

DIGITAL TRANSFORMATION OF THE WORKING ENVIRONMENT

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ABSTRACT

The aim of this paper is to discuss how the working environment has changed due to coronavirus pandemic. While it is true that along the human history working environments have been changed to automation and digitalization. It is safe to assume at this point in time that digital transformation was accelerated and businesses are being forced to adopt technologies and measures in order to protect their employees. This paper will show the challenges and impact faced by both employees and businesses and what measures can be taken in order to mitigate the risks. Coronavirus will have an impact on the working environment even after is over because digital businesses will adopt a hybrid work style while businesses in manufacturing will continue their automation.

KEYWORDS: *digital organizations, remote work, teleworking, working from home.*

1. INTRODUCTION

Given the fact that Covid-19 is easily transmitted from one person to another business had to embark on a digital transformation journey that is human-centric, prioritizing the adoption of technologies in order to ensure human safety and wellbeing.

The coronavirus pandemic has forced businesses into a new reality and led to a digital transformation of the working environment. A major impact of the pandemic was on businesses' workforce because of the requirement to socially (physically) distance and the lockdown that occurred. Some businesses were less impacted because they were agile and able to take quick action such as adopting technologies quickly for the work to be done by the employees remotely. Others had to close entirely their activities or reduce their working hours. The coronavirus pandemic has pushed businesses into adapting to virtual work environments in order to protect the employees from the virus.

The analysis of human history indicates that working environments have changed across various periods of time. The first major change took place during the first industrial revolution when people moved from working the field and farms in rural areas into the cities to work in steam-powered factories. As seen in the first industrial revolution people moved into the cities because the working environment was better and provided a higher social status. During the second wave of the industrial revolution, more processes in factories were mechanized leading to mass production, and more people were needed in factories. During the third wave on the industrial revolution which is the digital revolution a shift from analog to digital technologies had happened. People experienced changes in the working environment during this third wave because it disrupted industries and processes. And subsequently humanity arrived at the stage of the industrial revolution that happens now and is named Industry 4.0. Given the above facts, a conclusion can be drawn and that is that humanity was able to adapt to all digital and industrial changes until now. But now is a special time

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because until now people had the next best working place to be, but given the current advancement in digital technologies, it is very hard to see in the future what will be the next best working place to be in especially for people working in manufacturing. By looking at the current global crisis generate by coronavirus pandemic it can be seen that digital transformation is accelerated as new technologies are being deployed, business models and working environments are being changed.

2. WORKING ENVIRONMENT CHALLENGES AND IMPLICATIONS

While in the past only some companies offered working from home opportunities to their employees the coronavirus has changed this situation and working from home has become mandatory for some businesses, while for businesses that require employees to be on-site it is impossible. Consequently, Kramer and Kramer (2020) have risen some social concerns because Covid-19 has created an economic shock that was able to impact all aspects of the economy with a higher impact on the labor market. This has deepened the gap on the labor market between, one hand, the better paid and highly skilled employees who are able to work from home and, on the other hand, the low wage and less skilled employees who must be physically present on-site in order to perform their work. According to Kramer and Kramer (2020), Covid-19 had a negative impact on the low wage employees who depend on their working environment because it is likely that organization are going to decrease the investment they make in these employees compared with highly skilled employees who are able to perform even during the pandemic. Also, worker and the occupation job rate is highly correlated to how fast is the worker able to recover from the economic recession, because high skill workers can move more quickly from one employer to another compared to low skilled workers.

This has led to a classification of people roles in four segments according to the value a remote worker can deliver (Boland et al., 2020): fully remote, hybrid remote, hybrid remote by exception, and on-site. The first two segments of workers require to upskill, and also these two segments can facilitate the talent sourcing because the pool will not be tied to the geography constraints. Meaning that works can be done from anywhere and once a month or from time to time could come physically will be enough (Boland et al., 2020). The last two-segment requires the employee to be physically present at work because such is the nature of work for example production and assembly workers.

Businesses are faced with the challenge of changing the working environment by adopting working from home, teleworking, or remote working. According to Savić (2020) working from home represents a hired person by the organization working from outside the office on a specific task and is able to telecommunicate with the organization regarding work. It is important to mention that telecommunication or teleworking is different from working from home because the employee can be anywhere or travel while using different technologies to communicate with his/hers employing organization.

