The effects of flexible work in the IT industry

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Abstract— **Flexible work can come in a variety of types, such as fully flexible strategy where employees are fully flexible in carrying out their tasks from any location in the world to strategies that allow workers to work flexibly over several days, weeks or months at a time. There are many types of flexible work strategies for companies, and the most common are hiring digital nomads, freelancers, using co-working space crowds and so on. This paper tries to compare and analyze the findings of Stack Overflow research from 2017 with the survey conducted as a part of this research, in Macedonia in 2019 regarding flexible work arrangements in the IT industry. The comparative analysis will represent the workers' perspective. In the second part of the paper we will consider several obstacles and traps of flexible work arrangements from the companies' perspectives, and offer principles to overcome them.**

Keywords—Flexible-working, IT-industry, Productivity, Satisfaction, Profitability

I. INTRODUCTION

Flexible work can come in a variety of types, namely a fully flexible strategy where employees are fully flexible in carrying out their tasks from any location in the world to strategies that allow workers to work flexibly over several days at a time, week or month. There are many types of flexible work strategies for companies, and the most common are hiring digital nomads, freelancers, using co-working space crowds and so on.

As Hill and his associates state, "In the organizational perspective, the goal of flexibility is to enable the organization as a whole to adapt to rapidly changing demands placed on the organization from either internal or external forces. By contrast, the goal of workplace flexibility from the worker perspective is to enhance the ability of individuals to meet all of their personal, family, occupational, and community needs. It is assumed, however, that as a byproduct the organization will indirectly benefit with increased efficiency, effectiveness, and greater productivity." [1]

Flexible work is not only suitable for employers and employees, research has shown that it proved more effective. According to a Gallup report [2], employees in various industries that worked 60 to 80 percent of their time flexibly had the highest productivity rates. As companies and employees become increasingly aware that work is "fluid" and can take place anywhere and at any time, they realize that simply having a dedicated employee just to fill a position for a future activity, no longer justifies cost, nor is it effective in achieving goals.

Previous studies note two ways of dealing with the effect of ubiquitous information technologies, blurring the boundaries between personal life and work activities: keeping work and personal life domains separated or integrated, that is, segmenting or blending of domains [3].

The growing trend of flexible working in technology companies shows no signs of slowing down. Instead, it gains momentum. Given the benefits that businesses have in the long run, this should come as no surprise given the technological advances of innovative startups that have made hiring flexible employees, especially IT professionals, more effective and successful than ever. In addition, flexible work is no longer just a benefit to attracting the best candidates, but it is certainly turning into a business strategy for companies actively preparing for the Fourth Industrial Revolution.

This paper tries to compare and analyze the findings of Stack Overflow research from 2017 [4] with the survey conducted as a part of this research, in Macedonia in 2019 regarding flexible work arrangements in the IT industry. The comparative analysis will represent the workers' perspective [1]. In the second part of the paper we will consider several obstacles and traps of flexible work arrangements from the companies' perspectives, and offer principles to overcome them [5].

II. STACK OVERFLOW SURVEY

Founded in 2008, Stack Overflow is the largest online community of IT professionals that enjoys great trust among them. IT professionals use this platform to learn, share their knowledge and build their careers. More than 50 million professionals in the IT industry visit Stack Overflow every month to help solve coding problems, develop new skills, and find new challenging job opportunities.

Since 2011, each year Stack Overflow has been conducting different types of surveys of IT professionals approaching the community to find out about their favorite technologies, coding habits, work preferences, the way they learn, share their knowledge and advance in their career.
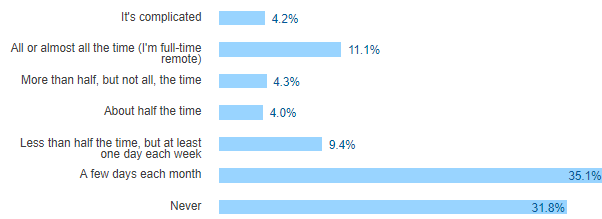
In 2017, Stack Overflow received the largest group of respondents in their history, numbered about 64,000 IT professionals. The research was done in January 2017.

