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On behalf of the committee, I would like to express my sincere gratitude to all colleagues, professors, lecturers, researchers, and welcome you all to the 4th INCRID 2022 “Supporting the Realization of Zero Carbon Environment by Implementing Circular Economy”. This conference provides a great opportunity for researchers, students, industries, and governments to communicate their research results on the fundamentals and application of sustainability issues and community development.

INCRID 2022 was held on 1 September 2022 in the online system and the theater room 5th floor of the Faculty of Engineering Diponegoro University, Semarang (hybrid). Keynote and invited speakers were Prof. Ramaraj Boopathy Nicholls State University, USA, Dr. Premakumara Jagath (Institute for Global Environmental Strategies, Japan), Prof. Pau Loke Show (University of Nottingham Malaysia), Prof. Sudharto P. Hadi, MES, Ph.D. (Universitas Diponegoro, Indonesia), Prof. Ir. Tjandra Setiadi, M.Eng., Ph.D. (Institut Teknologi Bandung, Indonesia), Prof. Dr. Soraya Heuss-Aßbichler (Ludwig-Maximilians-Universität München, Germany).

At this conference we have contributions from seven countries. We received about 118 submissions of papers for presentation at this meeting. Each paper was evaluated by a reviewer and about 85 of these are accepted for presentation, divided into 12 parallel presentation sessions. The topics of this conference include Environmental, Health and safety; environmental science, technology, and education; Green infrastructure; and Energy Conservation and Efficiency. It is my hope that the 4th INCRID 2022 will be able to achieve its objective of creating an international forum for researchers, students, industries, and governments to communicate their research results, to share and exchange ideas on the fundamentals and application of environmental, sustainability issues, and community development.

By bringing up this theme, the Department of Environmental Engineering and the INCRID 2022 Committee want to support the efforts of the World to achieve the goal of emission reduction and Net Zero Emission (Carbon neutrality). Furthermore, this activity is expected to support efforts to implement the concept of the circular economy.

Last but not least, my deepest gratitude goes to the Advisory Board, Organizing Committee, International Scientific Committee, institutions, companies, and volunteers who have directly and indirectly supported the success of this conference. Although we try our best to be professional, on behalf of the committee, we request you to accept our sincere apologies for any inconvenience.

Dr. Yustina Metanoia Pusparizkita, S.T., M.T.  
Chairman of the 4<sup>th</sup> INCRID 2022



## NAME OF THE EVENT

The 4<sup>th</sup> International Conference on Environment, Sustainability Issues and Community  
Development 2022 (4<sup>th</sup> INCRID 2022)

## THEME

“Supporting the Realization of Zero Carbon Environment by Implementing Circular  
Economy.”

The topics of the conference are as follows.

### **A. Environment, Health, & Safety**

- Environment, health, and safety system
- Environmental modeling and computation
- Risk analysis

### **B. Environmental Science, Technology, and Education**

- Waste management and treatment
- Water and wastewater engineering
- Environmental education

### **C. Green Infrastructure**

- Life cycle assessment
- Green building and technology option

### **D. Energy Conservation and Efficiency**

- Clean and renewable energy
- Climate change and global warming

## OBJECTIVES OF THE EVENT

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- To create an international forum for researchers, students, industries, and governments to communicate their research results on the fundamentals and application of environment, sustainability issues, and community development.
- To share and exchange ideas, thoughts, and discussions on all aspects of the environment, sustainability issues, and community development.
- Facilitate the formation of networks among participants to enhance the quality and benefits of research and development.

## PARTICIPANTS

This international conference is open to academicians, researchers, students, and professionals worldwide.

