The Influence of Organizational Learning on Operational Performance During Covid-19 Pandemic: The Moderating Role of Hierarchical Culture

Zi Chuin Cheah
Graduate School of Business, Universiti Sains Malaysia
Minden, Pulau Pinang, Malaysia
Email: cheahzc@gmail.com

Noor Fareen Abdul Rahim*
Graduate School of Business, Universiti Sains Malaysia
Minden, Pulau Pinang, Malaysia

* Corresponding Author

Abstract
Purpose: This study explores the relationship between organizational learning and operational performance with a focus on the moderating role of hierarchical culture. The research also examines how COVID-19 work implications mediates these dynamics and whether hierarchical culture affects this relationship.
Design/methodology/approach: Data were collected from 107 employees working remotely or in a hybrid mode across various organizations in Malaysia. SPSS and Structural equation modeling (SEM) were used to analyze the data and test the proposed hypotheses.
Findings: The analysis revealed a significant positive relationship between organizational learning and COVID-19 work implications, and between organizational learning and operational performance. However, COVID-19 work implications did not significantly mediate the relationship between organizational learning and operational performance. Additionally, hierarchical culture did not moderate the relationship between organizational learning and operational performance.
Research limitations/implications: The study, conducted during the transition from the global announcement of the COVID-19 pandemic to the endemic phase in Malaysia, offers a unique perspective specific to a time when employees had already become familiar with the home office setup.
Practical implications: This study aims to provide practical insights into improving operational performance in the context of the new work norms established by the COVID-19 outbreak. In the unpredictable post-COVID-19 era, sustainable organizational learning is crucial for addressing the constantly evolving and increasingly complex challenges, often referred to as 'wicked problems'.
Originality/value: This study expands the understanding of how organizational culture influences organizational learning, suggesting future research could explore other dimensions of organizational culture, such as clan, market, and adhocracy.

Keywords: Organizational Learning, Operational Performance, Covid-19 work Implications, Hierarchical Culture
Classification: Research paper

Introduction

The outbreak of COVID-19, caused by the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-COV-2), was declared a global emergency by the World Health Organization (WHO) on January 30, 2020. This pandemic has had a significant ripple effect, impacting global healthcare and various other sectors due to measures such as border shutdowns, travel restrictions, and quarantine. Early on, social distancing became a crucial measure to "flatten the curve" and slow the exponential spread of the virus through cross-contamination. As a result, many workplaces introduced new measures, such as home offices, to comply with social distancing policies and sustain business operations. The pandemic accelerated the adoption of home offices as a new work norm, catching many organizations unprepared for such a sudden shift, as noted by Jamal et al. (2021). As more companies implemented remote working policies, many roles were found to be effectively performed remotely, leading to the emergence of hybrid work modes that are likely to remain for some jobs and roles due to their proven efficiency as long-term policies. Considering the pandemic, it is crucial to examine how companies are navigating the unprecedented challenges it brings. The uncertainty related to the pandemic's health impacts has complicated future planning and critical decision-making for businesses, potentially leading to long-term effects. However, business groups might possess a competitive edge over independent firms due to the benefits of network effects. Organizations can facilitate risk-sharing and resource distribution across the group. This internal network may bolster member firms' resilience against economic shocks, enabling them to sustain operations and even grow under adverse economic conditions. For instance, organizations may leverage shared resources and expertise, allowing individual firms to adapt and innovate more effectively in response to shifting market dynamics (Banarjee, Dhole & Mishra, 2023).

While telecommuting is not a new concept, the involuntary and prolonged nature of remote work during the pandemic presents unique challenges and concerns. Communication now relies heavily on IT tools, which can lead to stress (Fonner & Roloff, 2012). Management is concerned about the trade-offs of COVID-19, which can affect employees' emotional, cognitive, and physical well-being, ultimately impacting their performance (Graves & Karabayeva, 2020). The pandemic has altered organizational learning processes and their impact on performance, with some processes being removed, skipped, or adapted to the new work norm (Härter et al., 2020). This study aims to explore the relationship between organizational learning and operational performance and how organizational culture should be adjusted in response to the new work norm.

Hierarchical culture emphasizes an internal focus and control (Škerlavaj, Song, & Lee, 2010), with efficiency and strict adherence to rules and regulations being its primary traits (Naranjo-Valencia, Jimenez-Jimenez, & Sanz-Valle, 2011). This cultural approach prioritizes rules, policies, and procedures, often at the expense of agility (Moonen, 2017). Organizations that embody a hierarchical culture tend to emphasize control and authority. They are characterized by stability, caution, and maturity, with work processes that are systematic and well-organized. Such organizations are typically marked by a strong focus on order, regulation, and adherence to procedures (Wallach, 1983). This culture often results in challenges with communication across different managerial levels, as information tends to be concentrated at higher levels, leading to less flexibility and increased rigidity (Knein, Greven, Bendig, & Brettel, 2020). Organizations that

cultivate a strong hierarchical culture can effectively establish clear and precise processes across all departments and teams, which also supports a well-defined managerial structure.Building on this area of interest, this study extends the conceptual model examined by Tortorella et al. (2021) by adding a moderating element to investigate how organizational culture, specifically hierarchical culture, influences learning processes during the COVID-19 outbreak and the new virtual work norm.

This study introduces hierarchical culture as a moderating variable to highlight the significance of control and organized processes in improving operational performance. Hierarchical organizational culture is marked by formalized and structured procedures that guide employee behavior, emphasizing consistency, predictability, and efficiency through a well-defined chain of command. In such environments, management places a strong emphasis on status and authority, where control is maintained using power. As a result, key decisions are typically made by those in managerial positions, and employees are often discouraged from expressing opinions or perspectives that deviate from management's views. The focus on order and stability is intended to ensure smooth operations and enhance overall organizational effectiveness (Hartnel, Ou, Kinicki, Choi & Karam, 2019; Lee & Edmondson, 2017; Summereder, Streicher, & Batinic, 2014; Moonen, 2017). Tortorella et al. (2021) found that COVID-19 work implications mediate the relationship between organizational learning and operational performance, with a positive significant relationship at the team level but not at the individual level. This study covers direct effect testing among the constructs and incorporates organizational culture, which is believed to alter the relationship.

