

# What Will Be The Productivity Of Employees With Shorter Work Hours?

**Violeta Cvetkoska**

*Ss. Cyril and Methodius University in Skopje  
Faculty of Economics-Skopje  
Skopje, 1000, Republic of North Macedonia*

*vcvetkoska@eccf.ukim.edu.mk*

**Milanka Dimovska**

*Ss. Cyril and Methodius University in Skopje  
Faculty of Economics-Skopje  
Skopje, 1000, Republic of North Macedonia*

*milankadimovska@gmail.com*

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## Abstract

We live in a world where we struggle every day to strike a balance between private and professional life. Shortening working hours leads to higher productivity, but what prevents us from achieving perfect balance? The aim of this paper is to examine the problems, causes and changes that may affect the change of working hours, and to answer whether there is a real possibility of introducing shorter working hours than eight hours, while achieving maximum productivity. The research was conducted through four rounds of questionnaires using the method of qualitative forecasting - Delphi. The questionnaires were answered by 11 respondents from one financial institution in North Macedonia in the period between February 20 and May 24, 2019. For each round of the Delphi method the answers were obtained and served as an auxiliary tool for forming the next survey questionnaire. With the results of the last round the successful application of the method was confirmed by achieving consensus among our panel of experts. Although we concluded that there are no conditions for introducing a shorter working day than eight hours, still the respondents believe that by introducing certain changes they could perform the work tasks in a shorter period of time.

**Keywords:** Qualitative Prediction, Delphi Method, Working Hours, Productivity, Stress.

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## 1. INTRODUCTION

Some researches show that working overload results in thousands of depressed people each year and overtime work makes it difficult to balance between career and family care [1]. Scientists believe that a person is simply neither mentally nor physically capable of working longer than five hours [2]. According to a survey of 1989 UK office workers all aged over 18 as part of research into the online habits and productivity of workers across the nation, the results of this revealed the average answer to be '2 hours and 53 minutes' of actual productivity in the workplace across all respondents. [3]. Experts say the 40-hour working week is not based on the ideal total hours humans can work productively [4]. A wide variety of unproductive activities disrupt workers' concentration levels [4]. These include smoking breaks, visiting social media sites, making food at work, eating, reading news websites, searching for jobs and more [4]. Most workers are interrupted every three minutes [4]. Meanwhile, it has been revealed that employees can take an average of 23 minutes to return to productive tasks after being interrupted [4]. Employees at work for a long time may experience fatigue or stress that not only reduces his or her productivity but also increases the probability of errors, accidents, and sickness that impose costs on the employer [5]. The point at which fatigue sets in and the nature of the link between working hours and work effort or fatigue is likely to vary across types of work and across workers [5]. Employers often use working time as a proxy for their employees' productivity and commitment [6]. Those who work particularly long hours are often awarded benefits such as raises or promotions or are

spared from dismissals [6]. This makes it individually rational for each worker to work extra hours in an attempt to outcompete colleagues [6]. However, if many workers pursue this strategy, it loses its effectiveness [6]. Through high work commitment, workers may over time develop into professional employees with greater experiences, resulting in greater performances [7].

Given the tendency of each employer with minimum resources to achieve the best possible results, the question arises whether for certain jobs, primarily in the service industry, it will be necessary to introduce additional staff in order to fill the reduced working hours in order to have continuity in the work. Working hours in the Republic of North Macedonia are regulated in accordance with Article 116, paragraphs 1 and 3 of the Law on Labor Relations [8] according to which full working hours must not be longer than 40 hours per week and not less than 36. In the existing literature we have not found a conducted research or pilot project that would give relevant data on the possibility and justification of the introduction of a seven-hour working day in terms of achieving maximum productivity using minimum resources.

The aim of this paper is to analyze what will be the productivity of employees with shorter work hours using the method of qualitative forecasting - Delphi, conducting the research in one financial institution in North Macedonia.

Given the tendency of each employer to achieve maximum results with minimum resources, the question arises whether certain jobs will require additional staff to fulfill the reduced working hours in order to have continuity in work. In order to apply shorter working hours than eight hours, many factors and conditions need to be met. By introducing a legal obligation to work less than eight hours, many institutions in the financial sector in the Republic of North Macedonia will face the challenge of carrying out their regular tasks, i.e., achieving maximum productivity with available human resources, but in a shorter time.

The obtained results show that in such conditions of organizational set-up, staffing and continuous work under stress due to inability to perform the assigned tasks within the given deadline there is no real basis for shorter working hours than eight, given that the tasks cannot be completed in a regular eight-hour workday. The dependence on processing data from other departments and divisions that should arrive further, complicates the fulfillment of deadlines if we take into account that they are usually received before the end of the workday and their completion requires additional time outside the eight-hour day. This problem can be overcome through better automation and connectivity in the circulation of data from other units to the management of the financial institution, continuously during the eight-hour working day, and not by delay in sending the data for processing. Although we concluded that there are no conditions for introducing a shorter working day than eight hours, still the respondents believe that by introducing certain changes they could perform the tasks in a shorter period of time, i.e. seven hours if there was good motivation, process automation, improved accountability and better task planning. Only motivated people can achieve above-average results, adequately completing the task in an optimal and shorter period of time.