Important information from Stack Overflow's research on "flexible work" with their interviewees is selected and highlighted below.

A. How often do developers work remotely?

64% of the respondents of Stack Overflow's survey answered that they work flexibly for at least 1 day a month, while 11.1% answered that their work is full flexible working

How Often Do Developers Work Remotely?

It's complicated	4.2%
All or almost all the time (I'm full-time remote)	11.1%
More than half, but not all, the time	4.3%
About half the time	4.0%
Less than half the time, but at least one day each week	9.4%
A few days each month	35.1%
Never	31.8%

44,008 responses

time.

Fig. 1. How often do developers work remotely? (https://insights.stack overflow.com/survey/2017#remote-work)

The next question of particular interest for this research is what developers value in compensation benefits, and the answers are presented in Fig. 2. 53.3% of the respondents said that flexible working hours are one of the 5 most important priorities in accepting a new job.
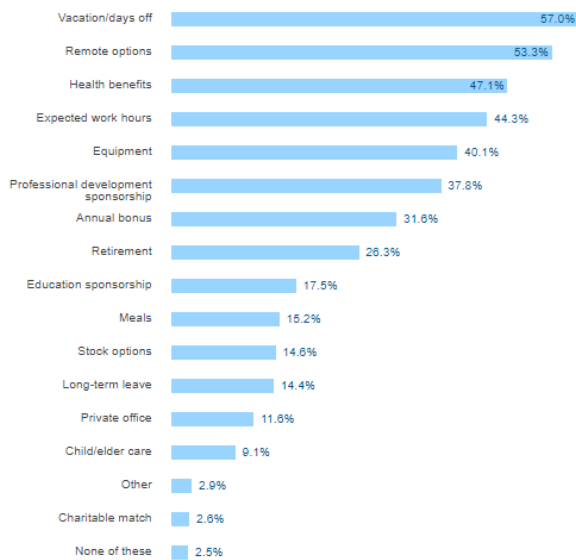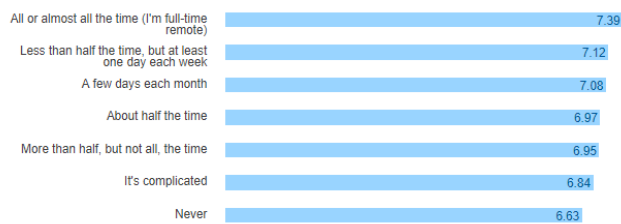
What Developers Value in Compensation/Benefits

Vacation/days off	57.0%
Remote options	53.3%
Health benefits	47.1%
Expected work hours	44.3%
Equipment	40.1%
Professional development sponsorship	37.8%
Annual bonus	31.6%
Retirement	26.3%
Education sponsorship	17.5%
Meals	15.2%
Stock options	14.6%
Long-term leave	14.4%
Private office	11.6%
Child/elder care	9.1%
Other	2.9%
Charitable match	2.6%
None of these	2.5%

Fig. 2. What developers value in compensation benefits (https://insights.stack overflow.com/survey/2017#remote-work)

Job Satisfaction Rating and Remote Work

All or almost all the time (I'm full-time remote)	7.39
Less than half the time, but at least one day each week	7.12
A few days each month	7.08
About half the time	6.97
More than half, but not all, the time	6.95
It's complicated	6.84
Never	6.63

Mean of 40,325 responses; satisfaction on a 0-10 scale

Fig. 3. Job satisfaction rating and remote work (https://insights.stackover flow.com/survey/2017#remote-work)

As Fig. 3. indicates, there is a moderate correlation between flexible working time and satisfaction with the job and the company. The highest ratings for job satisfaction come directly from employees who have full flexible hours.

III. FLEXIBLE WORKING OF IT PROFESSIONALS IN MACEDONIA

In order to gain insight, we conducted an online survey on flexible working of IT professionals in Macedonia. The methodology was following:

- The questionnaire consisted of 14 questions;

- Each question contained from 1 to 30 options in the answer. If the respondent could not find satisfying answer in the options offered, each question had an additional field in which open answer can be added;

- The survey questionnaire was sent to 117 IT professionals from Macedonia through the social networks LinkedIn and Facebook;

- The time frame for filling in this questionnaire was from 13.02.2019 to 20.02.2019 (7 days).