This study aims to contribute practical insights into how operational performance can be improved in the context of the new work norms created by the COVID-19 outbreak. In the post-COVID-19 era, characterized by unpredictability, sustainable organizational learning is crucial for coping with constantly changing and increasingly complex problems, such as the "wicked problems" described by Lee and Moon (2022). This study aims to help managers design more effective teleworking policies and strategies to ensure organizational learning is not compromised, thereby reducing job stress and improving performance.

Literature Review

To lead the reader to this point, it is necessary to review the relevant literature briefly.

Organizational Learning

The beliefs, behaviours, and knowledge within an organization is characterised by the development of organizational learning capabilities in an organization. (Desai, 2010; Örtenblad, 2002; Watkins & Kim, 2018). While individual social learning can contribute to organizational learning, the latter encompasses more than just the sum of individual learning curves. Organizations typically have a division of labor, leading individuals to perform distinct tasks. Some tasks, such as those in engineering, may significantly impact organizational learning more

than others. Additionally, given the interdependence among organizational members, mastering the coordination of their activities is a crucial aspect of organizational learning (Argote, Lee & Park, 2021). From another perspective, Levitt and March (1988) proposed that organizational learning occurs through historical inference, developing into routines that guide behavior. These routines encompass rules, procedures, forms, conventions, strategies, and technologies within an organization's operations, as well as paradigms, belief structures, cultures, codes, and more. These routines become ingrained within the organization, independent of the individuals who initially experienced them. They persist even after those individuals leave the organization and are accessible to new members through socialization, education, professionalization, and imitation. Routines spread throughout the organization via personnel movement and can even extend across organizational boundaries through mergers and acquisitions. Although these routines are recorded as collective memory within the organization, they can sometimes become jumbled, lost, or changed. They continuously evolve as history is reinterpreted, and changes in outcomes gradually alter these routines and, consequently, organizational behavior.

Operational Performance

Competitive advantage is the goal that most firms strive to achieve through effective operations (Rajaguru & Matanda, 2019). Hong et al. (2019) describe operational performance as a measurable outcome of a firm's internal operational efficiency, which is crucial for enhancing competitiveness and profitability. Operational performance can be conceptualized through various dimensions, such as quality, delivery, customer satisfaction, flexibility, cost, and productivity (Gambi et al., 2015; Ju et al., 2016; Saleh et al., 2018). This definition aligns with Feng et al. (2006), who suggest that organizational performance is measured by internal operations, specifically product quality and customer satisfaction. In the context of this study, operational performance is narrowed down to the measurement of quality and delivery, following previous research on the pandemic's impact by Tortorella et al. (2021).

COVID-19 Work Implication

In response to the pandemic and the emergence of new work norms, there has been a surge in academic research and literature as organizations quickly adapted to different work practices to sustain business operations under new constraints. Organizations have restructured their processes to enable remote work, aiming to prevent the exponential growth of infections before pharmaceutical solutions became available (Nicola et al., 2020). Some studies have delved into the collaboration of virtual teams, which now rely on virtual communication tools for interaction (Belzunegui-Eraso & Erro-Garcés, 2020; Kawashima et al., 2021). Other articles have focused on work-life balance and employee well-being, capturing psychologists' perspectives on these issues (Bouziri et al., 2020; Raghuram et al., 2019). In the context of this study, the implications of COVID-19 on work have been conceptualized and operationalized based on the COVID-19 work implication construct in Tortorella et al. (2021), which is curated from several studies. Nicola et al. (2020) examined the socio-economic implications of the pandemic, highlighting how social distancing and travel restrictions led to job losses or remote working scenarios. Lewnard and Lo

(2020) described social distancing as an early strategy to minimize contact between susceptible and infected individuals, reducing transmission before pharmaceutical interventions were available. Zhang et al. (2020) also discussed social distancing and the establishment of home office setups as part of the new work norm.

Hierarchy Culture

Schneider et al. (2013) describe organizational culture as how an organization approaches problems through shared perceptions, beliefs, and expectations. In earlier literature, organizational culture has been framed within a two-dimensional model, consisting of control orientation and the extent to which an organization focuses on its internal and external functions. These dimensions combine to form four quadrants: clan, adhocracy, market, and hierarchy. Hierarchical culture is characterized by formal procedures that govern organizational actions and task management through defined protocols (Rai, 2011). Similarly, Wallach (1983) noted that organizations with a hierarchical culture are often associated with control and power, contributing to stability, carefulness, and maturity, where work is organized and systematic. However, this culture can also result in information isolation at higher management levels, making it difficult to convey information across managerial tiers, sometimes resulting in rigidity and reduced flexibility in information flow. Despite this perceived rigidity, some literature suggests that the characteristics of hierarchical culture, such as stability, control, and predictability, can enhance organizational efficiency (Wei et al., 2011).

Social Learning Theory

Balakrishnan and Gan (2016) classify learning into four main categories: behaviorism, cognitivism, humanism, and constructivism. Social Learning Theory (SLT) serves as a significant bridge between behavioral and cognitive learning theories, emphasizing attention, memory, and motivation (Muro & Jeffrey, 2008). Research indicates that learning effectiveness can be enhanced through observation and interaction with other learners, such as participation in small study groups (Balakrishnan & Gan, 2016; Bandura & Walters, 1977). Key authors in the field emphasize conditions crucial for effective social learning, including attention, retention, reproduction, and motivation (Prestridge, 2019). In this study, the focus on social learning theories centers particularly on the aspect of attention. Moreover, the theory underscores an individual's capacity to bring about changes in personality traits, behaviors, and skills through social interactions, such as using performance feedback and modeling persuasion. Consequently, a person can alter their "destiny" or life path by making decisions based on evaluating random life events. The theory also places significant emphasis on the individual's ability to self-educate and self-develop, which involves change and self-regulation. Self-regulation involves guiding oneself in deciding how to act and what to avoid when encountering challenges, including moral behavior (Bandura & Walters, 1977).