In today's conditions, long-term success and competitive advantage of enterprises depend on giving importance to human because many of the resources owned by enterprises can be imitated, except for human resources [9]. Therefore; it is important to ensure that human resources do their activities voluntarily [9]. In other words, the motivation of individuals to work is an important factor in the success of the enterprise [9]. However, the point to be noted here is that human beings do not act only in line with economic motives and that they have a number of needs as a social being [9]. In addition to this, most of today's enterprises acknowledge that well-trained staff is a critical success factor for them [9].

Motivation can counteract the effects of mental fatigue [10]. However, the underlying mechanism by which motivation affects performance in mentally fatiguing tasks is obscure [10].

In our country there is no research or pilot project that would give us relevant data on the possibility and justification of introducing shorter working hours than eight in terms of achieving maximum productivity using a minimum of resources. This research is the first study of this type conducted in a developing country through which we enter into a small segment of the basic problems, causes and changes that would be initiated if the Republic of North Macedonia would think about changing the duration of working hours. The rest of our paper is organized as follows: Section 2 describes the applied methodology. Section 3 presents the evaluation and discussion of the obtained results, while Section 4 concludes the paper.

## **2. METHODOLOGY**

The idea of the authors of this paper was to conduct a research on what will be the productivity of employees with shorter work hours using the Delphi method in one of the financial institutions in the Republic of North Macedonia. In this regard, a request was prepared which was submitted to the financial institution, which remained anonymous and an interview was conducted with one of the directors of the institution. During the conversation with the director, the purpose of the research and the Delphi method were explained in detail. The proposed idea was positively accepted and it was decided to conduct the research anonymously (as required by the method) in order to give the respondents freedom without pressure to answer the questions, realistically expressing their remarks and at the same time to make maximum contribution in the direction of the changes that they want. A few days after the interview, one of the authors was invited for an interview aimed at selecting panel experts. In addition, it was decided that the experts would be from one of the departments, which includes eleven employees. The panel of experts consists of people with a faculty degree in the branch of economics and banking. Their work engagement refers to work tasks in the area of finance and accounting and they are experts in their field based on their knowledge and work experience. The nature of the work tasks from the employees requires maximum concentration and rational use of working hours in order to complete daily work responsibilities within eight hours. Due to the nature of the work tasks assigned to it and the working time required to perform them, the director of the department was not included in the panel of experts. An instruction was sent to the employees in which the method was explained, as well as its application in the analysis of what will be the productivity of employees with shorter work hours.

The process of the Delphi method, consisting of four rounds, took place in the period between February 20 and May 24, 2019. To examine what will be the productivity of employees with shorter work hours, the Delphi method is implemented in the following rounds:

1. Round 1 - This round includes a survey questionnaire of four open-ended, general questions.
2. Round 2 - The answers of the respondents will be summarized and formulated in several specific questions. They will need to be answered further.
3. Round 3 - The questions from round 2 will be submitted to the respondents again, but this time they will be able to see the answers of the other respondents (the respondents remain anonymous and are marked as respondent 1, respondent 2, etc.). Also, if they think it is necessary, they can change the answers of the questions in round 2 and explain why they decided make the change. If there are any changes in their answers, new round/s will be conducted until is achieved a consensus among the respondents.

### **2.1 Delphi Method**

RAND developed the Delphi method in the 1950s, originally to forecast the impact of technology on warfare [11]. The method entails a group of experts who anonymously reply to questionnaires and subsequently receive feedback in the form of a statistical representation of the "group response," after which the process repeats itself [11]. The goal is to reduce the range of responses and arrive at something closer to expert consensus [11]. The idea was to have a "remote" brainstorming session without psychological interference [12]. Delphi is a scientific method to organize and structure an expert discussion aiming to generate insights on controversial topics with limited information [13]. The technique has seen a rise in publication

frequency in various disciplines, especially over the past decades[13]. The method helps reach a consensus among the participants based on all posted opinions from different experiences and points of view in order to build a common scenario [14].

Before using the Delphi method, the problem for which predictions are expected should be defined. Then the group is defined, i.e. the experts who will participate in the process are selected. Several circumstances contribute to the validity of the method and the obtained data [15]. It is important to carefully identify and select qualified experts within the area of the study [15]. We live in an ever-changing environment with technology, society, policies, laws, and other areas changing at a fast pace [16]. One always needs to reflect on the context in which panelists provide their assessments in the Delphi study [16]. A prerequisite that the selected experts must meet in order to be included in the predictions is to possess the necessary knowledge, experience and expertise for the specific problem. There are no clearly defined rules regarding this issue (this also refers to the time period in which the survey questionnaires should be sent). What is specific about this method is that the contacts with the experts are made through several rounds of questionnaires, the experts are anonymous and various information are obtained from them.

Scientific evidence to guide Delphi researchers on whether panel members who miss a round can be included in a subsequent round is sparse [17]. Yet, if the results are consistent with the conventional approach of excluding these experts from subsequent rounds, the final outcome may be a better reflection of the opinions of the originally invited panel and false consensus caused by drop-out of those with a different opinion may be reduced [17].

