

Review

Operational Resilience as a Key Determinant of Corporate Sustainable Longevity in the Indonesian Jamu Industry

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Abstract: The *jamu* (Indonesian traditional herbal drink) industry has grown in popularity because of people's increased interest in the qualities of herbal remedies for bodily immunity. The COVID-19 pandemic has affected not only the market but also how businesses have managed their supply chains and production. COVID-19 has been claimed to be a test of a company's long-term viability. Sustainability refers to a company's ability to last a long time (corporate longevity). The tug of war between economic prosperity, environmental quality, and social justice that guarantees enterprises are profitable and sustainable is the main issue for companies in developing governance. From a theoretical standpoint, longevity is an intriguing problem. There are two types of corporate longevity: corporate longevity (CL) and corporate sustainable longevity (CSL). Little research has specifically examined the internal aspects of CSL. It necessitates several specific characteristics that all play a role in CSL. This research intends to highlight operational resilience as a crucial predictor of CSL's significance in the jamu business. Companies that have consistently produced and benefitted from their business operations, before, during, and after the pandemic, have faced challenges of sustainability or longevity. Predecessor independent variables, and moderating or mediating variables, can be used to enable the operational resilience stance. To achieve CSL, the company must know how much it will determine its position in numerous ways in company practice. This study contributes to exploring dimensions and indicators of operational resilience to determine CSL in its relevance to the jamu industry. Different roles for operational resilience in different industry practices are also feasible.

Keywords: corporate longevity; corporate sustainable longevity; operational resilience; resilience triangle; resource-based view



Citation: Irawan, D.; Prabowo, H.; Kuncoro, E.A.; Thoha, N. Operational Resilience as a Key Determinant of Corporate Sustainable Longevity in the Indonesian Jamu Industry. *Sustainability* **2022**, *14*, 6431. <https://doi.org/10.3390/su14116431>

Academic Editors: Kayhan Tajeddini and Thorsten Merkle

Received: 18 April 2022

Accepted: 16 May 2022

Published: 24 May 2022

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1. Introduction

During the coronavirus pandemic in Indonesia, people returned to consuming the herbal medicinal drink jamu. All businesses have been disrupted in some way by the COVID-19 pandemic. Disruption has put sustainability in jeopardy. During the pandemic in Indonesia, there was an interesting phenomenon involving jamu. The jamu industry has grown in prominence because of people's increased interest in the benefits of herbal medicines for promoting bodily immunity during this pandemic. Is it possible for the herbal medicine sector to prevent the pandemic's effects right away? The pandemic affects not only the market but also how businesses protect themselves.

From a theoretical standpoint, corporate longevity is an intriguing topic. Corporate longevity (CL) and corporate sustainable longevity (CSL) were defined by [1]. CSL refers to the factors that contribute to a company's long-term viability. CL stands for the company's lifespan as a percentage of its average age. However, there is no explanation for how long a corporation can be considered successful and long-lived. According to Davis [2], the

most prevalent obstacle for businesses is longevity. In a chaotic environment, Geus [3] underlines the importance of achieving company longevity and maintaining a balance of complex organizational features.

According to De Falco and Vollero [4], company longevity is intimately linked to sustainability. According to previous studies, corporate longevity and sustainability must consider operational procedures and the ability to thrive in the current climate. This crucial business function has given rise to the concept of corporate longevity. CSL research is especially concerning because, according to recent data from Innosight, just a few companies are immune to the forces of disruption [5].

As part of the pharmaceutical industry category, the traditional herbal medicine industry—locally known as *jamu*—is also encouraged to adapt to the industrial revolution, as well as other matters that are disruptive to the sustainability of the business, such as the COVID-19 pandemic. Companies are directed to improve production quality, avoid human error, and increase production capacity in line with increasing market demand. Even pre-pandemic, the herbal medicine industry had an agenda for continuous improvement. Pandemic conditions are like perfect storm for the herbal medicine industry, but it must be maintained while fixing more internal challenges in the industry.