Research Hypotheses

Organizational Learning and Operational Performance

Organizational learning involves various knowledge management activities that facilitate the collection, creation, storage, sharing, and application of knowledge across all levels of an organization. It positively influences sustainable organizational performance by enhancing employees' problem-solving and decision-making abilities, achieving knowledge-based strategies, and fostering both local and global leadership. Kump et al. (2015) suggest that organizational learning is underpinned by cognitive processes, where collective declarative knowledge is formed through verbal interactions at the organizational level, while collective non-declarative knowledge emerges from repetitive practices, where collaboration on shared tasks strengthens individual expertise and skills. Understanding the distinction between declarative and non-declarative knowledge provides insights into practical aspects of organizational learning and change. Moreover, prior studies have shown that when managers in audit and consulting firms engage in organizational learning through the four processes of knowledge management—acquisition, storage, sharing, and application—it positively impacts sustainable organizational performance within the audit and consulting sectors (Kordab, Raudeliuniene, & Meidute-Kavaliauskiene, 2020). Consequently, this study hypothesizes that:

H1: Organizational learning has positive and significant relationship with operational performance.

Organizational Learning and COVID-19 Work Implication

The COVID-19 pandemic has introduced new norms and methods of working, such as home offices and social distancing, which have impacted interpersonal interactions through the use of virtual communication tools. These changes are believed to create resistance to effective learning, as the level of observation in a remote and virtual workplace is much lower than in in-person interactions. Social distancing also reduces the sense of social connection, further hindering effective learning (Graves & Karabayeva, 2020). According to Social Learning Theory (SLT), which describes four steps of learning: attention, retention, reproduction, and motivation, the home office aspect of COVID-19 might have impeded an individual's ability to maintain full attention throughout the learning process. However, it is also recognized that an individual's attention span varies with their personality traits and past reinforcement. Personality closely influences how an individual interacts with their environment and interprets behavior in learning (Mischel, 1973; Nowicki et al., 2017). The home office environment during COVID-19 could contribute to various distractions and affect observational learning, as mentioned by Snethen and Van Puymbroeck (2008), where the ability to pay attention impacts the amount of learning an individual can achieve. In SLT, motivation is crucial for effective learning. Depending on the observed consequences, an individual is more likely to repeat a behavior if they see positive outcomes or avoid it if they observe negative outcomes. This learning occurs mostly through observation (Chen et al., 2018; Panigrahi et al., 2018). However, in the context of home offices and social distancing, the impediments to effective observation reduce the amount of learning during the motivation step. On another note, a review by Filimonau & de Coteau (2020) found that adaptability, collaboration, and human resources are key factors in building resilient organizations. An organization's

willingness to change and adjust its operations in response to environmental changes reflects its adaptability, which is often an outcome of effective organizational learning (Lee et al., 2013). Aligning with the changes introduced by the COVID-19 context, this study hypothesizes the following:

H2: Organizational learning has a positive and significant relationship with COVID-19 work implications.

COVID-19 work implication and operational performance

COVID-19 has introduced various interventions, such as remote work (home office), social distancing, and travel restrictions, leading to differing opinions on their impact on individual and organizational performance. A Deloitte survey reported that 46% of individuals in Chinese firms experienced performance degradation due to COVID-19 (Alves, Lok, Luo & Hao, 2020). This aligns with observations that factors in the virtual work environment, such as increased stress, poor home office infrastructure, lack of workplace environment and colleagues, difficulties in building trust between colleagues or between managers and subordinates, and unrealistic or misaligned expectations, contribute to decreased employee performance (Graves et al., 2020). Conversely, research has also shown an increase in performance due to the better work-life balance enabled by virtual work settings, which can motivate employees and boost productivity (Palumbo et al., 2022). Graves & Karabayeva (2020) explained that increased flexibility in work hours, additional time gained from not commuting, and the use of more virtual communication tools can improve access to global talent, thereby enhancing average individual performance. Interestingly, Narayanamurthy & Tortorella (2021) found that the work implications of the COVID-19 pandemic have a direct positive impact on employee performance, though the mediation factors were not clearly explained. Overall, several studies suggest that when employees work remotely from their homes, it can potentially increase their productivity and job satisfaction. Thus, this study hypothesize as follow:

H3: COVID-19 work implication has positive and significant relationship with operational performance.

The Mediating Role of COVID-19 Work Implication

In the context of COVID-19, Tortorella et al. (2021) found that the outbreak mediates the relationship between organizational learning and operational performance, particularly in the home office work environment, which is studied as an operational indicator related to COVID-19 work implications. Two competing hypotheses were set up in this study to understand the relationship between organizational learning processes and operational performance during the pandemic. The first hypothesis, based on social learning theory, suggested that COVID-19 negatively mediates the effect of organizational learning on operational performance. Conversely, the second hypothesis, grounded in transactive memory system theory, proposed that COVID-19 positively mediates this effect. Tortorella et al. (2021) discovered that the reinforcement of home office policies due to the pandemic led to increased performance at the individual, team, and organizational levels, which was somewhat counterintuitive. This was explained by the high degree of labor intensity in certain industries, where managers spend more time on personal

matters, thereby improving individual learning. However, the study had limitations due to its sample, which was primarily composed of infrastructure services. These services are often well-equipped with IT knowledge and did not experience significant negative impacts from the need for telecommuting. Thus, this study hypothesized that:

H4: COVID-19 work implication mediates the relationship between organizational learning and operational performance.

The Moderating Role of Hierarchical Culture

In a company, culture shapes the context and environment for cultivating learning. Thus, organizational culture plays a crucial role in defining the direction and influence on organizational learning (Sørensen, 2002). The culture promoted by an organization, when aligned with employees' values, enhances the quality of employer-employee relationships, influencing employees' attitudes and behaviors in communication, performance assessment, and job satisfaction (Zeitlin et al., 2014). The dynamics of knowledge distribution can be influenced by cultural attributes within teams, shaping the learning culture both horizontally and vertically across an organization's hierarchy (Wiewiora et al., 2013). Consequently, organizational structure can either encourage or discourage knowledge distribution among employees (Wang & Noe, 2010). In a hierarchical culture characterized by high centralization and formality, various hindrances to organizational learning arise. While centralization promotes stability, it can stifle innovative thinking. High formality levels create difficulties in adaptation and the learning process. Rules and regulations across hierarchical levels and authorization requirements can slow down communication, which is vital for organizational learning (van der Voet, 2014). Findings by Palos & Veres Stancovici (2016) indicate that hierarchical culture facilitates organizational learning more in public organizations than in private ones. However, hierarchical culture can restrict employees' freedom, inhibiting creative problem-solving, understanding processes, experimenting with new ideas, and ultimately accepting them. The high internal focus and rigidity of hierarchical culture limit employees' ability to perform evaluations or exercise good judgment due to restricted access to necessary information and imbalanced authority and power (Richard et al., 2009; Friebel & Raith, 2004). This aligns with Social Learning Theory, which suggests that effective learning requires good interaction. Thus, this study hypothesizes the following:

H5: Hierarchical culture moderates the relationship between organizational learning and operational performance.
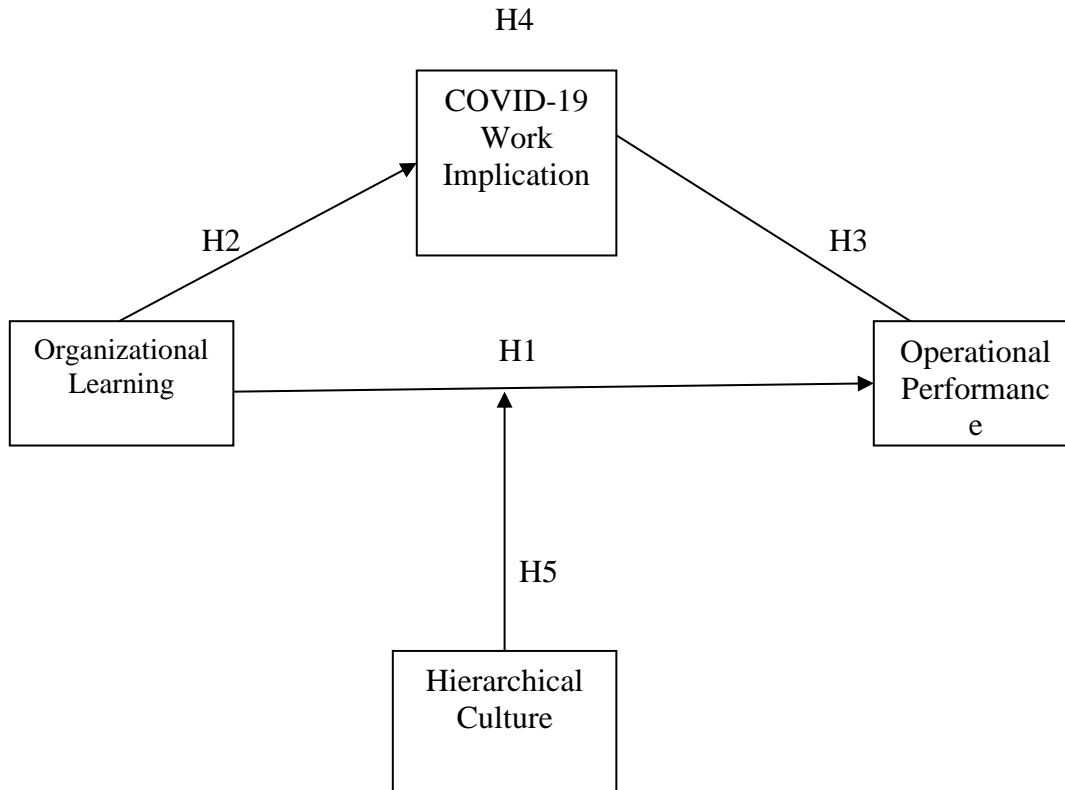
H4

Figure 1: Conceptual Framework

Method

Samples and Data Collection

This study focuses on the organizational learning of telecommuters during the COVID-19 pandemic. The target population includes employees who are required to telecommute and are expected to continue doing so. The sampling strategy does not fix the sampling frame to allow wider sampling, as defining a specific sampling frame was not feasible in this context. Consequently, a non-probability sampling technique was used, specifically convenience sampling, distributed through an online survey. This approach was chosen due to the limitations imposed by COVID-19 standard operating procedures. The sample size was calculated using the G power calculator, resulting in a recommended sample size of 92 to achieve a power of 0.80. The purpose of this descriptive study is to understand the interaction between organizational learning and operational performance, considering the mediation effect of COVID-19 work implications and the moderating effect of hierarchical culture. The unit of analysis is at the individual level, focusing on personal perceptions of COVID-19 work implications, learning efficiency, hierarchical culture, and perceived changes in operational performance over two months.

Measures of Constructs

In this study, the instrument used is a questionnaire divided into four sections. The first section gathers demographic information about the respondents and their organizations, including gender, work experience, role within the organization, and organization size (small/medium or large, defined by a threshold of 500 employees). To measure the implications of COVID-19 on work, items from Tortorella et al. (2021) were used due to the limited literature and existing indicators for this construct. Hierarchical culture was assessed using six items from Cameron and Quinn (2006) on a Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree). For organizational learning, the Dimensions of the Learning Organization Questionnaire (Marsick, 2013; Marsick & Watkins, 2003) was adapted, employing a 5-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree), resulting in 39 reflective indicators. The dependent variable, operational performance, focused on perceived changes in performance over the past two months at individual, team, and organizational levels, using a 5-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree) to assess changes in output quality and delivery (Tortorella et al., 2021).

Data Analysis

PLS-SEM is used for data analysis due to its appropriateness for the study's purpose and its predictive power (Vinzi et al., 2010). All survey results will be input into the Smart PLS software for path modeling estimation, reliability and validity checks, and structural model estimation. Given the constraints of time and budget for data collection, a small sample size was used for convenience sampling, and the data distribution shape is uncertain. Social science data often deviate from a normal distribution. Reflective survey questions rated on a Likert scale were prepared to capture the latent variables. PLS-SEM is selected for this research due to its ability to handle small sample sizes, complex models with numerous endogenous and exogenous constructs and indicator variables, and non-normal data distributions (Astrachan et al., 2014). PLS-SEM generates the structural equation model based on partial least squares variance. In PLS, the best-fitting line is the one where the sum of the squared residuals is minimized. From the analysis, coefficients of determination (R-square values) and P-values can be determined. At a 95% confidence level, a P-value less than 0.05 indicates significant evidence to reject the null hypothesis and accept the alternative hypothesis, demonstrating a significant relationship between the independent variable and the outcome of interest. Additionally, a higher R-square value indicates less error between the regression model and the observed values, meaning the equation can explain most of the observed variation.