In the first round of this method it is recommended asking open-ended questions, but we can also start with closed-ended questions. The advantage attributed to open-ended questions is that we can see the different views, understandings, ideas and opinions that the experts will offer on the question. When the first round is over, the responsible person conducts the second round of survey questionnaires based on the answers received from first round, and they are usually closed-ended, in which the specific problem should be assessed. The responsible person not only writes down the answers from all the experts but also notes their frequency. In the third round the experts are sent the questions from the second round again, but this time they will not only be able to change the given grade and state the reasons why they decided to change, they will also see the answers of the other participants who remain anonymous. This process continues until a consensus is reached among the respondents.

The main advantage of the Delphi method is to reach consensus in areas of uncertainty [18]. Some of the other advantages of the method are [19]: flexibility and simplicity, knowledge sharing, cost efficiency, freedom of expression, ease of communication, variations of members, no geographical restrictions. In addition to the advantages, some disadvantages of the Delphi method are [19]: researcher bias, imposing the researcher's prejudices on respondents, anonymity and power of a panel member, etc. The technique has seen a rise in publication frequency in various disciplines, especially over the past decades [13]. In April 2021, the term Delphi method yielded 28,200 search hits in Google Scholar for the past five years alone [13]. Given the increasing level of uncertainty caused by rapid technological and social change around the globe, collective expert opinions and assessments are likely to gain even more importance [13].

### **3. EVALUATION AND DISCUSSION OF RESULTS**

#### **3.1 First Round**

A few days after sending the manual to the financial institution the first survey questionnaire was submitted to the respondents (panel of experts) (Appendix No. 1). This survey questionnaire was submitted to them on February 20, for which they had a period of 3 days, until February 22, to

answer. It was fully answered by all eleven respondents. This round consisted of four open-ended questions that leave an opportunity for the respondents to give creative thinking.

The answers received of the first question regarding the problems faced by the department in achieving maximum productivity in an eight-hour working day are given in Table 1. From Table 1 we can see that 10 problems in total were listed, so that, insufficient technical support has the highest frequency (4 responses), followed by improper delegation of work tasks, and greater process of automation (2 responses for each respectively), etc.

Problem	Frequency
Insufficient technical support	4
Improper delegation of work tasks	2
Greater process of automation	2
Insufficient experience for new processes / tasks that are usually related with shorter deadlines	1
Lack of staff	1
Planning and coordination of activities	1
Better organization and prioritization	1
Temporary problems due to technology interruptions	1
The process of transferring knowledge / information to colleagues who were not previously involved in the activity	1
Stress	1

**TABLE 1:** Problems and their frequency.

Productivity is expressed as the relationship between the outputs of a production system (both goods and services) and its resources (inputs) that are consumed in producing the outputs [20]. Productivity comes from your experience, knowledge, and expertise [21]. The improvement in work productivity has become one of the most important goals for sustainable economic growth [22]. As a result, there is a growing interest on what determines work productivity and how to improve it [22]. Identifying the effect of working time on productivity is not straightforward for two main reasons [23]. First, unobservable characteristics of industries, firms, jobs and individuals are likely to influence both working time and productivity, so that the correlation between the two variables is likely to be a biased estimate of the effect of working time on productivity [23]. Second, external shocks could influence both working time and productivity, which again leads to a biased estimation of the effect [23]. Increasing production, and ultimately productivity, depends on well-organized technical, economic and organizational factors as well as the human factor [24]. Two most common measures of productivity are total measure and partial measure [25]. Total measure includes all the input resources used in achieving the desired outputs whereas partial measure focuses on an incomplete list of input factors [25].

If productivity is enhanced by better visual ergonomic working conditions, then managers of workplaces may be able to improve work outcomes by optimizing the physical work environment [26].

The answers obtained regarding the second question, which refers to how often employees perform their duties outside of working hours and for how long, are presented in Table 2. Based on the results presented in Table 2 we can see that there are eight answers in total, so that three respondents answered that they very rarely perform work tasks outside the working hours, due to an incidental and exceptional situation when there is a justified basis. Besides, there are answers that sometimes they perform work tasks outside the working hours at intervals of one to three hours (2 respondents), daily between 30 and 45 minutes before the start of working hours (1 respondent), etc.

Performing work tasks outside working hours	Frequency
Very rarely, due to an incidental and exceptional situation when there is a justified basis	3
Sometimes at intervals of one to three hours	2
Two to three times a week after the end of regular working hours, usually for a period of one hour	2
Rarely, after working hours	2
Once or twice a month	1
Daily between 30 and 45 minutes before the start of working hours	1
Daily at intervals of several hours	1
Two days a week between one and two hours	1

**TABLE 2:** Frequency of performing work tasks outside working hours.

The third question provides an answer to the reasons why employees in the department perform work tasks outside of working hours (Table 3). Based on the results given in Table 3, twelve reasons are identified for completing work tasks outside the working hours. The highest frequency (6 responses) has the reason short deadlines for completing the tasks and submitting them to the authorities, followed by the nature/job description (4 responses), timely delivery of information and if a technical problem occurs (2 responses for each), etc.

