

Received: May 2023 Accepted: June 2023  
DOI: <https://doi.org/10.58262/ks.v11i02.165>

## Business Operation Strategies In Epidemics of Emerging Diseases

Sunee Wattanakomol<sup>1</sup>

### Abstract

*Purpose: Epidemics of emerging diseases severely affect economies, consumption, and investment. Thus, this exploratory study investigated the importance level of business operations in epidemics of emerging diseases, compared the importance placed on such operations among small, medium, and large enterprises, and developed a structural equation model of such operations. Methodology: Using multistage sampling, data were collected by interviewing 500 Thai entrepreneurs operating small, medium, and large enterprises registered as juristic persons. The mean and standard deviation were used to ascertain the level of importance of business operations in epidemics. The importance level of such business operations among small, medium, and large enterprises was compared using F-values obtained from Analysis of Variance. The structural model was tested using structural equation modeling. Findings: Business operations in epidemics were divided into five areas: financial capability, operation transformation, personnel development, innovation deployment, and material sourcing. Comparing the importance level of business operations among small, medium, and large enterprises showed that two out of five latent variables, personnel development and material sourcing, differed at the 0.05 significance level. Furthermore, operation transformation had the most direct impact on innovation deployment. Originality: This study shows that the digital economy allows micro and small enterprises to reach more consumers and reduces the investment required to start a business, but this does not guarantee that all small and medium enterprises are ready for digital transformation.*

**Keywords:** business operation, emerging disease, COVID-19, new normal

### Introduction

Since 2020, there has been a rise in emerging infectious diseases, such as COVID-19, and existing vaccines have been unable to tackle them. This has led to multitudes of people getting infected daily, along with the rapid spread of such diseases. Recently, the world encountered a public health crisis due to the rapid spread of COVID-19 (Tantrakarnapa and Bhopdhornangkulb, 2020; Walker *et al.*, 2020). Countries restricted international travel and initiated lockdowns, severely affecting the economy and consumption and investment activities. The epidemic turned into a pandemic, and more than 600 million people were infected with the virus. Nearly 57% of the cases worldwide were in the ten countries whose combined economy is bigger than two-fifths of the world economy (46.68%) (Dimitropoulou, 2022; Worldometer, 2022), as shown in Table I.

From an economic perspective, the COVID-19 pandemic affected a wide range of businesses (Azer and

---

<sup>1</sup> Faculty of Business Administration, King Mongkut's University of Technology North Bangkok, Thailand. Email: [sunee.w@fba.kmutnb.ac.th](mailto:sunee.w@fba.kmutnb.ac.th)  
<https://orcid.org/0000-0001-7518-8229>

Alexander, 2022; Narayanan *et al.*, 2021). All countries faced difficulties in importing raw materials for production. Import and export restrictions slowed down routine activities. Moreover, nearly all sectors, including the manufacturing, trade, service, agriculture, and industrial sectors, suffered from the lack of liquidity and business slowdown. Resultingly, some entrepreneurs had to stop their business (Sharma *et al.*, 2022).

**Table I:** Top ten infected countries, the number of cases, the share of cases worldwide, and the share of global GDP

Ranking	Infected country	Number of cases (million people)	Share of cases worldwide (%)	Share of global GDP (%)
1	United States	94.8	15.90	24.26
2	India	44.3	7.43	3.18
3	Brazil	34.2	5.74	1.77
4	France	34.2	5.73	3.07
5	Germany	31.6	5.30	4.46
6	United Kingdom	23.4	3.93	3.37
7	Italy	21.5	3.61	2.22
8	South Korea	21.5	3.61	1.87
9	Russia	18.9	3.18	1.67
10	Türkiye (Turkey)	16.5	2.77	0.83

<https://ceoworld.biz/2022/03/31/economy-rankings-largest-countries-by-gdp-2022>, March 2022

<https://www.worldometers.info/coronavirus>, August 2022

COVID-19's mutation and variants have forced many countries to contemplate whether to resume lockdown and to what extent. If the new variant does not cause severe illness, countries may not adopt measures as strict as those in the past. Bloomberg Economics anticipated that if the situation improved, the global economy would grow from 4.7% to 5.1% in 2022. On the contrary, if the situation worsened, lockdowns would be as strict as those in the past. In just three months, the global growth rate could immediately fall to 4.2% (Asia-Plus, 2021). Therefore, organizations must be able to operate even if an epidemic persists or other communicable diseases return, such as monkeypox, which has spread in more than 80 countries. Business organizations must adjust their operations strategies to survive the new and unfamiliar "New Normal" until effective drugs and vaccines are formulated and sufficient for the world's population.

In Thailand, there was a continuous increase in the number of factories and workers before the pandemic. However, the COVID-19 pandemic started at the beginning of 2020 and has since worsened. In addition, the monkeypox outbreak aggravated the situation. Many countries resumed public health surveillance. In Thailand, most businesses were disrupted (Table II). The overall MPI from January to September 2020 was 11.4% down compared to 2019. Most sectors saw a significant drop in production and a marked decline in 2020. Although there was a recovery in the following years, they were still less than before the crisis. (Department of Industrial Works, 2022).

