is the calculation of the correlation coefficient. The paired correlation determines the linear relationship between the two variables X (independent) and Y (dependent) (Pabedinskaitė & Činčikaitė, 2016). This method aims to determine the impact of the number of days of quarantine caused by the spread of coronavirus in Lithuania on the financial results of road transport companies. The same relative indicators are used, but only those calculated according to the financial statements for the quarters of 2020. Quarantine days in Lithuania are counted accordingly by quarter (see Table 2). The dependent variable Y is the number of quarantine days and the independent variables X are the relative quarterly indicators.

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Table 2. Data for correlation analysis – the number of quarantine days in Lithuania in 2020, by quarter

Number of days (Y)	*Period*
16	1 quarter (3 months)
93	2 quarters (6 months)
93	3 quarters (9 months)
148	4 quarters (12 months)

For correlation calculations, Excel is used. Using the *CORREL* function, in which values *X* and *Y* are highlighted, the correlation coefficient is obtained. Correlation coefficient values are between -1 and 1. The closer the value is to zero, the lower the correlation, and the closer the value is to -1 or 1, the higher the correlation. When the coefficient is positive and close to 1, *X* increases if *Y* values increase, and when the coefficient is negative, *X* increases if *Y* decreases (Baak et al., 2020). Then, the weight of the coefficient is assessed using the statistic t, which is calculated according to Formula 5 (Pabedinskaitė & Činčikaitė, 2016):

$$t^{eksp} = \left| r\sqrt{\frac{n-2}{1-r^2}} \right|, \tag{5}$$

Where t^{exp} is Student's statistic *t* calculated from the sample; *r* is the correlation coefficient; *n* is the number of observations.

The critical value of *t* is calculated using the *TINV* function at the weight level α=0.05, the number of degrees of freedom k=n-2. When texp>tkr, it can be concluded that the correlation is significant. After the correlation analysis, the relative financial indicators of each of the road transport companies concerned are determined, where changes to the indicators were possibly influenced by the number of quarantine days in Lithuania in 2020.

4. Results of the survey and insights of the directors of Lithuanian road transport companies

The expert survey was carried out in May 2021. Ten experts from road transport companies operating in Lithuania participated in the survey. The experts' compatibility was calculated according to Kendall's coefficient of concordance, based on the financial indicators assessed in question 8 of the survey. The resulting Kendall's coefficient of concordance (obtained according to Formula 1) is W=0.2244, so it can be said that expert opinions are barely compatible. Such a coefficient value may indicate that the companies represented by these experts and the financial results of the companies were affected differently during the COVID-19 period. The coefficient of concordance is considered reliable when the Pearson criterion X^2 is higher than the X_{kr}^2 value. In this case, X^2=15.71, X_{kr}^2=14.07, so it can be assumed that the expert compatibility coefficient is reliable and significant.

The survey showed that the companies represented by 70 % of the respondents experienced COVID-19 quarantine effects (Figure 2). None of the companies stopped their activities during quarantine, but some of the activities of 50 % of the companies were restricted or suspended (Figure 2).

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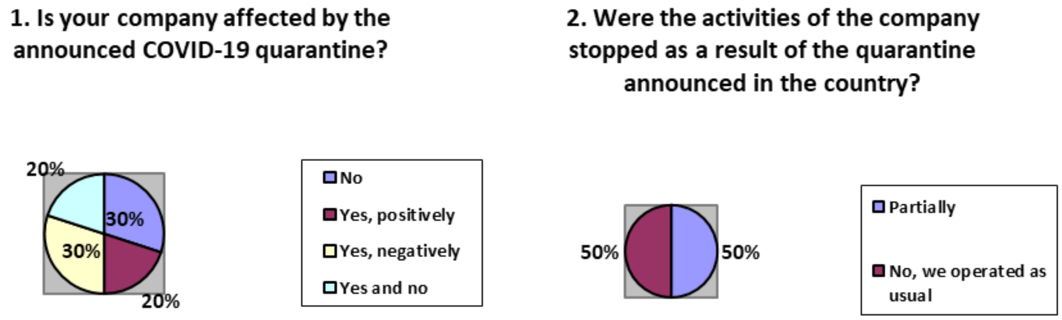

Figure 2. Answers to the expert survey (questions 1 and 2)

Since the activities of the companies were not stopped, the third question was skipped by all respondents. During the quarantine period, the demand of 40% of the companies increased, remained stable for a third of the companies, and declined for the same number of companies (Figure 3). The results of the demand depend on the purpose (cargo or passengers) of transport and on the services provided at a local or international level. Meanwhile, supply remained stable for 50% of the companies, decreased for 30% of the companies (mainly due to employees falling ill and a lack of opportunities for working remotely), and increased for 20% of the companies (Figure 3).

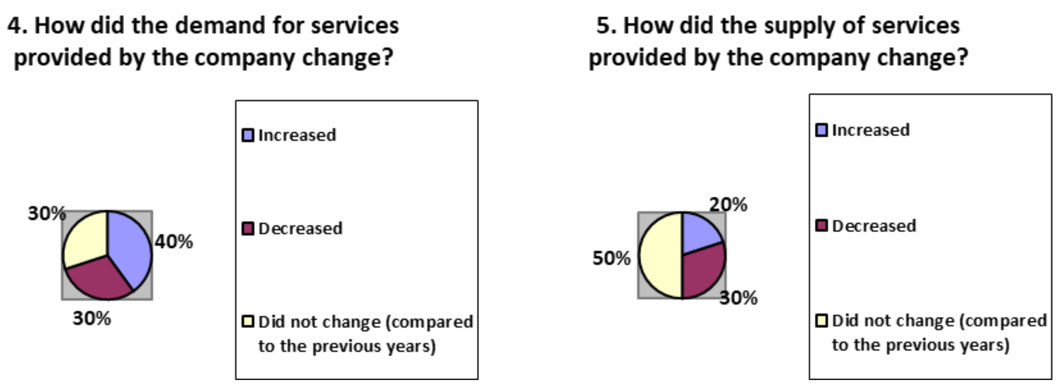

Figure 3. Answers to the expert survey (questions 4 and 5)

During quarantine, 20% of the companies surveyed lost suppliers and customers because of forced closure of businesses (Figure 4). COVID-19 affected as many as 50% of the companies participating in the survey in one way or another (Figure 4), according to the respondents.

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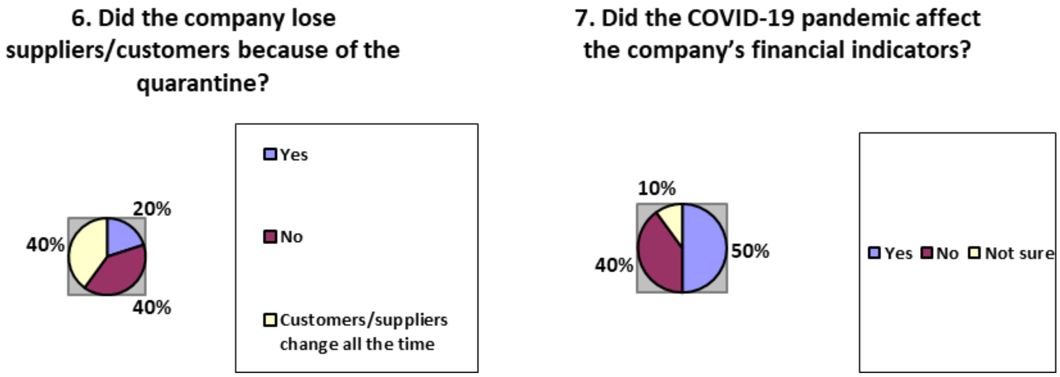

Figure 4. Answers to the expert survey (questions 6 and 7)

Thirty percent of the companies surveyed received support from the Government of the Republic of Lithuania for their business regarding losses incurred because of COVID-19 (Figure 5). Twenty percent of them answered that the support was not sufficient and did not solve the financial problems of the company, while 10% said that the support was useful, but only partially. Thus, measures envisaged by the state do not help to restore business activity, or help only partially.

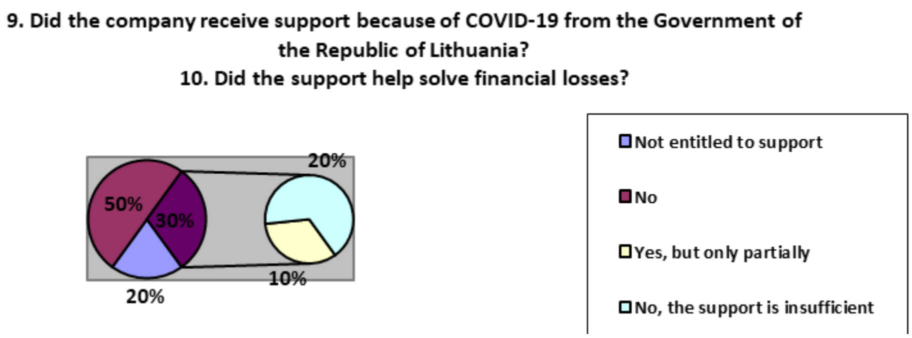

Figure 5. Answers to the expert survey (questions 9 and 10)

The survey contained open questions (questions 11 and 12), where experts presented the actions taken to deal with the difficulties caused by the COVID-19 quarantine. Some of the respondents used subsidies for downtime, partial interest compensation, deferral of loans and taxes, and rent compensation. The companies also agreed on the reduction of the rental fee, fired some of their employees, sought new areas of activity and partially reoriented their activities. If the pandemic situation ends by 2022 (question 12, part (a)), the experts made possible financial forecasts for the companies: companies that operated in a stable manner and were not affected by the quarantine should continue their activities with similar results and growth trends. Companies that have suffered financial losses are likely to recover in 2-3 years, while others claim that one year will be enough. Companies that have experienced profit growth believe that the results will remain the same or will continue to grow if it does not depend on COVID-19. When profit growth is associated with the COVID-19 pandemic, the results should be slightly worse or they should reach pre-pandemic levels after the end of the pandemic. If the pandemic situation continues for 2-3 years (question 12, part (b)), the experts believe that adapting to pandemic conditions will enable companies to restore their financial indicators to previous levels, and a reorganisation of the nature of their activities could improve their results over a period of 1-2 years. Others believe that in this case the results would stabilise after at least 5-7 years, while those whose results did not suffer do not comment on this issue in detail and expect the company to maintain a stable financial condition.

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Each expert assessed the impact on the indicators presented in the survey (question 8), which was possibly caused by the COVID-19 quarantine in 2020. According to experts' evaluations, the weight of these indicators was estimated and they were ranked from 1 to 8 (from the most affected to the least affected). The results are shown in Table 3.

Table 3. The weight of indicators according to the experts' evaluation

Indicator	*Indicator weight (w)*	*Rank*
Gross profit	0.1462	3
Net profit	0.1840	1
Sales income	0.1415	4
Cost of sales	0.1274	5
Current assets	0.1061	6
Fixed assets	0.0566	8
Current liabilities	0.1509	2
Non-current liabilities	0.0873	7

According to the results in Table 3 and the assessment of the weight of the indicators (based on Formulas 1 and 2), the most significant, in other words, the most affected during COVID-19, indicator is net profit, which represents the final financial result of a company, as well as current liabilities and gross profit. The least significant in the context of COVID-19 is fixed assets and non-current liabilities.

5. Changes in the financial relative indicators of Lithuanian road transport companies from 2015 to 2020

The completed calculations of the relative indicators highlighted various trends. GPR shows the benefits of the sale of services, i.e. how much gross profit is contained in each sales euro. Above 15% shows good condition, less than 7% means unsatisfactory condition (Mackevičius & Valkauskas, 2010). In all companies, GPR shows good condition, except for company "R" in 2019 when this indicator was equal to 6.66% (see Figure 6). The dynamics of the GPR indicator from 2015 to 2020 does not show a significant COVID-19 impact.

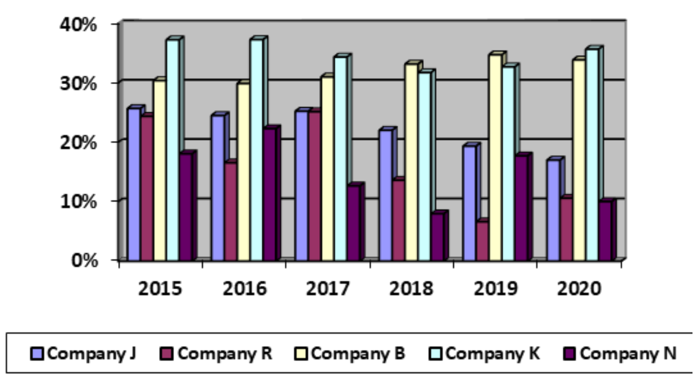

Figure 6. Gross profitability (GPR) in Lithuanian road transport companies from 2015 to 2020, %

NPR assesses the efficiency of the company's activities and shows how much net profit is contained in each sales revenue euro. Above 10% is considered to be a good situation and below 5% means a bad one (Mackevičius & Valkauskas, 2010) and the company needs to take action to improve competitiveness. NPR calculation results are shown in Figure 7.

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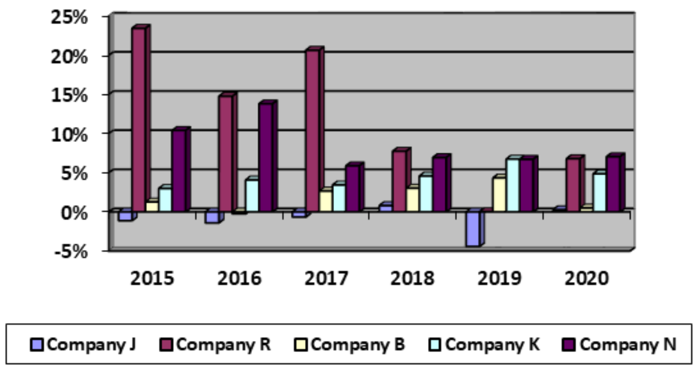

Figure 7. Net profitability (NPR) in Lithuanian road transport companies from 2015 to 2020, %

In companies "J", "B" and "K", the NPR indicator was below 5% from 2015 to 2020, indicating that the company needs innovation and an increase of its advantage in the sector. In company "R", the indicator was above 20% from 2015 to 2017 and below 8% from 2018; a similar situation is also seen in the company "N". However, the most stable NPR indicator is in company "N", which remained almost unchanged from 2017 to 2020; it is likely that COVID-19 did not significantly affect net profit. In companies "J" and "R", the indicator improved in 2020 compared to the previous years. Company "J" only operated profitably in 2018 and 2020. To determine whether COVID-19 had an impact on the growth of the profit of company "J" in 2020, additional studies are needed. In companies "B" and "K", the net profitability indicator decreased in 2020, which could have been caused by the quarantine in Lithuania.

ROA shows how much net profit is contained in one assets euro and what share of the assets is returned in the form of profit. When ROA is above 15%, the situation is considered good, and when it is under 8%, it is unsatisfactory; about 20% or more is considered very good (Tamulevičienė, 2016). From 2015 to 2020, ROA was the most stable in company "N": values comprised 16-35% and there was no significant decrease in 2020. In the company "R", the indicator changed inconsistently from 0% to 30% over the same period, but in 2020, it increased by 12% compared to 2019 (0% in 2019), but this indicator does not show a good situation. In companies "J", "B" and "K", the indicator was extremely low and was below 6% every year, while in 2020, compared to 2019, the indicator decreased in companies "B" and "K", and increased in company "J".

ROE shows the net profit per euro of equity capital. This indicator refers to the profitability of investments and a high value means high dividends. High value is considered from 20% and unsatisfactory value is less than 10% (Tamulevičienė, 2016). The trends of ROE change in selected companies from 2015 to 2020 are similar to trends of ROA change. In company "N", the indicator was high and relatively constant over the period under consideration; the indicator in company "R" from 2015 to 2017 shows a good situation and an unsatisfactory one from 2018 to 2020. In contrast, in the remaining companies, this indicator was low throughout the period being analysed and increased in 2020 compared to 2019 in company "J" and decreased in companies "B" and "K".

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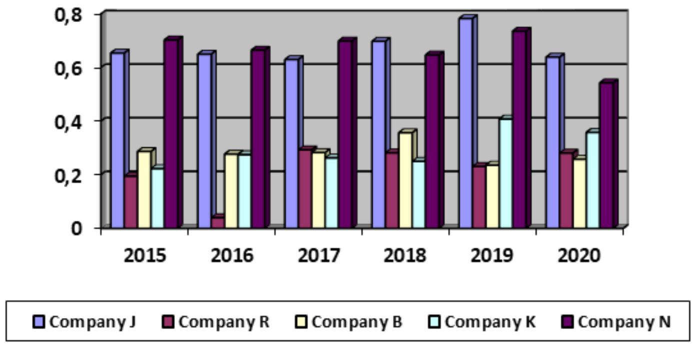

Figure 8. Total debt ratio (TDR) in Lithuanian road transport companies from 2015 to 2020

The TDR shows debts per assets euro (see Figure 8 for results). A high value of the indicator shows that most of the debts are not covered by assets, while a low value means the opposite. Companies whose indicator is low can receive loans easier. The indicator is considered to be good when it is under 0.5 (the best value is 0.2 (Steponavičiūtė & Kamarauskienė, 2016)), and unsatisfactory when it is above 0.7. The TDR of companies can be divided into two groups according to results: For companies "J" and "N", the TDR was high throughout the years analysed and it slightly decreased in 2020, while for companies "R", "B" and "K", the indicator was rather stable and did not exceed 0.5.

The CLR indicator, also known as the current liquidity ratio, shows the coverage of the current liabilities of the company with current assets, namely the amount of current assets per one euro of current liabilities. When the resulting value is less than 1, it means that the company may not be able to cover current liabilities, a value between 1 and 2 is considered good, and when it exceeds 2, it means that the company uses the company's assets inefficiently (Kazakevičius & Jakštas, 2018). The results are shown in Figure 9.

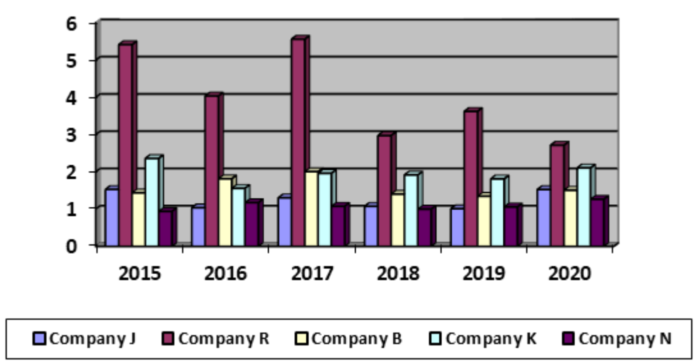

Figure 9. Current liquidity ratio (CLR) in Lithuanian road transport companies from 2015 to 2020

The obtained CLR results in Figure 9 highlight the following aspects: it is likely that company "R" used current assets inefficiently as CLR exceeded 2 from 2015 to 2020. CLR of company "K" is close to 2, but throughout the years, with the exception of 2015 and 2020 close to the value of 2; it can be considered that the situation in the company is good. In companies "J", "B" and "N", the values of the indicator are within the recommended range, indicating that the companies effectively deal with current liabilities.

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The calculated TSR is important for investors. It shows the ratio of equity capital per euro of debt. The indicator value of less than 0.5 is considered bad, about 1-2 is good, and a value above 2 means a very good situation; on the other hand, it may mean that the company has accumulated too many assets (Steponavičiūtė & Kamarauskienė, 2016). From 2015 to 2020, only the indicator of company "R" was above 2, meaning that own funds of the company exceeded borrowed funds. A similar situation is observed in company "K": from 2019 to 2020, the indicator was below 2, but within normal situation limits. Company "B" maintains a stable indicator throughout the period: from 1.15 to 1.63, which shows a fairly good situation. The situation is the opposite in companies "J" and "N" since the TSR did not amount to 1 throughout the years and the majority of the companies' assets are borrowed. This gives investors a negative view of these companies.

The results of the calculations of financial relative indicators do not reflect the same change trends throughout the period and in 2020, as compared to the previous years. In several companies, the indicators improved, while in others, they deteriorated or remained relatively stable, so it is difficult to determine whether such changes were caused by the quarantine imposed in Lithuania because of the spread of COVID-19. The relative indicators method should be used with other methods to support or refute these conclusions.

6. The impact of coronavirus-related quarantine on the financial results of Lithuanian road transport companies

The calculations of the paired correlations coefficients and their weight highlighted a different connection between coronavirus and financial results in individual companies. The calculated paired correlation connections between the number of quarantine days (*Y*) and each calculated relative indicator in the companies (*X*) shows that the financial relative indicators of companies "K" and "N" are not dependent on the number of quarantine days in Lithuania. In other companies, at least one indicator was recorded that correlates with the number of quarantine days per quarters of 2020. For companies "J", "R" and "B", significant correlation coefficients and t values are given in Table 4.