Reasons for completing work tasks outside the working hours	Frequency
Short deadlines for completing the tasks and submitting them to the authorities	6
The nature / job description	4
Timely delivery of information	2
If a technical problem occurs	2
When the work is dependent on other departments/units	1
In case of unpredictable problems that require additional time	1
If one of the colleagues is on vacation and his / her obligations should be performed in addition to his / her own	1
Completion of tasks started during working hours	1
Additional check of work tasks	1
Involvement in new projects / work assignments that are usually short-term	1
Atmosphere and peace after working hours	1
Additional concentration for performing work tasks	1

**TABLE 3:** Frequency of reasons for completing work tasks outside the working hours.

Regarding the fourth question, which refers to the changes that would be introduced by the employees in the department in order for the daily tasks to be performed on time, and the working day to last seven hours, the obtained results are presented in Table 4. According to the presented results in Table 4, twelve necessary changes are identified for the tasks to be performed on time, so that a greater process of automation has the highest frequency (4 responses), followed by division of work tasks evenly among all employees in the department, facilitated communication and flow of information with colleagues from other department, increase in the team due to increase of the workload (2 responses for each), etc.

Necessary changes for the tasks to be performed on time	Frequency
Greater process of automation	4
Division of work tasks evenly among all employees in the department	2
Facilitated communication and flow of information with colleagues from other department	2
Increase of the team due to increase of the workload	2
Motivating employees through the correct placement of the position that corresponds to their knowledge and engagement	1
Reducing time in communicating with other colleagues about activities not related to work	1
Optimization of time spent in communication, oral and written	1
Additional technical support	1
The way of planning and scheduling tasks	1
Setting a to-do list to prioritize on a weekly basis	1
Improving / enhancing accountability	1
Reduce break time	1

**TABLE 4:** Frequency of the necessary changes for the tasks to be performed on time.

### 3.2 Second Round

In order for each employee to identify their answers in round 3 and at the same time preserve their identity and achieve anonymity, each survey was marked in a different color. The second round of surveys was submitted on March 20 and the employees had to respond until March 25. Eleven surveys were sent, and the number of respondents who fully answered the questions is ten. The survey from the second round is presented in Appendix 2. The answers obtained from the first question as well as the mean for each problem are presented in Table 5. Based on the results in Table 5 we can see that the problems, stress, lack of staff and insufficient experience for new processes / tasks that are usually related with shorter deadlines have the highest mean, i.e. ( $\bar{x} = 2.70$ ), ( $\bar{x} = 2.70$ ) and ( $\bar{x} = 2.50$ ) respectively, etc.

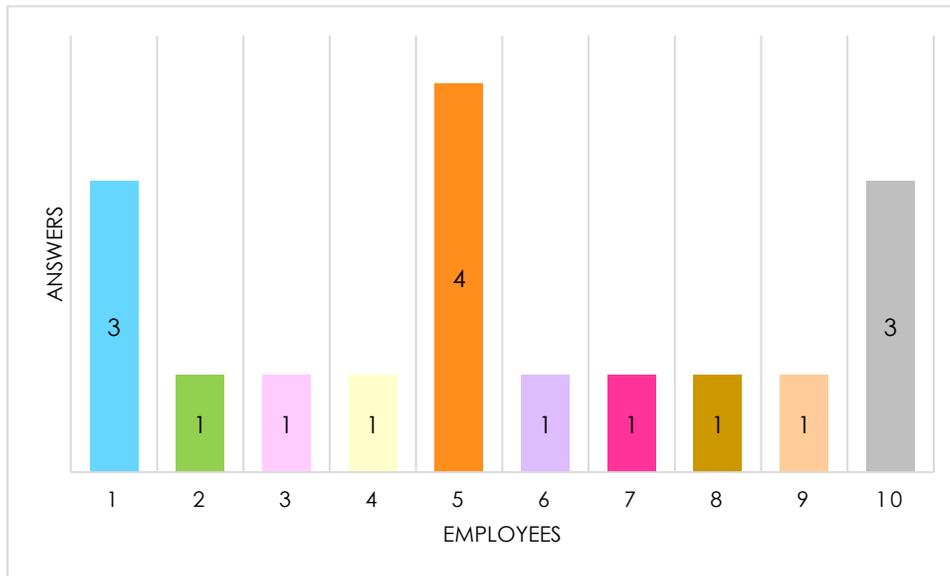
Problem description	Grade (1-5)										Mean
	3	1	1	1	3	3	2	3	1	4	
Temporary problems due to technology interruptions	3	1	1	1	3	3	2	3	1	4	2.20
Stress	3	1	5	2	4	2	4	3	1	2	2.70
Greater process of automation	3	1	1	2	5	3	2	3	1	3	2.40
Lack of staff	3	1	5	3	1	3	3	5	1	2	2.70
Insufficient technical support	2	1	1	3	3	4	4	1	1	3	2.30
Planning and coordination of activities	2	1	1	2	5	4	3	2	1	2	2.30
The process of transferring knowledge / information to colleagues who were not previously involved in the activity	2	1	1	2	4	4	3	1	1	1	2.00
Improper delegation of work tasks	2	1	1	3	4	4	3	4	1	1	2.40
Insufficient experience for new processes / tasks that are usually related with shorter deadlines	2	1	1	3	4	3	4	3	1	3	2.50
Better organization and setting priorities	2	1	1	2	4	3	3	4	1	2	2.30