The distribution and scale of *jamu* companies in Indonesia have different technological capacities and intensities to follow the characteristics of the industrial revolution. The *jamu* industry in Indonesia consists of companies with large to small business capacities as follows: (i) the traditional herbal medicines industry, (ii) the natural material extract industry, (iii) traditional herbal medicine micro businesses, (iv) traditional herbal medicine small businesses, (v) *jamu racikan* (concocted herbal medicines), and (vi) *jamu gendong* (mobile herbal medicine vendors).

The *Jamu Producers Association (GP Jamu)* said that around 400 *jamu* factories have been closed [6]. Based on the records of GP Jamu, there is a distribution based on the category of the herbal medicine industry in Table 1 as follows.

Table 1. *Jamu* industry population in Indonesia.

Category of <i>Jamu</i> Industry	Population
Traditional industry	112
Natural material extract industry	12
Traditional small business	611
Total	735

The category of traditional micro business is not registered as a member of GP Jamu; the membership of micro businesses is registered at the District/Municipal Health Office level spreading over 514 provinces in Indonesia separately. *Jamu racikan* and *jamu gendong* have individual business sizes and are not officially registered. Fernandez et al. [7] have found the performance of large and small firms to be mainly explained by the firm effect according to the firm's distinctive attributes. The size and creative accumulation of companies enable them to achieve competitive advantages in both differentiation and cost.

Several things pose a challenge to the *jamu* industry based on the main problem indications that researchers have found, including changing consumer preferences, competition in the market for medicinal herbs made of chemical raw materials and imported herbal medicine products, scarcity of raw materials, access to banking capital, government regulations, limited variants of medicinal plants using the digitizing industry revolution, and the quality of human resources. The *jamu* industry as Indonesian cultural heritage must be preserved with good support from technical, regulatory, and commercial perspectives so that *jamu* companies do not enter a period of decline.

Thus, the question is what the longevity importance for a company is. Hahn et al. state that company longevity plays a key role in the sustainable development of a country's economy because the company's performance represents a productive economic

resource. Growth at the company level determines the national-level economic growth of a country [7–9].

Exploring the industrial revolution and its consequences, companies need a clear picture of operational risk before accurately predicting the future [10,11]. It takes a strategic orientation to think ahead and see the consequences of decision-making. Collins and Hansen [12] address it as the two-lens capability to capture productive paranoia that focuses obsessively on goals and, on the other hand, change awareness. Kwee et al. [13] and Van Driel et al. [14] call it co-evolutionary competence which emphasizes the interaction of management intentionality with the pressure of changes in the external environment.

This study aims to identify the key determinant of CSL-based theoretical exposition, particularly operational resilience, and its application in the longevity of the jamu industry in Indonesia. Operational resilience requires an explanation in the form of understanding the factors and indicators that surround it to influence CSL.

2. Theory Linkage of CSL and Operational Resilience

The notion of corporate sustainable longevity (CSL) is based on the resource-based view's (RBV) grand hypothesis. The Brundtland Report on Sustainable Development [15] came before the RBV [16] and corporate sustainability [17]. Elkington proposed the triple bottom line concept, which asserts that economic business strategies are unsustainable if social and environmental implications are not considered. The corporate sustainability plan aims to maximize the value of corporate stakeholders while also ensuring organizational longevity and transparency. The academic study of corporate sustainability was founded in the Brundtland Report-United Nations paper "Our Common Future," which was published in 1987 and was the first to promote sustainable development. CSL's internal elements are in accordance with the RBV.

Operational resilience is based on the idea of resilience, which refers to a system's ability to return to its former shape following a disruption. Holling [18] was a physicist who pioneered the concept of resilience in the context of ecology and the environment. The topic of resilience is strongly linked to the potential hazards that must be considered when evaluating a company's ability to survive [19]. Resilience is a psychological ability to bounce back after being confronted with a difficult event, [20,21]. In the synthesis of the theory linkage in Figure 1, these two principles can be explained as follows.