Table 4. Correlation coefficients of relative financial indicators of the companies affected by the COVID-19 quarantine

Company	Value	GPR	NPR	ROA	ROE	TDR	CLR	TSR
Company J	r	-0.7766	0.3742	0.3829	0.3700	*-0.9858*	-0.2521	*0.9801*
	t^{tab}	1.7431	0.5707	0.5862	0.5632	8.2969	0.3685	6.9758
	t^{stat}	4.3027	4.3027	4.3027	4.3027	4.3027	4.3027	4.3027
Company R	r	*-0.9908*	0.3756	0.6029	0.5877	0.2337	-0.4587	-0.3824
	t^{tab}	10.3612	0.5732	1.0687	1.0273	0.3400	0.7299	0.5853
	t^{stat}	4.3027	4.3027	4.3027	4.3027	4.3027	4.3027	4.3027
Company B	r	-0.4815	*-0.9955*	*0.9672*	*0.9855*	-0.3114	0.4580	0.3382
	t^{tab}	0.7769	14.7819	5.3886	8.2032	0.4635	0.7287	0.5082
	t^{stat}	4.3027	4.3027	4.3027	4.3027	4.3027	4.3027	4.3027

Table 4 shows in italics the paired correlations coefficients that are significant. In company "J", there is a strong negative impact of the quarantine on the total debt ratio (r=-0.9858) and a strong positive impact on the total solvency ratio (r=0.9801). This means that the TDR indicator decreased with the increase in the number of quarantine days, which means that the debt of company "J" was better covered by assets and the value of the indicator improved. The TSR indicator increased with the increase in the number of quarantine days. This shows that the company's own funds exceed its debt and that the indicator is improving in 2020. The results of the correlation analysis show that the quarantine effect on company "J" is positive.

In company "R", the correlation coefficient is only significant in the case of overall profitability (r=-0.9908) and there is a strong negative correlation. As the number of quarantine days in Lithuania increased, overall

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profitability in company "R" decreased. This may mean that the benefits of the services sold by the company are decreasing, which may have been caused by quarantine restrictions, and that a restructuring of pricing is needed.

Three significant correlation coefficients were obtained in company "B": net profitability (r=-0.9955), return on assets (r=0.9672) and return on equity (r=0.9855). The strongest impact of quarantine on the financial results of the company compared to other companies was observed in this case. As the number of quarantine days increased, the NPR decreased: there was a strong negative correlation between the two. That is, in 2020, the competitiveness of transport services in company "B" decreased. In contrast, ROA and ROE indicators were affected differently: they increased with the increase in the number of quarantine days. A strong positive correlation is observed. This means that the company was able to use its assets profitably, had sufficient reserves, and the return on the money invested by the owners increased as well. It is stated that the opposite effect on different profitability indicators is normal as this also depends on the assets available, equity, and other indicators as well as on decisions taken in the company (Savickas, 2019).

The correlation analysis shows that the crisis caused by COVID-19 and the quarantine imposed in Lithuania affect road transport companies operating in the transport sector differently. The financial relative indicators of two of the five companies in 2020 were not dependent on quarantine and it is likely that their activities were not restricted during quarantine. The results of other companies were affected differently: two companies experienced a partially positive effect, one of which was also affected negatively, and only one company experienced negative effects because of quarantine. However, the coefficients calculated are not the only way to identify the effects and it is likely that all companies being studied may have been affected by quarantine restrictions in one way or another. This requires more detailed research and performing the same calculations with the financial data of transport companies for 2021.

Conclusions

After the analysis of scientific literature and empirical research, it can be stated that coronavirus affects companies in the road transport sector in Lithuania differently. The scientific literature emphasises the strong negative impact on air transport activities, on all public transport, partially positive impact on rail freight transport, while road transport in the context of COVID-19, which is likely to have been affected by the pandemic the least, is analysed insufficiently. In general, the outbreak of coronavirus caused market imbalance in the transport sector due to announced quarantine restrictions, which affected companies' profitability indicators, changes in sales costs and income in one way or another.

The methodology consists of an expert survey, a calculation of relative indicators and a paired correlation analysis, thereby analysing the impact of COVID-19 on the financial results of transport companies in several stages and producing more accurate research results.

The empirical study confirmed the following hypothesis: the financial results of the investigated Lithuanian road transport companies are not affected in the same way by the crisis caused by COVID-19:

- The expert survey showed that the opinions of ten experts are not coordinated (W=0.2244) and this may mean that the consequences of COVID-19 were different in their companies (70% of the experts confirmed positive or negative effects of COVID-19 on the companies). Demand for transport services decreased for 30% of the companies, and increased for 40%, while supply decreased for 20% and increased for 30%, and remained unchanged in the rest of the companies. The calculated weight of the indicators shows that net profit, current liabilities, gross profit and sales revenue were affected the most. On the basis of the results obtained and literature analysis, appropriate relative indicators were selected.

- The calculations of relative indicators carried out from 2015 to 2020 showed that the changes in the GPR and ROE in 2020 are minimal in comparison with the previous years and COVID-19 impact is absent or minimal; ROA, TDR, CLR, TSR in individual companies changed inconsistently; therefore, it is likely that the indicators decreased or increased due to COVID-19 in some cases. More significant changes compared to other indicators are observed in the change of the NPR indicator: in 2020, it increased in some companies and decreased in others. After summarizing the analysis of the relative indicators from 2015 to 2020, it was found that the most efficient companies were "R" and "K", while the worst situation was in company "J". However, company "J" was the least affected by COVID-19 quarantine, while companies "B" and "K" were the most affected.

- The paired correlation analysis identified three out of five companies whose relative indicators were significantly affected in 2020 by the number of COVID-19 quarantine days. In company "J", quarantine had a strong positive effect on the TDR and TSR indicators, in company "R", GPR was very negatively affected, and in company "B" the following correlation coefficients were significant: NPR was very negatively affected and ROA and ROE were affected very positively, suggesting that the coronavirus crisis had a different effect on the financial results of road transport companies.

In order to identify the exact impact of coronavirus on the financial results of companies in the transport sector better, it is recommended that a more detailed study be carried out to include financial data of 2021 from more companies operating in different modes of transport, and that additional research methods be used.

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PECULIARITIES OF ICT ADOPTION IN NIGERIA

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Abstract. From the vantage point of social change and development, studies have indicated that applying information and communication technology (ICT) in people's daily activities has enabled human beings to amazingly achieve things that were considered unattainable a couple of centuries ago. These remarkable achievements are evident in healthcare system, education, connectivity, economic and religious activities, among others. Studies have further indicated that there is some discrepancy between the extent to which the residents of the advanced countries and developing countries respectively accept ICT use in their daily activities. Hence, the sole objective of this systematic review is to investigate the current position of ICT use by the residents of Nigeria and the socio-cultural, economic, and technical factors that influence the popularity and acceptability of the ICT use in the country. To attain this objective, relevant available previous, mainly indigenous, studies that were published from the year 2015 to the year 2021 were sought and sorted, while the integration of the relevant previous qualitative, quantitative, empirical and theoretical studies were carried out thematically. This study discovered ICT use in tertiary education, maintenance of relationship, complementing healthcare system, ensuring the safety the relatives, religious and economic activities among the residents of the country. The conclusion drawn from this systematic review was that the ICTs use has been widely accepted among Nigerians in their various social activities, however, with challenges posed by several socio-cultural, economic and technical factors.

Keywords: ICT use; social activities; socio-cultural factors; ICT challenges; Nigeria

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Additional disciplines: sociology; educology; information and communication, social change

1. Introduction

On the basis the timeline that signifies the extent to which people in Nigeria have applied the ICTs in their various social activities, studies have established that the use of the ICTs, in particular mobile phones, personal computers, the Internet, among others, is not new in the country. For instance Ajani and Fakunle (2018) have established that people in the country are accustomed to use of mobile phone, as an ICT, and this technology has influenced the trips on various social activities people embark on in Nigeria. Also, Onyema (2019) have emphasized a number of opportunities embedded in the use of ICTs in imparting knowledge to students in the

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country. In the same vein, Ajani and Fakunle (2021), Familusi and Ajayi (2019) as well as Imam-Tamim, Zin and Ibrahim (2016) discussed the ICTs use that enabled people in Nigeria to have constant contact with people in other continents and the impacts that the use has on traditional family structures while in Nigeria. Moreover, Muoghalu and Fakunle (2021) as well as Adenuga, Iahad and Miskon (2020) indicated that the ICTs, in particular android mobile phone and the Internet, have also enabled the residents of Nigeria to access health services in various forms without visiting the medical centres. Among the main reasons often cited for the use of these ICTs in people's daily activities are convenience, time saving and enhancement of the quality of service rendered with the use of the ICTs (Ajani and Fakunle, 2021a; Adenuga, Iahad and Miskon, 2020; Chair, 2017; Abdullahi, Ghazali, Awang, Tahir and Ali, 2015). Moreover, Onyema (2019) added that a number of people, in particular the youths simply use the ICTs only to indicate that they are not lagging behind in technology savvy. At a superficial level, the epic perspective suggests that all these studies indicated wide acceptance of application of the ICTs in the social activities of residents of Nigeria. This current study applied the emic perspective to review the available relevant previous indigenous studies to investigate the current position of ICT use by the residents of Nigeria and the socio-cultural and economic factors that influence the popularity and acceptability of the ICT use in the country, and this account for the novelty value of this study.

2. Theoretical framework

A number of theorists have developed a set of interrelated assumptions about the acceptance or rejection of an idea, a concept, an object, a particular kind of behaviour and technology. Among these theorists is Everett Rogers (2003). In the 5th Edition of *Diffusion of Innovation*, Rogers (2003) implied that the diffusion of any innovation (for instance, a new idea) is not complete at once because not everybody accepts an idea at the initial stage it arrives. However, he asserted that the acceptance of a new innovation involves a gradual process and a series of stages where the key actors, which might be individuals, communities, societies, regions or nations, are in different stages of the acceptance. In this study, the innovation refers to the ICTs as these technologies spread from where they are made (for instance, industrialized countries) to another location where they were not readily available (developing countries). According to Rogers (2003), the key actors in different phases of receptivity of an innovation are: the innovators (who readily accept the use of ICTs and even carry out experiments to get more); the early adopters (those that also use the ICTs to accomplish tasks); the early majority (who adopt the ICTs but are not interested in applying the ICTs to accomplish tasks); the late majority (who stick to the conventional ways of doing things and are not comfortable with the ICTs); and the laggards (with the highest percentage of rejecting the use of ICTs). This relevance of this theory in this review manifests in the study objective which is to investigate the current position of ICT use by the residents of Nigeria. However, this study included the review of the socio-cultural, economic and technical factors that influence the popularity and acceptability of the ICT use in the country.

3. Review procedure and basis

The activities involved in carrying out this systematic review as guided by the sole purpose of this study began with searching the relevant available previous, mainly indigenous, studies that were published from the year 2015 to the year 2021 via database searching to reduce the influence of time lags and to maintain the recency of these studies. This theoretical study was the integration of relevant previous qualitative, quantitative, empirical and theoretical studies that were carried out thematically.

4. Review of the relevant literature

a. ICT use: an opportunity to facilitate learning

Geometric increase in the population of young people signifies need for more schools with needed facilities for smooth learning in Nigeria. Also, the stance of a number of scholars is that the application of the Internet and android phones has lent students a helping hand in their studies in the country (Onyema, 2019; Hejab, Al and Shaidah, 2017; Laidi, 2016; Osubor and Chiemeke, 2015). However, poor economy condition of many developing countries, including Nigeria, coupled with high level of corruption has inhibited the establishment of schools with modern infrastructures to facilitate learning (Niebel, 2018; Kuboye, 2017; Siew, Nor, Nor and Nur, 2017; Zakaria, Fordjour and Afriyie, 2015). These previous indigenous studies have indicated that close examination of the potential roles of incorporating the ICTs use in education could be an alternative to the learners in the country.

Electronic-learning (also known as e-learning) is becoming popularly accepted in Nigeria. Provision of distance learning opportunities emphasizes the importance of e-learning for people residing in the remote areas where opportunities for conventional mode of learning are not readily available. Mobile phones, in particular android types, coupled with the Internet are useful in e-learning (Tossell, Kortum, Shepard, Rahmati, Zhong, 2015). According to Gillwald, Odufuwa and Mothobi (2018), these technological gadgets provide a platform for teacher-student interaction and relation for learning without meeting face-to-face. Moreover, some of the features of mobile phones that facilitate e-learning include text messaging especially for the students that are nervous and afraid of face-to-face communication (Igyuve, Akilla, Oriola and Agbele, 2018). This feature also enables students to individually share private information with their teachers on the state of their learning process, also, texting has been reportedly identify as one of the fast ways to pass information (Onyema, 2019; Hejab *et al.*, 2017).

The millennials in sub-Saharan Africa have experienced swift changes in technology. For instance, invention and introduction of (android or smart) mobile phones and improved internet facilities have enabled the millennials to get interconnected globally (Muoghalu and Fakunle, 2021). In the same vein, the millennials in Nigeria have experienced increase in virtual (online) interaction with school mates, peers, online study groups and teachers (Laidi, 2016; Osubor and Chiemeke, 2015). This interaction has further facilitated learning, tutoring, sharing and disseminating vital information and conducting exercises or tests in the virtual world. Therefore, in the sub-Saharan region of Africa in general and Nigeria in particular, learning is not limited to face-to-face interaction that takes place in the classrooms; it has extended to the virtual world.

Studies have explored the ICTs that are peculiar to the sub-Saharan region including Nigeria (Ajani and Fakunle, 2021; Wobodo, 2020; Onyema, 2019; Niebel, 2018; Olaoye and Adebayo, 2017; Laidi, 2016; Zakaria *et al.*, 2015). These studies found that the technologies that are utilized for learning purposes in the region as a whole include computers (both laptops and desktops), iPods, (android) mobile phones with a series of applications on them that facilitate both online and offline learning. However, drawing on the convergence of diverse opinions, theoretical debates and empirical findings of the extant indigenous studies, the most widely accepted technology utilized for educational purpose in the region is (android) mobile phones.

In Nigeria, use of laptops, projectors, sound systems, the Internet facilities to make the teaching more practical and visual for the teachers and more understandable for the students exists; all these have further emphasized the importance of employing technology devices in classroom teaching and learning (Onyema, 2019; Hejab *et al.*, 2017). However, the use of these ICTs, in particular mobile phone, has not been popularly adopted in a number of lower institutions of learning in particular secondary schools in the country (Laidi, 2016). Moreover, some of these portable technology devices are utilized to record audio and capture video which the students could play to revise things they were taught after the lecture at their leisure time (Tossell *et al.*, 2015). Studies have established

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that teachers of the higher institutions of learning in the country are able to give assignment that in most instances necessitates surfing the web in search of e-books, online journals and other materials that could be assessed only on the Internet (Onyema, 2019; Osubor and Chiemeke, 2015; Zakaria *et al.*, 2015). However, this has not extended to secondary students in the country.

b. Reasons for the popularity of ICT for learning

A closer examination on the reasons behind popular acceptance of mobile phone technology for learning in the region indicates that this device has low cost (however, the cost varies in relation to the brand and type of the phone), various operating systems that accommodate a calculator, camera, audio, video and Internet facilities, calendar among others. Moreover, mobile phones' ability to accommodate various online and offline applications such as the Facebook, WhatsApp, dictionaries, word games, Computer-Based Tests, among others, that could be use while walking from one place to another anytime anywhere and portability, as a result of the weight and size, of mobile phone further lends credence to the devices' popular acceptance.

c. ICT and connectivity

The functions and features of many android mobile phones have generated significant alterations in some of the ways people in sub-Sahara West Africa conduct their daily activities (Ajani and Fakunle, 2021b; Cosmas, Nwankwo, Kanyangale and Okechukwu, 2019; Ajani and Fakunle, 2018; Rahman and Zhang, 2017; Omotayo, 2016; Imam-Tamim, Zin and Ibrahim, 2016). For instance, in the early first quarters of the year 2020, the outbreak of Corona Virus Disease of 2019 (otherwise known as COVID-19) that is transmissible through droplets from the infected respiratory organ of the disease carrier has prompted medical experts to recommend avoiding a close gathering of people and maintaining "social distancing"- a term that refers to keeping six feet distance between two people to avoid the spread of the disease (Muoghalu and Fakunle, 2021). This recommendation has generated an increase in the popularity of conducting video conference through the (android) mobile phones in the region (Wobodo, 2020). This mobile phone feature makes the means of communication and sharing information whereby people are able to maintain eye-to-eye contact available.

Moreover, during the COVID-19 pandemic, the use of android phones and laptops for online classes were suggested as a replacement for holding face-to-face classes, in particular in the higher institutions of learning in Nigeria just as in more advanced countries (Babalola, Anayo and Itoya, 2021; Bokolo, 2020). However, this was not executed in the larger part of the country (Onyema, 2019). Systematic review of extant previous studies has indicated the some of probable reasons cited for the inability to replace holding face-to-face classes with online classes include poor network service delivery by the service provider, costs of sophisticated mobile phones and browsing data subscription, complaints from some students that having online classes affects their level of understanding, theft and technical faults of the students' mobile phones, poor technical know-how of the (smart) mobile phones that generate their underutilization.

d. Poor receptiveness of ICT use in learning

In spite of the popular acceptance that use of technology, in particular smartphones, enhances learning; another school of thought has held an antithetical view. Studies have established that the more the students of higher institutions of learning utilize mobile phone in the educational activities, the lower their academic performance (Hejab *et al.*, 2017; Laidi, 2016; Aregbesola and Asani, 2015; Osubor and Chiemeke, 2015; Tossell, *et al.*, 2015). Hence, these scholars advocate reassessing adopting mobile phones as a tool to facilitate learning among students in tertiary institution. In the same vein, in spite of a number of opportunities in education that mobile phone use intervention tends to generate, use of mobile phones in high schools, popularly known as secondary schools, in Nigeria has not gained popular acceptance. These previous studies have established that authorities of these institutions of learning cited mobile phone abuse and inappropriate phone etiquette among students.

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Moreover, Siew, *et al.* (2017) and Laidi (2016) added that the introduction of mobile phone use among secondary schools students generates loss of full concentration on the lecture taking place in the class for them. These scholars cited that the Apps for entertainment and social media such as Facebook, WhatsApp, Youtube, Instagram among others, on (android) mobile phone divert the attention of these students away from their lectures as a number of these students fail to observe mobile phone use off-limit domains. The poor concentration of the students generates their low level of understanding of what they are taught in class and poor academic performance at large. As a result of negative effects of mobile phone use on secondary school students' academic performance, school authorities have resorted to warning, confiscation and destruction of the mobile phones sighted among the students during their lectures (Onyema, 2019). In addition, another factor identified is poor receptivity of the governments and schools in the region to venture into technology resources to facilitate learning in the classroom (Aregbesola and Asani, 2015).

e. Overview of ICTs use and economic opportunities in Nigeria

Also, advancement of technology has led to the invention of fax machines, photocopier, mobile phone, laptops and the Internet. These technology devices have gain acceptance as among the tools that promote self-employment in the country (Omoneye, 2019; Gabriel, Ogbiugwe and Ahiauzu, 2016; Agwu and Murray, 2015). A number of the self-employed utilize these devices to render services to their customers and to access useful information that could promote their businesses and to maintain seller-customer relationship by contacting their customers about their products (Okundaye, Fan and Dwyer, 2019). These devices have generally promoted their daily business activities. A number of unemployed youths, both males and females, are able to become self-employed by getting involved in business activities actuated by the Information Communication Technologies (Ajani and Fakunle, 2021a; Okundaye *et al.*, 2019; Abdullahi, *et al.*, 2015). Such business activities include sales of data for browsing and recharge cards, sales of mobile phones, phone accessories, computers and computer accessories. Ajani and Fakunle (2021a) further portray the impact of the ICTs in engendering gender equality in the region.

The Internet is one of the components of technology that have introduced new services in the country. For instance, the Internet has generated online shopping which in turn has bred the proliferation of a number of business centres (such as Jumia, Konga, Slot, Kara, Parktel Online, Dealdey, Kaymu, among others) that provide online services. Online shopping has further boosted the economy in the region. Technology has generated a number of advantages for the people in the country through online shopping. For instance, reports about online shopping show that online shoppers in the region found it user-friendly and it provides the users the means of making their choices at their convenient time and location (Cosmas *et al.*, 2019). Moreover, Olaoye and Adebayo (2017) found that ICT has enabled the introduction of cashless policy into the country which tends to generate a decrease in the workload of workers that deals with counting banknotes, however, with several challenges in particular, poor network service delivery.

Teleconference, telecommuting and tele-working promote flexibility of work and working arrangements. However, in the country, teleconference and tele-working to promote business activities have not been popularly accepted as people still have a greater preference for face-to-face interaction (Bokolo, 2020; Ajani and Fakunle, 2018). This preference is as a result of the challenges that people face in the Internet use such as the cost incurred to access the Internet, poor network service delivery, and the cost of sophisticated means of communication that has suitable applications for teleconferencing such as laptops and suitable smartphones (Ajani and Fakunle, 2021a; Ajani Fakunle, 2018).

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f. ICTs use and religion

The richness of the country in culture and tradition manifests in the religious activities and other social engagements of the people living in the region. The advent of the Information and Communication Technology in the country has prompted studies on the influence of mobile phone, laptops and the Internet use on social activities of the residents of the region (Ajani and Fakunle, 2021a; Muoghalu and Fakunle, 2021; Ajani and Fakunle, 2018; Tob-Ogu, Kumar and Cullen, 2018). In contemporary period, various religions in the world have accommodated the use of ICTs in their practices and this is attainable in the region as well (Wobodo, 2020). For instance, larger percentage of the Moslems, Christians and traditional religion worshippers own mobile phones, laptop or desktop computer and access the Internet through these devices in Nigeria (Omotayo, 2016). This ownership distribution is an indication that the three main religions that exist in the country embraced various aspects of modern technology. Therefore, ICTs have become a part of the valuable religious tools and this attests to the assertion that a number of religions in the contemporary era do not preach against ICTs use.