## SPEAKERS

### Keynote Speakers

No	Name	Institution and Country
1	Prof. Ir. Tjandra Setiadi, M.Eng., Ph.D	Institut Teknologi Bandung, Indonesia
2	Prof. Sudharto P. Hadi, MES, Ph.D	Universitas Diponegoro, Indonesia
3	Prof. Dr. Soraya Heuss-Aßbichler	Ludwig-Maximilians-Universität München, Germany
4	Prof. Pau Loke Show	University of Nottingham, Malaysia
5	Dr. Ramaraj Boopathy	Nicholls State University, USA
6	Dr. Premakumara Jagath	Institute for Global Environmental Strategies, Japan

## SCHEDULE

### 1<sup>st</sup> Round Submission

Deadline for Abstract Submission	7 June 2022
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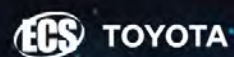
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All papers published in this volume have been reviewed through processes administered by the Editors. Reviews were conducted by expert referees to the professional and scientific standards expected of a proceedings journal published by IOP Publishing Publishing.

- **Type of peer review:** Single Anonymous
- **Conference submission management system:** Morressier
- **Number of submissions received:** 118
- **Number of submissions sent for review:** 98
- **Number of submissions accepted:** 85
- **Acceptance Rate (Submissions Accepted / Submissions Received × 100):**  
72
- **Average number of reviews per paper:** 2
- **Total number of reviewers involved:** 14
- **Contact person for queries:**  
**Name:** Yustina Metanoia Pusparizkita  
**Email:** ympusparizkita@lecturer.undip.ac.id  
**Affiliation:** Departement of Environmental Engineering, Diponegoro University, Semarang, Indonesia





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# Table of contents

Volume 1098

2022

[◀ Previous issue](#)   [Next issue ▶](#)