**Table II:** Numbers of factories and workers in Thailand between 2017 and 2022

Item	2017	2018	2019	2020	2021	2022
Number of factories	139,446	140,535	138,807	70,410	72,504	73,232
Number of workers	4,008,922	4,041,694	4,017,476	3,719,525	3,800,479	3,876,538

The outbreak of emerging infectious diseases, such as COVID-19, and related changes have affected businesses in the past and will continue to affect them in the future. It will disrupt the supply chain (Abas *et al.*, 2021; Meyer *et al.*, 2022), reduce customer orders, and increase business costs. This will inevitably affect the debt burden and survival of businesses. During a crisis, businesses must review their operational plans, formulate strategies, and analyze their current standing to operate without smoothly. Moreover, they must adjust to survive and prepare for the future new economy. Thus, this study (i) investigates the level of importance of business operations in epidemics of emerging diseases, (ii) compares the importance level of such business operations in small, medium, and large enterprises, and (iii) develops a structural model of such business operations. This study is a survey study that conforms to the inductive format.

## Literature Review

### The Outside-in Approach

According to Ranjay Gulati's outside-in approach, businesses must look from the outside environment to the inside to manage risks and adapt to an epidemic (Wu *et al.*, 2022). The 3P principles of this approach—product, process, and people—are briefly described below.

Products must be different and meet the diverse needs, lifestyles, cultures, and tastes of the people in each country (Trinh *et al.*, 2009; Zhong *et al.*, 2019). Therefore, each country's culture, livelihood, consumption behavior, and market must be investigated before deciding to undertake business activities.

While the outbreak persists, a process that can be adjusted to achieve cost-effectiveness and increase responsiveness is necessary. This is because, in the digital era, a competitive advantage can be achieved only through quick responsiveness (Berman, 2012).

The personnel's potential and skills must be developed to a great extent (Murrar *et al.*, 2022). Developing language skills is also dispensable in today's era of borderless communication (Thomas *et al.*, 2016; Andersen and Rasmussen, 2004).

### PESTELE Analysis

The PESTELE analysis is a strategic framework used to assess the external environment of a business (Gillespie, 2007; Grant, 2019; Wurthmann, 2020). The acronym PESTELE is described below.

"P" stands for Political. Political factors directly affect the organization and its operations (Pan *et al.*, 2022). Organizations must conform to current and anticipated laws and adjust policies to tackle changes (Schepers, 2011). "E" stands for Economic. Economic factors include macroeconomic factors related to government mechanisms, such as government policies on interest control, tax collection, and budget, consumer-related microeconomy, and people's purchasing power (Wang *et*

*al.*, 2021). “S” stands for Social. Social factors are related to society and culture, such as people’s beliefs and attitudes (Gupta *et al.*, 2020). “T” stands for Technological. Technology is rapidly changing. Therefore, organizations must adapt quickly to tackle changes (Rajan and Dhir, 2021), especially during an epidemic when technology changes rapidly. “E” stands for Environmental. Environmental factors include topography, inland natural features, and climate (Onyido *et al.*, 2016). “L” stands for Legal. Legal factors concern the laws of the land. They determine what a business can and cannot do (Teixeira *et al.*, 2022). The lockdown policy is a good example of a legal factor. “E” stands for Ethical. Ethical factors include the code of ethics and moral principles in business, such as fair trade and social responsibility (Marques *et al.*, 2020).

### **SWOT Analysis**

The SWOT analysis is a tool used to assess the potential and environment of an organization. It helps management know the strengths and weaknesses of the internal environment and opportunities and threats in the external environment. It also shows the impact on the organization (Vlados, 2019) during an epidemic of an emerging infectious disease.

### **Balanced Scorecard**

The BSC suggests that from four different perspectives to help develop objectives, measures (KPIs), targets, and initiatives adapt to an epidemic (Balanced Scorecard Institute, 2023).

Financial: views an organization’s financial performance and the use of financial resources.

Customer/Stakeholder: views organizational performance from the perspective of the customer or key stakeholders the organization is designed to serve.

Internal Process: views the quality and efficiency of an organization’s performance related to the product, services, or other key business processes.

Organizational Capacity (or Learning & Growth): views human capital, infrastructure, technology, culture, and other capacities that are key to breakthrough performance.

### **Research Hypotheses**

#### **Operation Transformation and Innovation Deployment**

Every organization utilizes innovation and cutting-edge technology to improve its operations’ efficiency and gain a competitive advantage. To adopt modern innovation, organizations must adjust their operations (Wu *et al.*, 2019). Accordingly, the following hypothesis was posited.

**H1:** *Operation transformation directly influences innovation deployment.*

#### **Operation Transformation and Innovation Deployment**

Lack of financial liquidity is a major problem currently encountered by many businesses. It stems from the inability to manage income and meet expenses. Businesses must plan and adjust their operations to eliminate such financial problems (Karim *et al.*, 2021). Accordingly, the following hypothesis was established.

**H2:** *Operation transformation directly influences financial capability.*

### **Operation Transformation and Material Sourcing**

Many businesses are focusing on effectively managing the supply chain, specifically on the procurement of goods, raw materials, and equipment in appropriate quantities and time intervals. To meet these goals, organizations must adjust their operations (Jerome *et al.*, 2021). Thus, the following was hypothesized.