Technology devices, in particular android phones and laptops, accommodate various Applications (for Bible, Quran, Hymn, Calendar, among others) that are used in religious activities. However, there are people that still opined that replacement or substituting The Holy Books (The Bible and Quran in Nigeria's case) with the Apps that contains the softcopy of these Books on computers and android phones translates to an act of impropriety, hence they considered it sacrilege. In contrast, a large number of people in the country have adopted the use of these Apps in their activities; hence, both religion and advance of technology tend to complement each other in the location. Moreover, people in the region utilized the Apps on their mobile phone to listen to preaching and religious songs. Also, as a proactive measure to curb the increase in transmission of COVID-2019, governments of the countries in the region declared total lockdown to restrict movement and physical gathering, and to avoid physical contact among people. Therefore, worshippers in the region resorted to video conferencing and virtual meetings to maintain eye-to-eye contact and to conduct their services and other religious activities (Amadi-Nche, 2021).

The ICTs have generated online services that further promote centralization of tradition, culture and mode of worship for worshippers that belong to the same denomination in the region. This centralization further tends to promote oneness among the congregation as they all listen to the same sermons, and are open to the same teachings and doctrines. In a part of the region, Ajani and Fakunle (2021a) established that mobile phone use has generated more trips on religious activities for women than for men, while both men and women have accessed more information about their religious programmes and this results in increased participation.

g. ICT use for safety

Seeking help in any state of emergency has justified mobile phone ownership for a number of people in the region. For instance, people in the region have expressed that mobile phones have offered an opportunity to get an instant connection between them and those that would help them in the event of a need for help or assistance. However, unlike in advanced countries where family members use Global Positioning System (GPS) based services to track one another for protection (Auyo, Idris, Mato, Ibrahim, 2020; Ashara, Saleh, Hassan and Kaura, 2020; Kemi and Happiness, 2016), in the region, these services are used underutilized as they are mainly used by the security agencies to track crime suspects and criminals while not quite a large number of people employ the services to track their property such as vehicles in the stead of family members (Abulude, Akinnusotu and Adeyemi, 2015).

h. ICT and healthcare

Muoghalu and Fakunle (2021) observed that steady rise in the number of the residents of Nigeria and low number of the qualified medical practitioners that are accessible, coupled with the monetary cost of healthcare services has enabled telemedicine to gain popularity in the country. According to Manyati and Mutsau (2020) as well as

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Ibekwe and Fasunla, (2020), telemedicine, a concept that denotes provision of healthcare services via the Internet, has helped in bridging the gap between the reality and appropriate proportion of heath service delivery. Also, Adenuga, Iahad and Miskon (2020) added that the Internet as an ICT has provided a platform for people in the country to communicate and share vital information about their health condition with the medical experts, and to seek advice from knowledgeable people about a particular kind of disease and how such a disease is partially managed or totally controlled. Adenuga, Iahad, Miskon (2017) further added that the ICT has enabled medical experts from the remote places both in and outside the country to render humanitarian services to the masses by posting health-related information about patient self-care and the outbreak of a particular disease and the measures to curtail the pandemic.

One of the main factors that characterize the majority of the developing countries is poverty. The majority of the financially challenged people are denied of the access to quality health service delivery in the country (Idoga, Toycan, Nadiri and Çelebi, 2019). Governments in Nigeria at different levels have made efforts to ensure that the masses are able to gain easy access to quality health services; therefore, several programmes are initiated. Among the programmes is National Health Insurance Scheme (NHIS) where people have to register with forty-five thousand Naira, which is equivalent to one hundred US Dollars as of July 2021, so that the people that have registered for this scheme are only obliged to pay just ten percent of the total cost of the medical service they get. However, one of the major demerits of the scheme is that a number of people in the country live below one US Dollars per day coupled with the present astronomical increase in the price of goods translates to a concomitant increase in the inability of this set of people to enjoy this scheme. In the other way, Muoghalu and Fakunle (2021) noticed that the use of the Internet for enlightenment and dissemination of health-related issues and essential information about enhancing public health tends to generate prevention of illness in the body and drastic reduction in the cost maintaining people's wellbeing. Moreover, these scholars noted that such medical costs as medical consultancy fee, among others are averted with the use the ICTs. Also, Ajani and Fakunle (2018) found that people in the country utilized mobile phone, as an ICT, to call on the relatives and medical experts to seek help in when the need arrives.

i. The Challenges of Information Technology in Nigeria: Indigenous studies have uncovered multifarious challenges people in Nigeria encounter in using the Internet and mobile phones. Some of these challenges include:

(i) Economic barrier

One major problem that characterizes the majority of the developing countries, including Nigeria is high level of poverty among people (Bokolo, 2020; Idoga, *et al.,* 2019; Okundaye, *et al.,* 2019). Therefore, poverty has compounded the challenges that people encounter in possessing android phones or personal computers and accessing the Internet. For instance, a large number of residents of the region are faced with the challenge of covering the monetary costs of owning these gadgets and high tariff of accessing the Internet charged by the telecommunication service providers (Muoghalu and Fakunle, 2021; Igyuve *et al.,* 2018).

(ii) Poor network service delivery by telecommunication service providers

Poor network coverage in the service delivery of telecommunication service providers in the country limits the access that the Internet users have to surf the Internet. People in large cities, towns and, in general, urban centres have greater access to use of these ICTs as a result of the availability of the facilities such as electricity, network coverage, among others in these centres. However, people such as farmers and petty traders in rural areas of the region are able to use mobile phones and the Internet only where the network service covers, the coverage in most instances is limited to urban areas or where there is high population of people (Muoghalu and Fakunle, 2021; Agwu and Murray, 2015). Hence, the unavailability of the network service constitutes a barrier that prevents these people from using mobile phones or accessing information via the Internet at their workplaces.

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(iii) Theft and cyber-crime
As a result of high crime rate, a number of mobile phone users in the region have cited losing their phones through theft and this has denied them of the benefits that they could have gained from using the phones (Ajani and Fakunle, 2018). These scholars, moreover, found that more women reported phone theft than men in southwestern part of Nigeria. Also, reports on cyber-crime have indicated that people in the region are not free from being innocent dupes and victims of fraudulent acts via mobile phones (Asongu and Le, 2017).

(iv) Technical-know-how and underutilization
Inability of phone-users to understand the language that the phone-makers used to identify the icons and directions to operate and fully utilize this gadget is another barrier (Ajani and Fakunle, 2018; Chair, 2017). The descriptions on computers and most of the mobile phones supplied to the country are largely in foreign languages and only the literate are suggested to be able to understand and fully utilize the functions on these technology gadgets. However, some phone-makers have programmed different local languages on their brands, only the literate are still able to understand the functions on these gadgets. Moreover, a number of phone users are mere concerned with making and receiving phone calls and messages on their phones while other functions are neglected or the users are not aware of other uses.

(v) Technical faults
Frequent technical fault of these technology gadgets, coupled with extant high level of poverty, is another barrier that the residents of the region face (Chair, 2017; Gabriel *et al.*, 2016). The maintenance costs of technology gadgets have discouraged a number of people in the region from harnessing the benefits accrued from using sophisticated mobile phone and computers.

(vi) Unfavourable cultural practices and social norms
In several parts of the region, there are extant social norms and cultural practices that subtly constitute underlain barriers to using modern technology gadgets to the fullest benefits. In the region, in spite of the concerted efforts of government and non-governmental organisations to curb gender inequality, there are several cultural factors that subtly limit women economic empowerment and access to education (Mumporezea and Prieler, 2017; Goswami and Dutta, 2016; Motilewa, Onakoya and Oke, 2015). These factors include the widely-held belief that women are mainly to prepare food, nurse children and take care of their home; therefore, women are believed to be subjected to attaining low level of formal education and having access to only the resources their husbands provide for them. Women low level of literacy and poor economic power translate to their poor accessibility to the Information Technology.

5. Conclusions and prospects for future research

The conclusion drawn from this systematic review was that ICTs use has been widely accepted among Nigerians in their various social activities, however, with several challenges. These challenges are signals for the network service providers to devise means of improving their service delivery and to expand their network coverage, for the security agencies to devise means of curbing mobile phone theft, for the authorities of the high schools to incorporate ICTs use in imparting knowledge on students and for the policy-makers to create the environment that favours the use of these ICTs by the masses in the country. The main limitation of this systematic review, however, was envisaged to manifest in the content validity of the employed previous studies pertaining to the ICT use by the masses in Nigeria as this study absolutely hinged on them. Therefore, this limitation advocated a similar but empirical study.

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FOOD CONSUMPTION KNOWLEDGE AND HABITS IN A DEVELOPING COUNTRY: A CASE OF LEBANON*

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Abstract. This research work investigated the Lebanese consumers' knowledge about food fibre and their food habits according to age groups and gender. The study was conducted from January 2021 till end of March 2021. Due to the pandemic of Covid-19 and the lockdown, the questionnaire was administered randomly through social media. The survey consisted of a longitudinal study carried out on a non-probabilistic convenience sample of 258 Lebanese participants. The responses were used to undertake a quantitative, descriptive and analytical study. The questionnaires received and considered valid, were mostly from women (59.7%) and essentially living in an urban environment (78.3%). To analyse the data, basic descriptive statistics were considered on a first level. Additionally, statistical tests were also carried out (Student t test for comparisons between two groups). Finally, results and analysis were done to evaluate the importance of food knowledge among these people in addition to their eating habits and the possible gender differences. The results revealed that there are some gender inequalities ($F=6.238$, $\alpha= 0.0013$) in terms of knowledge about food fibre, but no living environment differences were found ($F=0.36$, $\alpha=0.85$). Additionally, consumption habits showed major differences between female and male food behaviour, especially when it comes to eating: the frequency of eating outside from home, eating fast food and consuming fruits. The value of this study focuses on the food knowledge and habits in Lebanon, specifically in a country defined by a multi-ethnical diversity and religiosity and where food habits were mainly related to social behaviour. Therefore, this study adds more knowledge about these people's food behaviour and valuable information about specific food attitudes.

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Additional disciplines: Public health; Regional development; Information

1. Introduction

Researchers address various changes in the knowledge about food components and the eating habits among variety of civilizations and the diversity of green, organic, rich in fibres and sustainable product purchase and consumption behaviour among people. One of the key components of food literacy is food knowledge and a cultural merge of nutritional, health and environmental knowledge (Azevedo Perry et al., 2017). It has been widely demonstrated that the possession of good levels of food knowledge positively influences eating behaviours (Wijayaratne et al., 2018). However, it is still unclear whether food knowledge is more effective in promoting healthy eating habits (Truman et al., 2017). The relationship between food knowledge and purchase behaviour has received experimental attention over the last decade (National Academies of Sciences, Engineering, and Medicine, 2016), whereas procedural skills such as food preparation and declarative knowledge like the information about nutritional properties of food are both instrumental for boosting healthy behaviours (Kolasa et al., 2001).

Furthermore, a noticeable phenomenon about young generations (Generation Y aged from 18 to 35 years) eating habits exhibit their powerful cohort in the restaurant industry (Yoon & Chung, 2018) where a significant percentage of their expenditure is spent on dining out activities (Nyheim et al., 2015). They dine out twice as much as the rest of the population and spend more money on eating out. This fact is very important to the researchers because understanding consumer preferences and consumer segments in a market-based economy is crucial and some broad assessments have been done to understand these needs and preferences (Okumus et al., 2021; Rosenbaum et al., 2015). It is important to identify the consumer's expectations and build appropriate marketing strategies in the world of business and restaurants industry. These young generation's concerns regarding their health are increasing (Y.-H. C. Sun, 2008). Members of this cohort view themselves as health conscious and adventurous (Roseman et al., 2017). They prefer green restaurants, healthy menus and quality foods (Jang et al., 2011). Additionally, they spend a greater proportion of their income on prepared foods and cook at home from scratch less frequently than earlier cohorts (Namin et al., 2020). They also eat out more, and spend more when they do, than other cohorts. They view dining out as an experience (Hammond et al., 2013) and want to enjoy a nice meal out, even when financially short. They also appreciate the social aspects of dining out and prefer communal tables at restaurants where either they eat in large groups of friends and colleagues, or they are seated with strangers. Aligned with the evident increase in the income and wealth, eating out has become more and more popular in todays' society, particularly in developed counties (Kolanowski et al., 2020).

Lately, a nutritional transition in food choices has been observed in Lebanon, shifting from the traditional Mediterranean diet to the globalized fast-food pattern. Consequently, young adults' dietary habits have been particularly impacted. A study conducted by Nyheim et al. (Nyheim et al., 2015) about Lebanese obesity problems among university students showed that overweight and obesity are more and more frequent among young people, which, combined with unhealthy lifestyles, such as smoking and physical inactivity, can increase substantially the risk of chronic diseases. Hence, nutritional knowledge specifically about food fibres may act as a deterrent against these changes in food habits. Furthermore, awareness campaigns aimed at increasing the level of knowledge about food may be decisive to significantly reduce the prevalence of obesity and chronic diseases

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among Lebanese population, through the promotion of healthy eating habits specially in a developing country. On the other hand, and in terms of eating habits, a study conducted at Midwestern University on a sample of 286 students (105 male and 181 female), reported that 94.4% of the participants recognize the importance of eating a variety of foods for improved health (Davy et al., 2006). In another study, healthful diet was classified as a diet that included more fruits and vegetables, and less fat (Wardle et al., 2004). The unhealthy eating habits of younger generation were noticed in the intake of fried food, in a developed country (Yahia et al., 2008).

To the best of the authors knowledge, no prior study combined the two questions of knowledge about food fibres and the food habits consumptions in order to investigate food choices and awareness about food components among Lebanese citizens. Also, the authors did not find any previous study exploring consumers' sociodemographic profiling, in terms of age and gender and living environment, in relation to food knowledge about fibres components and eating habits. The authors think that the assessment of consumers sociodemographic profiling might bring new insights into the understanding of food purchase behaviour and healthy lifestyles promotion. The present study intends to contribute to the existing literature by addressing the associations between food knowledge and eating habits in Lebanon and it will add more knowledge to a previous study conducted on Lebanese people motivational eating factors (Yahia et al., 2008). Lebanese food consumption habits and their level of knowledge on food fibres may improve their eating habits by promoting the adoption of healthier food choices.

The purpose of this study is to assess Lebanese eating habits and to investigate the Lebanese consumers' knowledge about food fibre according to gender and age, looking for differences between generation X (aged 35 years or more) and Y (between 18 and 35 years).

2. Materials and Methods

This research was undertaken on a non-probabilistic convenience sample of 273 Lebanese participants. However, only 258 questionnaires were considered valid to include in this quantitative, transversal, descriptive and analytical study. It was conducted from January 2021 till end of March 2021. Due to the pandemic of Covid-19 and the lockdown, the questionnaire was administered randomly through social media. We used the Google Forms to collect the survey responses, which is common and friendly to most Lebanese people enabling all our respondents to answer easily all the questions. By using the internet to disclose the questionnaire we targeted people with access to internet and computer or other mobile devices. The latest estimate dated February 2021 held by the Datareportal Digital 2021 Lebanon (*Digital in Lebanon*, sem data) indicates that 78.2% of Lebanese people can access the Internet at home, via any device type and connection (internet penetration), from a total population of 6.8 Million Lebanese citizens. We used a convenience sample, recruited according to facility and considering the restrictions of the COVID-19 pandemic. Although convenience samples are described as having some limitations, namely not allowing direct generalization of the conclusions from the sample to the whole population, it is also reported that they have some positive aspects, mostly the possibility to easy recruit participants, and they can be used to carry out exploratory research (R. P. F. Guiné, Florença, Barroca, et al., 2020; R. P. F. Guiné, Florença, Villalobos Moya, et al., 2020). Even though being a convenience sample, adequacy of the sample size was evaluated to serve as an indicator. For this, some assumptions were considered: •Confidence interval = 90%, •Z score = 1.65, •Power of the test = 95% (minimum acceptable probability of preventing type II error = 0.05) (Levin & Fox, 2004; Triola & Flores, 2017), •Lebanese population = 6.8 million (*Digital in Lebanon*, sem data): assuming that the target population was 30% of adults, and considering the above mentioned conditions, the minimum sample size was calculated as 229 respondents (Cochran, 1977; Levine et al., 2008). The number of valid questionnaires obtained in this survey was 258, which is over the minimum.

The conducted research was approved on the 15th of May 2020 Reference number USJ-2020-89. The study is integrated in an international project lead by CI&DETS research centre of the polytechnic institute of Viseu in

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Portugal (Boustani & Guiné, 2020). The questionnaire included different parts as follows: ●Demographics (4 items) (age; education; gender; living environment); ●Consumption habits (5 items) whose answer was given as frequency of consumption per week; ●Knowledge about food fibres (6 items), whose answerers were given on a 5-point Likert scale.

Data processing was carried out using IBM Statistics (Statistical Package for the Social Sciences SPSS v24). Different statistical techniques were used to treat the data. On a first step the normality of the distribution was assessed by measuring Skewness (SK) and Kurtosis (K). As for the central tendency, the researchers focused on mean, standard deviation and coefficient of variation. The crosstabs tool was also used to analyse and report data across groups. Results were expressed as means ± standard deviation (SD). Parametric variables were analysed using students' t-test to examine differences in the characteristics of respondents across groups. All reported P values were made on the basis of 2-sided tests and compared to a significance level of 5%; differences were considered statistically significant at $P < 0.05$.

The questions about consumption were as follows: How many meals do you have in a week that include vegetables and/or salads? How many pieces of fruit do you eat per week? How often do you eat outside from home per week? How many times a week do you eat fast food? How many times a week do you eat whole grains (whole-wheat bread, whole-wheat pasta ...)? Given the dispersion of possible values, for presentation of of the results, the answers given by the participants to these questions were grouped into categories according to each type. For the consumption of fruits/vegetables&salads/whole cereals the categories were: 2-3 times per day, 1 time per day, 4-5 times per week, 2-3 times per week, 1 time per week, 1 time per month, Never. For variables eating out and fast-food consumption the categories were: 1 time per day, 4-5 times per week, 2-3 times per week, 1 time per week, 1 time per month, Never. Note that for some cases some of the categories were empty, meaning that there were not any answers falling into that category. For the evaluation of gender or age differences, a mean value for each of the variables was computed as an average from all the answers of the participants, and these mean values were submitted to a parametric test for comparison of means between two groups (T-test).

In the case of knowledge, the variables were: Fibres are naturally present in vegetable foods; Foods of animal origin have no fibres (unless added); The average adult should eat 25g of fibre per day; Whole foods have less fibre than non-whole foods; The unpeeled fruits have less fibre than peeled ones; Dietary fibres are classified into soluble and insoluble. For all these the respondents were asked to indicate their level of agreement on a 5 points Likert scale as follows: 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree. In this case, to evaluate the gender or age differences also a mean value was calculated for each of the questions as an average from all the answers. Again, the parametric T-test was used to compare the means of the different groups being compared.

The research questions of our research are the following:

RQ1: What are the food habits among the Lebanese women and men?
RQ2: what is the knowledge about food fibres among the Lebanese women and men?
RQ3: Are there any gender differences in the knowledge about food fibres and in Lebanese consumer habits?
RQ4: Are there any age differences in the knowledge about food fibres and in Lebanese consumer habits?

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3. Results

3.1. Sociodemographic characterization

Table 1 presents the demographical data for the sample studied. Having in mind to compare the X and Y generations, as mentioned above, the variable age was classified into these two categories. So, there were almost half of the participants in each of the classes, with 51.9% in the young category and 48.1% being aged and from 36 and above. Also, the gender distribution is relatively even, with 59.7% women and 40.3% men. However, for education level and for living environment the groups were highly different, with an expressive majority of participants holding a university degree (93.0%) and living in an urban environment (78.3%). Therefore, given that the distribution of the participants in this study was almost equitable in terms of gender and age and categories, the researchers focused on the study about the variables of food consumption habits and knowledge of the Lebanese across these groups, rather than those groups where the representativeness was not so even. Our sample was found relatively representative of the Lebanese population, since, Lebanon demographic traits are as follows for gender: 49.6% of women *versus* 50.4% of men. Hence Lebanon has approximately half women while in our sample we have about 60%, so the sample can be considered representative of the gender distribution in Lebanon. As for the living environment: 89.0% of Lebanon's population lives in urban centers, while 11.0% live in rural areas, and again this sample is representative of the Lebanese demographic living areas.

Table 1. Sociodemographic characterization of the study sample

Variable	Group	Frequency	Percent
Age	18 to 35 years (Class Y)	134	51.9
	Over 35 years (Class X)	124	48.1
Education	Secondary school	18	7.0
	University degree	240	93.0
Sex	Female	154	59.7
	Male	104	40.3
Living environment	Rural	56	21.7
	Urban	202	78.3
Total		258	100

3.2. Food consumption habits among the Lebanese women and men

A cross sectional analysis for the set of questions related to food habits was conducted to answer research question RQ1. The results in Table 2 show that an expressive majority of the surveyed Lebanese people (84.1%) consume fruits regularly (more than 3 times per week), regardless of gender (♂ 79.7% vs ♀ 87.0%). With regards to the consumption of vegetables and salads, it appears that 58.7% of men and 63.6% of women eat salad daily. As for daily whole cereals consumption accounts for only 27.6%, slightly higher in women (♂ 20.2% vs ♀ 32.5%). When asked whether they eat out more than two times per week, 29.9% responded affirmatively more for women than men (♂ 41.3% vs ♀ 22.0%). The fast food is consumed weekly by 68.6% (♂75.0%; ♀64.2%). These results show a certain awareness and good food consumption habits for Lebanese people as of high percentages of healthy food intake. The researchers' main concern is about the fast-food consumption, which represents a high percentage of frequent fast-food intake. It appears that most women (53.2%) eat outside just once per week whereas men visit restaurants more often (just 40.4% once per week), this might be due to their different lifestyle or work situation.