A. Demographics

The demographic structure of the respondents is as follows:

- Regarding the age, between 18 – 23 years were 7.7%; between 23 – 30 years were 54.7%; between 30 – 50 years were 35.9%; between 50 - 64+ years were 0.9% and 0.9% did not want to share this information.

- Regarding the gender, male respondents were 59.8% and female were 39.3%. 0.9% did not want to share this information.

- Regarding the level of education, the structure is following: secondary education 8.5%; completed level of College/University studies without a degree 11.1%; Undergraduate studies 65.8; Master's Degree 12%; Doctoral studies and 0.9% and did not want to share this information / 1.7%.

- Regarding the type of IT professional, the structure of respondents was following: Full Stack Web Developer 16.2%; Front End Web Developer 8.5%; Back End Web Developer 10.3%; Desktop Application Developer 3.4%; Android Developer 0.9%; iOS Developer 0.9%; Embedded Developer 0%; Database Administrator 0%; System Administrator 3.4%; DevOps Specialist 0.9%; Machine learning specialist 0.9%; Quality Assurance Engineer 9.4%; Graphics programming 0.9%; Graphic Designer or Illustrator 5.1%; Educator or Academic 1.7%; IT Project Manager 1.7%; Product Manager 1.7%; Marketing or Sales Manager 4.3% ; C-suite Executive [CEO, COO or CTO] 2.6%; Did not want to share this information 15.4%; Data Analyst 0.9%; Game Designer 0.9%; App Developer 0.9%; Game level designer 0.9%; UI designer 0.9%; Senior Recruiter 0.9%; Customer support - Service management 0.9%; Integration Developer 0.9%; Database Developer 0.9%; Test Automation Engineer 0.9%; IT Law 0.9%; Java developer and Database administrator 0.9%; Animator 0.9% and Concept Artist 0.9%.

- Regarding the work status, the structure were following: Full time 82.1%; Freelance 5.1%; Self-employed 0%; Part time employee 0%; Full time/part time employee and freelancer 8.5%; Unemployed who is currently not looking for a job 0%; Unemployed who is currently actively seeking work 1.7%; did not want to share this information 2.6%.

- Work experience is distributed this way: less than 1 year 12.8%; 1-2 years 8.5%; 2-3 years 13.7; 3-4 years 10.3%; 4-5 years 11.1%; 5-6 years 3.4%; 6-7 years 11.1%; 7-8 years 1.7%; 8-9 years 1.7%; 9-10 years 6%; 10-11 years 4.3%; and more than 11 years 12.8%.

- The company size distribution is as follows: less than 10 employees 12.8%; 10-19 employees 15.4%; 20-99 employees 37.6%; 100-499 employees 18.8%; 500-999 employees 6%; 1000-5000 employees 1.7%; more than 5000 employees 1.7%; does not know 1.7%; and did not want to share this information 4.3%.

- The company industry is following: Software - Development & Maintenance 50.4%; Internet and web services 6.8%; Finance, Banking and Insurance 3.4%; Media, advertising, publishing or entertainment 4.3%; Consulting 4.3%; Education 3.4%; Health services 0.9%; Telecommunications 0%; Retail or wholesale 1.7%; Civil Service (including Ministry of Defense) 1.7%; Computer hardware or consumer electronics 0%; Transportation, logistics or storage 0.9%; Automotive 0%; Aviation or Defense 0%; Gaming 11.1%; Industrial equipment/heavy machinery 0%; Energy production/distribution 1.7%; Pharmaceuticals and/or medical devices 0%; Non-profit/non-governmental organizations 0.9%; Construction 1.7%; Agriculture, forestry or fishing 0.9%; Mining or extraction of oil and gas 0.9%; Archive and data center 0.9%; Legal services / 0.9%; don't want to share this information 3.9%.