Findings

A total of 123 responses were collected through the online distribution of the questionnaire. Among the respondents, 45.5% indicated they were currently working in a hybrid mode, splitting their time between the office and home. Another 41.5% of respondents were fully working from home, even after more than two years into the pandemic and the introduction of various pharmaceutical interventions. However, 13% of the responses were excluded from analysis because those respondents were working entirely from the office. An initial filtering question was intentionally included to ensure only relevant respondents completed the questionnaire. If a respondent was fully working from the office, the questionnaire was designed to prevent them

from continuing, ensuring the data accurately represented the study's scope and hypotheses focused on those working from home. Despite efforts to ensure respondent eligibility, some questionnaires were likely forwarded to others, contributing to the 13% unqualified responses, leaving 107 valid responses for analysis. The respondents were almost evenly distributed between genders, with 51.4% male and 48.6% female. In terms of work experience, nearly half of the respondents (50.5%) were in their first five years of their careers, followed by 37.4% with 6 to 10 years of experience, and the remainder having over 11 years of experience. Regarding organization size, the majority of respondents (75.7%) came from smaller organizations with fewer than 5,000 employees, while 24.3% were from larger organizations with more than 5,000 employees.

Assessment of measurement models

Since the structural model consists of different constructs that are not directly observable, various indicators and measurement items were referenced and adopted to support the quantitative research. All the indicators used are reflective, making it essential to assess the measurement model before evaluating the structural model. Firstly, the reliability of the indicators was tested by analyzing the outer loadings for all variables. For the construct of COVID-19 work implications, 7 out of 10 items were found to have outer loadings less than 0.7 and were therefore excluded from further testing. Similarly, for the organizational learning construct, 8 out of 39 indicators had outer loadings less than 0.7. The removal of these 8 items is acceptable, as Hair et al. (2019) suggest not deleting more than 20% of the indicators. In total, 15 items were removed from the initial 61, which amounts to approximately 24% of the reflective indicators. The reliability and validity of the constructs were then assessed using the Average Variance Extracted (AVE), with all constructs showing AVE values higher than 0.5, as reported in the table. Additionally, Composite Reliability (CR) was evaluated, and none of the constructs violated the guideline threshold of 0.5. The Heterotrait-Monotrait Ratio (HTMT) was also used to assess discriminant validity, with all readings being less than 0.85, indicating acceptable results (Kline, 2011).

Table 1: Convergent Validity

Construct and Items	Outer Loading	CR	AVE
COVID-19 Work Implication (COW)		0.981	0.699
COW1	0.835		
COW2	0.877		
COW3	0.887		
Organizational Learning (OL)			
OL1	0.723		
OL2	0.710		
OL3	0.771		
OL4	0.849		
OL5	0.832		
OL6	0.791		
OL7	0.790		
OL8	0.827		
OL9	0.786		
OL10	0.792		
OL11	0.783		
OL12	0.841		

OL13	0.849		
OL14	0.766		
OL15	0.816		
OL16	0.822		
OL17	0.716		
OL18	0.796		
OL19	0.808		
OL20	0.797		
OL21	0.744		
OL22	0.726		
OL23	0.793		
OL24	0.825		
OL25	0.847		
OL26	0.840		
OL27	0.775		
OL28	0.737		
OL29	0.826		
OL30	0.801		
OL31	0.827		
Hierarchical Culture (HC)		0.936	0.711
HC1	0.774		
HC2	0.915		
HC3	0.857		
HC4	0.807		
HC5	0.876		
HC6	0.822		
Operational Performance (OP)		0.933	0.699
OP1	0.778		
OP2	0.782		
OP3	0.846		
OP4	0.853		
OP5	0.898		
OP6	0.852		

Table 2: Discriminant Validity

	COW	HC	OL	OP
COW	0.404			
HC	0.039	0.237		
OL	0.545	0.456	0.204	
OP	0.360	0.444	0.152	0.531

Assessment of structural model

Further testing the hypothesis involved bootstrapping the data into 5000 subsamples, following the recommendation by Hair et al. (2019). Since all measurements are reflective indicators, inner VIF values were checked to ensure no collinearity issues among the model's variables. Relationships between variables were analyzed from the bootstrapping results, interpreting based on a minimum t-value threshold of 1.645 to determine construct significance. The analysis indicated a strong positive relationship between organizational learning and COVID-19 work implications (t-value = 5.955, supporting H1), as well as a significant direct effect from organizational learning to operational performance (t-value = 3.046, supporting H2). However, bootstrapping results suggested no significant relationship between COVID-19 work implications and operational performance (t-value = 0.257, rejecting H3). The data also indicated that the

indirect effect of organizational learning on operational performance was insignificant (t-value = 0.244, far below the acceptance threshold of 1.645), suggesting no mediation through COVID-19 work implications, contrary to Tortorella et al. (2021). Additionally, hierarchical culture's moderating effect between organizational learning and operational performance was found to be insignificant (H5 rejected). The structural framework supported 2 out of 5 research hypotheses. R-squared values revealed that the model explained 25.4% of the variance in COVID-19 work implications and 31% in operational performance, aligning closely with findings by Tortorella et al. (2021), who reported a 32% variance in operational performance before including COVID-19 work implications. Effect sizes (f2) indicated a medium effect size for the relationship between organizational learning and operational performance (0.340), approaching a large effect size threshold (0.35). The relationship between organizational learning and operational performance (0.144) was also significant but less pronounced, nearing the medium effect size threshold of 0.15.