In a similar study by Guiné et al. (2020) undertaken on six countries (Argentina, Croatia, Hungary, Latvia, Portugal and Romania) it was found that 78.2% of the participants had a low consumption of vegetables and salads and also of fruits (for 92.3% of participants). Regarding whole cereals, 23.1% of participants never consumed them and 72.6% has a low consumption. In the same work (R. P. F. Guiné, Florença, Leal, et al., 2020)

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the authors found variations in the consumption of vegetables, salads, fruits and whole cereals across genders and age groups, as well as across countries. In a recent survey by Lee and Pena-y-lillo (Lee & Pena-y-Lillo, 2021), for US participants, it was found that vegetable and fruit consumption were positively correlated with education and income, meaning that higher education level and higher income were factors that contributed to an increase consumption of these foods. The same authors also reported that these observed differences across social groups are explained by communication inequalities, which are linked with the level of information. The social cognitive theory emphasizes the critical role that cognitive processes have in shaping the human behaviour. According to this theory, a person considers cognitive, social, and environmental factors to define their motivations, including the motivations for food choice (Bandura, 1999). In the work by Garcia et al. (2021) are explored the cognitive factors associated with the frequency of eating outside from home, by using multinomial models to compute relative risk ratios. They found that for every 1-unit increase in mindfulness disposition, the risk of a participant eating out every week compared with every month decreased by a factor of 0.42. Similar results indicated that other factor besides mindful disposition also contributed to the increased frequency of eating out, namely, the higher nutrition knowledge. Contrarily, the self-efficacy resulted in a decreased frequency of eating outside from home.

Table 2. Reported food consumption habits according to gender

	Women		**Men**		**Global sample**	
	N	**%(1)**	**N**	**%(1)**	**N**	**%(1)**
Frequency of consuming fruits						
2-3 times per day	45	29.2	25	24.0	70	27.1
1 time per day	43	27.9	28	26.9	71	27.5
4-5 times per week	46	29.9	30	28.8	76	29.5
2-3 times per week	17	11.0	16	15.4	33	12.8
1 time per week	3	1.9	5	4.8	8	3.1
Frequency of consuming vegetables and salads						
2-3 times per day	43	27.9	29	27.9	72	27.9
1 time per day	55	35.7	32	30.8	87	33.7
4-5 times per week	18	11.7	19	18.3	37	14.3
2-3 times per week	26	16.9	22	21.2	48	18.6
1 time per week	12	7.8	2	1.9	14	5.4
Frequency of consuming whole cereals						
2-3 times per day	12	7.8	8	7.7	20	7.8
1 time per day	38	24.7	13	12.5	51	19.8
4-5 times per week	12	7.8	9	8.7	21	8.1
2-3 times per week	53	34.4	35	33.7	88	34.1
1 time per week	18	11.7	24	23.1	42	16.3
1 time per month	13	8.4	7	6.7	20	7.8
Never	8	5.2	8	7.7	16	6.2
Frequency of eating out						
1 time per day	3	1.9	12	11.5	15	5.8
4-5 times per week	8	5.2	4	3.8	12	4.7
2-3 times per week	23	14.9	27	26.0	50	19.4
1 time per week	82	53.2	42	40.4	124	48.1
1 time per month	38	24.7	19	18.3	57	22.1
Frequency of consuming fast food						
1 time per day	3	1.9	4	3.8	7	2.7
4-5 times per week	1	0.6	6	5.8	7	2.7
2-3 times per week	22	14.3	29	27.9	51	19.8
1 time per week	73	47.4	39	37.5	112	43.4
1 time per month	47	30.5	20	19.2	67	26.0
Never	8	5.2	6	5.8	14	5.4
Total	154	100.0	104	100.0	258	100.0

(1)Percentage within sex.

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3.3. Knowledge about food fibres among the Lebanese women and men

In order to answer research question RQ2 concerning the level of knowledge about food fibres for both men and women, also a cross sectional analysis was made. In this, a set of questions (6 items) tested the level of knowledge of the participants; the questions were related to the existence of fibres in vegetable foods, in Foods of animal origin, in peeled or unpeeled fruits, the adult daily fibre consumption and the different classification of dietary fibres (soluble and insoluble). In the analysis of the statistics related to food literacy and knowledge, it appears that the level of knowledge is somehow low which is indicative that Lebanese people lack intervention in terms of healthy eating habits and don't have a wide vision about the existence of fibres in different types of food (Table 3). There are some differences in the percentages and distribution of the Likert scale replies of male and female participants in most answers. Regarding the presence of fibre in vegetable foods (a true statement), 22% of men and 21% of women know this, so it is quite even for both genders. As to the absence of fibres in animal foods (also true), more women (65%) know this than men (33%). Concerning the recommended dose 25g of fibre per day for adults, 41% of men know which is lower than the percentage of women (65%). Regarding the lower fibre content of whole foods (this was given as a false information), again women are more informed than men (♀ 69.0% vs ♂ 40.0% disagree with the false information presented). Also, the fibre content of peeled and unpeeled fruits was presented as a false statement and the women were more informed than men, being able to recognize it was a false statement (♀ 77.0% vs ♂ 56.0% disagree). Finally, about the classification of fibre into soluble and insoluble, men and women showed some differences (♀ 46.0% vs ♂ 40.0%).

Regardless of the above-mentioned results, it is important to notice, a high proportion of respondents who answered "Neither agree nor disagree", showing that they are not able to express an opinion, lacking information about the topics. The work by Ferreira et al. (2016) undertaken on ten different countries, showed that mostly people get information about dietary fibre from the internet, although recognizing that television might be a most suitable way to disseminate this type of information. The work by Georgescu et al. (2019) revealed that percentage of correct answers regarding knowledge about health effects of dietary fibre were generally low.

Table 3. Reported food knowledge according to gender

		Fibres are naturally present in vegetable foods.			**Foods of animal origin have no fibres (unless added).**		
		Women	**Men**	**Total**	**Women**	**Men**	**Total**
Strongly disagree	Count	39	14	53	8	10	18
	% within Q	73.60%	26.40%	100.00%	44.40%	55.60%	100.00%
	% within Sex	25.30%	13.50%	20.50%	5.20%	9.60%	7.00%
Disagree	Count	74	55	129	38	38	76
	% within Q	57.40%	42.60%	100.00%	50.00%	50.00%	100.00%
	% within Sex	48.10%	52.90%	50.00%	24.70%	36.50%	29.50%
Neither agree nor disagree	Count	20	13	33	43	23	66
	% within Q	60.60%	39.40%	100.00%	65.20%	34.80%	100.00%
	% within Sex	13.00%	12.50%	12.80%	27.90%	22.10%	25.60%
Agree	Count	16	15	31	51	25	76
	% within Q	51.60%	48.40%	100.00%	67.10%	32.90%	100.00%
	% within Sex	10.40%	14.40%	12.00%	33.10%	24.00%	29.50%
Strongly agree	Count	5	7	12	14	8	22
	% within Q	41.70%	58.30%	100.00%	63.60%	36.40%	100.00%
	% within Sex	3.20%	6.70%	4.70%	9.10%	7.70%	8.50%
Total	Count	154	104	258	154	104	258
	% within Q	59.70%	40.30%	100.00%	59.70%	40.30%	100.00%
	% within Sex	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		The average adult should eat 25g of fibre per day.			**Whole foods have less fibre than non-whole foods.**		

Strongly disagree	Count	2	4	6	26	18	44
	% within Q	33.30%	66.70%	100.00%	59.10%	40.90%	100.00%
	% within Sex	1.30%	3.80%	2.30%	16.90%	17.30%	17.10%
Disagree	Count	9	13	22	43	22	65
	% within Q	40.90%	59.10%	100.00%	66.20%	33.80%	100.00%
	% within Sex	5.80%	12.50%	8.50%	27.90%	21.20%	25.20%
Neither agree nor disagree	Count	78	46	124	34	27	61
	% within Q	62.90%	37.10%	100.00%	55.70%	44.30%	100.00%
	% within Sex	50.60%	44.20%	48.10%	22.10%	26.00%	23.60%
Agree	Count	49	31	80	41	29	70
	% within Q	61.30%	38.80%	100.00%	58.60%	41.40%	100.00%
	% within Sex	31.80%	29.80%	31.00%	26.60%	27.90%	27.10%
Strongly agree	Count	16	10	26	10	8	18
	% within Q	61.50%	38.50%	100.00%	55.60%	44.40%	100.00%
	% within Sex	10.40%	9.60%	10.10%	6.50%	7.70%	7.00%
Total	Count	154	104	258	154	104	258
	% within Q	59.70%	40.30%	100.00%	59.70%	40.30%	100.00%
	% within Sex	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		The unpeeled fruits have less fibre than peeled ones.			**Dietary fibres are classified into soluble and insoluble.**		
Strongly disagree	Count	44	22	66	8	4	12
	% within Q	66.70%	33.30%	100.00%	66.70%	33.30%	100.00%
	% within Sex	28.60%	21.20%	25.60%	5.20%	3.80%	4.70%
Disagree	Count	33	34	67	15	18	33
	% within Q	49.30%	50.70%	100.00%	45.50%	54.50%	100.00%
	% within Sex	21.40%	32.70%	26.00%	9.70%	17.30%	12.80%
Neither agree nor disagree	Count	35	13	48	85	42	127
	% within Q	72.90%	27.10%	100.00%	66.90%	33.10%	100.00%
	% within Sex	22.70%	12.50%	18.60%	55.20%	40.40%	49.20%
Agree	Count	32	28	60	34	25	59
	% within Q	53.30%	46.70%	100.00%	57.60%	42.40%	100.00%
	% within Sex	20.80%	26.90%	23.30%	22.10%	24.00%	22.90%
Strongly agree	Count	10	7	17	12	15	27
	% within Q	58.80%	41.20%	100.00%	44.40%	55.60%	100.00%
	% within Sex	6.50%	6.70%	6.60%	7.80%	14.40%	10.50%
Total	Count	154	104	258	154	104	258
	% within Q	59.70%	40.30%	100.00%	59.70%	40.30%	100.00%
	% within Sex	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

3.4. Evaluation of gender differences in the consumption habits and knowledge about food fibres

To evaluate gender differences and answer RQ3, the t test for independent variables was used, being the results presented in Table 4. As for the existence of gender differences regarding Lebanese food habits, there are significant gender differences for the consumption of fruits, for the frequency of eating out and for the consumption of fast food.

Several studies highlight the need to consume adequate amount of fruits and vegetables, as a way to ingest the necessary requirements of macronutrients (such as protein, carbohydrates, fat, ect…) and micronutrients (vitamins and minerals), as well as bioactive compounds with health effects, like phenolic compounds present abundantly in the plant kingdom (López-González et al., 2021; Manjunath et al., 2021; Morze et al., 2020; Sosalagere et al., 2022).

According to Morse and Driskell (Morse & Driskell, 2009), the explanation for a higher percentage of men reporting to eat at fast-food restaurants than women is because men believed that this type of restaurants constituted cheap alternative. On the other hand, for the women, it was very important the nutrition content of

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food, and therefore they eat at fast food restaurants less often (Morse & Driskell, 2009). Hidaka et al. (Hidaka et al., 2018) concluded that fast food consumption was linked to higher levels of education in women, but the same was not verified in men.

Table 4. Results of T-test for gender differences regarding consumption habits

	Sex	Mean	SD	F	Sig. (P)	T	DF
Consuming fruit	Female	3.03	1.34	5.670	**0.018**	-0.016	206.094
	Male	3.03	1.48				
Consuming vegetables and salads	Female	2.64	1.45	0.141	0.707	-0.353	256
	Male	2.70	1.49				
Eating whole cereals	Female	3.84	1.75	0.607	0.437	-0.653	256
	Male	3.98	1.70				
Eating out	Female	3.42	0.95	7.397	**0.007**	-0.656	196.644
	Male	3.51	1.11				
Consuming fast food	Female	3.71	0.94	11.655	**0.001**	-0.385	181.131
	Male	3.77	1.23				

Furthermore, the authors used the six items in the scale for food knowledge to evaluate the reliability through Cronbach's alfa. The value showed a moderate internal reliability (α=0.642). Again, an independent t-test was conducted to find possible gender differences, whose results are reported in Table 5. The results showed significant differences at the level of 5% only for the last item, about the classification of fibre into soluble and insoluble. Ljubicic et al. (2017) investigated on a sample of Croatian participants, the influence of several variable on the level of knowledge about fibre and fibre consumption, namely variables age, gender, education and living environment. These differences can be used to produce targeted education campaigns to improve eating habits and, as a consequence, the general health status.

Table 5. Results of T-test for gender differences regarding knowledge

	Sex	Mean	SD	F	Sig. (P)	T	DF
Fibres are naturally present in vegetable foods.	Female	2.18	1.03	2.561	0.111	-2.217	256
	Male	2.48	1.11				
Foods of animal origin have no fibres (unless added).	Female	3.16	1.06	1.046	0.307	2.351	256
	Male	2.84	1.13				
The average adult should eat 25g of fibre per day.	Female	3.44	0.81	1.425	0.234	1.395	256
	Male	3.29	0.94				
Whole foods have less fibre than non-whole foods.	Female	2.78	1.20	0.044	0.834	-0.625	256
	Male	2.88	1.22				
The unpeeled fruits have less fibre than peeled ones.	Female	2.55	1.28	0.003	0.959	-0.630	256
	Male	2.65	1.27				
Dietary fibres are classified into soluble and insoluble.	Female	3.18	0.90	6.244	**0.013**	-0.828	199.761
	Male	3.28	1.04				

3.5. Evaluation of age differences in the consumption habits and knowledge about food fibres

Research question RQ4 was addressed with a similar methodology as for RQ3. Table 6 shows the results of t test for age differences regarding the consumption habits and Table 7 the results for t test regarding the food knowledge differences between age classes X (over 35 years) and Y (between 18 and 35 years). A significant difference was found for vegetable and salad consumption according to age group. These results show, particularly, that younger people eat more vegetables and salads when compared with older people. These findings are indicative that younger Lebanese generations are practicing even healthier diets than their ancestors, which is aligned to the theories of difference in food consumption between generations X and Y. Costa et al. (2022) evaluated the differences in fruit and vegetable consumption across generations for a sample of Brazilian

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participants, and found that younger generations consume less fruit than traditionalists, and that contrarily to traditionalists, generations X and Y showed lower vegetables consumption. Hidaka et al. (2018) reported that age was negatively correlated with fast food intake, in a study undertaken in the United States.

When the researchers tested the level of knowledge of the population under study about fiber and food constituents in regard to age groups, they noticed that for all questions, there were no differences relating to age except to their knowledge about fibers constituents in unpeeled fruits compared to peeled ones results presented in Table 7). For this case the P value was equal to 0.023, lower than the significance limit established, meaning that there is a significant difference in the knowledge according to the age group, i.e. between younger and older generation related to fibers in fruit skins.

Although a nutritive diet rich in vitamins, minerals and bioactive substances is essential for a good health status, healthy eating is a complex process which is influenced by a combination of knowledge, skills, and decision-making capabilities, besides personal preference, availability, and affordability. All these dimensions are linked to the concept of food literacy (Deshpande et al., 2009; Hemmer et al., 2021).

Table 6. Results of T-test for gender differences regarding consumption habits

	Age	N	Mean	SD	F	Sig. (P)	T	DF
Consuming fruit	> 35 years	150	2.90	1.36	0.038	0.845	-1.377	256
	18-35 years	108	3.14	1.42				
Consuming vegetables and salads	> 35 years	150	2.53	1.32	14.491	**0.000**	-1.394	253.338
	18-35 years	108	2.78	1.58				
Eating whole cereals	> 35 years	150	3.71	1.66	0.377	0.540	-1.670	256
	18-35 years	108	4.07	1.78				
Eating out	> 35 years	150	3.47	0.94	1.891	0.170	0.157	256
	18-35 years	108	3.45	1.09				
Consuming fast food	> 35 years	150	3.90	1.04	1.160	0.283	2.320	256
	18-35 years	108	3.59	1.08				

Table 7. Results of T-test for gender differences regarding knowledge

	Age	Mean	SD	F	Sig. (P)	T	DF
Fibres are naturally present in vegetable foods.	> 35 years	2.37	1.07	0.440	0.508	0.991	256
	18-35 years	2.24	1.07				
Foods of animal origin have no fibres (unless added).	> 35 years	3.00	1.16	1.250	0.265	-0.434	256
	18-35 years	3.06	1.05				
The average adult should eat 25g of fibre per day.	> 35 years	3.35	0.89	0.032	0.858	-0.589	256
	18-35 years	3.41	0.85				
Whole foods have less fibre than non-whole foods.	> 35 years	2.75	1.25	0.937	0.334	-0.868	256
	18-35 years	2.88	1.17				
The unpeeled fruits have less fibre than peeled ones.	> 35 years	2.61	1.35	5.202	**0.023**	0.240	247.104
	18-35 years	2.57	1.20				
Dietary fibres are classified into soluble and insoluble.	> 35 years	3.23	1.02	3.372	0.067	0.141	256
	18-35 years	3.21	0.90				

4. Discussion

In the past decades, there has been a trend to follow dietary patterns which do not comply with the recommended intake of macronutrients, micronutrients or bioactive compounds present in food, and these inadequate diets have proven to result in severe diet-related non-communicable diseases such as type 2 diabetes, cardiovascular disorders, hypertension and some forms of cancer (Verain et al., 2022). Diets too dense in fat, and especially *trans* saturated fat has been reported to contribute to a number of diseases, like hypertension, obesity and diabetes (Gayed et al., 2021; Otagiri et al., 2021). However, excessive fat has also been proven to affect brain diseases,

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especially those related with ageing, such as Alzheimer's disease (Sarroca et al., 2021). Diets with a high level of protein intake is associated with kidney failure (Kim et al., 2021). The excessive intake of salt has been reported as contributing to the onset of many heart related pathologies, such as coronary heart disease, stroke, myocardial infarction, cardiovascular disease or hypertension (He et al., 2020; Igreja et al., 2019; Ikehara et al., 2012). Still, these studies must encompass that not all patients respond in the same way to salt reduction strategies, and the debate is ongoing (Khan et al., 2020; Messerli et al., 2018). Collins et al. (Collins et al., 2014) conducted a study to evaluate the cost-effectiveness of four different population health policies to reduce dietary salt intake in the United kingdom as a way to prevent coronary heart disease, and they found that all the four policies aimed at reducing the dietary intake of salt could increase the life expectancy while reducing health care expenditure on coronary heart disease. A similar study by Shoaibi et al. (2013) also analysed three salt-reduction interventions from societal perspective in Palestinian territory and found that all evaluated policies resulted in a reduction in salt intake, with an impact on heart health. The burden associated with diseases provoked by inappropriate dietary patterns is a problem worldwide nowadays and governments and policy makers try to implement strategies to improve people's diets with a gain in many aspects of human health (Bhattarai et al., 2020; Lui et al., 2021; Wen et al., 2022). Foods such as fruits, vegetables or salads, and whole cereals are seen as potent allies to improve human health and reduce the risk of disease owing to their beneficial components (Newberry & Lynch, 2021; L. Sun et al., 2021; van der Heijden et al., 2021; Visvanathan & Williamson, 2021). They include vitamins, minerals and bioactive substances such as phenolic compounds with antioxidant activity, which help the human body to fight the harmful effects of oxidative stress (Alì et al., 2021; Jiang et al., 2021; Singh et al., 2020). Dietary fibre, present in this type of foods is particularly important to the health of the gastrointestinal system and certain types of cancer (Gill et al., 2018; Johnson, 2005; Mao et al., 2021; McRae, 2018; Tang et al., 2013; Tomas et al., 2020; Wunjuntuk et al., 2022; Xu et al., 2018). Hence incentive the consumption of fibre rich foods is a way to improve the health of the general population. This wok showed that the Lebanese consume moderate amounts of fruits and vegetables, which might be linked to the influence of the Mediterranean dietary patterns. Nevertheless, the consumption of whole cereals is lower than the amounts recommended. This can be associated with the modernization of eating habits, namely eating out and consuming fast-food frequently, as influences by westernization (Hussain et al., 2019; Leech et al., 2017; Schaalan et al., 2009). The work by Guiné et al. (2020) evaluated the consumption of fruits, vegetables and whole cereals in Portugal, Croatia, Latvia, Romania and Hungary, and it was observed that these foods were also consumed in amounts lower than recommended in all countries. According to Van der Heijden et al. (2021) healthy eating is variable according to the socioeconomic position, and therefore countries with lower average economic power may face more difficulties in implementing effective strategies to promote healthier eating habits. Dhakal and khadka (2021) investigated in what extent the household food budget influences diet quality and weight-related health outcomes in the United States. They observed that families with lower income households, who spent a larger part of their food budget at convenience stores and fast-food restaurants are those practicing lower quality diets, which in turn are associated with a higher risk of obesity. They believe that their work may bring to light possible intervention strategies to address obesity. Penne and Goedemé (2021) reported that in 16 out of 24 EU countries, at least 10% of people experience some kind of financial constraints that limit them to eat healthily. Hence, they suggest that policies should increase their focus on ensuring adequate incomes as a way to improve dietary habits and therefore diminish non-communicable diseases.