- The question whether the company is startup was answered like this: yes - 70.9%; no - 20.5%; don't want to share the information 8.5%.

B. Main results

The other part of the survey answers will be discussed in more details, since they serve as a base to analyze the effects of flexible work in the IT industry in Macedonia.

The answers on the question how satisfied are you from your current work are presented in the Figure 3.
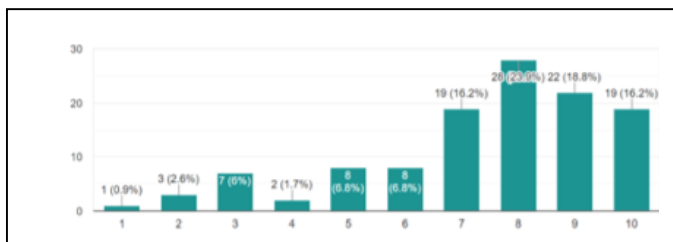

Fig. 4. How satisfied are you from your current work?

The answers on the question whether they look for a new job are as follows:

- I'm not actively seeking, but I'm open for new opportunities - 56.4%

- I'm not interested in a new job - 22.2%

- I'm actively seeking for a new job - 9.4%

- I don't want to share this information - 12%.

The next answer was what benefits and perks do you appreciate the most when you accept a new job offer. There were maximum of three possible answers on this question. The results indicate following:

- Free days - 44.4%

- Ability to work from home (flexible work) - 53%

- Health benefits - 35%

- Strictly planned and expected working hours - 29.9%

- Sponsorship for professional development - 51.3%

- Educational sponsorship - 28.2%

- Food and beverages during working hours - 11.1%

- Company shares / options - 12%

- Long term absence - 2.6%

- Private offices - 4.3%

- Weekly / monthly / yearly social work - 2.6%

- Sports packages - 14.5%

- None of the above - 9.4%.

The next question deepens the issue, asking how important is flexible work offer when you accept a new job. The results are shown at Figure 4.

Fig. 5. How important is flexible work offer when you accept a new job?

Next question is how often do you use flexible work for fulfilling your work duties. The answers are:

- Complicated to explain - 12%

- Fully flexible - 11.1%

- Half the time, but not always - 4.4%

- Half of the working time 0.9%

- Less than half, but at least one day during the working week 2.6%

- Few days in a month - 27.4%

- Never - 36.8%

- Very rarely, in time-bound, emergency situations. Annually maybe 5 times - 2.2%

- Once a month - 2.6%.

C. Comparative Analysis of Stack Overflow and Survey in Macedonia

1) Working status

The results obtained for the employment status of the survey questionnaire and the survey of Stack Overflow did have significant difference. In the Stack Overflow survey, 70.3% responded that they were employed full time, while 10.2% were freelancers. In the Macedonian survey questionnaire, 82.1% responded that they were employed full time, while 5.1%, exactly a half of the Stack Overflow's results were freelancers.

2) Are you satisfied with your work?

On a scale of 1-10, where 1 represents "not at all satisfied with their current job" while 10 represents "high level of satisfaction with their current job", in a survey by Stack Overflow, 22.2% rated their current job with a rating of 8 whereas, in the our survey questionnaire, 23.9% rated their current job with a score of 8 and an additional 18.8% rated their current job with a score of 9. Thus, we can conclude that respondents to the questionnaire have a high level of satisfaction with their current work.

3) Are you currently looking for a new job?

Nowadays, the constant fluctuation of IT professionals from company to company for various reasons is a huge problem for IT companies because of the impact on the productivity of the companies.

Although we have a high level of satisfaction with the respondents, in the survey by Stack Overflow, 62.1% responded that they are not actively looking for a job at the moment, but are open to new opportunities. 24.8% responded that they were not interested in new job opportunities.

In the survey questionnaire conducted in Macedonia, 56.4% responded that they are not actively looking for a job at the moment but are open to new opportunities. 22.2% responded that they were not interested in new opportunities.

From both surveys we note that this percentage is very high and companies must investigate why despite high satisfaction, many employees are interested in leaving the company on the first or better offer.