Discussion

Overall, this study aims to deepen our understanding of how organizational learning impacts operational performance during a pandemic, specifically exploring the potential moderating effect of organizational culture, particularly hierarchical culture. It confirms the well-documented impact of organizational learning on operational performance and identifies a significant relationship where organizational learning influences COVID-19 work implications. However, it finds no significant direct relationship between COVID-19 work implications and operational performance. The most surprising finding is the absence of a mediating effect, contrary to Tortorella et al. (2021). Unlike previous studies, this research did not find a direct relationship between organizational learning and COVID-19 work implications, suggesting that adjustments in work norms due to COVID-19 may not be directly influenced by organizational learning. However, a significant interaction between organizational learning and COVID-19 work implications suggests that a strong organizational learning culture may facilitate successful adaptation to new work norms and tools, such as increased use of virtual communication tools. This interpretation is supported by research (Filimonau & de Coteau, 2020), which indicates that effective organizational learning enhances adaptability and resilience.

Furthermore, this research confirms the well-established positive relationship between organizational learning and operational performance, as evidenced by previous studies (Akgün et al., 2014; Hung et al., 2010; Martínez-Costa & Jiménez-Jiménez, 2009; Škerlavaj et al., 2007). This reaffirms that organizational learning plays a crucial role in enhancing operational performance, even during a pandemic. Establishing this relationship reinforces the need for exploring moderating factors that may influence these variables.

Many organizations, whether in manufacturing or services, have been significantly affected by the global pandemic. While social distancing requirements have posed operational challenges such as logistical issues and global material shortages, this study found no significant positive or negative relationship between COVID-19 work implications and operational performance. This could be attributed to respondents experiencing improved output and quality recovery post-announcement of the endemic phase of COVID-19 from April 1, 2022. As hybrid work models become

normalized, predictors other than COVID-19 work implications may better explain organizational performance in hybrid work environments.

The absence of a mediation effect observed in this study contradicts findings by Tortorella et al. (2021) and suggests that COVID-19-related work implications do not explain the impact of organizational learning on reduced work and operational performance, possibly due to the evolving phases of the pandemic when data was collected in the first and second quarters of 2022.

The examination of moderation effects in this study yielded somewhat insignificant results compared to literature such as Palos & Veres Stancovici (2016), which highlighted hierarchical culture's facilitative role in organizational learning, particularly in public organizations. The predominance of respondents from organizations with fewer than 5000 employees may have influenced these findings, suggesting a need for further investigation into organizational demographics. Despite hierarchical culture's apparent insignificance, the COVID-19 pandemic has seen increased efforts in virtual learning and communication tools, potentially mitigating hierarchical barriers to organizational learning.

Analyzing this study through the lens of Social Learning Theory, which posits four meditational processes linking environmental stimuli to behavioral outcomes, the rejected hypothesis regarding the mediation effect of COVID-19 work implications may be due to the increasing familiarity and efficiency with digital communication tools. Tools like Microsoft Teams, Zoom, and Webex have rapidly evolved to support enhanced interaction and engagement, reinforcing learning processes such as attention, retention, reproduction, and motivation. Features like video calls and digital well-being apps have improved user experience, supporting the cognitive aspects of organizational learning during telecommuting.

Conclusion

From a theoretical perspective, this study empirically confirms the continued direct impact of organizational learning on operational performance during both pandemic and endemic phases. Additional testing has also substantiated a positive and significant relationship between organizational learning and COVID-19 work implications, highlighting how organizational learning supports the adaptation to new norms such as home office arrangements. This study contributes to expanding knowledge about COVID-19's impact and the intensification of home office practices, further exploring the influence of organizational culture on organizational learning. Future research could explore dimensions such as clan, market, and adhocracy (Cameron & Quinn, 2011; Palos & Veres Stancovici, 2016). From a practical standpoint, this study aims to raise management awareness regarding the challenges faced by organizational learning at individual, team, and organizational levels during the COVID-19 era of virtual and hybrid workplaces. The moderation study on hierarchical culture found no significant impact—positive or negative—on organizational learning's influence on operational performance amid COVID-19 implications, with the hypothesis being rejected. This suggests that hierarchical structures may not hinder the dissemination of information through robust use of virtual communication tools like SharePoint, which enhances accessibility and usability. One notable limitation of this study pertains to the reliability of the COVID-19 work implications construct, as there is limited literature and established reflective indicators for this construct. While measurement items were

adapted from Tortorella et al. (2021), it appears that these were initially developed for this specific pandemic context, lacking extensive evaluation of their reliability and validity. This study found that 7 out of 10 measurement items had low outer loadings, indicating potential weaknesses in reliability for accurately representing the construct. Another limitation concerns the representativeness and generalizability of the study's findings. Conducted during Malaysia's transition from pandemic to endemic phases of COVID-19, the study reflects a specific and evolving context where employees have become accustomed to home office setups. This may present a unique perspective that differs from earlier phases of the pandemic or from organizations newly adopting remote work practices.

References

Akgün, A. E., Ince, H., Imamoglu, S. Z., Keskin, H., & Kocoglu, İ. (2014). The mediator role of learning capability and business innovativeness between total quality management and financial performance. *International Journal of Production Research*, *52*(3), 888-901.

Alves, J. C., Lok, T. C., Luo, Y., & Hao, W. (2020). Crisis challenges of small firms in Macao during the COVID-19 pandemic. *Frontiers of Business Research in China*, *14*, 1-23.

Argote, L., Lee, S., & Park, J. (2021). Organizational learning processes and outcomes: Major findings and future research directions. *Management science*, *67*(9), 5399-5429.

Astrachan, C. B., Patel, V. K., & Wanzenried, G. (2014). A comparative study of CB-SEM and PLS-SEM for theory development in family firm research. *Journal of family business strategy*, *5*(1), 116-128.

Balakrishnan, V., & Gan, C. L. (2016). Students' learning styles and their effects on the use of social media technology for learning. *Telematics and Informatics*, *33*(3), 808-821.

Banerjee, P., Dhole, S., & Mishra, S. (2023). Operating performance during the COVID-19 pandemic: Is there a business group advantage?. *Pacific-Basin Finance Journal*, *79*, 102031.

Bandura, A., & Walters, R. H. (1977). *Social learning theory* (Vol. 1, pp. 141-154). Englewood Cliffs, NJ: Prentice hall.

Belzunegui-Eraso, A., & Erro-Garcés, A. (2020). Teleworking in the Context of the Covid-19 Crisis. *Sustainability*, *12*(9), 3662.