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Novie Susanto, Faradhina Azzahra and Alldo Haswandana Putra  
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- 
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Integrating fuzzy logic and house risk method for operational risk management in automotive industry  
Nia Budi Puspitasari and Muhammad Raihananda Ashafy Yuwono  
[+](#) Open abstract [View article](#) [PDF](#)
- 
- OPEN ACCESS** 012008  
Define indicators for health protocol assessment at Prambanan Temple Tourism Park Yogyakarta  
Ratna Purwaningsih, Linda Anggita Leony, Ekawati, Ary Arvianto and Parwa Oryzanti  
[+](#) Open abstract [View article](#) [PDF](#)
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New risk assessment and prioritization failure modes based approach in a gas turbine system  
A Chakhrif, M Bougofa, I H M Guetarni, N Nehal, A Bouafia, F Z Ghazli, R Kharzi and M Chennoufi  
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- 
- OPEN ACCESS** 012010  
The effectiveness of EM4 and Local Micro-organisms (LOM) Activators in Organic Waste Processing in Brikama Market West Coast Region, The Gambia  
Babucarr Jassey, Syafrudin, Badrus Zaman, Kemo Ceesay, Ibrahim Touray, Juma Ngum and Habibi Prakoso  
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- OPEN ACCESS** 012011  
Environmental impact assessment Approach to Dynamic Safety Evaluation : A Liquefied Natural Gas Plant Case Study  
Abderraouf Bouafia, Mohammed Bougofa, Bilal Zeroauli, Rabeh Kharzi, Ammar Chakhrif, Amin Baziz, Salah Aberkane, Mohamed Salah Medjram and Ahmed Mebarki  
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Review of Seepage Behaviour on Concrete Facing Rockfill Dam Based on FEM Simulation and Chemical Aspect  
G Pamungkas, T T Putranto and Suharyanto  
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Analysis of Water Quality Change in Tourist Attractions to Reduce Ecological Destruction: Perspectives on Science and Environmental Theology  
Zainul Abas, Dita Purwinda Anggrella, Fathurrohman Husen and Purwono Purwono  
[+](#) Open abstract [View article](#) [PDF](#)
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- OPEN ACCESS** 012014  
Review of the Circular Economy of Plastic Waste in Various Countries and Potential Applications in Indonesia  
Z Murti, Dharmawan, Siswanto, D Soedjati, A Barkah and P Rahardjo  
[+](#) Open abstract [View article](#) [PDF](#)
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- OPEN ACCESS** 012015  
Dynamic Availability Assessment Using Dynamic Evidential Network: Water Deluge System Case Study  
Mohammed Bougofa, Abderraouf Bouafia, Ammar Chakhrif, I H M Guetarni, Amin Baziz, Salah Aberkane, Bilal Zerouali, Rabeh Kharzi and Ahmed Bellaouar  
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Alvi Eka Mentari, Adian Khoironi and Hadiyanto	
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Stability Evaluation of Bener Dam Diversion Tunnel During Construction	
MSH Danuartha, K W Sadono and T T Putranto	
<a href="#">+ Open abstract</a> <a href="#">View article</a> <a href="#">PDF</a>	
<b>OPEN ACCESS</b>	012018
The Effect of Laptop Usage Behaviors on Eye Fatigue on Work-from-Home (WFH) Lecturers during The Covid-19 Pandemic	
T L Wardani, L Retnowati, R Fajariani, I Qadrijati, Sumardiyono, S Rinawati and T B Atmojo	
<a href="#">+ Open abstract</a> <a href="#">View article</a> <a href="#">PDF</a>	
<b>OPEN ACCESS</b>	012019
Development of Agritourism Potential as an Alternative Form to Preservation of Rural Environment in Samboja East Kalimantan	
Virgilia Anna Gustiniani Pakalla and Achmad Ghozali	
<a href="#">+ Open abstract</a> <a href="#">View article</a> <a href="#">PDF</a>	
<b>OPEN ACCESS</b>	012020
A Time-Series Analysis on the Covid-19 Mortality, PM2.5 Levels, and Weather Variables in Denpasar City, Indonesia	
Amari Dihaning Suhendarto, Yeny Dhokhikah and Abdur Rohman	
<a href="#">+ Open abstract</a> <a href="#">View article</a> <a href="#">PDF</a>	
<b>OPEN ACCESS</b>	012021
Precipitated Calcium Carbonate Derived from Green Mussel Shells Extracted from Magnesium Chloride Containing Solution	
M.A. Irfa'i, A. Prihanto, S. Muryanto, J. Jamari, R. Ismail and A.P. Bayuseno	
<a href="#">+ Open abstract</a> <a href="#">View article</a> <a href="#">PDF</a>	
<b>OPEN ACCESS</b>	012022
Utilization of green mussel shell waste for calcium carbonate synthesis through the carbonation method with temperature variation	
A Prihanto, S Muryanto, R Ismail, J Jamari and AP Bayuseno	
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<b>OPEN ACCESS</b>	012023
A Review on Household Water End-Use Consumption to Mitigate the Urban Water Crisis: Insight from Various Cities in Indonesia	
R N Azizah, L F Sinaga, D Awfa, A D Imami, R Yanda, Z F Saraswati, Y Putri and E Setiawati	
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<b>OPEN ACCESS</b>	012024
Upcycle strategy on tree branches to improve eco-efficiency towards a circular economy using life cycle assessment	
Sri Hartini, Rani Rumita and Muhammad Hafidz Al Huda	
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Improving quality of COD analysis using AgNO <sub>3</sub> for wastewater samples with high chloride content	
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<b>OPEN ACCESS</b>	012039
Analyzing the environmental sustainability of rural water management in community self-help group (CSHG) – a case study of Gunungpati district	
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<b>OPEN ACCESS</b>	012040
Learning from Contextual Material Practices in Architecture: Exploring Nature-Based Materials in Indonesia and Thailand	
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Noise Intensity Analysis and Mitigation of Workers Health in home industry Steamed bun Arum Jaya Nusukan	
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Adsorption of Oil and Grease in Wastewater using Activated Carbon Derived from Sewage Sludge	
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The Efficiency of Reducing COD and Turbidity of Tofu Wastewater using A Combination of Electrocoagulation and Ozone	
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Analysis of the application of injection wells in the Undip Tembalang campus area as an effort to reduce drainage flow loads  
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# A study of work-culture changes at post Covid-19 pandemic in greater Jakarta

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**Abstract.** This paper presents an examination of culture change in working places due to the Covid-19 pandemic, with a study case in the Greater Jakarta. During the Covid-19 pandemic, most of companies around the world made policy for the employee to work from home (WFH). Implementation of the WFH policy has showed a great success not only in keeping the employee safety and health but also in maintaining employee performance. Now, the pandemic has been shifting to endemic such that working culture is going to change. Health, safety, and flexibility are being keywords of the new working culture. This study assessed the employee perspective about a trend of workplace changing and the needs of supporting facilities. The assessment was done through a survey and analysing the survey data. The result show different types of working system, where 66% work from office, 30% work in hybrid system, 2% work from home, and 2% work from anywhere.