**TABLE 5:** Problems (individual mean and grade).

One of the most stressful periods of a normal day can be during working hours [27]. Stress is often regarded as a subjective feeling of individuals, in which the demands of work or life exceed the belief of the individual in his or her capacity to cope [27]. Work stress can come from a variety of sources and affect people in different ways [27].

It is widely believed that the relationship between a supervisor and his/her employees greatly affects employees' wellbeing and/or productivity [28]. Job stress and job satisfaction are important factors affecting workforce productivity [29]. The high prevalence of office stress and its detrimental health consequences are of concern to individuals, employers and society at large [30]. Environmental quality seems to have a relation to perceived individual stress and productivity [31]. Rest breaks at work are reported to reduce fatigue and job stress [32]. The advent of the smartphone has dramatically altered how we communicate, navigate, work and entertain ourselves [33]. While the advantages of this new technology are clear, constant use may also bring negative consequences, such as a loss of productivity due to interruptions in work life [33]. It is possible that perceived stress in the workplace may motivate workers to "escape" on to their smartphones [33].

To the second question, the employees had to circle one of the offered answers, i.e. whether very rarely (1-once a week), rarely (2-twice a week), sometimes (3-three times a week), often (4-four times a week) or very often (5-five times a week) during the working week perform work tasks outside working hours. The given answer from each employee is presented in Graph 1. According to their answers we can see that all of the employees perform their work tasks outside of the eight-hour working day.



**FIGURE 1:** Performing work tasks outside working hours.

Many studies have reported noticeable increases in the proportion of employees working either relatively short or relatively long hours [34]. Such trends have been accompanied by an increasing concern regarding work hour mismatches defined as a discrepancy between actual and preferred work hours [34].

The global budget of human time is a societal limit to consider in the sustainability discussion [35]. Global working time allocation among countries is a zero-sum game [35]. Essentially, if long working hours present a danger to health, it should be possible to change them, which is not always the case with other work environmental factors [36].

The answers obtained from the third question as well as the average assessment of each reason are presented in Table 6. Based on the results in Table 6 we can see that the reasons when the work is dependent on other departments/units and atmosphere and peace after working hours have the highest mean, i.e. ( $\bar{x} = 3.20$ ) and ( $\bar{x} = 3.00$ ) respectively.

Description of the reason	Grade (1-5)										Mean
	5	4	3	2	1	5	4	3	2	1	
When the work is dependent on other departments/units	5	1	1	3	5	2	5	5	1	4	3.20
In case of unpredictable problems that require additional time	3	1	1	2	5	2	3	1	2	3	2.30
Timely delivery of information	2	1	5	1	5	3	4	3	1	2	2.70
If a technical problem occurs	2	1	5	2	1	3	5	3	1	3	2.60
If one of the colleagues is on vacation and his / her obligations should be performed in addition to his / her own	3	1	5	3	1	2	2	4	1	1	2.30
Short deadlines for completing the tasks and submitting them to the authorities	3	1	5	4	2	4	3	2	1	3	2.80
Completion of tasks started during working hours	2	1	1	1	5	2	1	1	1	3	1.80
Additional check of work tasks	2	1	5	1	5	2	1	1	1	2	2.10
Involvement in new projects / work assignments that are usually short-term	3	1	5	2	5	3	2	1	1	1	2.40
The nature / job description	2	1	5	3	2	3	2	3	1	3	2.50
Atmosphere and peace after working hours	3	1	5	5	5	2	2	3	1	3	3.00
Additional concentration for performing work tasks	1	1	5	1	5	3	5	3	1	1	2.60

**TABLE 6:** Reasons (individual mean and grade).

There are predictions that in future rapid technological development could result in a significant shortage of paid work [37]. A possible option currently debated by academics, policy makers, trade unions, employers and mass media, is a shorter working week for everyone [37]. Due to the limited availability of automatic generation technology for integrated information including both physical component attributes (such as spatial information) and managerial attributes (such as allocated resources), research efforts focusing on cost-time integrated progress control theory have been sparse [38]. The satisfaction with the working conditions is an important factor that affects the health and productivity of workers [39].

The answers obtained from the fourth question as well as the average grade of each change are presented in Table 7. Based on the results in Table 7 we can see that the changes motivating employees through the correct placement of the position that corresponds to their knowledge and engagement and the change greater process of automation have the highest mean, i.e. ( $\bar{x} = 4.40$ ) and ( $\bar{x} = 3.90$ ) respectively.