**H3:** *Operation transformation directly influences material sourcing.*

### **Operation Transformation and Personnel Development**

Personnel can be considered a crucial resource for the success of an organization. Therefore, every organization focuses on developing the quality of their personnel. They also aim to improve the skills and mindset of personnel (Murrar *et al.*, 2022) to cope with the new normal. Accordingly, the following was hypothesized.

**H4:** *Operation transformation directly influences personnel development.*

### **Financial Capability and Personnel Development**

In the 21st century, every organization focuses on human resource development because human resources are the key to success and limitless progress. Developing human resources requires financial stability in the organization. Thus, to development the potential of personnel, considerable attention must be paid to organizational budgets (Chinyamurindi *et al.*, 2021). Thus, the following hypothesis was posited.

**H5:** *Financial capability directly influences personnel development.*

### **Financial Capability and Material Sourcing**

Procuring sufficient raw material and equipment are crucial business activities. The procurement department is responsible not only for procurement but also for merchandise receipt, inspection, storage, material handling, and inbound and outbound traffic. To perform these activities, the organization must consider its financial capability (Wantanakomol, 2021). Accordingly, the following was hypothesized.

**H6:** *Financial capability directly influences material sourcing.*

## **Research Methodology**

This study focuses on the business operations of small, medium, and large Thai businesses registered as juristic persons. Thus, data were collected by interviewing 500 Thai entrepreneurs operating small, medium, and large businesses. This sample size was determined according to Comrey and Lee's criteria (Meyers *et al.*, 2017). For a structural equation model analysis like the one this study, 500 samples were considered appropriate. Furthermore, samples were obtained using the multistage sampling.

The research instrument was a questionnaire with a 5-point rating scale based on Likert scale (David

and Sutton, 2011). Five latent variables were determined: financial capability, operation transformation, personnel development, innovation deployment, and material sourcing. Eighty variables were included in this respect. The tool was tested with 30 samples with characteristics similar to those of the sample group before actual application. The discrimination value ranged between 0.34 and 0.97 and was found acceptable because it exceeded 0.30. Reliability was calculated using Cronbach's alpha, which was 0.93 and acceptable because it exceeded 0.80.

Descriptive statistics included percentages, means, and standard deviations. Data was analyzed using a one-way analysis of variance (ANOVA) with F-values via the SPSS software. AMOS software was used to conduct the multivariate statistical analysis. The data-model fit was evaluated based on these criteria (Arbuckle, 2011): Chi-square Probability Level > 0.05, Relative Chi-square < 2, goodness-of-fit index > 0.90, and Root Mean Square Error of Approximation < 0.08.

The level of importance of business operations in epidemics of emerging diseases was determined using the mean and standard deviation. The importance level of business operations in small, medium, and large enterprises was compared using the F-value after the model was modified.

## Research Results

### Level of Importance of Business Operations in an Epidemic Situation

Table III presents the results of analyzing the importance level of business operations in epidemics of emerging diseases after model modification.

**Table III:** Statistical values concerning business operations in an epidemic after model modification

Abbreviation	Variable	Mean	S.D.	Level	F-Value	P-Value
1. Financial Capability		3.96	0.62	high	0.07	0.93
Fina1	Track revenue and plans every quarter to forecast the annual revenue.	4.07	0.73	high	0.22	0.80
Fina2	Control cost by adjusting the budget to meet the current situation.	4.02	0.81	high	1.91	0.15
Fina3	Monitor customer payments closely and continuously.	3.79	0.87	high	0.23	0.80
Fina4	Continuously analyze and compare financial statements to plan and improve operations.	4.04	0.83	high	1.65	0.19
Fina5	Monitor volatility trends in foreign exchange rates.	3.89	0.84	high	1.92	0.15
2. Operation Transformation		4.04	0.59	high	2.03	0.13
Oper1	Prepare a back-up plan in case production or operations are interrupted.	4.06	0.74	high	4.62	0.01*
Oper2	Regularly analyze the strengths, weaknesses, opportunities, and threats of the business (SWOT) to adjust to the situation that may arise in the future.	4.08	0.72	high	0.54	0.58
Oper3	Improve work processes, increase efficiency, and reduce operating costs by reducing redundant or unnecessary steps.	3.97	0.80	high	3.05	0.05*

Oper4	Design a production process that can develop new products from existing inventory during critical situations.	4.07	0.77	high	0.50	0.61
Oper5	Set policies to allow employees to work remotely.	4.02	0.88	high	0.95	0.39
3. Personnel Development		4.03	0.61	high	3.64	0.03*
Pers1	Study and collect new knowledge to pass on to personnel.	4.09	0.74	high	3.39	0.03*
Pers2	Prepare a plan to develop personnel's skills and abilities in accordance with the organization's policy.	4.14	0.76	high	0.13	0.88
Pers3	Rotate jobs to develop workers' skills.	4.01	0.81	high	3.43	0.03*
Pers4	Appraise performance based on the achievements of the job rather than the procedure.	3.90	0.83	high	1.69	0.19
Pers5	Design team operations activities to facilitate the transfer of knowledge.	4.00	0.80	high	4.86	0.01*
4. Innovation Deployment		3.98	0.63	high	2.54	0.08
Inno1	Adjust operations according to the situation, for instance, by using AI technology to replace manpower.	3.97	0.85	high	1.01	0.36
Inno2	Always update information databases.	4.02	0.76	high	2.55	0.08
Inno3	Create production innovations or new processes that make work processes efficient.	3.94	0.78	high	1.53	0.22
Inno4	Use an online database system that connects operations across all departments to facilitate working anywhere and any time.	4.00	0.81	high	3.72	0.02*
Inno5	Collaborate with external agencies, such as educational institutions and partners, to develop new innovations suitable for the epidemic situation.	3.99	0.84	high	0.68	0.51
5. Material Sourcing		4.00	0.60	high	4.30	0.01*
Mate1	Purchase raw materials from domestic suppliers to reduce delivery time.	4.01	0.75	high	6.19	0.00*
Mate2	Precisely forecast future demand for raw materials.	3.97	0.74	high	2.74	0.07
Mate3	Classify raw materials based on the importance of their use for easy maintenance.	3.98	0.79	high	1.93	0.15
Mate4	Prepare a risk management plan and identify a solution in the event of a shortage of raw materials.	4.00	0.77	high	2.41	0.09
Mate5	Look for substitutes of raw materials.	4.04	0.81	high	1.59	0.21