Telecommuting can offer great benefits for both business and employees like reducing office costs, saving money by reducing travel, and an increase in flexibility. But it can also cause sociological or psychological challenges for the employee resulted from isolation and no life-work balance (Savić, 2020). Even though remote working resembles the two above it refers to the employee that is in a different geographical area from the organization and is able to perform the task by using different digital tools (Savić, 2020).

As seen the Covid-19 has changed the working environment and pushed managers to change and use digital technologies in order to engage with their peers. This type of change requires a flexible and agile approach from a manager to be able to keep the team united and deliver the work on schedule. This can be true for a digital business many traditional businesses are faced with challenges and need to understand fast technologies by adopting a digital mindset. According to Lord (2020), these are not the only problems that business and employees are facing another

important problem is the working policies. Businesses must adopt new policies that remove the cost for working from home from the employee to the business. Covid-19 has shifted costs from the business to the employees, and some companies can profit from this by reducing costs with the labor. Here is where governments should intervene in order to mitigate future risks that may arise from this, and relocate the costs to businesses (Lord, 2020). Even if business transforms their business model by achieving more value at a lower cost due to remote working, they also must take into account the community in their region and the impact it can create on people's jobs. And this is another important aspect that governments must consider and mitigate the risk of companies hiring high skilled remote workers from countries with low wages. Because this can have a big impact on the long term on the social and economic status of the people in the country where the company is situated.

Another implication is mental health it is true that companies want to help employees with challenges they encounter in their daily life. They are offering therapy sessions and advisors that help with finances, stress, work, or family of their employees. But this could also lead in the future to problems such as firing employees based on their psychological health and, therefore, should be considered as private data. This is where governments must act in order to protect people's private life from companies.

As seen, while working from home can be beneficial for some workers and business, it has a lot of implications for others. There are a lot of managerial problems to be solved during this transformation process and businesses must act now in order to prepare for the future of a hybrid remote working and a safe working environment for employees.

3. DIGITAL TRANSFORMATION THAT PRIORITIZES EMPLOYEES SAFETY

Covid-19 has enabled a digital transformation that is people-centric and has changed the way people work and how their daily life is impacted. Therefore, businesses must not adopt only new technologies but also use different management methods. Managers and team leaders must ensure people's safety and that they are able to deliver the same work as in the brick-and-mortar offices.

Bibu and Sala (2020) has defined five directions that managers can apply in order to adapt to the coronavirus pandemic and change their working process. The first direction requires creativity and managers must use a creative way to tackle problems and discover solutions. The second direction is the adoption of different technologies for communication. This is helping businesses to become more agile, flexible, and digital by maintaining connections with stakeholders and employees. The third direction requires that managers must be able to evaluate and make the decision at a rapid pace while evaluating the risk and uncertainties. In the fourth direction, managers must democratize the decision-making process and become more transparent. This ensures managers that the decision and actions they take will have a higher value of success in uncertain times. And the fifth direction requires managers to form a digital thinking mindset which will lead to the digital transformation of the business and the adoption of new and innovative technologies. According to Bibu and Sala (2020) managers must take action to ensure a safe working environment for employees that are unable work remotely, and ensure the necessary support and resources for employees that are able to perform their work while working remotely.

The new world of work according to Dahik et al. (2020) will be a blend between the office and working from home resulting in a hybrid model. Subsequently, businesses must find technologies and digital infrastructure to support remote work social connectivity. It is also important for employees' wellbeing to replicate some office activities in a virtual environment. Businesses must leverage the power of technology in order to prioritize people's safety and wellbeing. Even if before the Covid-19 pandemic only a few businesses allowed their employees to work remotely, now it is safe to say that some businesses were able to adopt digital technologies, which allow employees to work remotely. Among the adopted technologies for remote working the most used are teleworking

platforms like Zoom, Google Meet, Microsoft Teams. Other technologies that can be used for remote working are augmented reality and virtual reality. While augmented reality is the technology that overlays digital information on the real world and employees are still connected to reality, virtual reality is the technology that fully immerses the user into the digital world (Lavingia & Tanwar, 2020). Augmented reality has proven to be the technology that can be used by people working in hazardous environments and allowing connections with remote experts if needed. Both augmented reality and virtual reality have proven to be useful in people training and reskilling, and this can be useful for the ongoing changing working environment.