Bouziri, H., Smith, D. R., Descatha, A., Dab, W., & Jean, K. (2020). Working from home in the time of COVID-19: how to best preserve occupational health?. *Occupational and environmental medicine*, *77*(7), 509-510.

Cameron, K. S., & Quinn , R. (2006). Diagnosing and Changing Organizational Culture: Based on the Competing Values Framwork. San Francisso : The Jossey- Boss: Business and Management Series

Chen, B., Chang, Y. H., Ouyang, F., & Zhou, W. (2018). Fostering student engagement in online discussion through social learning analytics. *The internet and higher education*, *37*, 21-30.

Desai, V. (2010). Do organizations have to change to learn? Examining the effects of technological change and learning from failures in the natural gas distribution industry. *Industrial and Corporate Change*, *19*(3), 713–739.

Feng, J., Prajogo, D. I., Chuan Tan, K., & Sohal, A. S. (2006). The impact of TQM practices on performance: A comparative study between Australian and Singaporean organizations. *European Journal of Innovation Management*, *9*(3), 269-278.

Filimonau, V., & De Coteau, D. (2020). Tourism resilience in the context of integrated destination

and disaster management (DM2). *International Journal of Tourism Research*, *22*(2), 202-222.

Fonner, K. L., & Roloff, M. E. (2012). Testing the Connectivity Paradox: Linking Teleworkers' Communication Media Use to Social Presence, Stress from Interruptions, and Organizational Identification. *Communication Monographs*, *79*(2), 205–231.

Friebel, G., & Raith, M. (2004). Abuse of authority and hierarchical communication. *RAND Journal of Economics*, 224-244.

Gambi, L. D. N., Boer, H., Gerolamo, M. C., Jørgensen, F., & Carpinetti, L. C. R. (2015). The relationship between organizational culture and quality techniques, and its impact on operational performance. *International Journal of Operations & Production Management*, *35*(10), 1460-1484.

Graves, L. M., & Karabayeva, A. (2020). Managing Virtual Workers - Strategies for Success. *IEEE Engineering Management Review*, *48*(2), 166–172.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European business review*, *31*(1), 2-24.

Hartnell, C. A., Ou, A. Y., Kinicki, A. J., Choi, D., & Karam, E. P. (2019). A meta-analytic test of organizational culture's association with elements of an organization's system and its relative predictive validity on organizational outcomes. *Journal of Applied Psychology, 104*(6), 832–850.

Härter, G., Spinner, C. D., Roider, J., Bickel, M., Krznaric, I., Grunwald, S., Schabaz, F., Gillor, D., Postel, N., Mueller, M. C., Müller, M., Römer, K., Schewe, K., & Hoffmann, C. (2020). COVID-19 in people living with human immunodeficiency virus: a case series of 33 patients. *Infection*, *48*(5), 681–686.

Hong, J., Liao, Y., Zhang, Y., & Yu, Z. (2019). The effect of supply chain quality management practices and capabilities on operational and innovation performance: Evidence from Chinese manufacturers. *International Journal of Production Economics*, *212*, 227-235.

Hung, R. Y. Y., Lien, B. Y. H., Fang, S. C., & McLean, G. N. (2010). Knowledge as a facilitator for enhancing innovation performance through total quality management. *Total Quality Management*, *21*(4), 425-438.

Jamal, M. T., Anwar, I., Khan, N. A., & Saleem, I. (2021). Work during COVID-19: Assessing the Influence of Job Demands and Resources on Practical and Psychological Outcomes for Employees. *Asia-Pacific Journal of Business Administration*, *13*(3), 293-319.

Kawashima, T., Nomura, S., Tanoue, Y., Yoneoka, D., Eguchi, A., Shi, S., & Miyata, H. (2021). The relationship between fever rate and telework implementation as a social distancing measure against the COVID-19 pandemic in Japan. *Public Health*, *192*, 12-14.

Kline, R. B. (2023). *Principles and practice of structural equation modeling*. Guilford publications.

Knein, E., Greven, A., Bendig, D., & Brettel, M. (2020). Culture and cross-functional coopetition: The interplay of organizational and national culture. *Journal of International Management*, *26*(2), 100731.

Kordab, M., Raudeliūnienė, J., & Meidutė-Kavaliauskienė, I. (2020). Mediating role of knowledge management in the relationship between organizational learning and sustainable organizational performance. *Sustainability*, *12*(23), 10061.

Kump, B., Moskaliuk, J., Cress, U., & Kimmerle, J. (2015). Cognitive foundations of organizational learning: Re-introducing the distinction between declarative and non-declarative knowledge. *Frontiers in psychology*, *6*, 1489.

Lee, A. V., Vargo, J., & Seville, E. (2013). Developing a tool to measure and compare organizations' resilience. *Natural hazards review*, *14*(1), 29-41.

Lee, M. Y., & Edmondson, A. C. (2017). Self-managing organizations: Exploring the limits of less-hierarchical organizing. *Research in organizational behavior*, *37*, 35-58.

Lee, S., & Moon, M. J. (2022). Managing policy risks using big data analytics in the pandemic era: VUCA and wicked policy problems. *International Journal of Public Policy*, *16*(5-6), 362-378.

Lewnard, J. A., & Lo, N. C. (2020). Scientific and ethical basis for social-distancing interventions against COVID-19. *The Lancet infectious diseases*, *20*(6), 631-633.

Levitt, B., & March, J. G. (1988). Organizational learning. *Annual review of sociology*, *14*(1), 319-338.

Marsick, V. J. (2013). The dimensions of a learning organization questionnaire (DLOQ) introduction to the special issue examining DLOQ use over a decade. *Advances in Developing Human Resources*, *15*(2), 127-132.

Marsick, V. J., & Watkins, K. E. (2003). Demonstrating the value of an organization's learning culture: the dimensions of the learning organization questionnaire. *Advances in developing human resources*, *5*(2), 132-151.

Martínez-Costa, M., & Jiménez-Jiménez, D. (2009). The effectiveness of TQM: the key role of organizational learning in small businesses. *International Small Business Journal*, *27*(1), 98-125.

Mischel, W. (1973). Toward a cognitive social learning reconceptualization of personality. *Psychological review*, *80*(4), 252.