\* Statistical significance level:  $p < 0.05$

Evidently, 15 observational variables were applicable after the structural equation model was modified. All had a high mean, ranging between 3.79 and 4.14. Comparing the importance level of business operations of small, medium, and large enterprises in an epidemic revealed that two out of five latent variables, personnel development and material sourcing, differed at the statistical significance level of 0.05. A detailed investigation revealed differences in 7 variables: Oper1, Oper3, Pers1, Pers3, Pers5, Inno4, and Mate1.

### Structural equation model of the business operations in epidemics of emerging diseases

The model was improved using modification indices. The results obtained from data processing and theoretical principles were considered to exclude some inappropriate observable variables. The model was then processed repeatedly until data–model fitness criteria were met. Consequently, the structural



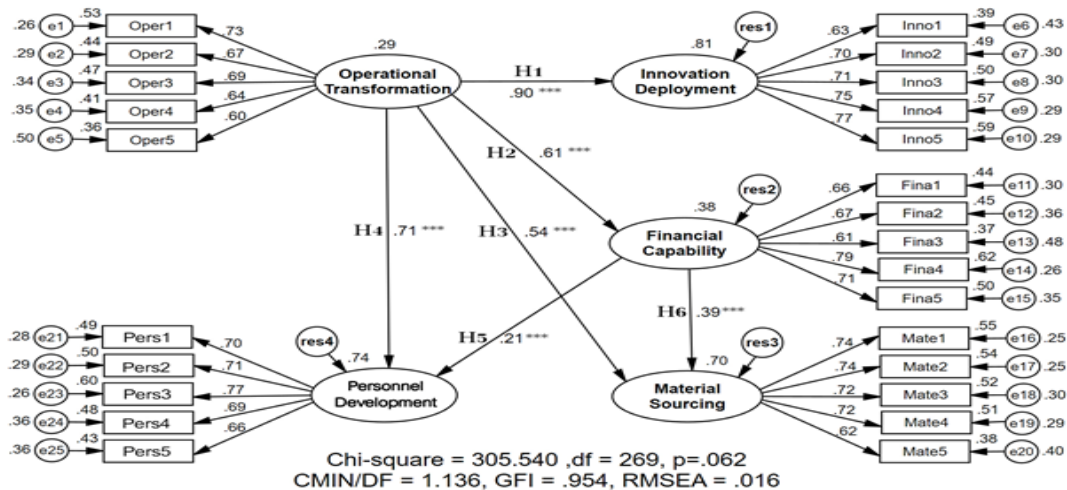
equation model was considered perfect and consistent with the empirical data. Table IV presents the results of data–model fit assessments.

**Table IV:** Results of assessing model consistency after modification

Statistics assessed	Criterion	Value after modification
Chi-square Probability Level (CMIN-p)	> 0.05	0.062
Relative Chi-square (CMIN/DF)	< 2.00	1.136
Goodness of fit Index (GFI)	> 0.90	0.954
Root Mean Square Error of Approximation (RMSEA)	< 0.08	0.016

Evidently, all criteria of data–model fitness were met, and five latent variables and 15 observable variables were found applicable. The details are shown in Figure 1 and Table V.

**Figure 1:** Structural equation model of business operations in an epidemic after modification



**Table V.** Statistical values of the structural equation model after modification

Variable	Estimate		$R^2$	Variance	C.R.	P
	Standardized	Unstandardized				
Operation Transformation						
Innovation Deployment	0.901	0.890	0.812	0.053	12.556	***
Financial Capability	0.613	0.551	0.375	0.146	10.015	***
Material Sourcing	0.538	0.557	0.699	0.093	9.156	***
Personnel Development	0.713	0.698	0.740	0.072	10.430	***
Financial Capability						
Personnel Development	0.213	0.232	0.740	0.072	4.052	***
Material Sourcing	0.390	0.449	0.699	0.093	6.812	***

The hypothesis testing revealed that operation transformation directly influences innovation deployment (H1), with a standardized regression weight of 0.901 at the 0.001 significance level. The squared multiple correlation coefficient ( $R^2$ ) and variance were 0.812 and 0.053, respectively.



Operation transformation directly influences financial capability (H2), with a standardized regression weight of 0.613 at the 0.001 significance level. The squared multiple correlation coefficient ( $R^2$ ) and variance were 0.375 and 0.146, respectively.