While remote working is possible for digital businesses, companies that operate in manufacturing, mining, oil, and gas such action where impossible, because the activities in these business sectors require the physical presence of the employee. Therefore, business types like manufacturing robots can be used in order to ensure workers' safety by maintaining social distance. By using robot's business can also gain large value at a lower cost and avoid dangerously and hard activities that can endanger worker's life. The development and creation of robots should help in protecting workers for risk and not replace the workers in factories (Murphy et al., 2020). According to Murphy et al. (2020), there is still work and research to be done in human-robot interactions in the field of teleoperation and adaptability.

Cybersecurity is another important aspect that businesses must take into account while employees work remotely is privacy and security. As cybersecurity represents a challenge for organizations, Ahmad (2020) has defined guidelines that employees and organizations working from home should follow. Businesses should update their cybersecurity policies to include remote working and ensure that employees are using VPN solutions, and multi-factor authentication in order to access data and IT resources from the organization. Also, employees should only use working equipment provided by the organizations in order to minimize the risk of hackers' attacks (Ahmad, 2020).

On one hand, it is true that the coronavirus crisis has proven to be an opportunity for businesses to do redefine and reinvent the workplace, on the other hand, it is important to mention an important ethical aspect regarding security referring to tracking of the employee's internet connections that can give business access to the employee's private information's. While organizations protect themselves from hackers they also must protect their employee's private information.

4. RESEARCH ON THE IMPACT OF COVID-19 ON CANADA'S WORKFORCE

Canada statistics has gathered data from businesses to help both businesses and government in mitigating the coronavirus crisis. Data was collected by Canada for a better understanding of the risks in their country in order to mitigate the impact of Covid-19 pandemic on the Canadian workforce. This data is highly diverse and offers a deeper level of granularity for this study purpose. The databases provided by Canada are complex, have a remarkably high level of granularity and can provide a good understanding of what happened in Canada due to the impact of Covid-19.

The Canadian databases used in the article were processed using the Tableau data science / analysis software. To find out what was the impact of Covid-19 on work in Canada, the data were analyzed according to the characteristics of the companies as a level of detail, calculating the average percentage for them. The processing of the data using Tableau and the analysis made resulted in the information about the impact that Covid-19 had on work in Canada that is presented in Figure 1 to Figure 8 and discussed below.

By comparison, databases for Europe are simple, and have a low level of granularity. The same processing was used as for the Canadian databases which resulted in the following analysis at European level, presented in Figure 9 and discussed below. The methodology used for this study is a quantitative one because it analyses the data of a large sample of Canadian businesses to understand better the situation and impact of Covid-19 on the workforce by answering the question:

“What was the impact of Covid-19 on the Canadian workforce that caused businesses to take measures?”

The above question has led to formulating the following two hypotheses:

H1. The Canadian workforce was not impacted by Covid-19 and businesses did not implement any measures to cope with its impact.

H2. The Canadian workforce was impacted by Covid-19 and businesses have implemented measures to cope with the impact.

For a better understanding of the Canadian workforce situation by looking at the impact of social distancing measures. Figure 1 shows detailed data on the impact of social distancing on business. According to the analysis, 90.80% of businesses from Accommodation and food services were severely impacted by Covid-19 measure, followed by Arts, entertainment and recreation 90.30%, Healthcare and social assistance 87.00%. The data show another important aspect for the economy which is the Construction business with an impact of 75.10% because workers must keep the distance to prevent the coronavirus from spreading, the same situation can be seen in Manufacturing with an impact of 60.30%. The data also show an impact on Real estate and rental and leasing of 79.10% that can be connected to the situation in Construction because build has slowed down because of the pandemic. Given the negative impact that Covid-19 had on business, it can be concluded the H1 is partially invalid and H2 is partially validated.

	Impact of social distancing measures		
	Business has been negatively impacted by social distancing measures	Business has benefited from social distancing measures	Social distancing measures have had little or no impact on business
Accommodation and food services	90.80	1.40	7.80
Administrative and support, waste management and ..	61.80	1.80	36.40
Agriculture, forestry, fishing and hunting	44.50	3.00	52.50
Arts, entertainment and recreation	90.30	0.80	8.90
Construction	75.10	1.90	23.00
Educational services	86.70	2.10	11.20
Finance and insurance	60.60	3.20	36.30
Health care and social assistance	87.00	2.80	10.20
Information and cultural industries	65.60	2.50	31.80
Management of companies and enterprises	61.80	0.80	37.40
Manufacturing	60.30	3.90	35.90
Mining, quarrying, and oil and gas extraction	59.60	2.50	37.90
Other services (except public administration)	73.40	2.20	24.40
Professional, scientific and technical services	63.40	1.60	34.90
Public administration	64.30	7.10	28.60
Real estate and rental and leasing	79.10	2.50	18.50
Retail trade	78.50	3.00	18.60
Transportation and warehousing	59.50	2.30	38.10
Utilities	57.30	5.60	37.10
Wholesale trade	64.70	0.30	34.90