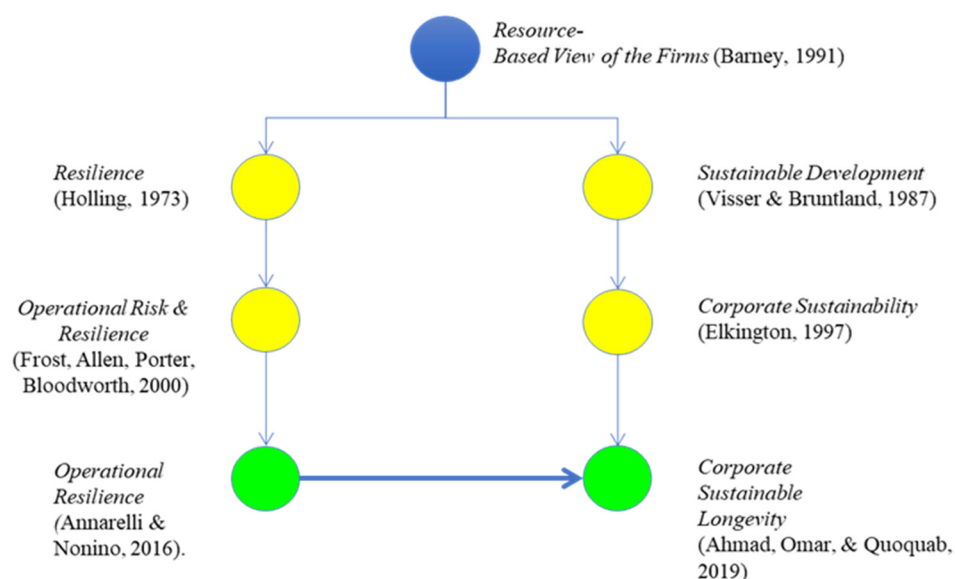


Figure 1. Theory linkage of CSL and operational resilience. Sustainable Development [15]. Resource-Based View of the Firms [16]. Corporate Sustainability [17]. Resilience [18]. Operational Risk & Resilience [19]. Corporate Sustainable Longevity [1]. Operational Resilience.

2.1. Corporate Sustainable Longevity

Business longevity, which includes the company's long-term survivability, has been extensively explored by business history and management researchers. There are questions or debates about the following: (i) Are the large, diversified, and professionally managed organizations the most efficient at exploiting economies of scale and ensuring their longevity? (ii) Do family businesses follow a cycle of creation, maintenance, and decline? and (iii) Why do some businesses fail while others succeed in the long run? According to Napolitano et al. [21], company performance is commonly connected with corporate sustainability and longevity. Performance and business longevity, on the other hand, are not regarded as substitutes in management research. Good performance alone is not enough to predict a company's long-term viability.

The organizational death model proposed by Freeman et al. [22] includes four facts: (i) Organizational death is caused by the interaction of environmental shocks and internal processes; (ii) Organizational death can happen at any time; (iii) The dissolution of an organization is only one way in which the organization does not act as an independent actor; and (iv) Organizations of the same age in the same neighborhood have different mortality rates.

Several researchers put the macro-business view of the relationship between firm size, longevity, and profitability [23–28] under the microscope, focusing on the legacy of family company founders, succession planning, leadership, and ownership structure in company longevity [29–35].

In the last few decades, corporate longevity has dropped dramatically. The average age of firms in the S&P 500 declined from 33 years in 1964 to 24 years in 2016 [5], according to an Innosight analysis. Furthermore, by 2027, company longevity is expected to be reduced to just 12 years. Only a few family firms can thrive in the long run [36–39]. According to Hnátek [38], around 70% of family-owned enterprises do not survive the second generation, and 90% are no longer managed by the original family's third generation. According to another Boston Consulting Group (BCG) study on international corporations, firm longevity ranges from 40 to 50 years [40].

2.2. Operational Resilience

Resilience, according to Holling [18], is the ability to absorb changes and re-establish equilibrium after a brief disruption. This notion is continually evolving, and different fields have imagined it differently [41]. According to Allen et al. [42], Cumming introduces two types of resilience through ecological literature: (i) Ecological resilience, defined as a system's ability to absorb changes and persist after external shocks; and (ii) Technical resilience, which deals with disturbance resistance and the speed with which it returns to pre-existing equilibrium. The ability of a system to sustain its identity in the face of internal and external shocks and disruptions is referred to as resilience.