4) What do you most consider when accepting a job offer

In a survey of Stack Overflow, from a larger selection of benefits, respondents identified the following three as most important:

• Vacation - 57%

• Flexible work opportunity - 53.3%

• Health benefits - 47.1%

In Macedonia, the respondents selected the following benefits:

• Flexible working opportunity - 53%

• Sponsorship for professional development - 51.3%

• Holiday - 44.4%

Unlike the respondents of Stack Overflow, IT professionals in Macedonia are more interested in the possibility of flexible working and sponsoring professional development. For respondents to Stack Overflow, sponsoring professional development has been replaced by health benefits.

The percentage of respondents that valued flexible work arrangements were almost the same in Macedonia and on the global level – 53% and 53.3%.

5) How often do you use flexible working hours to complete your activities

Among Stack Overflow respondents, 35.1% responded that they work flexibly for a few days a month, while 31.8% responded that they never use flexible working hours to complete their activities.

In our survey questionnaire in Macedonia, 36.8% said they never use flexible working time to complete their current tasks, while 27.4% responded that they use a few days a month for flexible work.

Although flexible work is one of the major benefits sought by Macedonian IT professionals, we can conclude that many companies do not have a flexible work program.

IV. DISCUSSION

Flexible work in a very short time has gone into the race for who will do it faster. While the media report on how much flexible work increases productivity and the skills needed for a worker to succeed in a flexible environment, the need for this change in companies' work strategies comes much faster than expected. It is worrying that some companies, focused on their profits, are still unaware of the need, as well as the risk of not implementing a flexible strategy for their employees. Despite all the research showing that workers are ready to leave the current company for a more flexible work environment, even if that means lower financial benefit, some companies are not even considering such a strategy.

We can safely conclude that the structure of the work is changing. However, not all companies are successful in change [6] [7], so they try to stay as close as possible to the most successful ones.

Also, not all countries have solid background in introducing and promoting flexible work during the last decades. Macedonia has very modest experience in this area. As to this broader systematic change some socioeconomic insights should be mentioned regarding the situation in Macedonia. The developed western European countries has long been practiced different and numerous models of flexible working time, just to mention few interesting ones: four day work week, staggered working time, regular part time (Turnusteilzeiten), work time based on trust (workers, employees allocate their time on mutual trust).

German company Bosch certainly has over 100 forms of employment – like BMW, Ikea and many others[1].

In Macedonia, working hours are extremely inflexible. And this is mainly due to the ineffective combination of a legacy of socialist classification of workers employment, and the neoliberal model of understanding the position of the employee that has ruled for nearly 30 years [8].

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[1] See https://www.zeit.de/karriere/2015-10/bosch-arbeitszeitgesetz-pausenzeit-christoph-kuebel/komplettansicht.

The socialist classification consists of the two most common forms of employment - full-time, indefinite period employment, and fixed-term employment.

The neoliberal model has been by grafted onto economy with high unemployment, ran by new made employers who believed that he had all the options of the Manchester capitalism at their disposal, on the indolence of the worker who accepted exploitation because he had no choice. Macedonia is still a country of widely spread stance of de-ideologization among leading political parties in which distancing from Marxism and Socialism meant distancing from labor rights discourses and the role of workers unions.

After 30 years the percentage of black labor is still high, unemployment is reduced to about dull 20 percent. The influence of the ruling parties on economy and public life is also too high. In the Macedonian very small market with underdeveloped private sector, the state (the ruling party) is still the best employer.

It is difficult to discuss on culture of flexible working time in Macedonia. For illustration the state institution still confuse staggered working time, with flexible working time. Both the media and citizens are under the illusion that this is the only possible innovation of the flexible working time plan. The new EU Work-life Balance Directive is almost unknown in Macedonia

This, however, is not the case with the IT sector. The IT labor market is more dynamic, independent, and with much larger perspectives than other labor markets in Macedonia. Not only the region and Europe, but also the US and Canada are considered as part of the IT labor market for Macedonian IT experts. And exactly here lies the problem. The state and the market in Macedonia cannot contain young IT experts. Their incomes are pretty high, compared to other professions, but they are insufficient to keep young IT experts in Macedonia.