Apart from the food consumption habits, one other aspect investigated in this research was the level of knowledge about dietary fibre. The knowledge is a powerful tool to help citizens in general, and food consumers in particular, to make informed choices. Velardo (2015) discusses the concepts of health literacy, nutrition literacy, and food literacy, and how they interrelate proposing a model based on health literacy as a way to facilitate healthy food relationships. Many factors can be pointed out that contribute to poor dietary practices, but they analysis is complex and requires an interdisciplinary approach that includes the social context. Rodriguez (2011) refers that it is important to teach skills to manage health, i.e., give the public the tools to increase their levels of knowledge and take better care of their health status. Public health requires cross-sector collaboration as well as policy actions that directly affect the social determinants of health. Food literacy is a motor to the preparation of nutritious food aimed at a better health (Alexander, 2020; DeSalvo et al., 2016). Shahavandi et al. (2021) reported that higher health literacy levels were associated with better healthy eating patterns in Iranian adults. Palumbo et al. (2019) reported low food literacy among Italians and that inappropriate food literacy contributes to worsening individual health status. Truman and Elliot (2019) published a review that focuses on the barriers to food literacy proficiency evaluating the relationships between food knowledge, attitudes, and behaviors. Their ultimate objective was the development of a model that might be available for researchers, educators, and nutrition professionals to implement effective interventions capable of effectively changing food-related attitudes. The results of the present research showed that the Lebanese have a low knowledge about some aspects related with dietary fibre, like for example, the recommended dosages or the natural sources of fibre. Guiné et al. (2017) reported a good general level of knowledge about the benefits of dietary fibre for the human health on a sample of more than 6 thousand participants from 10 countries. However, for the same sample, the level of knowledge regarding the sources of dietary fibre or recommended dosages was also low, particularly in Egypt, which is a country very close to Lebanon, and with eventually some similarities in economic terms (Guiné et al., 2016). These studies reveal that there is still a long way to go with the goal of improving food literacy as a way to promote better food choices that envisage promotion of health status and reduce the economic burden of food-related diseases.

Conclusions

The importance of this work resided in the highlight of the food knowledge and habits in Lebanon, specifically, in a country defined by a multi-ethnical diversity and religiosity and where food habits were mainly related to social behaviour, therefore this study adds more knowledge about these people´s food behaviour and add more data to specific types of food attitude.

Regarding the food habits, we concluded that the Lebanese consume fruits and vegetables on a daily basis, but the consumption of whole grains is low. The frequency of eating outside form home is high and the consumption of fast food is also very high. In what concerns the knowledge about dietary fibre, it was fund that the Lebanese still lack information about this topic, and therefore this is a problem that the Lebanese authorities should address as a way to improve the health of the population, given the many health benefits of a diet rich in dietary fibre. Therefore, the main highlights are on the low level of knowledge, and the importance to design better strategies to improve the literacy of the Lebanese as a way to incentive them to consume healthier foods, namely in the categories of fruits, vegetables and whole grains, given their proven roles as promoters of health. The evaluation of gender or age differences can bring light as to how targeting each intervention and policy strategy directly to be more effective according to gender or age groups, instead of directing campaigns to the whole population that might not be as effective.

The social and economic context of Lebanon makes it imperative to implement adequate instruments to address the health care systems and just import solutions from other countries' experiences might not be an adequate choice. For this reason, the present work may present an opportunity to build strong campaigns to better inform the Lebanese and help them make more adequate food choices.

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PECULIARITIES OF EMPLOYEE PROFESSIONAL DEVELOPMENT IN THE WORLD, EUROPEAN UNION AND LATVIA*

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Abstract. Within this study, employee professional development is conceptually understood as a component of lifelong learning. The concepts of lifelong learning, a learning society and even a learning economy are popular and theoretically justified as necessary prerequisites for the competitiveness and the economic performance of countries in the modern world. The problem is that Latvia (like most countries with low economic performance) is still not a learning society – especially compared to the countries of the European Union. In this regard, it became necessary to empirically measure the economic importance of employee professional development in the modern world in order to justify the management of lifelong learning based on the economic paradigm. For an empirical interpretation of lifelong learning and employee professional development, the author used the Global Talent Competitiveness Index (GTCI) and indicators of the economic performance of the world's countries for the period from 2018 to 2020. Applying four methods of quantitative data analysis – correlation analysis, regression analysis, comparison of means and discriminant analysis, the author proved the following: in the modern world, employee development is mainly a factor, but also an indicator of competitiveness and economic performance of countries, since significant investments are required to implement employee professional development. Nevertheless, the sustainable management of lifelong learning and the self-motivation of employees helps to create a learning society not only based on material investment, but also through the development of a learning culture.

Keywords: employee professional development; economic importance; lifelong learning; learning society; sustainable management; European Union; Latvia

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JEL Classifications: C18, D22, E70

1. Introduction

In scientific and analytical literature, employee professional development is conceptually understood as a component of lifelong learning (INSEAD et al., 2017, 2018, 2019, 2020; Bersin & Zao-Sanders, 2019; Beqiri & Mazreku, 2020). The relevance of lifelong learning in the world is due to the increasing role of education in the economy, caused by the change in the global economic model in the 21st century. This global economic model assumes a transition from an industrial economy to a knowledge economy (Boronenko, 2007; Rivza, 2018). The concept of lifelong learning is to continue professional development after graduation, since the knowledge gained quickly becomes outdated (Su, 2007).

In turn, the economic essence of lifelong learning is associated with the fact that people's knowledge becomes a real factor of production. This knowledge is capable of creating high added value, and at the same time is a demanded product in the market (Sannikova, 2015). The Latvian researchers I. Lapinya and D. Aramina concluded that "the increase in the general professional level of the labor force is one of the main determinants of economic development" (Lapina & Aramina, 2011: 63). As automation, artificial intelligence and new workplace models are reshaping the business environment, lifelong learning is becoming not only a pedagogical but also an economic imperative (Zao-Sanders, 2019). 80% of business leaders around the world believe that the need for new skills is the biggest challenge in their business (PwC, 2021).

Some scholars emphasize that lifelong learning is necessary in order to meet the increased demand in the labor market for a new skills of employees (Galindo-Rueda et al., 2003). Education today is no longer limited to a certain age, it is economically necessary throughout life and becomes an integral part of it (Zborovskij & Ambarova, 2020). In this regard, a new term appears in the terminological space – "learning society". The development of a learning society is determined by three main factors: the information society, the scientific and technological environment and the internationalization of the economy (EC, 1995).

The concept of a learning society has been studied for a relatively long time and is actively used in the international scientific space (Hutchins, 1968; Husen, 1974; Edwards et al., 1995; Jarvis, 2000, 2006; Welton, 2005; Su, 2007; Popescu, 2011; Tindemans & Dekocke, 2020; Seriakova & Kravchenko, 2020; Sungsup et al., 2021; Raven, 2021), but practically not used in Latvia (at least in Latvian publications). G. Chen and R. Klimoski argue that there is a gap between training and development theories and empirical research in this area. In this regard, empirical research at the macro level is needed to better understand how employee professional development affects macroeconomic indicators (Chen & Klimoski, 2007).

The aim of this study is to theoretically substantiate and to empirically measure the economic importance of employee professional development in the modern world. The author intends to pay the special attention to the position of Latvia against the background of the world's countries and especially the EU countries as well as to answer the research question: can Latvia be called a learning society? Methodologically, the author's research is based on a conceptual understanding of employee professional development as a component of lifelong learning, which is of particular value in the knowledge economy.

The source of empirical information for this study is data for 2018-2020 from reports on the Global Talent Competitiveness Index (GTCI) for more than 100 countries of the world (including all EU countries) (INSEAD et

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al., 2018, 2019, 2020). The author uses GTCI (more precisely, one of its pillars) as a tool for empirical assessment of the relationship between the employee professional development and the economic performance of the modern world's countries over three years. In the course of the empirical study, several methods were used in order to obtain more stable results: correlation analysis, regression analysis, comparison of means and discriminant analysis.

2. Conceptual understanding of employee professional development as a component of lifelong learning

In the modern social science, a learning society is considered the ideal and economically optimal model for the development of education (Seriakova & Kravchenko, 2020). According to P. Edwards, a learning society is, first of all, an educated society characterized by active citizenship, liberal democracy and equal opportunities for lifelong learning (Edwards et al., 1995).

Most researchers working in the field of lifelong learning theoretically consider a learning society as an undeniable factor of success both for the employees themselves and for the organizations in which they work, as well as for a society and an economy as a whole. For example, the scholars Th. Beqiri and I. Mazreku write that lifelong learning is an important part of people's working life and that it is also important for employers. Investing in the employee skills through formal and non-formal education increases the creativity, resilience and efficiency of employees. In turn, enterprises that invest in improving the skills of their employees become competitive both domestically and internationally. The potential benefits of employee professional development may not be obvious and do not always follow immediately after training, but it certainly increases competitiveness (Beqiri & Mazreku, 2020). Th. Beqiri and I. Mazreku especially emphasize the need for continuous employee development in those countries "that are still in transition and for which the current problem is the lack of employee skills" (Beqiri & Mazreku, 2020: 95).

In turn, the International Labor Organization in its conceptual article "Lifelong learning: concepts, issues and actions" emphasizes that lifelong learning also characterizes the future of educational systems and units. Educational systems and units must be flexible and capable of preparing workers for the labor market even after they have embarked on their professional careers. Educational systems and units should also motivate employees to constantly learn in order to be ready for situations when it will be necessary to change jobs (ILO, 2019).

Furthermore, crises like the Covid-19 pandemic are accelerating historically determined trends and processes within lifelong learning. In any case, today there is an excellent opportunity: the long-overdue need for systemic adaptation to more suitable forms of education has received a unique impetus. The period for creating new educational systems can be shortened by innovative processes launched or accelerated by the pandemic. The overall goal of lifelong learning is to ensure that everyone can successfully meet life's challenges in an ever-changing world (Tindemans & Dekocke, 2020).

Colleges and universities are beginning to recognize the importance of lifelong learning beyond the traditional model of earning credit points and degrees. Some of the learning stages take place in the framework of interest education and are important both for employees and employers as well as for a society (Aspin & Chapman, 2007). In this regard, the term "learning economy" appeared in the scientific literature (Lundvall, 2016). According to the author, it is more functional than the term "knowledge economy", since it focuses not on an economically valuable product – knowledge, but on the process of obtaining it, i.e. learning. In turn, learning itself also has market value, and modern economic and management science should pay special attention to this issue.

The economic influence of educational units is significant at all levels of social life, since people continue formal education throughout their lives and master certain subjects in accordance with their interests. Educational units carry out economic activities and "produce" educated citizens who buy goods and services in the economy. Like

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healthcare units, educational units are one of the largest employers in many places in the world. Whether educational units operate face-to-face or remotely, they have a large socioeconomic impact on education for all age groups (Zborovskij & Ambarova, 2020). In the process of constantly improving and expanding their education, people try to find themselves in more valuable professions, influencing the economic, social and cultural life of local communities (Aspin & Chapman, 2007).

In the OECD Skills Strategy, five priority tasks are formulated for the new lifelong learning system: (1) development of learning culture; (2) reducing disparities in employee skills; (3) improving the skills used at work; (4) improving the management of lifelong learning; (5) optimization of funding for lifelong learning (OECD, 2019). This document clearly defines a common purpose: a society that learns to become a competitive society with an advanced economy. Then scientists are faced with the following research question: if the answer is lifelong learning, then what is the problem? According to the author of the article, the main problem is that, according to the OECD data, many OECD countries are still not learning societies. This is especially true for that part of the employed population of the OECD countries, which most of all needs to learn, i.e. for low-skilled employees (Figure 1). This problem, in turn, may indicate other hidden problems in the field of lifelong learning in general and employee professional development in particular.

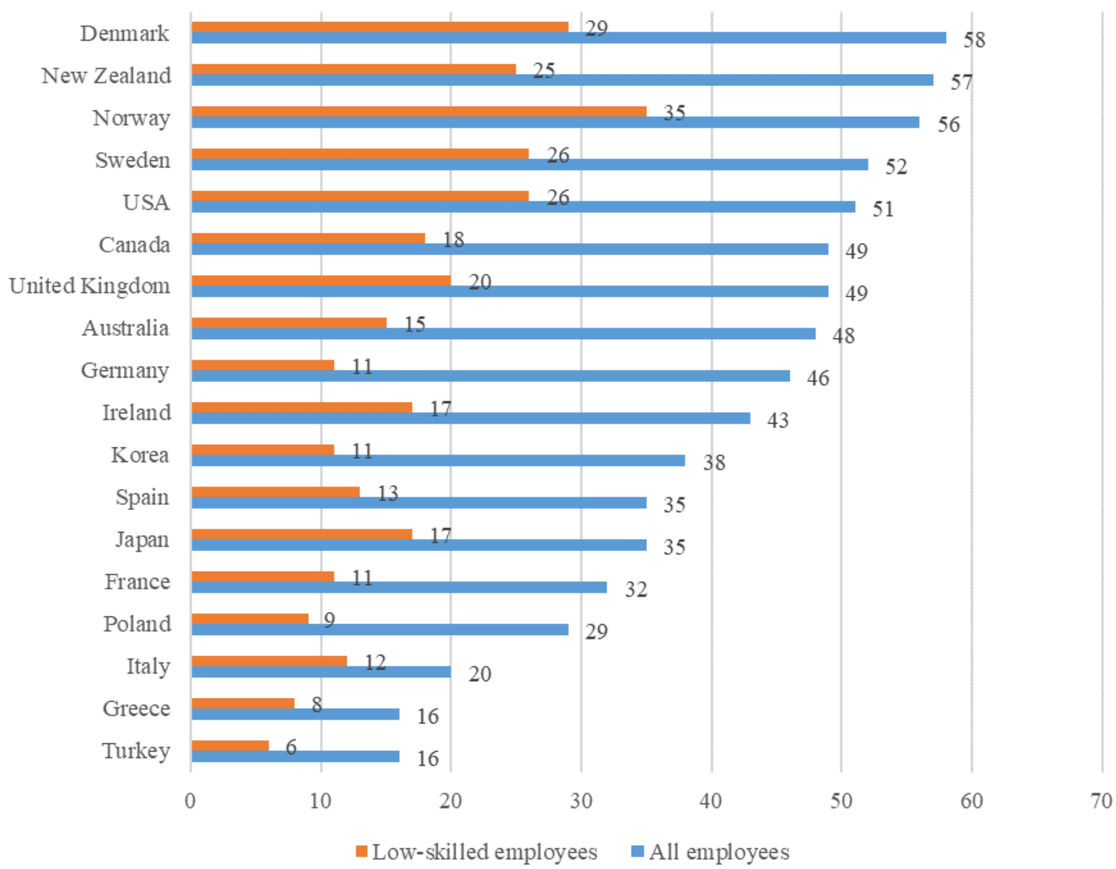

Fig. 1. Participation of the employed population in selected OECD* countries in professional development, all empolyees and low-skilled employees, %, 2019

* The OECD mean is 41% for all employees and 18% for low-skilled employees.
Source: OECD, 2019.

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B. Tindemans and V. Dekocke, the experts of the Center of Expertise on Innovative Learning Pathways (Brussel) consider the following as a serious problem: despite the fact that the industrial age has passed and the learning context has completely changed, in the modern world's countries, the educational systems in most cases have not yet adapted to the new requirements of life. The current educational system has been developing over the course of decades, when the first professional diploma obtained was at the same time the last stage of education. This diploma provided the young people with a socio-economic status, allowing them to take a worthy place in the industrial society. Today, the learning process itself is largely still organized as an industrial production process, in which schoolchildren or groups of students sit in classrooms. They are crammed into timelines similar to work hours, and the school bell indicates that work has begun or is completed. The educational work itself is divided into stages depending on the age of the students. The next stage of the educational process depends on the mean points obtained in the previous stages (Tindemans & Dekocke, 2020).

With regard to the new educational system, B. Tindemans and V. Dekocke write that "all generations and all residents should be included in it. When the educational system has a social and economic impact on every citizen, when we have learning enterprises and organizations, when obstacles are removed and innovative solutions for lifelong learning are developed, then it becomes possible to create a learning society in which every person can grow and develop in any new socio-economic context" (Tindemans & Dekocke, 2020: 5).

In scientific literature (mainly European and North American (Kyndt & Baert, 2013; Boeren, 2016; Webb et al., 2019)), as well as in declarations and analytical reports of international institutions and organizations – European Commission, OECD, UNESCO (EC, 2000; UNESCO, 2015a, 2015b, 2016; OECD, 2019) – there is consensus on the concept of lifelong learning, based on three principles: (1) the central role of the learner; (2) focus of learning on transitional situations and processes; (3) a plurality of forms and contexts of learning. It is especially emphasized that people can learn throughout their lives in different contexts and conditions – not only at school, but also in the workplace, in a family environment, during their free time, participating in the community life, and so on. Furthermore, different learning models in terms of duration, time and type are recognized in the literature (OECD, 2019).

In the global scientific space, there are two paradigms that try to explain and analyze the participation of people in lifelong learning in general and employee professional development in particular. The first and dominant one, the economic paradigm, focuses on competitiveness in a rapidly changing knowledge society (Dahlman et al., 2007). The second, the humanistic paradigm, argues that the ideal of development is a civil, socially integrated society (UNESCO, 2015b). But sometimes the conceptual understanding of lifelong learning and employee professional development is based on these two paradigms at once (Panitsides et al., 2012), since the ability of people to cope with changes and live in a socially integrated society is precisely a prerequisite for being competitive in the modern labor market (Tindemans & Dekocke, 2020).

In turn, the ability of an educational system to ensure economic performance, effectively using the resources of present and future generations is an object of sustainable management. Sustainable management is defined as the application of sustainable practices in different fields by management in a manner that is beneficial to present and future generations (Sekhar, 2020). The following figure schematically presents the conceptual understanding of sustainable management of employee professional development as a component of lifelong learning within the economic paradigm.

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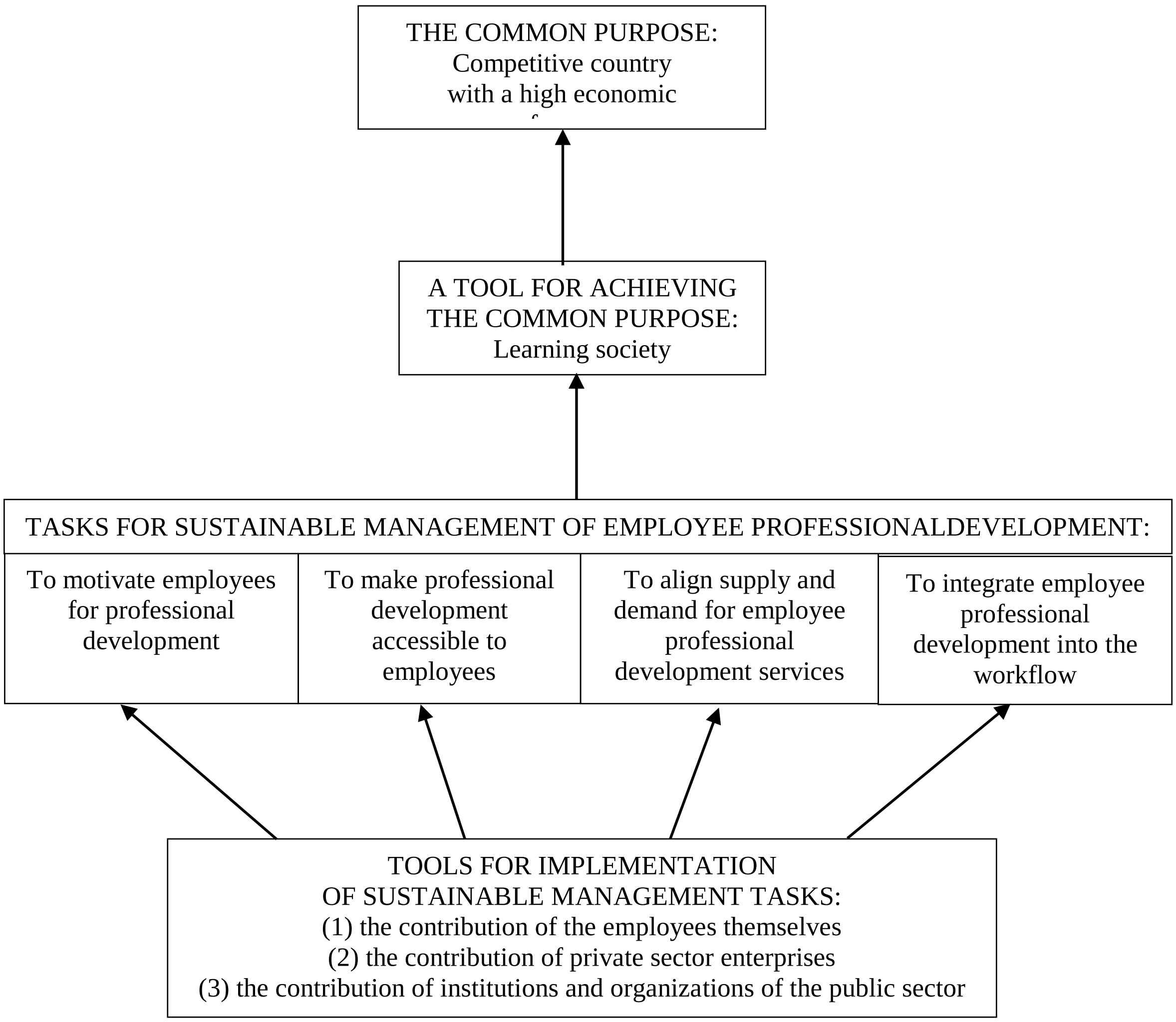

Fig. 2. The conceptual understanding of sustainable management of employee professional development within the economic paradigm

Source: elaborated by the author based on Webb et al., 2019; Tindemans & Dekocke, 2020.