Dinh et al. [43] describe resilience as the ability to bounce back when confronted with unexpected events from an engineering standpoint. Woods and Hollnagel [44] define failure as the result of adaptations needed to overcome real-world complexity because of damage or malfunction. Success, according to this theory, is determined by an organization's, group's, or individual's ability to foresee change as a form of risk before failure and harm occur.

In addition, the concept of resilience is now being applied in economics. When it comes to economic resilience, Rose [45] uses the word static resilience to describe a system's or organization's ability to sustain its fundamental function in the face of a shock. The concept of dynamic resilience components is also introduced, which is defined as the speed at which it is feasible to revert to optimal operating circumstances. Static resilience is concerned with the system's ability to recover from shocks quickly enough to return to the state before the shock or to the previous balance. Dynamic resilience is based on an adaptive concept defined by complex non-linear dynamics and adaptive capability that allows for spontaneous internal structure rearrangement.

Tierney and Bruneau [46] proposed the resilience triangle, which was born out of disaster research and shows the loss of functionality as a result of damage and disruption. The length of the triangle represents the damping time and recovery time, while the depth of the triangle represents the severity or amount of the damage lost. The more robust the system, the smaller the triangle's area. Devices, organizations, and networks all contribute to minimizing the area of the resilience triangle by their actions, behavior, and completeness. Developing responsiveness through flexibility and redundancy is linked to the ability to recover from crash situations. The shorter the recovery period, the more efficient the contingency approach [47].

3. Discussion

Jamu is an Indonesian cultural heritage that has been passed down from generation to generation and is a potential commercial product to be developed. Apart from the positive factors that have fueled the rise of the herbal medicine sector, there is information about the industry's stagnation, which led to many jamu firms ceasing operations. The jamu industry is still losing 15% to 20% of its market share. There are currently just 300 herbal medicine factories left, and their numbers are declining. Income has dropped by 50% in the last two years, and it is tough to persuade individuals to consume herbal medicine [6].

If the dosage form is an extract with standardized constituents and a manufacturing procedure, jamu can be upgraded to standardized herbs or phytopharmacology. If it is safe, has scientific efficacy claims, goes through pre-clinical tests, meets appropriate quality requirements, and has standardized the raw components used in the finished goods, jamu can be considered a standardized herbal medication. A medical preparation with natural substances that has been scientifically demonstrated to be safe and effective through preclinical and clinical trials of raw materials and products is known as phytopharmacology, which is standardized. Phytopharmacology has undergone extensive research and human clinical trials and is now classified as herbal medicine, which is equal to medicine because it has clinical evidence and is ready to be prescribed by a doctor.

CSL is concerned with a company's ability to continue to exist. CSL is important to study, especially to stimulate the creation of industries or companies in order to develop their capacities to tackle technologically driven transformations in the industrial revolution. Adapting to technological advancements and taking advantage of them might leave a corporation stunned and underperforming; because uncertainty has become an innate aspect of business, this situation is unavoidable. It takes the ability to adapt to change and reestablish a new equilibrium.

To boost awareness and prediction, businesses must be able to absorb changes in the form of strategic direction, continuing to increase innovation capabilities, including technological capabilities and human capital, which results in innovation performance, so that they can quickly return to normal or find a new equilibrium. The differentiator for leveraging the company's management capability and reactivity to accomplish CSL is operational resilience.

McFarlane et al. [48] proposed a dimensional framework of operational resilience, along with essential considerations to consider when determining an operation's level of resilience. The four dimensions are: (i) Awareness, which is what is known about potential disturbances now or in the future; (ii) Prediction, which is what can be done to anticipate potential disruptions; (iii) Management, which is what information processing or decision making is required to manage the disturbance; and (iv) Response, which is what concrete actions can be taken in response to the disturbance.