## 1. Introduction

Working life has changed dramatically in the last two years due to the Covid-19 pandemic. It forcing us to rethink our perceptions of the workplace and the nature of work itself. So far, our understanding of work has been interwoven with concepts of place, which are associated with an office or workplace. Several studies explore how the Covid-19 pandemic affects to the workplace culture in the real world [1–3]. Those studies give a message about adaptation and preparation for success in future, especially in the face of unexpected disruptions like the Covid-19 pandemic. As [4] points out, the Covid-19 pandemic has shown many weaknesses of many systems that have been applied and implemented in daily life around the world. The pandemic has raised numerous questions for businesses such as about the working culture. Some current changes are expected to be temporary, while others will have long-term implications. Arguably, the pandemic has pushed several pre-existing trends in the office sector, such as flexibility, activity-based working, health and wellness, and the desire for better space utilization.

The pandemic has pushed most of the companies to adopt work from-home (WFH) since beginning of the Covid-19 pandemic. Surprisingly, the pandemic has shown that working from home is possible. Even though it is far from ideal, the absence of a commute and the ability to balance work and life are



highlighted as significant advantages of remote working. In fact, remote working had been implemented in several countries before the pandemic [4–6]. However, the pandemic has enabled millions of employees to work from home worldwide. Arguably, with the advent of cloud storage and the shift to a paperless working culture, the need to work from an office has become obsolete, as work can be done anywhere.

This trend has also had an impact on Indonesia's working culture. Many companies are finally rethinking about the importance of workplace and how work should be done. In order to attract potential employees, many companies are becoming more flexible in their work environments. Employees are the most valuable and costly resource in any organisation, so employee needs must be prioritised [7]. Indonesia has a distinct work culture. Arguably, the differences between its work culture and other countries significantly impact how businesses adapt to the new normal post-Covid-19 pandemic. This study examines how the companies in Greater Jakarta have adapted to the new normal during the Covid-19 pandemic.

## 2. Method

This study is evaluating working culture change after the Covid-19 pandemic. Three aspects are considered in the evaluation: 1) rethinking about remote working, 2) acceleration of digital transformation, and 3) hybrid working and workplace culture. A survey about the working culture change is conducted to collect data from employees. The resulted survey data is used in the evaluation.

### 2.1 A Rethink of Remote Working

As of July 2022, most companies are already back to work from the office, as the public activity restrictions (PPKM) have been relaxed for more than five months. Since the beginning of the pandemic in 2020, the office must implement social distancing and a 50% reduction in office capacity to prevent workplace-related clusters. There are several reasons why remote working will be a viable option such as:

1. Many companies were left with cash-flow issues due to the pandemic, having to pay high rent on offices they were not using. This has been a distressing experience for them, and they will increasingly want to advocate for a more flexible model [4].
2. Previously held meetings and collaborations in meeting rooms are now being replaced by online platforms such as Zoom, Ms Team, Cisco Webex, Google Meet, and others. Because virtual spaces can be accessed from anywhere, the office function as a place for collaboration has shifted to virtual spaces with greater flexibility. Many companies of all sizes are opting for a more decentralised working model as more businesses embrace the concept of remote working. People no longer need to travel to a central office and can work from anywhere. As a result, companies must broaden the definition of "workplace".
3. Viability of working from home or the office has been accepted by both employers and employees. Finally, the current generation (Generation Y & Z) of workers desires more job satisfaction and control over how, where, and when they work. They also want places where they can collaborate, share ideas, and innovate [8]. Generation Y & Z are more digitally savvy and value flexibility than previous generations.