In the conception presented in Figure 2, the central place in the process of achieving the country's competitiveness and its high economic performance is given to the employees themselves, because "the person himself/herself learns and learning begins directly with him/her. Moreover, learning can be successful only if the learner is internally motivated" (Tindemans & Dekocke, 2020: 10). This is in line with the definition given by UNESCO: "lifelong learning is a continuous, voluntary and self-motivated acquisition of knowledge for personal or professional development. Only then does lifelong learning not only contribute to social inclusion, active citizenship and personal development, but also competitiveness and employability" (UNESCO, 2016). Self-motivation is the hallmark of targeted professional development – as opposed to incidental or random learning. Incidental or random learning can be "an additional product" of daily activities, events or communication, and it does not represent a purposeful learning process to achieve the employee's perceived professional goals" (Tindemans & Dekocke, 2020).

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3. Methodology for empirical assessment of the economic importance of employee professional development

As already mentioned in the Introduction to this article, the author considers the Global Talent Competitiveness Index (GTCI) as the most appropriate tool for empirical assessment of the economic importance of employee professional development in the modern world. With the help of GTCI, it is possible to link the conceptual understanding of the sustainable management of employee professional development as well as the country's competitiveness and its high economic performance, on the one hand, and empirical observations in this area, on the other.

The following figure shows schematically the place of lifelong learning and its component "Employee development" in the general structure of the GTCI.

Global Talent Competitiveness Index, GTCI					
Input – a country's ability to:				Output – skills:	
Enable talents - regulatory landscape - market landscape - business and labour landscape	Attract talents - external openness - internal openness	Grow talents - formal education - access to growth opportunities **- lifelong learning**	Retain talents - sustain-ability - lifestyle	Vocational and technical skills - mid-level skills - employability	Global knowledge skills - high-level skills - talent impact

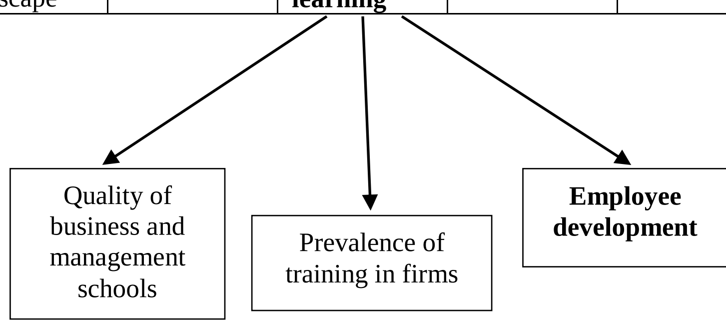

Fig. 3. The place of continuous learning and the component of employee development included in it in the general structure of the Global Talent Competitiveness Index (GTCI)

Source: elaborated by the author based on INSEAD et al., 2017.

The conceptual essence of the GTCI is that the modern world's countries compete with each other in the global economic space by growing, attracting, enabling and retaining talents that ensure competitiveness and economic performance of countries (INSEAD et al., 2017). In turn, lifelong learning (along with formal education and access to growth opportunities) is a sub-pillar of the GTCI's pillar "Grow talents" (Figure 3). The pillar "Grow talents" characterizes the ability of the world's countries "to produce" their own talents, and not attract them from outside. Its sub-pillar "Lifelong learning" includes the following three components (INSEAD et al., 2018, 2019, 2020):

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- quality of business and management schools, which is measured by the scale from 1 (extremely poor – among the worst in the world) to 7 (excellent – among the best in the world), an average answer of experts[†] to the question: "In your country, how do you assess the quality of business schools?"
- prevalence of training in firms, which is measured by the proportion of firms offering formal training (%);[‡]
- employee development, which is measured by the scale from 1 (not at all) to 7 (to a great extent), an average answer of experts to the question: "In your country, to what extent do companies invest in training and employee development?"

In order to adjust for differences in units of measurement and ranges of variation, all variables are normalized into the [0, 100] range, with higher scores representing better outcomes. A min-max normalization method was adopted, given the minimum and maximum values of each variable respectively (INSEAD et al., 2018, 2019, 2020).

The following table 1 shows those results of the GTCI statistical audit conducted by the European Commission Joint Research Center that belong to sub-pillars of the GTCI's pillar "Grow talents" and link them to all pillars of the GTCI. These results are obtained by the analysis of statistical coherence of the GTCI, which includes principal components analysis and multi-level analysis of the correlations between variables.

The table shows the statistical coherence between the sub-pillars of the GTCI's pillar "Grow talents" – formal education, access to growth opportunities, lifelong learning – and all six pillars of the GTCI to determine how strong the individual sub-pillars of the GTCI's pillar "Grow talents" define the world countries' ability to grow talents, and how strongly – other aspects of the countries' talent competitiveness.

Table 1. Statistical coherence in the Global Talent Competitiveness Index:
correlation between sub-pillars of the "Grow talents" and pillars of the GTCI**,** correlation coefficients, 2017

Sub-pillars of the GTCI's pillar "Grow talents"	Global Talent Competitiveness Index, GTCI					
	Input – a country's ability to:				Output – skills:	
	Enable talents	Attract talents	**Grow talents**	Retain talents	Vocational and technical skills	Global knowledge skills
Formal education	0.68	0.46	**0.89**	0.78	0.76	0.83
Access to growth opportunities	0.82	0.76	**0.90**	0.77	0.69	0.80
Lifelong learning	**0.74**	**0.72**	**0.84**	**0.60**	**0.54**	**0.60**

Source: the part of the table from Saisana et al., 2017: 87.

The data in Table 1 indicate that the ability of the modern world's countries to grow talents is correlated, firstly (by 90%), with access to growth opportunities, and secondly (by 89%), with the state of formal education in a

[†] The World Economic Forum's Executive Opinion Survey (EOS) is conducted on an annual basis to gather information from business leaders on topics for which hard data sources are scarce or nonexistent (World Economic Forum, Executive Opinion Survey: http://reports.weforum.org).
[‡] The Enterprise Survey is a firm-level survey of a representative sample of an economy's private sector. The survey covers a broad range of business environment topics including access to finance, corruption, infrastructure, crime, competition, and performance measures. Since 2005–06, under its developed Global Methodology, the World Bank's Enterprise Analysis Unit has collected these data based on over 135,000 interviews with top managers and business owners in about 140 economies (every year – a different quantity of countries) (World Bank, Enterprise Surveys: www.enterprisesurveys.org).

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country, and thirdly (by 84%), with lifelong learning. It should be noted that, despite the fact that lifelong learning is the least statistically significant part in the overall ability of the modern world's countries to grow talents, in percentage terms, the difference between the significance of all three sub-pillars is small. Thus, all three sub-pillars of the GTCI's pillar "Grow talents" are most strongly correlated with the ability of the modern world's countries to grow talents (and not with other aspects of the countries' talent competitiveness).

As for the correlation of lifelong learning with other pillars of the GTCI, we can say that lifelong learning is most strongly correlated with those pillar of the GTCI, which it belongs to – with the pillar "Grow talents". At the same time, lifelong learning is quite strongly correlated with such aspects of the countries' talent competitiveness, as their ability to enable talents (by 74%) and to attract talents (by 72%) (Table 1).

Table 2. Lifelong learning components' importance at the various levels of the GTCI structure, 2017

Components of the sub-pillar "Lifelong learning"	Captured part of the variance:			
	within the sub-pillar "Lifelong learning"	within the pillar "Grow talents"	within Input part of the GTCI	within the GTCI
Quality of business and management schools	61%	59%	58%	57%
Prevalence of training in firms	65%	34%	20%	16%
Employee development	**64%**	**54%**	**65%**	**59%**

Source: the part of the table from Saisana et al., 2017: 88.

The data in Table 2 indicate that lifelong learning's component "Employee development" captured 64% of the variance within the GTCI sub-pillar "Lifelong learning", 54% – of the variance within the GTCI pillar "Grow talents", 65% – of the variance within Input of the GTCI and 59% – of the total variance within the GTCI. Thus, lifelong learning's component "Employee development" is the most statistically significant among lifelong learning's components both for this sub-pillar itself, and for the GTCI factorial part (i.e., Input part), as well as for the GTCI as a whole.

4. Analysis and discussion of the results of empirical research

The author begins the analysis of the results of empirical research by measuring the position of Latvia among the world's countries according to lifelong learning's components over three years – from 2018 to 2020.

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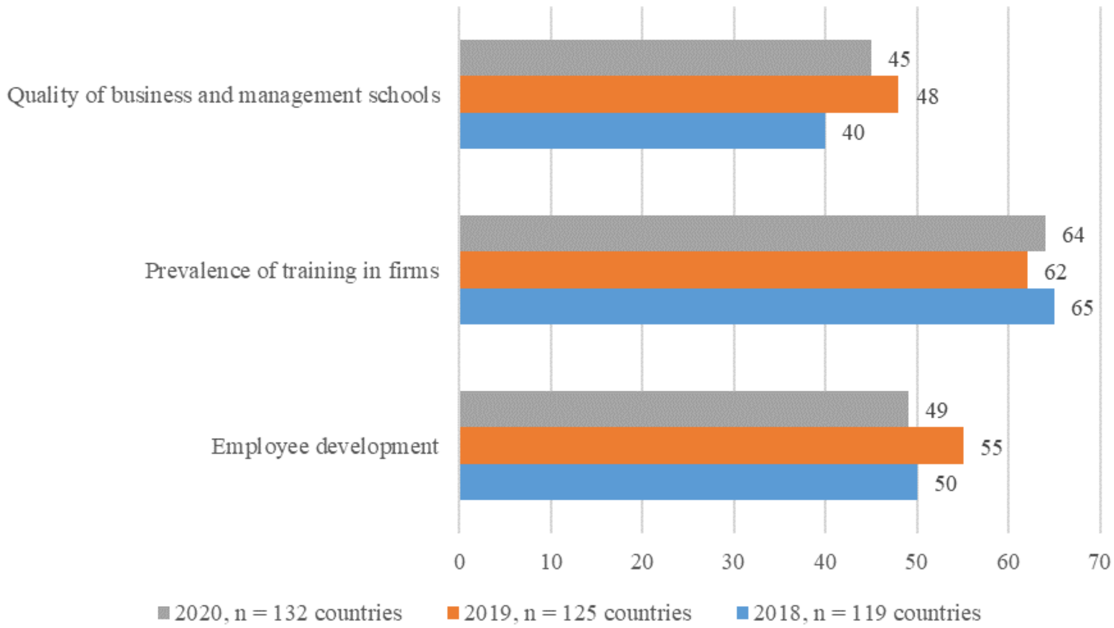

Fig. 4. The rank of Latvia among the world's countries according to lifelong learning's components, 2018-2020

Source: elaborated by the author based on the data of INSEAD et al., 2018, 2019, 2020.

As the data in Figure 4 show, for all three lifelong learning's components measured within the GTCI, Latvia consistently occupies an approximately middle position in the ranking of the world's countries. Compared to other countries of the world, Latvia is doing the worst with such lifelong learning's component as "Prevalence of training in firms": 65th in the world in 2018, 62nd in 2019 and 64th in 2020. The best position in Latvia is for such a lifelong learning's component as "Quality of business and management schools". In terms of the "Employee development" component, Latvia's position against the background of the world's countries is average, but at the same time it is constantly improving: for example, if in 2018 Latvia was ranked 50th in this component among 119 countries of the world, then in 2020 it is already 49th place among 132 countries of the world.

The following table shows the position of Latvia among the EU countries only for one lifelong learning's component – "Employee development", which is the subject of this study.

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Table 3. The position of Latvia among the EU countries according to lifelong learning's component "Employee development", 2018-2020

EU countries*	2018, N = 28 countries		2019, N = 28 countries		2020, N = 27 countries	
	Scores, from 0 to 100	Rank	Scores, from 0 to 100	Rank	Scores, from 0 to 100	Rank
Sweden	91.58	1	86.94	4	83.35	3
Luxembourg	91.25	2	88.68	1	90.11	1
Netherlands	89.23	3-4	87.00	3	84.45	2
Finland	89.23	3-4	84.82	5	80.65	5
Austria	84.18	5	78.34	8	74.00	8
Germany	82.83	6	87.54	2	79.37	6
Denmark	82.15	7	82.20	6	82.06	4
Belgium	81.48	8	79.05	7	73.24	9
United Kongdom	72.73	9	67.26	11	-	-
Ireland	69.36	10	73.14	9	74.04	7
France	69.36	11	67.63	10	67.34	10
Estonia	64.31	12	62.76	13	60.46	12
Lithuania	60.61	13	60.01	14	61.41	11
Czech Republic	58.92	14	63.30	12	58.74	13
Malta	56.57	15	58.23	15	51.36	15
Slovenia	49.16	16	46.37	17	51.79	14
Latvia	**46.46**	**17**	**43.62**	**19**	**48.79**	**17**
Portugal	43.77	18	45.10	18	45.37	19
Poland	41.75	19	40.06	21	40.54	20
Slovak Republic	40.40	20	41.91	20	48.40	18
Greece	37.37	21	31.90	22	30.27	22
Cyprus	33.67	22	46.74	16	49.32	16
Spain	30.98	23	31.60	23	37.04	21
Bulgaria	26.26	24	19.14	26	24.01	25
Romania	26.26	25	17.80	27	23.73	26
Hungary	23.23	26	24.85	25	29.28	23
Italy	22.22	27	27.57	24	28.53	24
Croatia	21.21	28	12.42	28	13.81	27

* Countries ranked according to the rank in 2018.
Source: calculated and elaborated by the author based on the data of INSEAD et al., 2018, 2019, 2020.

As the data in Table 3 show, in terms of the "Employee development" component, Latvia's position among the EU countries is consistently below the average: 17th place in 2018, 19th – in 2019 and 17th again, but already among the remaining 27 EU countries – in 2020. In turn, the best situation with employee development is observed in the countries of Western and Northern Europe: Sweden, Luxembourg, Netherlands, Finland.

Thus, empirical data show that Latvia cannot be considered a learning society, especially in comparison with other EU countries. The question arises: why is this happening despite the fact that in Latvia, both in political and scientific space, the importance of the continuous development of people's knowledge and skills is declared? For example, "Sustainable Development Strategy of Latvia until 2030" emphasized: "Our main capital is people, their abilities, knowledge and talent" (MEPRD of the Republic of Latvia, 2021). Furthermore, the Latvian "Human Development Report 2006/2007. Human Capital" noted that in industrial societies competitiveness and prosperity

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are determined by means of production and other material values. In turn, in a knowledge society, the main source of well-being and development is a set of human abilities and skills (Zobena, 2007).

A possible answer, requiring empirical verification, to the question of why Latvia (like many other countries of the world and the EU) is still not a learning society, may be the assumption that the economic importance of employee professional development in the modern world in reality is not very high and therefore it is not very attractive to both the employees themselves and their employers.

To empirically measure the economic importance of employee professional development in the modern world, the author considers GDP per capita (PPP) as an indicator of the economic performance of the modern world's countries (Porter, 2003; Boronenko et al., 2014; Kondratiuk-Nierodzinska, 2016; Selivanova -Fyodorova et al., 2021), as well as the belonging of countries to income groups (INSEAD et al., 2018, 2019, 2020). Further, the author, using various methods, measures the relationship of both of these indicators with indicators of lifelong learning in general and the development of workers in particular.

Table 4. Correlation between GDP per capita of the world's countries and sub-pillars of the "Grow talents" as well as lifelong learning's components, 2018-2020

Variables	2018, n = 119 countries		2019, n = 125 countries		2020, n = 132 countries	
	Correlation with GDP per capita (PPP)	Statistical signifi-cance, p-value	Correlation with GDP per capita (PPP)	Statistical signifi-cance, p-value	Correlation with GDP per capita (PPP)	Statistical signifi-cance, p-value
Formal education	0.549**	0.000	0.576**	0.000	0.618**	0.000
Access to growth opportunities	0.673**	0.000	0.715**	0.000	0.690**	0.000
Lifelong learning, incl.:	**0.706****	0.000	**0.705****	0.000	**0.714****	0.000
- Quality of business and management schools	0.634**	0.000	0.612**	0.000	0.630**	0.000
- Prevalence of training in firms	0.246*	0.018	0.211*	0.046	0.201*	0.049
- **Employee development**	**0.692****	0.000	**0.706****	0.000	**0.700****	0.000

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
Source: calculated and elaborated by the author based on the data of INSEAD et al., 2018, 2019, 2020 and using SPSS software.

As the data in Table 4 show, the state of lifelong learning in general and especially that of its component "Employee development" is quite strong and statistically significant (and at the same time quite stable) correlates with the indicator of countries' economic performance – GDP per capita (PPP). It is noteworthy that the relationship between lifelong learning and GDP per capita in the modern world's countries is consistently stronger than the relationship between formal education and GDP per capita.

In order to clarify the direction of the relationship between lifelong learning / employee development and the economic performance of the modern world's countries, the author conducted a regression analysis. Regression analysis will empirically test the assumption that lifelong learning and employee development are factors, and the economic performance of a country is the result.

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Table 5. Beta-coefficients and factors' statistical significance in the regression equation, GDP per capita of the world's countries (resulting variable), **sub-pillars** of the "Grow talents" and lifelong learning's components (factor variables), 2018-2020

Variables	2018, n = 119 countries		2019, n = 125 countries		2020, n = 132 countries	
	Beta-coefficient in the regression equation	Statistical signifi-cance, p-value	Beta-coefficient in the regression equation	Statistical signifi-cance, p-value	Beta-coefficient in the regression equation	Statistical signifi-cance, p-value
Formal education	108.230		145.178		254.686	
Access to growth opportunities	264.167		460.069		348.420	
Lifelong learning, incl.:	**520.883**					
- Quality of business and management schools	202.118		68.677		20.301	
- Prevalence of training in firms	69.471		74.636		79.059	
- Employee development					350.709	

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
Source: calculated and elaborated by the author based on the data of INSEAD et al., 2018, 2019, 2020 and using SPSS software.

The summarized results of the regression analysis presented in Table 5 confirm the author's assumption that lifelong learning and employee development are factors, and the economic performance of a country is the result. Moreover, lifelong learning is consistently almost the only one of the three sub-pillars of the GTCI's pillar "Grow talents", which for three years has statistically significantly increased the economic performance of the modern world's countries. In turn, lifelong learning's component "Employee development" is consistently practically the only one of the three lifelong learning's components, which for three years has statistically significantly increased the economic performance of the modern world's countries. Thus, we can say that lifelong learning is a statistically significant factor of the economic performance of the modern world's countries precisely due to its component "Employee development".

The following two tables show the results of the comparison of means of lifelong learning (Table 6) and employee development (Table 7) for four income groups of the modern world's countries. The application of this method will help to find out whether there are statistically significant differences between the income groups of the modern world's countries in terms of means of lifelong learning and employee development.

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Table 6. Multiple comparisons of the state of lifelong learning among income groups of countries, statistical significance of mean difference (p-value),* **2018-2020**

Income groups	2018, n = 119 countries				2019, n = 125 countries				2020, n = 132 countries			
	Income groups of the world's countries by the population income*											
	1	2	3	4	1	2	3	4	1	2	3	4
High income (1)	-	**0.000**	**0.000**	**0.000**	-	**0.000**	**0.000**	**0.000**	-	0.000	0.000	0.000
Upper-middle income (2)	**0.000**	-	0.095	**0.043**	**0.000**	-	0.220	**0.011**	**0.000**	-	0.355	**0.006**
Lower-middle income (3)	**0.000**	0.095	-	0.469	**0.000**	0.220	-	0.142	**0.000**	0.355	-	**0.046**
Low income (4)	**0.000**	**0.043**	0.469	-	**0.000**	**0.011**	0.142	-	**0.000**	**0.006**	**0.046**	-

* Mean difference among income groups of countries is statistically significant, if p-value is <0.05.
Source: calculated and elaborated by the author based on the data of INSEAD et al., 2018, 2019, 2020 and using SPSS software.

Table 7. Multiple comparisons of the state of employee development among income groups of countries, statistical significance of mean difference (p-value),* 2018-2020

Income groups	2018, n = 119 countries				2019, n = 125 countries				2020, n = 132 countries			
	Income groups of the world's countries by the population income*											
	1	2	3	4	1	2	3	4	1	2	3	4
High income (1)	-	**0.000**	**0.000**	**0.000**	-	**0.000**	**0.000**	**0.000**	-	**0.000**	**0.000**	**0.000**
Upper-middle income (2)	**0.000**	-	0.310	0.185	**0.000**	-	0.463	0.069	**0.000**	-	0.561	**0.011**
Lower-middle income (3)	**0.000**	0.310	-	0.596	**0.000**	0.463	-	0.248	**0.000**	0.561	-	**0.041**
Low income (4)	**0.000**	0.185	0.596	-	**0.000**	0.069	0.248	-	**0.000**	**0.011**	**0.041**	-

* Mean difference among income groups of countries is statistically significant, if p-value is <0.05.
Source: calculated and elaborated by the author based on the data of INSEAD et al., 2018, 2019, 2020 and using SPSS software.