Figure 1. The impact of Covid-19 social distancing measures on business

Source: own figure

The data from Figure 2 shows the impact on business staff because of the social distancing measures. As the data shows the highest impact results from the business's inability to have workers on-site. The most severely impacted business sectors are arts, entertainment and recreation 65.30%, Education services 64.80% and Accommodation and food services 57.30%.

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	Inability to have staff physically on-site					Reduction in productivity due to remote work					Staff absences due to self-quarantine					Staff absences to care for family members					Travel for staff cancelled				
	High	Low	Medium	None	Unknown	High	Low	Medium	None	Unknown	High	Low	Medium	None	Unknown	High	Low	Medium	None	Unknown	High	Low	Medium	None	Unknown
Accommodation and food services	57.30	13.40	11.80	15.40	2.10	11.80	11.40	8.20	59.10	9.50	22.70	22.80	14.80	35.10	4.50	14.20	23.40	12.40	43.90	6.10	20.60	11.40	5.10	57.90	5.20
Administrative and support, waste managem...	20.00	9.10	30.90	36.40	3.60	5.50	30.90	14.50	40.00	9.10	9.10	23.60	12.70	50.90	3.60	7.30	27.30	7.30	54.50	3.60	25.50	18.20	9.10	36.40	10.90
Agriculture, forestry, fishing and hunting	17.10	21.10	15.60	42.80	3.50	8.30	17.90	9.40	60.80	3.70	7.60	19.80	11.80	57.80	2.90	4.80	18.60	8.60	64.30	3.70	18.40	19.20	11.50	47.60	3.20
Arts, entertainment and recreation	65.30	6.70	11.60	15.30	1.10	28.20	14.40	22.90	28.90	5.50	19.60	20.90	8.80	46.70	4.00	9.60	20.60	8.40	55.50	5.90	44.70	11.70	10.70	29.90	3.00
Construction	51.70	15.60	19.90	11.30	1.40	24.10	16.90	16.90	36.70	5.30	20.90	26.40	21.00	28.90	2.80	12.40	25.40	16.00	42.20	3.90	25.10	15.40	11.10	45.10	3.30
Educational services	64.80	4.70	13.60	15.10	1.80	27.50	19.20	24.30	23.70	5.30	16.00	28.10	12.40	39.90	3.60	11.50	29.90	11.80	43.50	3.30	37.00	14.50	9.80	35.80	3.00
Finance and insurance	29.40	23.80	20.20	25.80	0.70	17.50	26.30	30.70	24.60	1.00	9.00	29.20	15.10	45.70	1.00	8.50	25.50	14.10	50.90	1.00	29.00	15.10	17.30	37.20	1.50
Health care and social assistance	61.60	10.90	12.00	14.70	0.90	29.20	17.00	13.30	34.80	5.60	21.40	18.10	17.90	41.00	1.60	14.60	21.90	13.40	47.40	2.70	24.00	14.30	11.00	47.80	2.90
Information and cultural industries	35.00	14.60	16.60	31.20	2.50	10.20	23.60	27.40	37.60	1.30	8.90	21.70	8.90	59.20	1.30	3.20	17.80	13.40	62.40	3.20	35.00	18.50	14.60	30.60	1.30
Management of companies and enterprises	34.10	13.80	15.40	35.00	1.60	17.10	19.50	26.80	36.60	0.00	10.60	25.20	10.60	52.00	1.60	8.10	17.10	7.30	65.90	1.60	36.60	15.40	13.80	32.50	1.60
Manufacturing	31.70	25.90	25.80	16.30	0.30	15.60	28.70	21.50	31.30	3.00	16.20	31.80	25.00	25.80	1.20	10.20	34.60	20.50	32.30	2.30	33.70	19.90	18.20	26.40	1.80
Mining, quarrying, and oil and gas extraction	44.40	12.10	25.30	16.20	2.00	24.70	27.30	16.70	27.30	4.00	18.20	34.30	14.60	30.30	2.50	12.10	32.80	10.60	36.90	7.60	47.00	17.20	13.10	20.20	2.50
Other services (except public administration)	47.70	13.30	14.60	22.50	1.90	21.50	17.00	16.60	38.70	6.20	18.00	21.10	11.70	45.80	3.40	11.20	21.00	10.10	53.20	4.40	29.80	13.60	10.80	41.90	3.90
Professional, scientific and technical services	34.00	17.80	18.20	29.00	1.00	17.70	24.20	23.80	32.50	1.80	11.50	21.90	11.20	54.10	1.30	9.40	22.90	12.30	54.10	1.30	33.70	16.80	14.70	33.70	1.20
Public administration	46.40	17.90	35.70	0.00	0.00	25.00	50.00	21.40	3.60	0.00	17.90	46.40	17.90	17.90	0.00	14.30	28.60	14.30	39.30	3.60	46.40	21.40	7.10	25.00	0.00
Real estate and rental and leasing	41.20	14.40	17.30	24.80	2.30	26.80	18.00	22.50	29.70	2.90	19.40	17.60	15.30	43.50	4.30	12.80	18.70	11.50	52.30	4.70	26.40	14.20	16.70	39.40	3.40
Retail trade	51.20	15.50	16.00	16.00	1.40	20.30	15.60	11.70	44.70	7.60	22.20	21.80	17.70	35.60	2.70	10.70	22.90	15.00	46.60	4.80	23.80	14.80	10.30	46.90	4.20
Transportation and warehousing	20.90	27.40	18.80	29.80	3.10	8.40	27.40	16.20	42.30	5.70	14.40	33.40	17.00	32.90	2.30	6.80	29.80	14.40	44.60	4.40	21.90	19.30	16.70	38.90	3.10
Utilities	34.80	22.50	13.50	28.10	1.10	16.90	21.30	28.10	31.50	2.20	10.10	30.30	11.20	44.90	3.40	5.60	33.70	12.40	47.20	1.10	29.20	22.50	20.20	27.00	1.10
Wholesale trade	31.50	24.00	24.00	19.90	0.70	19.90	24.00	23.30	29.80	3.10	11.30	34.90	19.50	32.90	1.40	5.80	37.00	14.70	39.70	2.70	37.00	20.20	21.90	19.90	1.00