The factors that enable a corporation to anticipate and overcome disruptions are described by Fiksel et al. [49] as (i) Flexibility; (ii) Production capacity; (iii) Efficiency; (iv) Visibility; (v) Adaptation; (vi) Anticipation; (vii) Recovery; (viii) Dispersion; and (ix) Collaboration. Unpredictable market demands can amplify a variety of capabilities, including manufacturing flexibility to meet surges in demand, visibility of current demand

status to support timely decision making, early anticipation, and close collaboration with customers and suppliers to ensure coordinated action.

These two references are provided as a format for explaining operational resilience, which is then translated into a resilience dimension in the form of change absorption and recovery into indicators. The equivalent meaning of the two references can be converted as follows in Table 2.

Table 2. Equivalence of indicators of operational resilience.

Dimensions	Indicators	
	McFarlane et al. [48]	Fiksel et al. [49]
Absorb change	Awareness	Visibility
		Anticipation
		Adaptability/Flexibility
	Prediction	Capacity
Recovery	Management	Efficiency
		Dispersion
	Response	Recovery
		Collaboration

People are more likely to take therapeutic plants because of the ongoing back-to-nature trend. Herbal products should, however, adhere to modern society's traditions, which include being practical, appealing, and safe. The jamu industry must be able to ensure that herbal medicine has become a part of modern produce, able to align with current health products without the need to add chemical substances to herbal medicine or follow technical improvements to compete in the pharmaceutical sector. The jamu sector, like other industries, is facing issues in terms of public awareness, such as diminishing consumer demand. This is problematic since industry actors are powerless to increase purchasing power. The state of the herbal medicine sector is deteriorating because of low public demand. As a result, producers will certainly raise the selling price, thus exacerbating the public's diminished interest.

With the ambition to expand its capacity to survive, awareness of the presence of herbal medicine and the ability to foresee the potential to compete in the future industry are required. The jamu industry ensures its capacity for asset availability at the prediction stage to enable a sustained level of production. Other countries have recognized Indonesia as having enormous potential, so domestic producers should investigate it. The natural medicine sector in Indonesia has enormous potential.

The jamu industry faces operational issues that necessitate strong resilience, as the consequences of a company's failure to operate could jeopardize its long-term viability. The jamu industry's challenges include: competition with chemical-based pharmaceutical drugs; demands for the quality of herbal products with the fulfillment of The Good Standard of Making Traditional Medicine Provisions (*CPOTB*); the fact that herbal medicines have not become the primary choice of the national health insurance system; a brand image that has made it difficult to absorb the latest generation into the market; limited access to banking due to reputation and trust; and workforce qualifications to produce a quality product. To produce output with minimal resources and scatter alternate supplier distribution rates, the jamu sector requires a touch of modern industrial management.

The ability to be resilient is required by jamu firms. If they can adapt rapidly, recover swiftly from disruptions, or take advantage of possibilities that were not foreseen successfully, they can be considered operationally resilient. Companies with operational resilience, according to Birkie [50], tend to prevent or limit negative potential in the form of operational interruptions. By generating or improving flexibility, one can reduce the likelihood of distraction while also increasing endurance.

Integration into the Indonesian national health system is required to ensure the long-term viability of the jamu sector. Because people's tastes, lifestyles, and economic levels continue to evolve, the jamu industry is encouraged to comply with the rules of CPOTB as soon as feasible. As a result of this situation, jamu industries must also improve. Those who do not keep up with the times will, of course, be eliminated. The capacity to quickly return to a regular operational state and collaborate effectively with other parties for mutual benefit is always a hurdle to overcome.

The combination of operational resilience and CSL necessitates a comprehensive and disciplined procedure. According to Birkie et al. [51], resilience can assist in lowering the chance of poor performance due to interruption. The relevance of operational resilience for business longevity is described by Gunasekaran and Ngai [52] as boosting efficiency, decreasing environmental consequences, and avoiding acute interruptions. Cirera et al. [53] looked at the derivative influence of the technological capability model on long-term competitive advantage in greater depth. Figure 2 depicts the resilience triangle scheme of operational resilience as a key predictor of CSL in visual terms.