Operation transformation directly influences material sourcing (H3), with a standardized regression weight of 0.538 at the 0.001 significance level. The squared multiple correlation coefficient ( $R^2$ ) and variance were 0.699 and 0.093, respectively.

Operation transformation directly influences personnel development (H4), with a standardized regression weight of 0.713 at the 0.001 significance level. The squared multiple correlation coefficient ( $R^2$ ) and variance were 0.740 and 0.072, respectively.

Financial capability directly influences personnel development (H5), with a standardized regression weight of 0.213 at the 0.001 significance level. The squared multiple correlation coefficient ( $R^2$ ) and variance were 0.740 and 0.072, respectively.

Financial capability directly influences material sourcing (H6), with a standardized regression weight of 0.390 at the 0.001 significance level of. The squared multiple correlation coefficient ( $R^2$ ) and variance were 0.699 and 0.093, respectively.

Furthermore, the results revealed that operation transformation directly influences innovation deployment the most, with a standardized regression weight of 0.901, as shown in Table VI.

**Table VI:** Values of total, direct, and indirect influence

Component	Operation Transformation	Financial Capability	Innovation Deployment	Material Sourcing	Personnel Development
Financial Capability	0.613	0.000	0.000	0.000	0.000
Innovation Deployment	0.901	0.000	0.000	0.000	0.000
Material Sourcing	0.777	0.390	0.000	0.000	0.000
Personnel Development	0.843	0.213	0.000	0.000	0.000

## Discussion

Epidemics of emerging infectious diseases, specifically COVID-19, have created a New Normal in Thai society. A major change the COVID-19 pandemic brought was the exponential growth and extensive use of digital technology in workplaces and everyday life (Hu and Kee, 2022), as seen in the increase in online shopping, electronic transactions, and remote work. Adopting digital technologies for more and more operations represents an opportunity to change the Thai economy and society. Businesses must adapt to digital platforms (H1) by utilizing technology to eliminate redundant or unnecessary procedures. Employees can work remotely similar to how they work at the office, reducing the organization's operating costs (Singh and Chitranshi, 2022). The finding that operation transformation has the most direct impact on innovation deployment is consistent with that of Bellis *et al.* (2022), who found that digitizing work environments can help reduce work procedures and barriers of time and

place. Therefore, it can be said that digital technology has increased work efficiency and improved the way of life, shifting the economic system to a digital era that creates opportunities for growth and changes business processes. This change has had a positive impact on entrepreneurs, who can obtain digital skills and utilize digital technology (Hwang *et al.*, 2022). In contrast, those who fail to transform digitally may be negatively affected and may have to eventually exit from the economic system.

It was found that businesses emphasized preparing skill development plans and developing the personnel's competency when an epidemic breaks out. In the present era, the development of employees' work skills is considered an important factor that organizations should not overlook. Therefore, organizations that intend to adapt to an epidemic must be prepared to equip their employees with the skills and knowledge required to accommodate new ways of working (H4) (Krishnamoorthy and Keating, 2021). It becomes necessary to upskill and reskill employees' hard skills, plan budgets to boost digital skills and knowledge (Cetindamar Kozanoglu and Abedin, 2021; Schlegel and Kraus, 2021), and polish their soft skills so that they can work with each other productively. Furthermore, customer service skills (Juhdi *et al.*, 2015) are also important. Organizations must equip their employees with these skills to implement virtual services and obtain a competitive advantage (H5, H1) (Söderlund and Oikarinen, 2021).

Comparing the importance small, medium, and large enterprises assign to business operations during an epidemic revealed differences at the 0.05 significance level. During the COVID-19 pandemic, small and medium-sized enterprises were among the most affected (Haneberg, 2021; Sopha *et al.*, 2022) by lockdown measures (Uzir *et al.*, 2022), while large enterprises rapidly adapted to the situation. Businesses considered reducing redundant steps to improve their work processes (activity-based management, BSC etc.) (Taticchi, 2010), increase efficiency, reduce operating costs, and run smoothly during the crisis. They realized that there should be a backup plan if production or operations are interrupted. They began to look for the substitutes of raw materials and chose domestic suppliers to reduce delivery time and inventory costs (H3). These findings align with those of Onyshchenko *et al.* (2022), who found that businesses incorporated technology into their operations to reduce redundant and unnecessary procedures and increase efficiency in raw material control (Bouayad *et al.*, 2022).

The results also showed that large enterprises emphasized using an online database system that connects operations of all sectors more than small and medium enterprises. This finding is consistent with that of Wantanakomol (2021), who found that large businesses established information communication systems that could connect manufacturers, wholesalers, retailers, and consumers by building cooperation among entrepreneurs in the same industry (H2). Manufacturers who are strong enough to implement an operation system according to the sharing economy concept will be able to reduce operating costs and make their organization work in harmony with all parties (H6) (Liu *et al.*, 2021).

## Suggestions

During an epidemic, organizations must understand the changing situation in order to make the right decisions. Production planning is particularly important for improving work processes. Designing a production system that can develop new products from the existing inventory in critical situations is especially recommended.

Human resources are the most important resources in an organization. Although robotics and artificial intelligence technology can replace human labor, many activities in an organization cannot be replaced by machines. Every organization wishes to succeed and lead; the quality of personnel is considered a crucial factor in realizing this goal. Therefore, organizations should focus on developing the skills and abilities of their personnel to cope with change.