Figure 2. Impact experienced by businesses because of the coronavirus pandemic
 Source: own figure

To protect their workers and assure the minimum required social distance, businesses had to undertake actions in order to ensure people's safety. The data in Figure 3 shows that a lot of businesses have considered the reduction of staff hours or shift with 64.00% in Accommodation and food services, also this sector has the highest percentage of workers laid off 59.80%.

	Reduced staff hours or shifts	Laid off staff	Cancelled or delayed planned hiring	Introduced temporary cost-reduction measures	Cancelled hiring contractors or seasonal workers	Reduced salaries or wages	Hired more staff	Increased salaries or wages	Increased staff hours or shifts	None	Froze salaries or wages	Other	Altered or changed contribution..	Delayed payment of salaries or wages	Implemente an Employ ment In..	Not applicable	Froze bonus payments
Accommodation and food serv...	64.00	59.80	25.80	11.40	11.00	9.40	8.90	8.80	6.20	5.90	5.80	5.40	5.10	4.20	3.30	2.70	2.50
Administrative and support, wa...	44.90	45.10	23.50	11.60	9.60	9.20	2.60	6.40	4.20	22.00	5.70	7.80	0.40	2.40	1.00	1.20	6.60
Agriculture, forestry, fishing an...	14.20	8.80	6.40	1.80	9.60	2.60	1.50	6.10	3.30	47.90	0.90	7.20	0.00	0.60	0.10	9.50	0.50
Arts, entertainment and recrea...	35.10	42.40	23.00	4.60	26.20	16.90	3.90	0.40	3.30	5.70	10.10	11.00	0.50	3.70	6.30	10.30	6.10
Construction	36.80	27.80	13.10	3.60	12.70	9.90	4.40	2.90	2.30	17.30	3.20	4.70	1.10	5.40	1.60	14.90	3.40
Educational services																	
Finance and insurance	37.50	9.30	20.60	15.10	9.30	15.00	1.00	5.20	5.10	37.90	9.80	3.70	3.20	7.70	3.80	6.60	5.70
Health care and social assistance	48.90	28.90	10.90	9.30	5.30	11.80	8.80	6.10	8.70	20.90	7.10	5.90	1.20	4.60	0.30	3.60	2.40
Information and cultural indust...	26.70	31.20	13.20	13.90	11.90	9.10	4.20	5.50	6.20	25.20	16.30	6.20	6.00	11.10	0.80	16.00	14.90
Manufacturing	42.80	31.00	24.60	12.00	13.60	14.40	2.00	9.50	1.80	23.80	9.60	4.20	2.90	4.40	2.70	5.40	7.20
Mining, quarrying, and oil and g...	29.90	25.10	14.60	14.80	9.50	17.90	3.40	0.30	3.10	28.70	7.00	6.50	1.10	3.00	0.10	16.30	4.60
Other services (except public a...	36.20	34.00	8.20	7.80	10.10	8.80	4.60	3.80	3.80	27.30	6.40	10.00	2.40	4.20	0.70	3.30	1.60
Professional, scientific and tec...	25.70	16.40	18.20	11.10	6.00	12.70	3.90	2.20	5.00	28.20	8.30	4.30	0.10	11.10	0.40	9.60	8.90
Real estate and rental and leasi...	34.70	9.20	8.20	5.10	4.60	12.20	0.70	2.40	0.60	33.10	0.80	2.00	11.00	0.00	0.10	17.00	0.90
Retail trade	47.10	31.40	12.60	8.50	4.90	7.10	10.40	17.90	8.70	20.00	6.50	2.20	0.50	4.00	0.90	9.30	2.20
Transportation and warehousing	42.10	20.80	8.60	4.30	7.70	14.40	3.80	2.00	1.00	16.70	5.70	1.60	0.20	1.90	0.40	19.10	4.30
Wholesale trade	51.50	29.30	23.70	14.90	9.80	14.20	1.30	4.10	3.50	22.40	10.90	3.30	3.50	4.90	5.70	4.00	7.60