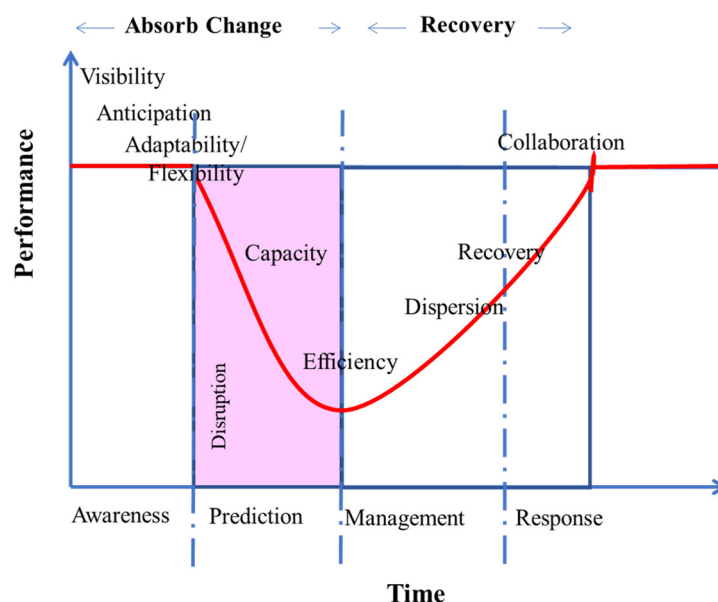


Figure 2. Resilience triangle in its dimensions and indicators.

Meeting standards for product quality and good production processes, capital and technological mastery, product development and down streaming, and product promotion, especially among the younger generations, are some of the issues faced by jamu enterprises. Visibility on the market and technology changes drive the importance of knowledge in the long-term economic growth perspective. According to Mill in Meramveliotakis and Manioudis [54], the diffusion and utilization of knowledge is essential for promoting social, political, and economic development. Utilizing knowledge is vital in directing market share and in accelerating entrepreneurial creativity.

To boost competitiveness, more research and development is required, especially when the industrial revolution shifts. The jamu industry, which is primarily traditional in nature, has been forced to compete with modernization because of the opening of the market due to globalization. The largest issue in government regulation and industrial innovation is still challenging.

The free-market economist Joseph Schumpeter tends to overlook the value of a firm's lifespan owing to creative destruction. Growth will decelerate as innovation becomes normal, and entrepreneurs will no longer feel compelled to disrupt the status quo. Furthermore, capitalists will become bureaucrats or members of the ruling class, and businesses that attempt to preserve the status quo will be destroyed [55]. Because of corporate competition, creative destruction with innovation makes long life harder. It is common knowledge

that some successful businesses fail to retain their viability due to bankruptcy. Laino [56] confirms that innovation does not stand alone. The rate of productivity growth affects the market structure, according to the Nelson–Winter Model, creating a monopolistic or oligopolistic market because of creative destruction.

Globalization, severe competition, and the movement of the industrial revolution all pose threats to a company's long-term viability. The characteristics of the present industrial era 4.0 are changing the paradigm of the preceding industrial era. Industry 4.0 demands precise requests, even personal (customized) requests, as opposed to the previous industrial era's emphasis on industrial scale. Businesses attempt to respond to small market demands while keeping operating expenses low [57,58]. The internet and associated technologies can improve market response times, shorten innovation cycles, and combine product life cycles and value chains to make them more visible, adaptable, and efficient.

As part of the pharmaceutical industry category, the herbal medicine and traditional medicine businesses are also pushed to adapt to industry 4.0. Companies are required to improve product quality, eliminate human error, and increase manufacturing capacity to meet rising market demand [59]. In industry standard 4.0, one can envisage a computer system programming the production process toward more efficient automation. The production process is carried out in a closed system, with contemporary measuring tools for scales and sensors for temperature, pressure, volume, and production flow rate disinfecting each incoming material. Product distribution to consumers is done through e-commerce, which makes sales from industry players to consumers easier, allowing small and medium-sized businesses to thrive. The Ministry of Industry also supports efforts by the pharmaceutical industry to reduce raw material imports and develop replacements. Apart from efforts to make the jamu industry adaptive to market changes, the state's role is to incorporate traditional herbal medicine into the national health system through the recognition and standardization of the quality of jamu products to be consumed and recommended by health professionals.