Description of change	Grade (1-5)										Mean
Motivating employees through the correct placement of the position that corresponds to their knowledge and engagement	5	1	5	5	5	4	5	5	5	4	4.40
Division of work tasks evenly among all employees in the department	3	1	5	5	2	3	3	5	4	4	3.50
Reducing time in communicating with other colleagues about activities not related to work	2	1	5	2	3	2	4	5	3	1	2.80
Reduce break time	2	1	1	2	1	2	3	4	3	1	2.00
Greater process of automation	4	1	5	3	4	3	4	5	5	5	3.90
Optimization of time spent in communication, oral and written	3	1	5	3	4	2	4	4	3	3	3.20
Additional technical support	3	1	5	3	2	4	3	4	4	4	3.30
The way of planning and scheduling tasks	3	1	5	3	5	3	2	5	5	2	3.40
Setting a to-do list to prioritize on a weekly basis	3	1	1	4	1	3	3	5	5	3	2.90
Improving / enhancing accountability	3	1	5	4	3	3	3	5	4	5	3.60
Facilitated communication and flow of information with colleagues from other departments	2	1	5	2	2	3	1	5	5	5	3.10
Increase of the team due to increase of workload	3	1	5	3	2	2	5	5	5	3	3.40

**TABLE 7:** Changes (individual mean and grade).

The strongest force behind the spread of more decent working time arrangements — ones that are both productive and socially healthy — remains a full employment economy plus the new institutional structures that facilitate a formal expression for desired flexibility in working time options [40]. Therefore, companies could and should be offered incentives to adopt and spread flexible working time arrangements, such as flextime and working time accounts, which are known to improve employee morale and attitudes [40]. This could, in turn, not only enhance individual work performance, but also improve company productivity, quality and, ultimately, the sustainability of firm performance [40]. Globalization, advancement in technology, rapidly changing work environments, and culturally diverse work groups are becoming the norm in organizations and will likely become more widespread in the future [41].

The competitive, dynamic and changing environment in which companies operate today, pose new challenges that allow them to grow and maintain themselves over time, aspects such as customer satisfaction, innovation, and social responsibility are increasingly used objectives by the companies [42]. However, elements such as quality and productivity continue to be critical factors in business sustainability [42].

### 3.3 Third Round

In the third round the survey (Appendix 3) was submitted to the respondents on April 25 and the employees had to answer until May 8. Each respondent who has decided to change the grade had to give a brief explanation of taking that step. This time, in addition to their answers, each respondent had the opportunity to see the answers of the other respondents who remain anonymous.

Regarding the first question, there was a change in the grades given in relation to the problems related to temporary problems arising due to technology interruptions, stress, greater process of

automation and insufficient technical support. Changes in grades caused changes in the average grade for the given problem. All changes to the first question were made by an employee whose survey color was orange. The changes are shown in Table 8:

Problem description	New rating	Previous rating	New average rating	Previous average rating
Temporary problems due to technology interruptions	2	3	2.10	2.20
Stress	3	4	2.60	2.70
Greater process of automation	4	5	2.30	2.40
Insufficient technical support	2	3	2.20	2.30

**TABLE 8:** Problems and their average grade.

Regarding the second question, the change that took place was made by the employee whose survey was marked in orange. The previous answer, often (four times a week) I perform work tasks outside of working hours, was replaced by sometimes (three times a week).

In question no. 3 related to the reasons that affect the employees in the department to perform their work tasks outside of working hours, changes were made by the employees whose survey was marked in orange and blue. The changes are shown in Table 9.

Description of the reason	New rating		Previous rating		New average rating	Previous average rating
In case of unpredictable problems that require additional time	x	4	3	5	2.20	2.30
Timely delivery of information	3	4	2	5	2.70	2.70
If a technical problem occurs	3	x	2	1	2.70	2.60
Involvement in new projects / work assignments that are usually short-term	x	4	3	5	2.30	2.40
Additional concentration for performing work tasks	x	4	1	5	2.50	2.60

**TABLE 9:** Reasons and their average grade.

The reasons given by the employees who decided to change their answers are that the current working conditions influenced their new given grade (refers to all questions in which there was a change in relation to the second round). Regarding the fourth question, the employees remained constant, i.e. did not change their answers.

The financial sector relies heavily on information systems for business [43]. The financial sector requires a great deal of software development [44]. In recent years, financial institutions have pressured their software suppliers to reduce cost, which has obliged them to search for new productive models in order to remain competitive [44]. The great majority of current solutions are focused on the industrialization of software development and the search for a less expensive workforce which is similar to outsourcing [44].

Because in round 3 were identified changes, we have prepared a questionnaire for round where were given all the grades for each respondent and the made changes. The questionnaire was

send to the respondents on May 11 and they had time to send back the questionnaire until May 24. Based on the obtained results from the respondents, there were not noticed new changes, which means a consensus was achieved in Round 4.