The digital economy provides numerous channels to micro and small enterprises to reach more consumers. It also makes it possible to start a business with a small investment and access services offered by e-commerce and sharing platforms. However, this does not guarantee that all small and medium enterprises are ready for digital transformation. Therefore, cooperation between the public and private sectors is important to support entrepreneurs in increasing their digital literacy and developing their businesses. This will also improve the country's economy in the future.

Remote working may seem new to some organizations. The COVID-19 pandemic led to social distancing, which subsequently led to remote work. To make remote work successful, organizations must provide appropriate tools and software and reduce redundant procedures to increase work efficiency and reduce operating costs. They must also emphasize a healthy balance between employees' work and personal lives to create happiness at work.

Government support is an important factor that helps businesses operate smoothly in the new normal. Government measures such as providing infrastructure, business support, loans, and tax reductions, stimulating purchases, and pushing the public sector to use digital management systems have supported the economy from the bottom-up. These measures and more should be adopted to prepare people to cope with the next new normal.

## References

- Abas, N., Kalair, E., Dilshad, S. and Khan, N. (2021), "Impact of COVID- 19pandemic on community lifelines", *Continuity & Resilience Review*, Vol.1, No.4, pp.94-123. <https://doi.org/10.1108/CRR-05-2021-0022>
- Andersen, H. and Rasmussen, E.S. (2004), "The role of language skills in corporate communication", *Corporate Communications: An International Journal*, Vol.9, No.3, pp.231-242. <https://doi.org/10.1108/13563280410551150>
- Arbuckle, J.L. (2011), *IBM SPSS Amos 20 User's Guide*, IBM, New York, NY.
- Asia-Plus. (2021), "A number of biggest economic risks predicted by Bloomberg Economics for 2022", available at: <https://www.asiaplustj.info/en/news/tajikistan/economic/20211215/a-number-of-biggest-economic-risks-predicted-by-bloomberg-economics-for-2022> (accessed 15 December 2021)
- Azer, I. and Alexander, M. (2022), "COVID-19 vaccination: engagement behavior patterns and implications for public health service communication", *Journal of Service Theory and Practice*, Vol. 32, No. 2, pp.323-351. <https://doi.org/10.1108/JSTP-08-2021-0184>
- Balanced Scorecard Institute. (2023). *Balanced Scorecard*. Retrieved january, 2023, from <https://balancedscorecard.org/bsc-basics-overview>.
- Bellis, P., Trabucchi, D., Buganza, T. and Verganti, R. (2022), "How do human relationships change in the digital environment after COVID-19 pandemic? The road towards agility", *European Journal of*

- Innovation Management*, Vol.6, No.25, pp.821-849. <https://doi.org/10.1108/EIIM-02-2022-0093>
- Berman, S.I. (2012), "Digital transformation: opportunities to create new business models", *Strategy & Leadership*, Vol. 2, No.40, pp.16-24. <https://doi.org/10.1108/10878571211209314>
- Bouavad, H., Benabbou, L. and Berrado, A. (2022), "A multi-criteria decision analysis approach for aligning IT and supply chain strategies", *International Journal of Supply and Operations Management*, Vol.9, No.2, pp.126-148. <https://dx.doi.org/10.22034/ijsom.2021.109042.2147>
- Cetindamar Kozanoglu, D. and Abedin, B. (2021), "Understanding the role of employees in digital transformation: conceptualization of digital literacy of employees as a multi-dimensional organizational affordance", *Journal of Enterprise Information Management*, Vol.34, No.6, pp.1649-1672. <https://doi.org/10.1108/JEIM-01-2020-0010>
- Chinyamurindi, W., Kyogabirwe, J.B., Kabagabe, J.B., Mafabi, S. and Dywili, M. (2021), "Antecedents of small business financial performance: the role of human resource management practices and strategy", *Employee Relations: The International Journal*, Vol.43, No.5, pp.1214-1231. <https://doi.org/10.1108/ER-03-2020-0138>
- David, M. and Sutton, C.D. (2011), *Social Research: an Introduction*, 2nd ed., SAGE, New York, NY.
- Department of Industrial Works. (2022), "Industrial factory statistics", available at: <https://www.diw.go.th/webdiw/static-fac> (accessed 15 July 2022)
- Dimitropoulou, A. (2022), "Economy Rankings: Largest countries by GDP", available at: [https://ceoworld.biz/31/03/2022economy-rankings-largest-countries-by-gdp-accessed 31\) 2022 March 2022](https://ceoworld.biz/31/03/2022economy-rankings-largest-countries-by-gdp-accessed-31-2022-March-2022)
- Gillespie, A. (2007), "PESTEL analysis of the macro-environment", *Foundations of Economics*, Oxford University Press, USA.
- Grant, R.M. (2019), *Contemporary Strategy Analysis*, 10th ed., John Wiley & Sons, New York, NY.
- Gupta, P., Sachan, A. and Kumar, R. (2020), "Different stages of the e-service delivery system process: belief–attitude–intention framework", *International Journal of Retail & Distribution Management*, Vol.48, No.7, pp.687-706. <https://doi.org/10.1108/IJRDM-01-2019-0014>
- Haneberg, D.H. (2021), "SME managers' learning from crisis and effectual behaviour", *Journal of Small Business and Enterprise Development*, Vol.6, No.28, pp.873-887. <https://doi.org/10.1108/JSBED-01-2021-0009>
- Hu, M.K. and Kee, D.M.H. (2022), "Fostering sustainability: reinventing SME strategy in the new normal", *foresight*, Vol.24, No.3/4, pp.301-318. <https://doi.org/10.1108/FS-03-2021-0080>
- Hwang, I., Shim, H. and Lee, W.J. (2022), "Do an organization's digital transformation and employees' digital competence catalyze the use of telepresence?", *Sustainability*, Vol.14, No.14, p.8604. <https://doi.org/10.3390/su14148604>
- Jerome, J.I.J., Saxena, D., Sonwaney, V. and Foropon, C. (2021), "Procurement 4.0 to the rescue: catalysing its adoption by modelling the challenges", *Benchmarking: An International Journal*, Vol.29, No.1, pp.217-254. <https://doi.org/10.1108/BIJ-01-2021-0030>
- Juhdi, N., Pa'wan, F. and Hansaram, R. (2015), "Employers' experience in managing high potential employees in Malaysia", *Journal of Management Development*, Vol.2, No.34, pp.187-201. <https://doi.org/10.1108/JMD-01-2013-0003>