Something still could be done. In Robert Walters Employee Insights Survey, 37% of the professionals would accept a lower salary if that offered a better work-life-balance. [2] In Macedonia 53% of the respondents selected flexible working opportunity as benefit.

Still, in the Macedonian survey questionnaire, 82.1% responded that they were employed full time. It is clear that flexible working time is a serious option to be offered to young IT professionals if the state wants to stop the brain drain. Though, no national strategy can fight the need of young people for international experience (in Robert Walters Survey 39% of the respondents choose international experience as a reason for working abroad, and only 7% for better work-life-balance).

On a global level, although everyone is focused on the impact of artificial intelligence on the labor market, on the contrary, according to most studies, in the near future flexible work will have the greatest impact on the current labor market (the nature of the job), especially when hiring and retaining talented workers.

Yes, it should be mentioned that some companies have abandoned their flexible working strategy and have called their employees back to the office, for example: IBM [9] and Yahoo [10]. However, a report released in 2018 on the state of the flexible labor market shows that 90 percent of flexible workers plan to continue working flexibly until the end of their careers. This is not surprising, given the high benefits of a flexible schedule, more time with family, a more comfortable working environment and avoiding specific office policies.

According to experience, the main issues that led to cancellation of flexible working arrangements in some companies are:

1. Co-locating employees in one place with all employees as a strategy for fostering innovation. Returning people physically back to the office is a "calculated risk", an effort to keep up with younger startups without corporate bureaucracy and able to better focus on product and re-design.

2. Flexible work is not suitable for every company and every employee.

3. Too much focus on technology and not enough on process.

The usual traps [11] in introducing flexible work arrangements are altered work-life dynamics, reduced fairness perceptions, and weakened organizational culture—and a balanced flexibility approach is required. The managers must become flex savvy to understand the options that exists in flexibility practices to align implementation with the workforce and organizational context. Also, implementing flexibility must be treated as a broader systematic organizational change empowering individuals and teams.

V. CONCLUSION

What can be concluded from the analysis of the current and previous situation in the labor market and the data obtained from the conducted surveys?

In order to make a successful flexible working policy, the following key principles must be established at the outset:

1. Communication. In a virtual environment, it can be difficult to explain complex ideas, especially if people are unable to ask questions and discuss in real time. Lack of face-to-face interaction limits social cues, which can lead to misunderstandings and conflict.

2. Coordination. Having processes is not enough. Managers must model and implement them until they are fully accepted. They should also evaluate the team members for how well they adhere to the protocol. Otherwise, they will return to their old habits. Working outside the established processes will shake the team's cohesion.

3. Culture. This principle is especially critical for virtual teams, but it is also important for individuals who work flexibly. Because these people rarely meet their peers face-to-face, they tend to focus on tasks and ignore the team. This may work for a while, but it must develop a culture to encourage engagement and maintain their performance in the long run.

4. Security practices and security risk management. The key to managing flexible workers' safety is to implement

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[2] https://www.robertwalters.de/content/dam/robert-walters/country/germany/files/reports/rw-eis-germany-2015.pdf

applicable security measures right now, even if it costs a little money in advance

Implementing a successful flexible working policy is quite complex. This requires careful strategy and reliable execution. But when it's done well, the reward is high: increased productivity, happier employees, and cost savings (which can be invested in building a better business). With major changes in the workplace, such as growth of the millennial cohort and a blurred boundary between work and life, flexible work will become a key tool for recruiting and hiring employees.

Companies like Yahoo may try to reverse the trend, but it is better to rethink the issues that have led them to ban flexible work.

Countries like Macedonia should educate business managers and entrepreneurs about the flexible working arrangement models and the benefits for the companies and for the society.

During the preparation of this research for publication, a Coronavirus pandemic emerged. Many companies migrated their work online in a short period of time, under the pressure of extraordinary circumstances. As future research, it would be interesting to carry out what the results of the same survey would be after the end of the pandemic.

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