#### **4. CONCLUSION**

In the Republic of North Macedonia there is an initiative to change working hours, i.e. the introduction of seven-hour working day following the example of EU member states, such as France, Denmark, Italy, the Netherlands, Ireland and Belgium. The current working hours, especially in the afternoon period, do not show much creativity and productivity, which leads to an amendment to Article 116, paragraphs 1 and 3 of the Labor Law, in which is written that full-time work must not exceed 40 hours per week and not less than 36 hours per week. On the other hand, the existence of flexible working hours would provide space in the performance of work tasks based on the personal needs for flexibility of the employee. A satisfied employee is an invaluable asset to the organization as a whole. Any investment in the employees and their working conditions results in better results for organizations. Until there is a legal obligation to introduce seven-hour working day, it would be desirable to conduct analyses and research that would look at all aspects of the impact of working hours on employee productivity.

The analysis of productivity through the length of working hours also depends on the type of work tasks performed by the employees in a certain activity. In the study by Man and Ling [45] the long working hours in food service and median working hours in information and communication industry, it was found that wages, working arrangements, job contents and information technology skills, working environment and personal health, and stress and job satisfaction are critical factors to enhance the labor productivity. Stress was listed by our panel of experts as a problem that the department faces in achieving maximum productivity within eight-hour working day.

Despite the fact that we found that the panel of experts could not complete the work tasks within eight hours the respondents through the given answers believe that by introducing certain changes, the work tasks could be performed in a shorter period of time, i.e. seven working hours. Some of these changes are motivational factors, process of automation, improved accountability, better task planning, etc. Motivated people can achieve above-average results, adequately completing the task in an optimal and shorter period of time as required by the supervisor. The problem is how to motivate employees to invest in the work they do given the fact that a particular group of workers may be motivated by one factor without having an impact on another working group. It is important to find out what motivates most employees or to make a combination that will achieve the best results. It gives us hope that if there is a legal obligation to introduce shorter working hours with the right choice of motivational factors that the expected results can be achieved. In addition, each organization should take care that each employee is placed in a position that corresponds to the level of his knowledge and experience, otherwise, if employees are placed in senior positions without a combination of these two dimensions, it will demotivate the team that lead it and the set goals cannot be expected to be achieved.

As a first research in the field of working hours using the Delphi methodology in the Republic of North Macedonia, this study opens the door for researchers interested in the field of working hours and productivity to conduct similar research. As a limitation of the study we point out that it was conducted in panel experts of one financial institution, but in the next study we plan to investigate the impact of the COVID-19 virus pandemic on the working hours in the financial industry using a panel of experts from several financial institutions.

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## APPENDIX 1

Dear Sir/Madam,

Your participation in our research will be completely confidential and you will remain anonymous throughout the process. The data collected within this research will not be used individually, but will be part of the sample for the research.

The aim of the research is: What will be the productivity of employees with shorter work hours. The survey below represents the first phase of the Delphi method. This questionnaire is designed to get your personal opinion on a key issue.

The Delphi process will involve examining three separate situations.

**Round 1-** This phase includes a survey questionnaire of four open-ended, general questions, which are on the next page, for which you have a deadline to answer in a period of 3 days, till 22.02.2019

At a later date:

**Round 2** - Your answers, as well as the answers of the others, will be summarized and formulated in several specific questions. You will have to answer the questions by giving a grade from 1 to 5 or by circling one of the offered answers. You will need to answer them further.

**Round 3-** The questions from round 2 will be submitted to you again, but this time you will also be able to see the answers of the other respondents. If you think it is necessary, you will be able to change the answers to the questions from round 2 and at the same time give an explanation why you decided to change them.

The number of rounds will be repeated until is achieved a consensus among respondents.

Yours faithfully,



## APPENDIX 2

### Delphi method-Round 2

1. Rate the problems that are present in your department from 1 to 5 (1 = problem that is present, but the department faces it very rarely, 5 = problem that the department often faces).

Problem definition	Grade (1-5)
Temporary problems due to technology interruptions	
Stress	
Greater process of automation	
Lack of staff	
Insufficient technical support	
Planning and coordination of activities	
The process of transferring knowledge / information to colleagues who were not previously involved in the activity	
Improper delegation of work tasks	
Insufficient experience for new processes / tasks that are usually related with shorter deadlines	
Better organization and prioritization	

2. Circle:

During the working week, the work tasks \_\_\_\_\_ are performed outside working hours (before and after the end of the working hours).

- 1) Very rarely (once a week)
- 2) Rarely (twice a week)
- 3) Sometimes (three times a week)
- 4) Often (four times a week)
- 5) Very often (five times a week)

3. The reason why you are forced to complete work tasks outside working hours rate from 1 to 5 (1 = reason that is present, but does not affect much to perform work outside working hours, 5 = reason that most affects to carry out work outside working hours).