- Karim, M.R., Shetu, S.A. and Razia, S. (2021), "COVID-19, liquidity and financial health: empirical evidence from South Asian economy", *Asian Journal of Economics and Banking*, Vol.5, No.3, pp.307-323. <https://doi.org/10.1108/AJEB-03-2021-0033>
- Krishnamoorthy, R. and Keating, K. (2021), "Education crisis, workforce preparedness, and COVID-19: reflections and recommendations", *American Journal of Economics and Sociology*, Vol.80, No.1, pp.253-274. <https://doi.org/10.1111/ajes.12376>
- Liu, Z., Xiao, Y. and Feng, I. (2021), "Manufacturer's sharing servitization transformation and product pricing strategy", *Sustainability*, Vol.13, No.3, pp.1-20. <https://doi.org/10.3390/su13031503>
- Marques, P., Bernardo, M., Presas, P. and Simon, A. (2020), "Corporate social responsibility in a local subsidiary: internal and external stakeholders' power", *EuroMed Journal of Business*, Vol.15, No.3, pp.377-393. <https://doi.org/10.1108/EMJB-01-2019-0013>
- Meyer, M.M., Glas, A.H. and Eßig, M. (2022), "Learning from supply disruptions caused by SARS-CoV-2: use of additive manufacturing as a resilient response for public procurement", *Journal of Public Procurement*, Vol.22, No.1, pp.17-42. <https://doi.org/10.1108/JOPP-11-2020-0079>
- Meyers, L.S., Gamst, G. and Guarino, A.J. (2017), *Applied Multivariate Research: Design and Interpretation*, 3rd ed., SAGE Publications, Singapore.
- Murrar, A., Batra, M., Paz, V., Asfour, B. and Balmakhtar, M. (2022), "Employability of job applicants in skilful jobs: commonality in employer and employee perspectives", *International Journal of Manpower*, Vol.43, No.6, pp.1285-1300. <https://doi.org/10.1108/IJM-10-2020-0454>
- Narayanan, V., Wokutch, R.E., Ghobadian, A. and O'Regan, N. (2021), "Toward a strategic approach to studying COVID-19 pandemic", *Journal of Strategy and Management*, Vol.3, No.14, pp.285-299. <https://doi.org/10.1108/JSMA-07-2021-0149>
- Onyido, T.B.C., Boyd, D. and Thurairajah, N. (2016), "Developing SMEs as environmental businesses", *Construction Innovation*, Vol.16, No.1, pp.30-45. <https://doi.org/10.1108/CI-05-2015-0026>
- Onyshchenko, O., Shevchuk, K., Shara, Y., Koval, N. and Demchuk, O. (2022), "Industry 4.0 and accounting: directions, challenges, opportunities", *Independent Journal of Management & Production*, Vol.13, No.3, s161-s195. <https://doi.org/10.14807/ijmp.v13i3.1993>
- Pan, Z., Zhang, G. and Zhang, H. (2022), "Political uncertainty and cost stickiness: evidence from prefecture-city official turnover in China", *China Accounting and Finance Review*, Vol.24, No.2, pp.142-171. <https://doi.org/10.1108/CAFR-02-2022-0007>
- Rajan, R. and Dhir, S. (2021), "Technology management for innovation in organizations: an argumentation-based modified TISM approach", *Benchmarking: An International Journal*, Vol.28, No.6, pp.1959-1986. <https://doi.org/10.1108/BIJ-01-2020-0019>
- Schepers, S. (2011), "The role of board and CEO in managing societal and political intangibles", *Corporate Governance: The international journal of business in society*, Vol.11, No.5, pp.551-559. <https://doi.org/10.1108/14720701111176966>
- Schlegel, D. and Kraus, P. (2021), "Skills and competencies for digital transformation—a critical analysis in the context of robotic process automation", *International Journal of Organizational Analysis*, (ahead-of-print). <https://doi.org/10.1108/IJOA-04-2021-2707>
- Sharma, V., Singh, A. and Rai, S.S. (2022), "Disruptions in sourcing and distribution practices of supply