Moonen, P. (2017). The impact of culture on the innovative strength of nations: A comprehensive review of the theories of Hofstede, Schwartz, Boisot and Cameron and Quinn. *Journal of Organizational Change Management*, *30*(7), 1149-1183.

Muro, M., & Jeffrey, P. (2008). A critical review of the theory and application of social learning in participatory natural resource management processes. *Journal of environmental planning and management*, *51*(3), 325-344.

Naranjo-Valencia, J. C., Jiménez-Jiménez, D., & Sanz-Valle, R. (2011). Innovation or imitation? The role of organizational culture. *Management decision*, *49*(1), 55-72.

Narayanamurthy, G., & Tortorella, G. (2021). Impact of COVID-19 outbreak on employee performance–moderating role of industry 4.0 base technologies. *International Journal of Production Economics*, *234*, 108075.

Nicola, M., Alsafi, Z., Sohrabi, C., Kerwan, A., Al-Jabir, A., Iosifidis, C., Agha, M., & Agha, R. (2020). The socio-economic implications of the coronavirus pandemic (COVID-19): A review. *International journal of surgery*, *78*, 185-193.

Nowicki, S., Iles-Caven, Y., Gregory, S., Ellis, G., & Golding, J. (2017). The impact of prenatal parental locus of control on children's psychological outcomes in infancy and early childhood: A prospective 5 year study. *Frontiers in psychology*, *8*, 546.

Örtenblad, A. (2002). A typology of the idea of learning organization. *Management learning*, *33*(2), 213-230.

Palos, R., & Veres Stancovici, V. (2016). Learning in organization. *The Learning Organization*, *23*(1), 2-22.

Palumbo, R., Flamini, G., Gnan, L., Pellegrini, M. M., Petrolo, D., & Fakhar Manesh, M. (2022).

Disentangling the implications of teleworking on work–life balance: a serial mediation analysis through motivation and satisfaction. *Journal of Organizational Effectiveness: People and Performance*, *9*(1), 68-88.

Panigrahi, R., Srivastava, P. R., & Sharma, D. (2018). Online learning: Adoption, continuance, and learning outcome—A review of literature. *International Journal of Information Management*, *43*, 1-14.

Prestridge, S. (2019). Categorising teachers' use of social media for their professional learning: A self-generating professional learning paradigm. *Computers & education*, *129*, 143-158.

Raghuram, S., Hill, N. S., Gibbs, J. L., & Maruping, L. M. (2019). Virtual work: Bridging research clusters. *Academy of Management Annals*, *13*(1), 308-341.

Rai, R. K. (2011). Knowledge management and organizational culture: a theoretical integrative framework. *Journal of knowledge management*, *15*(5), 779-801.

Rajaguru, R., & Matanda, M. J. (2019). Role of compatibility and supply chain process integration in facilitating supply chain capabilities and organizational performance. *Supply Chain Management: An International Journal*, *24*(2), 301-316.

Richard, O. C., McMillan-Capehart, A., Bhuian, S. N., & Taylor, E. C. (2009). Antecedents and consequences of psychological contracts: Does organizational culture really matter?. *Journal of Business Research*, *62*(8), 818-825.

Saleh, R. A., Sweis, R. J., & Mahmoud Saleh, F. I. (2018). Investigating the impact of hard total quality management practices on operational performance in manufacturing organizations: Evidence from Jordan. *Benchmarking*, *25*(7), 2040–2064.

Schneider, B., Ehrhart, M. G., & Macey, W. H. (2013). Organizational climate and culture. *Annual review of psychology*, *64*(1), 361-388.

Škerlavaj, M., Song, J. H., & Lee, Y. (2010). Organizational learning culture, innovative culture and innovations in South Korean firms. *Expert systems with applications*, *37*(9), 6390-6403.

Škerlavaj, M., Štemberger, M. I., & Dimovski, V. (2007). Organizational learning culture—the missing link between business process change and organizational performance. *International journal of production economics*, *106*(2), 346-367.

Snethen, G., & Van Puymbroeck, M. (2008). Girls and physical aggression: Causes, trends, and intervention guided by social learning theory. *Aggression and Violent Behavior*, *13*(5), 346-354.

Summereder, S., Streicher, B., & Batinic, B. (2014). Voice or consistency? What you perceive as procedurally fair depends on your level of power distance. *Journal of Cross-Cultural Psychology, 45*(2), 192–212.

Tortorella, G., Narayanamurthy, G., & Staines, J. (2021). COVID-19 implications on the relationship between organizational learning and performance. *Knowledge Management Research & Practice*, *19*(4), 551-564.

Van der Voet, J. (2014). The effectiveness and specificity of change management in a public organization: Transformational leadership and a bureaucratic organizational structure. *European Management Journal*, *32*(3), 373-382.

Vinzi, V. E., Chin, W. W., Henseler, J., & Wang, H. (2010). *Handbook of partial least squares* (Vol. 201, No. 0). Berlin: Springer.

Wallach, E. J. (1983). Organizations: The cultural match. *Training and development journal*, *37*(2), 29-36.

Wang, S., & Noe, R. A. (2010). Knowledge sharing: A review and directions for future

research. *Human resource management review*, *20*(2), 115-131.

Watkins, K. E., & Kim, K. (2018). Current status and promising directions for research on the learning organization. *Human Resource Development Quarterly*, *29*(1), 15-29.

Wei, L. Q., Liu, J., & Herndon, N. C. (2011). SHRM and product innovation: Testing the moderating effects of organizational culture and structure in Chinese firms. *The International Journal of Human Resource Management*, *22*(01), 19-33.

Wiewiora, A., Trigunarsyah, B., Murphy, G., & Coffey, V. (2013). Organizational culture and willingness to share knowledge: A competing values perspective in Australian context. *International Journal of Project Management*, *31*(8), 1163-1174.

Zeitlin, W., Augsberger, A., Auerbach, C., & McGowan, B. (2014). A mixed-methods study of the impact of organizational culture on workforce retention in child welfare. *Children and Youth Services Review*, *38*, 36-43.

Zhang, S. X., Wang, Y., Rauch, A., & Wei, F. (2020). Unprecedented disruption of lives and work: Health, distress and life satisfaction of working adults in China one month into the COVID-19 outbreak. *Psychiatry research*, *288*, 112958.