Figure 3. Actions that business has to take because of social distancing measures
 Source: own figure

As the data indicates businesses have been impacted and while some businesses require the workers to be physically present in order to perform their job. Other businesses have the digital advantage of using technologies to continue to serve their customers and ensure workers' safety. Figure 4 shows that businesses have been able to adapt and maintain business connections virtually and allow employees to work from home. According to the data Finance and insurance, sector has been able to maintain their connection virtual 74.20% and had their employees working from home 74.50%. Also, the Public administrations have moved online and used digital tools for virtual connection 82.10%, and 92.90% of employees worked remotely from home. This data also shows the importance of a business to being capable to transform and adapt to uncertain times.

	Maintaining business connections virtually	Working from home	Training	Staff reporting structure	Time sheets	None or other practices
Accommodation and food services	17.20	14.80	6.90	3.80	1.50	62.60
Administrative and support, waste manage..	40.00	45.50	14.50	9.10	5.50	34.50
Agriculture, forestry, fishing and hunting	30.50	24.40	6.60	4.30	2.60	53.10
Arts, entertainment and recreation	44.70	53.70	12.30	6.30	3.20	32.10
Construction	33.20	38.20	9.00	8.50	5.80	46.20
Educational services	47.90	57.70	20.10	8.30	7.10	28.70
Finance and insurance	74.20	74.50	13.10	10.50	3.90	13.10
Health care and social assistance	38.90	38.60	13.70	6.90	4.60	43.10
Information and cultural industries	61.80	72.60	13.40	9.60	8.30	16.60
Management of companies and enterprises	55.30	58.50	9.80	7.30	1.60	26.80
Manufacturing	47.60	58.70	10.40	8.40	5.90	24.90
Mining, quarrying, and oil and gas extraction	49.50	56.60	11.60	8.10	7.60	31.30
Other services (except public administration)	38.50	42.50	10.10	6.70	4.40	43.70
Professional, scientific and technical services	60.30	60.30	12.40	8.90	7.10	22.30
Public administration	82.10	92.90	3.60	35.70	14.30	7.10
Real estate and rental and leasing	54.70	62.80	11.30	5.40	2.30	23.90
Retail trade	29.70	27.70	8.10	3.60	1.50	42.80
Transportation and warehousing	28.20	37.60	9.10	7.00	4.20	49.30
Utilities	48.30	57.30	15.70	18.00	11.20	27.00
Wholesale trade	44.20	59.20	14.40	6.80	2.40	25.00

Figure 4. Business measures and practices used because of Covid-19 social distancing

Source: own figure

While teleworking and remote working are good measures in this pandemic as seen in data businesses will not adopt it as a permanent working style. As the data show businesses will tend to adapt in the future a hybrid working style. Because not all businesses are able to go fully digital and employees have to return to the brick-and-mortar office, working on site. And this can be clearly seen in Figure 5, Figure 6, and Figure 7, the percentage of business that has adopted remote work is low in Canada and people are expected to return at work. Also, it is important to notice that this applies most to businesses that require the physical presence of the employee in order to perform a specific task.