Description of the reason	Grade (1-5)
When the work is dependent on other departments/units	
In case of unpredictable problems that require additional time	

Timely delivery of information	
If a technical problem occurs	
If one of the colleagues is on vacation and his /her obligations should be performed in addition to his/her own	
Short deadlines for completing the tasks and submitting them to the authorities	
Completion of tasks started during working hours	
Additional check of work tasks	
Additional concentration for performing work tasks	
Involvement in new projects / work assignments that are usually short-term	
The nature / job description	
Atmosphere and peace after working hours	

4. Rate the changes that you would implement in your department in addition to the daily tasks to be performed on time, while the working day lasts seven hours, according to their priority from 1 to 5 (1 = Change with the lowest priority, 5 = Change with highest priority)

Description of change	Grade
Motivating employees through the correct placement of the position that corresponds to their knowledge and engagement	
Division of work tasks evenly to all employees in the department	
Reducing time in communicating with other colleagues about activities not related to work	
Reduce break time	
Greater process of automation	
Optimization of time spent in communication, oral and written	
Additional technical support	
The way of planning and scheduling tasks	
Setting a to-do list to prioritize on a weekly basis	
Improving / Enhancing accountability	
Facilitated communication and flow of information with colleagues from other departments	
Increase of the team due to increase of workload	

## APPENDIX 3

### Delphi method-**Round 3**

Dear Sir/Madam,

Thank you for your cooperation so far and for the time you have devoted responding the surveys from the previous two rounds of the Delphi method.

In this round, the questions from the previous survey are submitted to you again, but this time, in addition to yours, you will also be able to see the answers of the other respondents. If you think it is necessary, you have the opportunity to change the grade that you previously wrote. In case you change your mind, in the empty space under the table briefly give an explanation why you have decided to change your answer.

You have a deadline to respond to this survey within a period of 14 days, ending on May 8, 2019.

Yours faithfully,

1.

Problem definition	Grade										
	Your rating	Change of rating	Grades given by other respondents								
Temporary problems due to technology interruptions	1		1	1	1	3	3	2	3	4	3
Stress	1		1	5	2	4	2	4	3	2	3
Greater process of automation	1		1	1	2	5	3	2	3	3	3
Lack of staff	1		1	5	3	1	3	3	5	2	3
Insufficient technical support	1		1	1	3	3	4	4	1	3	2
Planning and coordination of activities	1		1	1	2	5	4	3	2	2	2
The process of transferring knowledge / information to colleagues who were not previously involved in the activity	1		1	1	2	4	4	3	1	1	2
Improper delegation of work tasks	1		1	1	3	4	4	3	4	1	2
Insufficient experience for new processes / tasks that are usually related with shorter deadlines	1		1	1	3	4	3	4	3	3	2
Better organization and setting priorities	1		1	1	2	4	3	3	4	2	2

2. Circle:

During the working week, the work tasks \_\_\_\_\_ are performed outside working hours (before and after the end of the working hours).

- 1) Very rarely (once a week)
- 2) Rarely (twice a week)
- 3) Sometimes (three times a week)
- 4) Often (four times a week)
- 5) Very often (five times a week)

Your answer	Change of answer	Grades given by other respondents									
1		3	1	1	4	1	1	1	1	3	

3.

Description of the reason	Rating (1-5) use whole numbers										
	Your rating	Change of rating	Grades given by other respondents								
When the work is dependent on other departments/units	1		4	1	3	5	2	5	5	1	5
In case of unpredictable problems that require additional time	2		3	1	2	5	2	3	1	1	3
Timely delivery of information	1		2	5	1	5	3	4	3	1	2
If a technical problem occurs	1		3	5	2	1	3	5	3	1	2
If one of the colleagues is on vacation and his / her obligations should be performed in addition to his / her own	1		1	5	3	1	2	2	4	1	3
Short deadlines for completing the tasks and submitting them to the authorities	1		3	5	4	2	4	3	2	1	3
Completion of tasks started during working hours	1		3	1	1	5	2	1	1	1	2
Additional check of work tasks	1		2	5	1	5	2	1	1	1	2
Involvement in new projects / work assignments that are usually short-term	1		1	5	2	5	3	2	1	1	3
The nature / job description	1		3	5	3	2	3	2	3	1	2
Atmosphere and peace after working hours	1		3	5	5	5	2	2	3	1	3
Additional concentration for performing work tasks	1		1	5	1	5	3	5	3	1	1

4.

Description of change	Rating (1-5) use whole numbers										
	Your rating	Change of rating	Grades given by other respondents								
Motivating employees through the correct placement of the position that corresponds to their knowledge and engagement	5		4	5	5	5	4	5	5	1	5
Division of work tasks evenly among all employees in the department	4		4	5	5	2	3	3	5	1	3

Reducing time in communicating with other colleagues about activities not related to work	3		1	5	2	3	2	4	5	1	2
Reduce break time	3		1	1	2	1	2	3	4	1	2
Greater process of automation	5		5	5	3	4	3	4	5	1	4
Optimization of time spent in communication, oral and written	3		3	5	3	4	2	4	4	1	3
Additional technical support	4		4	5	3	2	4	3	4	1	3
The way of planning and scheduling tasks	5		2	5	3	5	3	2	5	1	3
Setting a to-do list to prioritize on a weekly basis	5		3	1	4	1	3	3	5	1	3
Improving /Enhancing accountability	4		5	5	4	3	3	3	5	1	3
Facilitated communication and flow of information with colleagues from other departments	5		5	5	2	2	3	1	5	1	2
Increase of the team due to increase of workload	5		3	5	3	2	2	5	5	1	3