On the other hand, many managers from local and national companies may prefer to work in the office because it gives them more control and reduces the number of emails to which they must respond. Companies are also concerned about the remote working affecting the workforce. Many companies attract employees by emphasising values and cultural practices that are more visible in a formal office setting (for example, training, on-the-job learning, and mentoring). Maintaining these practices is critical for corporate culture, particularly as employees spend more time away from work. In addition, a study also highlighted that employees were concerned about missing out on conversations and office interaction in a situation of isolation [9]. Office is still required as it is a place for employee to have a social interaction.

## *2.2. Acceleration of Digital Transformation*

The requirement to move work online has emphasised the significance of digital transformation. Undoubtedly, the Covid-19 pandemic has accelerated digital technology adoption by several years. The Covid-19 crisis has caused years of change in how businesses in all sectors and regions operate [10]. The crisis has vividly demonstrated the power of digital technologies, and some changes may now be too significant to postpone [11]. According to a McKinsey survey, respondents said their companies moved 40 times faster than expected before the remote working pandemic. Respondents previously stated that implementing the level of remote working during the crisis would have taken more than a year. It took an average of 11 days [12].

As email has altered how we work and communicate, technological advancements will continue to change our work culture and methods. Technology will play a more significant role in office development in the future. Many businesses expect to continue investing in technology such as data security, remote working, and artificial intelligence to maintain productivity. Furthermore, paperless working and collaboration via video conferencing and asynchronous training collaboration have become the new norms in almost all businesses. This is both an opportunity and a challenge for companies, especially given the lack of good infrastructures such as fast internet connections and cloud-based work systems in many developing countries such as Indonesia. Work, space, and information technology (IT) alignment are necessary for success.

## *2.3. Hybrid Working and Workplace Culture*

According to some surveys, even during the Covid-19 pandemic, many employees reported a positive experience with remote working. Nonetheless, very few of them prefer to work in this manner all of the time, preferring instead to work in a hybrid work environment. According to a recent Hays survey, more than half of employees will shift to a hybrid work model [13]. In addition to traditional cubicles and factory spaces, a hybrid workforce is dispersed across multiple locations [9]. Flexibility and choice characterise the working model. Furthermore, according to another survey, hybrid working is driving the office footprint strategy [14].

It is worth noting that hybrid models emphasise activities that build and demonstrate trust. A diverse set of essential values that all employees respect and practice contribute to the positive and effective functioning of the workplace. Organisations can recruit talent better, achieve innovation, and create value for all stakeholders thanks to hybrid work models [15]. Furthermore, the absence of commuting means higher individual productivity in the case of work from-home (WFH) and hybrid model strategies [9]. Employees can choose between at-will employment, split weeks, shift work, and a flexible workweek.

Several studies have begun to look into the benefits and drawbacks of hybrid working. It has been discovered that hybrid working contributes to the reduction of toxic workplace cultures. According to a recent study, most employees would not consider joining a company with a higher salary but a poor work culture [16]. Cooperation and interaction, on the other hand, are more critical than ever in the remote working environment. Working remotely may make the employees to be isolated such that they will lack of conversations and office interaction [9]. Humans are social creatures, and social interaction at work can be difficult for many people, especially during Covid-19.

## *2.4. Survey to Employees in Greater Jakarta*

Employee perspectives are essential in understanding how workplace culture has changed in the last two years during the Covid-19 pandemic. This viewpoint has become critical in the current situation in which businesses reflect their office requirements. A quantitative approach using questionnaires was chosen to understand changes in working culture in various companies and regions of Greater Jakarta. From June to July 2022, data was collected using a Google form via the WhatsApp application. Respondents worked in offices in and around Greater Jakarta for national and multinational corporations. The questionnaire respondents were 61 employees from various industries and locations

throughout Greater Jakarta. The questionnaire uses a combination of multiple-choice and open-ended questions to provide a more detailed picture of how workplace culture is changing.

Results of the survey are applied in qualitative research to investigate how the pandemic affected the setting of working arrangements. Moreover, inductive analysis is done in analysis and generalisation. Objectives of using the inductive approach are to: (a) condense raw textual data into a brief summary format, (b) establish clear links between research objectives and the summary of findings derived from the raw data, and (c) develop a framework of the underlying structure of experiences or processes visible in the raw data [17]. This method is beneficial for studying phenomena that are still new and changing; the author recognised that pandemic cases would greatly influence responses during questionnaire distribution.