	0% to less than 1%	1% to less than 30%	30% to less than 50%	50% to less than 60%	60% to less than 80%	80% to less than 100%	100%	Unknown
Accommodation and food services	89.00	1.90	0.15	0.10	0.10	0.05	1.70	2.90
Administrative and support, waste management..	75.10	3.10	0.00	6.40	0.20	0.35	6.60	1.40
Agriculture, forestry, fishing and hunting	81.40	1.50	0.35	2.60	0.00	1.00	3.90	4.90
Arts, entertainment and recreation	80.50	3.73	0.20	1.30	0.05	0.20	2.50	3.50
Construction	87.00	1.47	0.55	2.60	0.15	0.05	3.20	1.30
Finance and insurance	69.00	5.63	0.15	5.40	0.40	0.50	3.10	3.60
Health care and social assistance	75.10	6.07	1.55	1.50	0.00	0.00	1.00	1.00
Information and cultural industries	56.80	6.83	0.80	4.30	2.00	0.35	11.60	0.50
Manufacturing	78.70	5.47	0.25	0.20	0.35	0.20	2.30	0.70
Mining, quarrying, and oil and gas extraction	77.00	1.80	0.70	3.20	0.30	0.45	9.20	2.20
Professional, scientific and technical services	58.20	6.20	0.35	4.10	0.60	0.70	13.00	2.80
Real estate and rental and leasing	69.60	4.50	0.25	0.20	0.40	0.00	13.10	2.20
Retail trade	86.80	2.27	0.20	0.40	0.35	0.00	3.10	1.80
Transportation and warehousing	68.10	2.57	0.20	2.90	0.05	0.25	16.90	3.40
Wholesale trade	69.80	5.43	0.55	0.90	0.85	0.45	4.50	4.90

Figure 5. Employees were teleworking or remote working prior to February 1st, 2020

Source: own figure

	0% to less than 1%	1% to less than 30%	30% to less than 50%	50% to less than 60%	60% to less than 80%	80% to less than 100%	100%	Unknown
Accommodation and food services	81.90	3.80	0.35	0.00	0.50	0.45	0.90	3.20
Administrative and support, waste management ..	64.00	4.30	1.05	2.10	2.60	1.20	10.00	1.20
Agriculture, forestry, fishing and hunting	82.40	0.73	0.55	2.10	0.15	0.55	4.50	6.30
Arts, entertainment and recreation	52.10	1.90	0.70	0.90	1.30	2.75	28.80	2.90
Construction	80.50	3.50	0.40	1.00	0.35	1.05	3.20	1.30
Finance and insurance	43.00	2.47	6.65	6.10	1.25	4.05	16.70	2.90
Health care and social assistance	55.70	4.17	0.95	5.70	2.00	3.25	13.40	0.50
Information and cultural industries	33.30	4.37	2.00	4.30	2.55	5.20	28.90	1.20
Manufacturing	57.60	8.37	2.50	1.80	1.55	1.85	2.70	1.10
Mining, quarrying, and oil and gas extraction	60.70	2.83	0.85	4.60	2.00	2.75	13.90	1.10
Professional, scientific and technical services	33.90	2.60	0.35	4.40	1.15	2.90	44.80	0.20
Real estate and rental and leasing	59.70	1.90	0.40	2.30	0.70	7.35	13.30	2.20
Retail trade	73.60	4.03	0.25	2.60	0.25	1.05	6.60	1.90
Transportation and warehousing	59.20	2.37	0.40	8.60	0.45	1.15	17.50	3.60
Wholesale trade	49.20	5.80	2.05	3.40	2.60	3.50	8.90	4.70