The results of the comparison of means of lifelong learning and employee development for four income groups of countries, presented in Tables 6 and 7, indicate that a statistically significant difference in both lifelong learning and employee development is consistently observed between the group of countries with high income (group 1) and all other groups – i.e. countries with middle and low income (groups 2, 3 and 4 together). Sometimes there is a statistically significant difference (more often – almost "on the threshold" of insignificance, when the p-value is very close to 0.05) between groups 2 and 4 or groups 3 and 4, but this does not change the overall stable and fairly clear picture – a group of countries with high income is very different from the modern world's countries with middle and low income precisely in that it includes mainly learning societies with a relatively high level of lifelong learning and employee development.

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The next two figures clearly compare means of lifelong learning and employee development across the high-income and middle / low-income groups of countries.

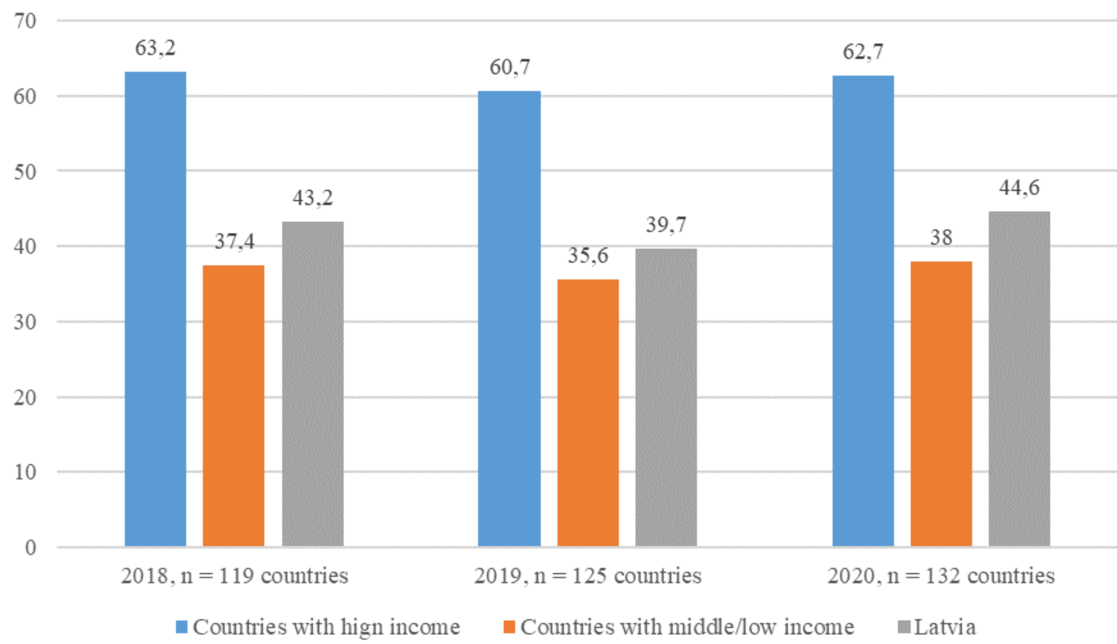

Fig. 5. Mean Difference between lifelong learning across income groups of countries, scores from 0 to 100, 2018-2020

Source: calculated and elaborated by the author based on the data of INSEAD et al., 2018, 2019, 2020 and using SPSS software.

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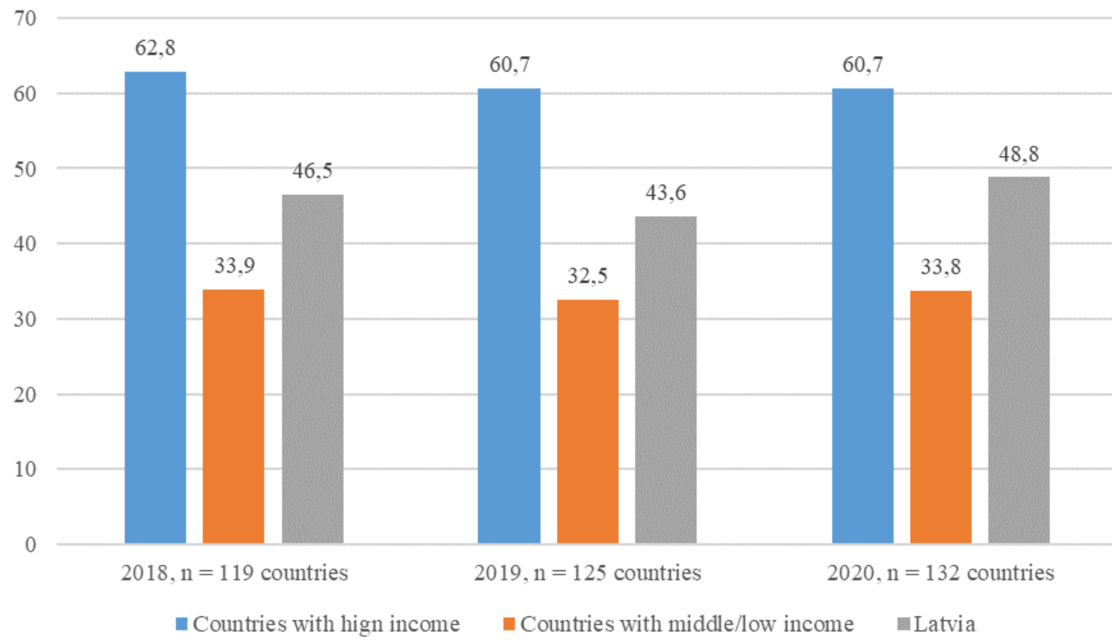

Fig. 6. Mean Difference between employee development across income groups of countries, scores from 0 to 100, 2018-2020

Source: calculated and elaborated by the author based on the data of INSEAD et al., 2018, 2019, 2020 and using SPSS software.

As shown by the data graphically presented in Figures 5 and 6, in the group of the modern world's countries with high income, means of lifelong learning and employee development are almost 2 times higher compared to the group of countries with middle / low income. As for Latvia, its position is consistently intermediate between the group of high-income countries and the group of middle / low-income countries in terms of employee development (Figure 6). In turn, in terms of lifelong learning, Latvia's position is closer to the group of middle / low-income countries (Figure 5). At the same time, according to the INSEAD (The Business School for the World) methodology, Latvia belongs to the group of high-income countries (INSEAD et al., 2018, 2019, 2020), which can be considered a kind of "credit of trust" from international organizations, which Latvia, according to the author, does not always justify – for example, in the field of lifelong learning and employee development.

The last, the fourth, method of discriminant analysis will help the author to confirm the results obtained by comparison of means. Using this method, the author will find out whether lifelong learning and employee development are "discriminatory" variables. Then, based on values of these variables, it is possible to predict in advance with a certain accuracy which group of countries – with high income or with middle / low income – a particular country will belong to.

The first two results of discriminant analysis presented in Tables 8 and 9 are test results and indicate the possibility of carrying out discriminant analysis as such on these particular samples of countries. The correlation coefficients (canonical correlations) between the calculated values of the discriminant functions and actual group memberships showed in Tables 8 and 9 are satisfactory **(**Sweet & Grace-Martin, 2012). The test conducted using the Wilks' Lambda criteria for whether the mean values of the discriminant function differ significantly among themselves in both groups of countries – with a high income and with a middle / low income, showed a very high statistical significance ($p < 0.001$) (Tables 8 and 9).

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Table 8. The results of discriminant analysis for lifelong learning: its discriminatory potential to divide the world's countries into income groups, 2018-2020

Variables	2018, n = 119 countries	2019, n = 125 countries	2020, n = 132 countries
Canonical correlation*	0.628	0.630	0.654
Wilks' Lambda**	0.000	0.000	0.000
The level of correctly classified originally grouped cases, %			
Countries with high income	67.4	65.3	79.2
Countries with middle/low income	82.2	84.2	89.3
Total	76.5	76.8	85.6

***** Correlation coefficient between values of the discriminant function and actual group membership.
** Test to determine whether the mean values of the discriminant function in both groups differ statistically significantly.
Source: calculated and elaborated by the author based on the data of INSEAD et al., 2018, 2019, 2020 and using SPSS software.

Table 9. The results of discriminant analysis for employee development: its discriminatory potential to divide the world's countries into income groups, 2018-2020

Variables	2018, n = 119 countries	2019, n = 125 countries	2020, n = 132 countries
Canonical correlation*	0.603	0.612	0.621
Wilks' Lambda**	0.000	0.000	0.000
The level of correctly classified originally grouped cases, %			
Countries with high income	67.4	65.3	77.1
Countries with middle/low income	80.8	82.9	83.3
Total	75.6	76.0	81.1

***** Correlation coefficient between values of the discriminant function and actual group membership.
** Test to determine whether the mean values of the discriminant function in both groups differ statistically significantly.
Source: calculated and elaborated by the author based on the data of INSEAD et al., 2018, 2019, 2020 and using SPSS software.

The main result of discriminant analysis (for which it is carried out) is the mean of correctness of predictions for each case that falls into the corresponding group of countries. In the case of lifelong learning, from 65.3% in 2019 to 77.1% in 2020 of cases correctly predicted to fall into the group of countries with high income and from 82.2% in 2018 to 89.3% in 2020 – into the group of countries with middle / low income (Table 8). Thus, based on lifelong learning indicator, it is easier to predict whether a country is in the middle / low income group than in the high income group. In other words, if a country has a high value of lifelong learning's indicator, then it most likely will not fall into the group of countries with middle / low income, but at the same time it is less obvious that it will fall into the group of countries with high income. The total level of correctly classified originally grouped cases within the discriminant model of lifelong learning is relatively high (Sweet & Grace-Martin, 2012) and constantly increasing: 76.5% in 2018, 76.8% in 2019, 85.6% in 2020 (Table 8). This means that in more than 85% of cases in 2020, based on the value of the lifelong learning's indicator in a country, it is possible to determine which income group this country will belong to.

As for the employee development indicator included in the GTCI's sub-pillar "Lifelong learning" and empirically interpreted as an answer of experts to the question: "In your country, to what extent do companies invest in training and employee development?", here, according to the results of discriminant analysis, the situation is almost the same as in the case of lifelong learning. That is, in more than 80% of cases in 2020, it is possible to find out whether a country has a high or medium / low income, knowing only to what extent do companies invest in training and employee development in that country. In the case of a relatively high level of employee development, the country is most likely not to fall into the group with middle / low income, but at the same time, as in the case of lifelong learning, it is less obvious that it will fall into the group with high incomes. Most likely, the probabilities of indicators of both lifelong learning in general and employee development in particular, as well as the probabilities of indicators of GDP per capita (PPP) in both income groups of countries are normally distributed (which is typical for the distribution of probabilities of almost all physical and socio-economic indicators (Selivanova-Fyodorova et al., 2018; Komarova et al., 2019), and Latvia is "at the tail" of this distribution in a group of high-income countries.

Thus, using four methods of quantitative data analysis, the author proves the economic importance of employee professional development in the modern world. This provides a scientific basis for the practical implementation of management tasks using the tools presented in the scheme of conceptual understanding of sustainable management of employee professional development as a component of lifelong learning within the economic paradigm (Figure 2).

Conclusions

The main limitations for this study are the time period (from 2018 to 2020), as well as the empirical interpretation of the subject of this study – employee professional development – in the framework of GTCI, limited to measuring to what extent do companies invest in training and employee development.

Using the set of the quantitative data analysis methods, the author proves the following:
(1) the state of lifelong learning in general, and especially that of its component "Employee development" is quite strong (stronger than the state of formal education), statistically significant and relatively stable correlated with an indicator of the economic performance of the modern world's countries – GDP per capita (PPP);
(2) the regression analysis confirmed the author's assumption that lifelong learning and employee development are factors, but the economic performance of a country is the result; at the same time, lifelong learning is a statistically significant factor of the economic performance of the modern world's countries precisely due to its component such as "Employee development";
(3) the comparison of means of lifelong learning and employee development for four income groups of countries showed that the group of countries with high income differs from the group of countries with middle / low income precisely in that it includes mainly learning societies with relatively high level of lifelong learning and employee development;
(4) the discriminant analysis showed that depending on the state of lifelong learning and employee development in the modern world's countries, it is possible to determine the income level (high or middle / low) in these countries by about 80-85%.

The author concludes that in the modern world, employee development is mainly a factor, but also an indicator of competitiveness and economic performance of countries, since significant investments are required to implement employee professional development. Nevertheless, the sustainable management of lifelong learning and the self-motivation of employees helps to create a learning society not only based on material investment, but also through the development of a learning culture.

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RESEARCH ON THE REFLECTION OF CULTURAL DIMENSIONS IN INTERNATIONAL BUSINESS *

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Abstract. The objective of this research is to reveal the reflection of cultural dimensions in international business. The management of an international business is complex and varies according to culturally determined values. To achieve success in international business, it is necessary to understand how cultural differences across and within countries affect it. Authors took under revision the international companies listed under the Nasdaq database (2021) and researched interlinks in the North-West region of Europe. The authors delivered the research in two stages. In the first stage, the authors constructed a matrix of cultural dimensions. Then formed the equation at the second step by using the Generalized Moments Method, which eliminates inaccurate assumptions. The authors used panel data analysis and constructed equations. The theoretical research results highlight the cultural dimensions identified in the 31 studies in the priority of attention. The authors' research proves that three main cultural dimensions affect the revenue of the international business. We came to the insight that the impact of culture in doing business globally is growing rapidly.

Keywords: international business; cultural differences; dimensions

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JEL Classifications: M14, F2, F23

1. Introduction

The cultural environment is important for international business. Many researches were delivered in the area. However, the authors do not combine cultural elements with international business revenue indicators.

In international business literature, authors stress that companies operating in international markets face more competition and must therefore be able to decide quickly (Centre, 2017). The literature states that these companies are most likely willing to learn rapidly and are proactively and dynamically changing. It is proposed to combine the experience taken from the mother company and consider that the success of companies can be

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achieved by actively finding new markets, responding to ongoing changes, increasing the value of goods and the volume of trade. Some argue international competition promotes greater efficiency (Ferreira et al., 2007; Sitharam & Hoque, 2016)

The authors revised scientific literature published on the topic Oxford University Press, Cambridge University Press, Harvard University Press, Springer, M.E. Sharpe, Routledge, other publishers and identified that they rarely discuss the thematic of cultural differences under the literature on international business. The analysis presented under Table 1 shows that only 0.66 percent of the above publications give the investigations in the research area.

Table 1. Literature revision (created by authors)

		Thematic of Cultural Differences
Year	Literature On International Business	Under the Literature on International Business,
1994-1998	81400	473
1999-2003	122000	1100
2004-2008	118000	973
2009-2013	235000	1700
2014-2018	286000	1760
2019-2021	365000	1950
Total	1207400	7956
%	**100%**	**0.66%**

Source: constructed by authors, according to publications published Oxford University Press, Cambridge University Press, Harvard University Press, Springer, M.E. Sharpe, Routledge, and other publishers

2. Literature review

The literature review combines two dimensions: cultural differences and their replication in the management of an international business.

Cultural differences

In the literature, you can find studies that compare the applicability of cultural frameworks to determine which cultural dimension measure is appropriate (Ng & Lim, 2019; Witte et al., 2020) In the scientific literature, according the authors, the primary authors examining the cultural dimension in international business are G. Hofstede, E.T. Hall, S.H. Schwartz, and F. Trompenaars.

The authors present the components of how they define culture and impact on communication and business. Despite the development of cultures, these methods provide a comprehensive and long-term understanding of the critical factors that shape culture, affecting every aspect of business worldwide.

S. H. Schwartz's (Masuda et al., 2020) theory refers to three bipolar dimensions of culture:

1. Insertion vs autonomy

In the cultures of autonomy, people are autonomous, restricted entities. This led them to develop and express their wishes, feelings, ideas, and abilities. S. H. Schwartz divided autonomy into two types: 1. Intellectual autonomy-encourages individuals to pursue their ideas and intellectual directions independently. 2. Emotional autonomy that encourages people to pursue positive emotional experiences. Embedded cultures emphasize the maintenance of the status quo and acts of restraint that can disrupt group solidarity or traditional order.

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2. Hierarchy vs egalitarianism

Cultural egalitarianism seeks to encourage people to recognize each other on moral levels who have fundamental interests as human beings. They based the alternative polar hierarchy of culture on hierarchical systems of assigned roles to ensure responsible, productive behavior.

3. Mastery vs harmony

The harmony of the cultural response is a change that is taking place in the social and natural world. It linked this to environmental protection and world peace.

Schwartz's system of cultural dimensions was constructed by revising data in 75 countries since 1994.

E.T. Hall (Lanigan, 1978) singled out three major categories that analyses and interpret the differences in intercultural relationships and interactions:

1. High vs low-context cultures

In a culture of high context, many contextual elements help people understand the rules (body language, a person's status). That is a direct contrast to low-context cultures, that more clarification is needed.

2. Space

Space shows the perception of physical distance between people. That shows how people behave when they are in one space, close to each other.

3. Attitude to time: polychronic and monochronic cultures.

In polychronic cultures, polychronic means "many times", people can do several things simultaneously. In monochronic cultures or "disposable" cultures, people perform one task at a time.

F. Trompenaars (1993) presents a seven-dimensional model of national culture differences, which he argues applies to the conduct of international business. It offers the following dimensions:

1. Universalism against Specificity

Universalism is the search for broad and standard rules. Specificity is about finding exceptions.

2. Analysis vs Integration

The analysis breaks down to find detailed information. The integration combines things to create an overall picture. He assumed that if someone has ahead in the weeds, he would miss the fundamental understanding.

3. Individualism against Communism

Individualism is about individual rights. Communism is about the rights of a group or society.

4. Internal directed vs external redirect

Internal perception is a person's opinion, and external perception is what information is available in society.

5. Synchronization of time compared to Time series

When synchronizing events and time, time coordination procedures are established in parallel. In a time, series, events are predicted in a separate sequence as separate elements.

6. Status achieved compared to the assigned status

The status achieved is the acquisition of the state through performance. The status assigned is about acquiring the status by others.

7. Hierarchy vs Equality

The hierarchy is about people who are superior to others. They assume that the order happens when few are blamed, while others obey through the scalar chain of command. Equality is for all people with the same status (Manrai & Manrai, 2010).

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Table 2. Table authors and their proposed original concepts of cultural dimensions

	G. Hofstede	S.H. Schwartz	E.T. Hall	F. Trompenaars
1.	Power distance	Embeddedness vs Autonomy	High-Context vs Low-Context Cultures	Universalism vs. Particularism
2.	Individualism vs Collectivism	Hierarchy vs Egalitarianism	Space	Analysing vs Integrating
3.	Masculinity vs Femininity	Mastery vs Harmony	Time: Polychronic vs. Monochronic Cultures	Individualism vs Communitarianism
4.	Uncertainty Avoidance vs Certain avoidance			Inner-directed vs Outer-directed
5.	Long- vs Short-term Orientation			Time as sequence vs time as synchronisation
6.	Indulgence/ Restraint			Status achieved vs assigned status
7.	-			Equality vs Hierarchy

Source: constructed by authors

More external factors make up culture. These include manners, mindsets, values, rituals, religious beliefs, art, customs, ceremonies, various institutions, laws, language, beliefs, individual behavior. However, these identified factors are still less structured and do not make up a comparative system.

The combination of intercultural analysis and business is a new and developing field; it is not a static understanding but a changing world. While new ideas are constantly being presented, G. Hofstede remains a leading thinker on how we see cultures. The Hofstede cultural dimension system, which has been in place since 1980, covers 111 countries, although detailed data are provided for 65 countries with all six aspects. G. Hofstede is named the pioneer of modern intercultural science theory, comparing nations using statistical analysis of two databases. Thus, the study was based on the cultural aspects proposed by this author.

G. Hofstede has developed a model where global cultural differences will be divided into five dimensions. These dimensions include:

1. Power distance: inequality between people that the population of the country considers normal.

2. Individualism or collectivism: the degree to which the country's inhabitants wish to behave as individuals or members of a group.

3. Masculinity or femininity: the degree to which values such as strength, productivity, success and competitiveness are used in decision-making.

4. Avoiding uncertainty: the preference of the citizens of the country for a structured, overly unstructured situation, the rigor of procedures, or the willingness to risk a collapse.

5. Orientation to the long-term or short-term perspective: to what extent decisions are based on long-term orientation versus short-term orientation? They are made on time and based on the past and assessing past and future conditions (Agodzo, 2014).

Later on, M. Minkov (Hofstede, Hofstede, Minkov, 2010) proposed the sixth one dimension - indulgence. Indulgence stands for the society is an acceptable, free desire for people to enjoy life and to satisfy their desires. Restriction - when strict social norms in society control the satisfaction of society's needs.

The core of G. Hofstede's advantage over alternative models is quantifiable, understood, available for inter-country comparisons, replicable, and accepted cultural taxonomy, which helps in international business research. Can measure cultural characteristics that are facilitating the inclusion of culture in international business.

The authors revised the literature and identified which cultural dimensions take the highest and the lowest attention in the studies by revising 31 authors. Among studies, the individualism (collectivism) dimension gets the greater attention, and the indulgence dimension gets the lowest attention (see Table 3).