### 3. Results and Discussion

#### 3.1 *Rethinking business model*

The presented result in this paper is at the early stage of the research. At this stage, the survey got 61 respondents who are employees in the Greater Jakarta area. The survey results show a changing pattern of working cultures across many companies in Greater Jakarta. According to the survey, nearly 30% of respondents now work in a hybrid model, 2% work entirely from home (WFH), 2% work from anywhere (WFA), and the rest return to the office. The survey result demonstrates various working models that companies in Greater Jakarta implemented even though office capacity is no longer restricted. Some businesses that return to the office also implement more flexible working hours to assist their employees in adapting to their individual needs. The findings also show that the working culture in Indonesia needs to be more adaptable to the possibility of working from home. Many businesses prefer their employees to present in the office, while others use "wait and see" approach by following the Covid-19 cases day to day. Nevertheless, working cultures in many companies appear to be rapidly changing in response to the new normal needs. According to the questionnaire, the readiness of companies' digital technology significantly impacts the choice of the working model. Leading companies have increased capital expenditures in digital technology and corporate strategies during this period of disruption. Indicators of success are not only strategy and leadership, but also the technology [18].

#### 3.2 *Transformation of working culture*

What stands out in the data is that almost all respondents said they are now shifting from face-to-face meetings to online meetings; even among respondents who have returned to the office, online meetings are still the preferred option. In the possibility of Covid-19 cases, people likely feel more comfortable having meetings online than offline, and some respondents highlight that online meeting are far more effective. It is included that business travel is significantly reduced because most tasks can be completed through online meetings. Most respondents stated that they have not travelled for business in the last few months. The majority of respondents also want more flexibility in their current working arrangement, with respondents who have the option of working from home or anywhere expressing greater satisfaction with their current working situation. Some respondents also feel unsafe and tired of wearing masks all day in the office, highlighting the importance of health and safety for most employees. According to several reports, the office will be a place to build corporate culture, conduct training, socialise, meet clients, and attract potential talents [4, 18, 19].

#### 3.3 *The New Normal Post Covid-19 Pandemic*

The covid-19 pandemic reinforced a fact of modern life: we live in a period of change and uncertainty, in which everything can change in a matter of weeks or days due to dramatic economic changes, natural disasters, or other disruptions. The workplace is evolving toward greater collaboration and teamwork. Employees are becoming more empowered; work/life balance is becoming more important; and there is a widespread desire for egalitarian and socially engaging workplaces. In order to respond to these trends, the workplace must be adaptable enough to accommodate a wide range of working styles.

When asked what they thought about the challenges in the new normal following the Covid-19 pandemic, the majority of respondents reflected on this. The constant fear of health when going to work, the fast-paced working culture, how to meet targets with economic uncertainty, and how to collaborate with other colleagues in the new working arrangements are some of the survey respondents' responses. Thus, understanding work and providing flexible workplaces that enable continuous improvement of that work are two things that organisations can do to help differentiate in the era of new normal post Covid-19 pandemic.

#### 4. Conclusion

With advancements in Covid-19 treatment and vaccine rollout, countries are beginning to imagine a future in which the pandemic has no impact on employee and employer decisions. The Covid-19 pandemic will eventually end, and it will be up to the business sector to develop new ways of working in order to maintain and foster this positive shift in workplace management. One thing is certain: many of our offline meetings will be replaced by online meetings in the near future. Short-term and long-term changes in working culture will significantly impact how the office operates following the Covid-19 pandemic.

A hybrid form of work may predominate in terms of the working system: a model in which employees can work at the office, from home, or mix it up throughout the working week. While some workdays may require all employees to be physically present, others may necessitate a combination of physical and virtual presence. Depending on the nature of their tasks and their personal needs or preferences, employees and managers must find ways to work that combine the benefits of face-to face contact with the flexibility of remote work [20].