Figure 6. Employees are teleworking or remote working on May 29th, 2020

Source: own figure

	0% to less than 1%	1% to less than 30%	30% to less than 50%	50% to less than 60%	60% to less than 80%	80% to less than 100%	100%	Unknown
Accommodation and food services	83.80	2.20	0.05	0.40	0.20	0.25	4.30	4.00
Administrative and support, waste management..	67.30	5.67	1.45	1.70	0.05	0.55	6.60	3.20
Agriculture, forestry, fishing and hunting	80.00	1.57	0.45	2.80	0.15	1.40	1.60	6.70
Arts, entertainment and recreation	50.80	4.33	0.55	8.30	0.80	0.65	8.40	15.50
Construction	81.70	2.70	0.05	0.90	0.80	0.25	3.60	3.50
Finance and insurance	44.40	7.67	1.90	6.00	2.15	0.80	4.90	11.80
Health care and social assistance	69.50	4.80	1.20	2.40	1.45	0.40	3.60	4.00
Information and cultural industries	36.00	5.13	1.55	11.40	2.95	1.75	15.70	9.00
Manufacturing	67.10	6.53	0.70	2.60	0.05	0.20	1.90	6.90
Mining, quarrying, and oil and gas extraction	66.00	3.13	0.55	5.50	0.75	0.90	7.60	7.10
Professional, scientific and technical services	37.10	3.57	1.40	7.70	3.45	1.45	16.50	15.30
Real estate and rental and leasing	66.70	2.80	5.90	2.60	0.25	0.40	3.50	5.60
Retail trade	73.30	4.60	0.15	0.40	0.35	1.55	3.70	4.70
Transportation and warehousing	66.30	1.23	0.90	3.80	0.75	3.80	8.90	6.40
Wholesale trade	59.80	5.20	0.75	5.20	1.10	0.75	5.30	8.80

Figure 7. Employees are going to telework or remote work once the Covid-19 pandemic is over

Source: own figure

The data from Figure 8 show the business practices that businesses are more likely to adopt in the long term. The data analysis shows that 15.37% of businesses have considered modifying the workspace and only 7.65% of businesses are considering adapting the possibility of offering employees remote working.

	Likelihood businesses will permanently adopt measure	
	very likely	not applicable
Adopt shiftwork to increase the distance between employees	6.24	49.41
Automate certain tasks	3.79	56.43
Increase information technology telework capacity	4.88	55.75
Make investments to increase the security of telework systems	5.61	55.17
Modify the work space to increase the distance between employees	15.37	42.07
Offer more employees the possibility of teleworking or working remotely	7.65	54.17
Reduce hiring of temporary foreign workers	1.53	82.27
Reduce physical space used by the business	6.48	48.22
Require more employees to telework or work remotely	4.08	56.14

Figure 8. Business measures likely to be adopted by business once the Covid-19 pandemic is over

Source: own figure

From the data analysis, it can be concluded that the H2 hypothesis is valid and business have been severely impacted by the pandemic and had to implement measures which have led to the invalidity of H1. Given the analysis, it is certain that business because of Covid-19 will continue to evolve and adopt new technologies to adjust the working environments and protect their employees.

As the study has covered only Canada it is certain that the situation is the same all over the world but with correlation given by how hard the country or business has been impacted by the Covid-19 pandemic. For example, by taking a look at European Union, and given the fact that countries like Spain and Italy were severely impacted by coronavirus it can be assumed that business have taken measures to protect their employees. And this can be proven by taking a look at Figure 9. The data provided by Eurofund shows that before the Covid-19 pandemic only 9.70% of the European employees worked from home compared to 63.20% that started working from home because of coronavirus pandemic. And according to this paper's H2 hypothesis, it can be assumed that businesses in European Union were impacted by the coronavirus pandemic and they have been taking measures to mitigate the risk on their employees.



Figure 9. Working from home in European Union because of the Covid-19 pandemic

Source: own figure

5. CONCLUSIONS

Even before the coronavirus, there was a lot of debate about the future of work and how the working environments change because of the automations. It is safe to assume now that because the coronavirus pandemic the automation process of the working environment was accelerated and digital transformation is happening at a faster pace. This paper tries to offer answers on how the working environment has changed and what are the advantages and disadvantages of remote working. Also, another important aspect is the gap that Covid-19 has widened between skilled and high skilled workers. The coronavirus pandemic has forced businesses to take actions in order to mitigate the risks of the new working environments. In the future we consider that for digital business the shift towards remote hybrid work style even after the pandemic is over will continue. Therefore, managers will have to adopt new strategies to manage workers and to transform the business working environments. The coronavirus is a pandemic with a big impact on the organizations and has accelerated the digital transformation process because every business sector is going digital to minimizing physical contact between people. As humanity is going through this pandemic we consider that new changes will continue to happen and technological and business model innovations will continue to occur.

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