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Table 3. Dimensions of cultural dimensions (created by authors)

Dimensions of cultural difference / Authors	Power distance	Individualism/ Collectivism	Masculinity/ Femininity	Uncertainty avoidance Uncertainty tolerance	Long term orientation/ Short-Term Orientation	Indulgence/ Restraint
(Xu & Hao, 2021)	+	+	+	+	+	
(Gonzalez, 2021)	+	+	+	+	+	+
(Vilaplana et al., 2019)	+	+	+	+	+	+
(G. Hofstede, 1980)	+	+	+	+		
(G. Hofstede, 2011)	+	+	+	+	+	+
(Ladhari & Skandrani, 2014)	+	+				
(Caputo, Andrea; Ayoko, Oluremi B.; Amoo, Nii; Menke, 2019)	+					
(Wang et al., 2021)	+					
(M. Liu, 2019)	+					
(M. Liu et al., 2019)	+					
Waistell, 2011		+				
Ogihara, 2018		+				
(Lee & Herold, 2016)	+	+	+	+	+	
(Safiah, Omar, Syukurriah, Idrus, 2011)		+				
(Minh, 2015)		+				
(Masuda et al., 2020)		+		+		
(Agodzo, 2014)	+	+	+	+	+	+
(Daňková & Droppa, 2015)	+	+	+	+	+	
(Ralston et al., 2014)		+				
(Mockaitis et al., 2012)		+				
(Fischer et al., 2010)	+	+	+	+		
(Fengfan, 2015)	+	+	+	+	+	+
(G. J. Hofstede et al., 2008b)				+		
(G. J. Hofstede et al., 2008a)					+	
(Mockaitis et al., 2012)		+				
(Fan et al., 2017)	+	+	+	+	+	
(Merkin, 2004)					+	
(Guo et al., 2018)					+	+
(G. J. Hofstede et al., 2019)	+				+	
(Warter et al., 2015)	+	+	+	+	+	+
(P. M. das N. Ferreira, 2017)	+	+	+	+	+	+
Number of studies	19	22	13	15	15	8

Source: constructed by authors

A more detailed description of cultural dimensions is presented in Appendix A. These cultural dimensions follow assumptions, such as one-to-one relationship between culture and country, get index score that is created for each of dimension, which was indicated according to the authors created empirical research.

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Management of international business

All economic activities carried out in cross-border transactions belong to international or foreign business. This includes all commercial activities, such as revenue, investments, logistics, etc., involving two or more parties.

A company doing international business we call the international or multinational company. These companies have a large customer base from different countries and their resources do not depend on one country. In addition, international business is investing and expanding its trade in other countries.

But there are shortcomings that hinder access to the international market, such as tariffs and quotas, political, social, cultural, economic and other factors affecting international business.

Several practices are necessary for a business to operate internationally:

1. Adaptation of global business models to the local market

Businesses can suffer setbacks and high costs without knowing the local culture and its impact on consumer demand and decision-making. Different specific changes need to be made to maintain the business. To deliver the target message in the local culture, presenting offers and different marketing strategies. The main point of businesses to exist is to pay attention to the customers' needs (Głodowska et al., 2016).

2. Knowledge of local business management

The local culture affects everything from employee management to business pace, negotiation management, and risk management. Thus, understanding local business practices is essential to international business success (Ferreira, 2017; Gujrati, 2017).

3. Implementation of different management strategies in an international company.

Poor leadership strategies can lead to losses and failures. Diversity in the workplace is a powerful tool that can be a significant attraction for high-quality global talent. A multicultural environment promotes new perspectives and approaches to problem-solving or achieving common goals (Decker, 2019; Lin, 2007).

4. Selection of human resources adapted to local culture

Globalization is crucial for the company's expansion. They must adapt personnel policies and practices to benefit their foreign employees and subsidiaries.

5. Acknowledge regional and subcultural differences

Adhering to the same behavior patterns or accepting the dominant culture's values may be unacceptable in society. Socio-economic status, original language, consumption habits and values are cultivations of differences encountered in society or a foreign country.

6. Adaptation of cultural voice from the host country

Knowledge of local dialect and communication style helps marketers reach the target audience of international business faster.

Cultural awareness helps break down cultural barriers, build cultural bridges, and appreciate those differences (Yehia, 2018). The results in more cultural connection and less cultural conflict. When encountering new languages and cultures, companies make comparisons and realize that their behaviors, values, and beliefs are not the general norm found elsewhere in the world. It helps to create a homogenous and inclusive work environment. That fosters creativity and innovation while boosting productivity and profitability (Centre, 2017; Liu & Liu, 2011).

Context and culture are critical factors in doing business internationally. Companies create a diverse corporate and personal culture by understanding the differences in ethics, beliefs, values, and rules of different countries and developing cultural awareness.

Below the authors present the links between cultural differences and multinational enterprises (see Table 4).

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Table 4. Relationship between cultural differences and multinational enterprises drawn in the scientific literature (source: compiled by authors).

Relations	Country	Features	Cultural differences
Relationship between cultural distance and input mode by Western European Multinational Enterprises into Eastern Asia (M. Liu et al., 2019)	Western Europe Easter Asia	The cultural distance and. sub-actors: (1) distance of power, (2) avoidance of uncertainty, (3) collectivism of individualism, (4) masculinity, (5) femininity.	Because of the distance between the home country where the parent company is located and the host country where the establishments of the undertakings are located, international failures happened A business manager can choose a local business partner who understands cultural preferences, establishing local supply chains and business rules to increase operational success in the country.

Source: constructed by authors

When different organizations merge into one, the operation's success is not solely on maximizing market share, cost savings, and efficiencies. With international companies, the merging process brings together employees and staff from different cultures who may have very different expectations of working together.

The smooth integration of both companies depends on whether the organizations consider issues relating to national culture through cultural awareness training programs. Cross-cultural training is an integral step to ensuring international organizations harness the benefits of doing business in an intercultural context.

3. Materials and Methods

The cultural environment is essential for international business. The authors used the Culture compass of Hofstede (G. Hofstede, 2021) analyses considerable differences between all cultures of international business countries. Such presents thinking patterns that are reflected in the meaning that employees touch in the organization. The cultural differences of one country are more significant than the differences between the cultures of all countries. We can still use those country scores based on the laws of large numbers, and most of us heavily depend on social control. Of course, statements are generalizations, and they should be relative. The scores used for the sixth (Hofstede, Hofstede, Minkov, 2010) measure on Minkov's research.

The research is multilayer. In the first stage, authors focus on which cultural dimensions impact revenue and in the second stage, they analyze the relationships among cultural dimensions.

For the case study, the authors selected the database of Nasdaq (Nasdaq.com, 2021) and revised all listed international companies. By following the company's country, the authors identified values of cultural dimensions (as specified in Figure 1).

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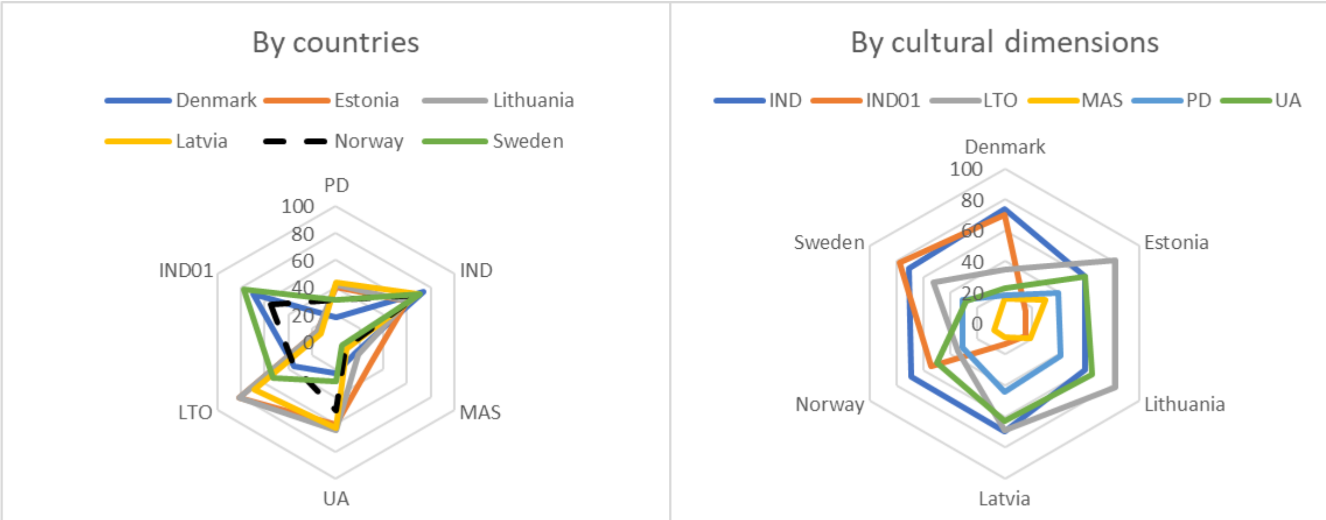

Figure 1. The profile of empiric research countries.

Where PD - Power distance, IND – Individualism, MAS – Masculinity, UA - Uncertainty avoidance, LTO - Long-Term Orientation, IND01 – Indulgence.

4. Results

The investigations are provided on several layers: they provided the review of cultural differences on international business revenue in the first layer. The construction of the equation by following panel generalized moments method (GMM) is provided under the second layer.

Impact of cultural differences on international business revenue

The results of empirical research show such interlinks (see Table 5).

Table 5. Empirical research results: the relationship between cultural differences and company revenue

Variables		LOG(PARDAVIMAI)	LOG(IMONES_PD)	LOG(IMONES_IND)	LOG(IMONES_MAS)	VADOVAS_M_F	LOG(IMONES_UA)	LOG(IMONES_LTO)	LOG(IMONES_IND01)
LOG(PARDAVIMAI)	Correlation coef.	1	-0,2818	-0,1461	0,1360	0,1214	-0,2856	-0,0310	0,2827
	Probability	-----	0	0,001	0,002	0,005	0,000	0,477	0,000
LOG(IMONES_PD)	Correlation coef.		1	-0,2801	0,0950	-0,0411	0,9010	0,7401	-0,8722
	Probability		-----	0	0,029	0,346	0	0	0
LOG(IMONES_IND)	Correlation coef.			1	-0,8796	0,0957	-0,4610	-0,7324	0,3097
	Probability			-----	0	0,028	0	0	0
LOG(IMONES_MAS)	Correlation coef.				1	-0,0323	0,3252	0,6306	-0,3226
	Probability				-----	0,458	0	0	0
VADOVAS_M_F	Correlation coef.					1	-0,0616	-0,0688	0,0256
	Probability					-----	0,157	0,114	0,556
LOG(IMONES_UA)	Correlation coef.						1	0,7070	-0,8886
	Probability						-----	0	0
LOG(IMONES_LTO)	Correlation coef.							1	-0,7714
	Probability							-----	0
LOG(IMONES_IND01)	Correlation coef.								1
	Probability								-----

Where: IMONES – Company’, PARDAVIMAI – Revenue, VADOVAS – Manager, M – Male, F – Female, LOG – logarithmic value.

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According to Table 5, power distance has a negative relationship with company revenue. Individualism has a weak negative relationship, masculinity—weak positive relationship. Uncertainty avoidance–negative relationship, long-term orientation—weak negative relationship, which is close to zero and has a high probability of the event occurring, is considered not straightforward, and indulgence has a positive relationship.

Power distance has a strong positive link with uncertainty avoidance, long term orientation and a negative link with indulgence. Individualism has a robust negative link with masculinity and long-term orientation. Herein, it is evident that male managers are more long term oriented and that long term orientation means strong uncertainty avoidance. However, indulgence has a negative link with long term orientation.

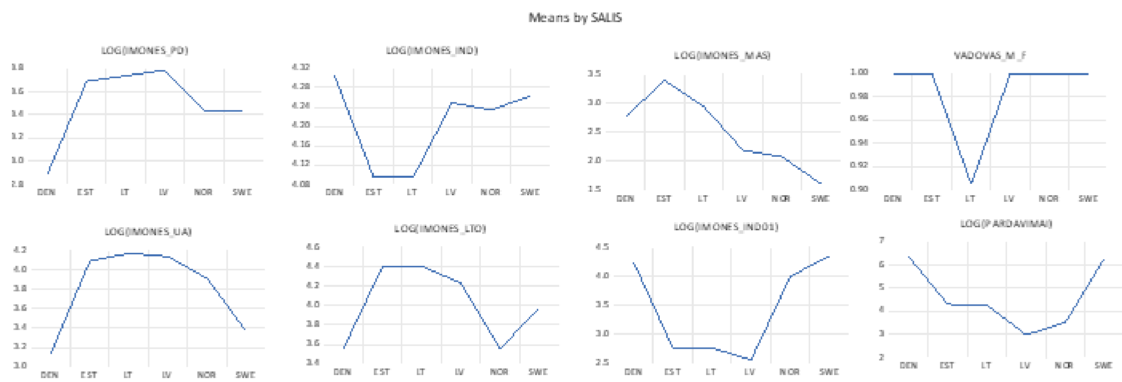

Figure 2. The curves of empiric research in logarithmic values by countries

where: SALIS – Country.

The results presented by countries shows similarities of curves of company revenue with individualism and indulgence.

The authors constructed an equation helping to identify the impact of cultural difference indicators on the company's revenue by following time trends.

Panel equation estimation with GMM method

The Generalized Moments Method (GMM) is an estimation procedure used in detailed panel data. It allows econometric models to avoid frequently unwanted or unnecessary assumptions, such as the specific distribution of errors. Panel data is a combination of time series and cross-sectional data that contains thousands of observations of companies, each observed at multiple points in time. In addition, the method is generalized. We got the moment estimate by reducing the criterion function by making a sample moment. This research study also covers the application of the GMM method. We provide the equation presenting the impact on company revenue below:

$$REV = \beta_0 + \ \beta_1 \, POWERDIST + \beta_2 \, LTOR + \beta_3 \, INDLG + u_t \tag{1}$$

where REV—logarithmic dependent variable of **the company revenue**;
β_0—intercept;
POWERDIST—dlog of power distance of the company country;
LOTR—dlog of long-term orientation of the company country;
INDLG—dlog of indulgence of the company country;
u_t—random model error;
$\beta_{1,2,3}$—coefficients of elasticity, reflecting the impact of regressors on **the revenue of the company.**
The constructed equation:

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$$\underset{(5.14)}{REV = -8.5} - \underset{(1.07)}{3.57 POWERDIST} + \underset{(0.56)}{4.7\, LTOR} + \underset{(0.36)}{1.95\, \mathrm{INDLG}} \tag{2}$$

For the construction of the equation, the authors used the residual cross-section dependence test, which results are presented in Appendix B. The results of equation estimation show that power distance has a negative and positive indulgence impact on company revenue. The impact of long-term orientation is specified as a positive impact on company revenue with a probability according to GMM equal to zero. Long-term orientation increases company revenue, the same as indulgence. However, high power distance hurts company revenue increase, and in such cases, better results are obtained only in low power distance countries.

5. Discussion

The scientific studies show that context and culture are fundamental for international business operations. By understanding the cultural differences in ethics, beliefs, values, and rules, companies create a diverse corporate and personal culture, which affects the international business results. The authors tried to deliver investigations on the topic, as the study still has much potential. The authors researched all six dimensions of the G. Hofstede approach under the same framework and reached results evaluated by different methods, helping to reach higher clarity on particular interlinks. Specialisation and not power distance demonstration gains the competitive advantage of international business. Long-term orientation helps to correct the company direction and reach future rewards.

Indulgence instrument helps to follow the rigor of the protocols in doing international business. Such three dimensions of culture are leading the company to higher revenue amount and international business expansion. Of course, the research authors used the dimensions of the country's culture where the researched business unit is located. However, other country-based directions are also possible in the future. In addition, the estimations of equations per country could widen the studies. In this paper, the authors investigated only international business units in Scandinavian and Baltic countries. However, the study could be expanded to the revision of framework applications other than this region.

Conclusions

The literature review results show that there is a lack of studies under the international business that are dedicated to researching cultural dimensions. The authors revised novel concepts of cultural dimensions and selected the G. Hofstede approach. Following the literature review, the authors identified that most authors focus on individualism and the least of authors – on indulgence. Under the empirical study, the authors were dedicated to revising cultural differences' impact on international business revenue. They selected several methods for revision. First, the authors constructed a matrix, which showed that cultural dimensions, except long-term orientation, impact revenues. Then the authors selected equation estimation with the GMM method, which avoids unwanted or unnecessary assumptions and reaches the precise impact of long-term orientation to revenue. After taking corrective actions, long-term orientation has a positive impact on company revenue. Indulgence also has a positive and power distance has – negative impact. This method proves the impact of power distance and indulgence and figures out the impact of long-term orientation. Of course, the cultural dimensions are changing. However, the results are static and do not present the impact of other factors, such as globalisation effect on the change of cultural dimensions. Because of that, they recommended it to repeat the study once in a decade.

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Appendix A

Dimensions of cultural differences (Hofstede, 1980 & 2011)

Dimension	Definition	Country
Power distance	The level of acceptance defines the power distance. The term 'institutions' refers to key elements of society, such as family, school, community, and the term 'organization' refers to different jobs. The high index shows the hierarchy is clearly defined and unchallenged. Low index shows the members of the company or institution have more equal power. At short distances, decision-making often requires additional members to justify, and hierarchies are not formally structured or completely eliminated.	**Low power distance**: Belgium Ireland Austria Bulgaria Czech Republic Denmark Estonia Greece Spain Italy Croatia Latvia Poland Lithuania Malta Portugal France Romania **High power distance**: Slovenia Finland Sweden Hungary Germany Australia Brazil Canada Chile China Hong Kong India Indonesia Iraq Japan South Korea Malaysia Mexico Norway Philippines Nigeria Russia Saudi Arabia Singapore South Africa Republic Switzerland Thailand Turkey United Kingdom United States Vietnam
Individualism vs Collectivism	Individualism marks societies in which the ties between individuals are not strong and everyone should take care of themselves. Society's position in this respect is shown in whether people's image is defined as "I" or "we". Collectivism values personal interdependence. Maintaining social harmony, consensus with others.	**Individualism**: Chile, China Hong Kong India Indonesia Iran Iraq Japan South Korea Malaysia Mexico Norway Philippines Nigeria Russia Saudi Arabia Singapore South Africa Republic Switzerland Thailand Turkey United Kingdom United States of Vietnam **Collectivism**: Belgium Austria Bulgaria Czech Republic Denmark Estonia Greece Spain Italy Croatia Latvia Poland Lithuania Malta Portugal France Romania Slovenia Finland Sweden Hungary Germany Australia Brazil Canada
Masculinity vs Femininity	It measures how culture values its gender roles. Men's cultures: they view men as hard conquerors and women as gentle stay-at-home parent, and women's cultures reduce these gender differences.	**Masculinity**: Chile China Hong Kong India Indonesia Iran Iraq Japan South Korea Malaysia Norway Philippines Nigeria Russia Saudi Arabia Singapore South Africa Republic Switzerland Thailand Turkey United Kingdom United States Vietnam **Femininity**: Belgium Ireland Austria Bulgaria Czech Republic Denmark Estonia Greece Spain Italy Croatia Latvia Poland Lithuania Malta Portugal France Romania Slovenia Finland Sweden Hungary Germany Australia Brazil Canada
Avoiding uncertainty vs Uncertainty tolerant	Avoiding uncertainty will affect (in) tolerance of ambiguities and/or trust in opponents who show unfamiliar behavior, as well as the need for structure and ritual in negotiated procedures. Uncertainty tolerant.	**Avoiding uncertainty**: France Romania Slovenia Finland Sweden Hungary Germany Australia Brazil Chile China Hong Kong India Indonesia Iraq Japan South Korea Malaysia Norway Philippines Nigeria Russia Saudi Arabia Singapore South Africa Republic Switzerland Turkey Thailand United Kingdom United States Vietnam **Uncertainty tolerant**: Belgium Ireland Austria Bulgaria Czech Republic Denmark Estonia Greece Spain Italy Croatia Latvia Poland Lithuania Malta Portugal
Long-term orientation vs Short-term orientation	Long-term orientation – fostering virtues focused on future rewards, especially perseverance and economy. Short-term orientation means fostering virtues related to the past and present, especially respect for traditions, preserving the "face" and fulfilling social obligations.	**Long-term orientation**: Canada Chile China HONG KONG India Indonesia Iran Iraq Japan South Korea Malaysia Mexico Norway Philippines Nigeria Russia Saudi Arabia Singapore South Africa Republic Switzerland Thailand Turkey United Kingdom United States Vietnam. **Short-term orientation**: Belgium Ireland Austria Bulgaria Czech Republic Denmark Estonia Greece Spain Italy Croatia Latvia Poland Lithuania Malta Portugal France Romania Slovenia Finland Sweden Hungary Germany Australia Brazil
Indulgence Vs Restraint	Indulgence will affect the atmosphere of the negotiations and the rigor of the protocols.	**Indulgence**: Belgium Austria Bulgaria Czech Republic Denmark Estonia Greece Spain Italy Croatia Latvia Poland Lithuania Malta Portugal France Romania Slovenia Finland Sweden Hungary Germany Australia Brazil Canada Chile China Hong Kong. **Restraint**: India Indonesia Iran Iraq Japan South Korea Malaysia Mexico Norway Philippines Nigeria Russia Saudi Arabia Singapore South Africa Switzerland Thailand Turkey United Kingdom United States of America Vietnam

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Appendix B

Residual Cross-Section Dependence Test

Residual Cross-Section Dependence Test
Null hypothesis: No cross-section dependence (correlation) in residuals
Equation: EQ02_GMM
Periods included: 10
Cross-sections included: 56
Total panel (unbalanced) observations: 529
Note: non-zero cross-section means detected in data
Test employs centered correlations computed from pairwise samples

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	4333,175	1540	0
Pesaran scaled LM	50,32952		0
Pesaran CD	10,22791		0

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