Technology must play a more significant role in increasing remote workers' productivity and making workplaces safer for returning employees. Employees must be flexible in order to benefit from both modes of operation. People anticipate a much more open and flexible work environment in the future. Furthermore, rather than simply reverting to the past, responsible companies will seize the opportunity in the new normal to reinvent their working model, fostering collaboration and productivity and creating a better human experience for their talents.

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#### References

- [1] KevinMKniffin, Jayanth Narayanan, Frederik Anseel, John Antonakis, Susan P Ashford, Arnold B Bakker, Peter Bamberger, Hari Bapuji, Devasheesh P Bhave, Virginia K Choi, et al. Covid-19 and the workplace: Implications, issues, and insights for future research and action. *American Psychologist*, 76(1):63, 2021.
- [2] Andr'e Spicer. Organizational culture and covid-19. *Journal of Management Studies*, 57(8):1737–1740, 2020.
- [3] Antonio de Lucas Ancillo, Mar'ia Teresa del Val N'ũnez, and Sorin Gavrilă Gavrilă. Workplace change within the covid-19 context: a grounded theory approach. *Economic Research-Ekonomska Istraživanja*, 34(1):2297–2316, 2021.
- [4] James Finestone, James Ward, Marcus Morrell, Neil Rebeugeot, Paula Walsh, Rebecca Goldberg, Stu Manton, and Tristan More. Future of offices: in a post-pandemic world, Aug 2020.
- [5] Ylenia Curzi, Tommaso Fabbri, and Barbara Pistoresi. The stressful implications of remote working: Evidence from europe. 2020.
- [6] Irene Hardill and Anne Green. Remote working—altering the spatial contours of work and home in the new economy. *New Technology, Work and Employment*, 18(3):212–222, 2003.

- [7] Barry P Haynes. Office productivity: a shift from cost reduction to human contribution. Facilities, 2007.
- [8] Nicola Gillen. Future Office: Next-generation workplace design. Routledge, 2019.
- [9] Michal Beno and Jozef Hvorecky. Data on an austrian company's productivity in the pre-covid-19 era, during the lockdown and after its easing: To work remotely or not? Frontiers in Communication, 6:641199, 2021.
- [10] Kevin Sneader and Shubham Singhal. The next normal arrives: Trends that will define 2021—and beyond. McKinsey. com, January, 2021.
- [11] Marco Tregua, Cristina Mele, Tiziana Russo-Spena, Maria Luisa Marzullo, and Adriana Carotenuto. Digital transformation in the era of covid-19. In International Conference on Applied Human Factors and Ergonomics, pages 97–105. Springer, 2021.
- [12] Kevin Sneader and Shubham Singhal. Beyond coronavirus: The path to the next normal. McKinsey & Company, 5, 2020.
- [13] Neil Franklin. Half of firms set to adopt flexible working, Jul 2020.
- [14] US PWC. It's time to reimagine where and how work will get done. In PWC, 2021.
- [15] Christoph Hilberath, Julie Kilmann, Deborah Lovich, Thalia Tzanetti, Allison Bailey, Stefanie Beck, Elizabeth Kaufman, Bharat Khandelwal, Felix Schuler, and Kristi Woolsey. Hybrid work is the new remote work. Boston consulting group. Viitattu, 8:2021, 2020.
- [16] Donald Sull, Charles Sull, and Ben Zweig. Toxic culture is driving the great resignation. MIT Sloan Management Review, 63(2):1–9, 2022.
- [17] David R Thomas. A general inductive approach for analyzing qualitative evaluation data. American journal of evaluation, 27(2):237–246, 2006.
- [18] Laura LaBerge, Clayton O'Toole, Jeremy Schneider, and Kate Smaje, Oct 2020.
- [19] Ian Brinkley, Ben Willmott, M Beatson, and G Davies. Embedding new ways of working: Implications for the post-pandemic workplace, 2020.
- [20] Monika Grzegorzcyk, Mario Mariniello, Laura Nurski, and Tom Schraepen. Blending the physical and virtual: a hybrid model for the future of work. Technical report, Bruegel Policy Contribution, 2021.