- chains due to COVID-19 pandemic: a sustainability paradigm”, *Journal of Global Operations and Strategic Sourcing*, Vol.2, No.15, pp.235-261. <https://doi.org/10.1108/JGOSS-02-2021-0020>
- Singh, Y. and Chitranshi, I. (2022), “Relevance of work-from-home culture in post Covid-19 era: regarding productivity of employees in IT sector”, *Cardiometry*, No.22, pp.290-296. <http://dx.doi.org/10.18137/cardiometry.2022.22.290296>
- Söderlund, M. and Oikarinen, E.L.) 2021), “Service encounters with virtual agents: an examination of perceived humanness as a source of customer satisfaction”, *European Journal of Marketing*, Vol.55, No.13, pp.94-121. <https://doi.org/10.1108/EJM-09-2019-0748>
- Sopha, B.M., Arvianto, A. and Tjahjono, B. (2022), “Survival strategies of traditional retailers during the COVID-19 pandemic: some insights from a developing country”, *Journal of Industrial Engineering and Management*, Vol.15, No.2, pp.185-201. <http://dx.doi.org/10.3926/jiem.3698>
- Taticchi, P. (2010). *Business Performance Measurement and Management*. New York : Springer.
- Tantrakarnapa, K. and Bhophdhornangkul, B. (2020), “Challenging the spread of COVID-19 in Thailand”, *One Health*, Vol.11, 100173. <https://doi.org/10.1016/j.onehlt.2020.100173>
- Teixeira, F., Ferreira, J.I. and Mota Veiga, P. (2022), “Does law as resource bring a competitive advantage to companies?”, *Management Research: Journal of the Iberoamerican Academy of Management*, Vol.20, No.3, pp.211-193. <https://doi.org/10.1108/MRJIAM-07-2021-1204>
- Thomas, A., Piquette, C. and McMaster, D. (2016), “English communication skills for employability: the perspectives of employers in Bahrain”, *Learning and Teaching in Higher Education: Gulf Perspectives*, Vol.1, No.13, pp.36-52. <https://doi.org/10.18538/lthe.v13.n1.227>
- Trinh, G., Dawes, I. and Lockshin, L. (2009). “Do product variants appeal to different segments of buyers within a category?”, *Journal of Product & Brand Management*, Vol.2, No.18, pp.95-105. <https://doi.org/10.1108/10610420910948997>
- Uzir, M.U.H., Bukari, Z., Jerin, I., Hasan, N., Abdul Hamid, A.B. and Ramayah, T. (2022), “Impact of COVID-19 on psychological distress among SME owners in Ghana: partial least square–structural equation modeling (PLS-SEM) approach”, *Journal of Community Psychology*, Vol.50, No.3, pp.1282-1314. <https://doi.org/10.1002/jcop.22716>
- Vlados, C. (2019). “On a correlative and evolutionary SWOT analysis”. *Journal of Strategy and Management*, Vol.12, No.3, pp.363-347. <https://doi.org/10.1108/JSMA-02-2019-0026>
- Walker, P.G., Whittaker, C., Watson, O.J., Baguelin, M., Winskill, P., Hamlet, A. ... and Ghani, A.C. (2020), “The impact of COVID-19 and strategies for mitigation and suppression in low-and middle-income countries”, *Science*, Vol.369, No.6502, pp.413-422. <https://doi.org/10.1126/science.abc0035>
- Wang, S.S., Goh, J.R., Sornette, D., Wang, H. and Yang, E.Y. (2021), “Government support for SMEs in response to COVID-19: theoretical model using Wang transform”, *China Finance Review International*, Vol.11, No.3, pp.406-433. <https://doi.org/10.1108/CFRI-05-2021-0088>
- Wattanakomol, S. (2021), “The Effect of Guidelines on Reducing Logistics Costs”, *Uncertain Supply Chain Management*, Vol.9, No.3, pp.667-674. <http://dx.doi.org/10.5267/j.uscm.2021.5.003>
- Worldometer. (2022), “COVID-19 Coronavirus Pandemic”, available at:



<https://www.worldometers.info/coronavirus> (accessed 28 August 2022)

- Wu, L., Liu, H. and Bao, Y. (2022), "Outside-in thinking, value chain collaboration and business model innovation in manufacturing firms", *Journal of Business & Industrial Marketing*, Vol.37, No.9, pp.1745-1761. <https://doi.org/10.1108/JBIM-03-2021-0189>
- Wu, L.F., Huang, I.C., Huang, W.C. and Du, P.L. (2019), "Aligning organizational culture and operations strategy to improve innovation outcomes: an integrated perspective in organizational management", *Journal of Organizational Change Management*, Vol.32, No.2, pp.224-250. <https://doi.org/10.1108/JOCM-03-2018-0073>
- Wurthmann, K. (2020), "The essential mix: six tools for strategy-making in the next decade", *Journal of Business Strategy*, Vol.41, No.1, pp.38-49. <https://doi.org/10.1108/JBS-09-2018-0147>
- Zhong, O., Liang, S., Cui, L., Chan, H.K. and Oiu, Y. (2019), "Using online reviews to explore consumer purchasing behaviour in different cultural settings", *Kybernetes*, Vol.48, No.6, pp.1242-1263. <https://doi.org/10.1108/K-03-2018-0117>