If the dosage form is an extract with standardized constituents and a manufacturing procedure, jamu can be upgraded to standardized herbs or phytopharmacology. Standardized Herbal Medicines are those that are safe, have scientific efficacy claims, have undergone preclinical testing, fulfill applicable quality requirements, and have standardized the raw components utilized in the finished products. Preclinical testing and clinical trials of raw materials and completed products that have been standardized describe phytopharmacology as a pharmaceutical preparation using natural substances that has been scientifically proven for its safety and efficacy. Phytopharmacology has undergone a lengthy study procedure as well as extensive human clinical studies to be classified as a type of herbal medication.

The Nobel Prize-winning psychologists Simons and Chabris [60] coined the phrase “counting passes while staring at the gorilla,” which means encouraging perfect performance and adapting to changing situations. In this situation, the gorilla spreads annoyance or a threat that is dangerous. Birkie [50] defines operational resilience as the ability to manage disruptions both proactively and reactively. By generating or improving flexibility, one can reduce the likelihood of distraction while also increasing endurance. According to Teixeira and Werther [61], tough firms anticipate and respond to disruptive industry shifts through innovation. To simply comprehend the term resilience, it is one of the qualities required to absorb changes in static conditions that focuses on system shock resistance and return or rise speed.

During a pandemic, increased community consumption of herbal medicine is not only a phenomenon at the level of market enthusiasm, but also a time to make internal improvements, beginning with awareness of disruptions in the business environment that will affect the availability of internal resources, accuracy of predictions, efficiency and management of supplier and market distribution, and recovery with collaborative efforts.

Paying attention to operational resilience indicators can project the maturity level of operational resilience implementation. Companies need to have the ability to absorb change

to increase awareness and predictability. Operational resilience as a novelty for CSL is a differentiator to increase the capacity and responsiveness of the company's management to face conditions of uncertainty.

4. Conclusions

The tug of war between economic prosperity, environmental quality, and social justice that ensures organizations are profitable and have longevity is the most typical problem for companies in developing governance. Changes in the industrial structure, markets, demography, legislation, and technology are all unpredictable, and they frequently disrupt operations. Companies of all sizes are compelled to plan because of uncertainty.

Unpreparedness for change is the same as inviting disruptions and shocks into the organization, particularly the operations. A strategic orientation marked by proper awareness and efforts in existing markets, customers, competitors, and technology, as well as future forecasts, will improve the company's operational ability to be resilient in the face of difficulties and changes that cause disruption. Operational disruption is unavoidable in the face of uncertainty, but the ability to predict, adapt, and accelerate self-recovery defines the company's long-term viability. As independent variables, operational resilience becomes a precursor variable for CSL.

Operational resilience is a variable that is expected to be significant to complement the realm of study and the ability of operational management to demonstrate its operational ability to maintain core functions when shocks occur, as well as to dynamically return to a new or original balance function condition when shocks occur. A company's lifespan is usually punctuated by disruptions and attempts to recover. Capability is required to swiftly determine the magnitude of the disruption's impact. If disruptions will always occur, focusing on what is expected to happen is therefore critical, and the ability to recover using a solid and proven procedure encourages the organization's ability to continue, which indicates business continuity.

Traditional herbs and medicines, as a cultural heritage, will always confront issues of sustainability or the sustainability of their life, which is symbolized by the existence of firms that continually produce and profit from their business activities before, during, and after the COVID-19 pandemic.

CSL is a variable whose internal and external determinants can still be investigated. To verify the position of this key determinant in the practice of the jamu industry or other types of industry, specific research on one key determinant of operational resilience can be carried out using quantitative and qualitative methodologies. Predecessor independent variables, moderating or mediating variables, can be used to enable the operational resilience stance. To achieve CSL, the company must know how much it will determine its position in numerous ways in company practice. Different roles for operational resilience in different industry practices are also feasible. Operational resilience is increasingly being studied facing disruption. Different industries have different resource views and diverse recovery time challenges which may not be explained by the resilience triangle model in the exploratory results of this paper.

Author Contributions: Conceptualization, D.I. and H.P.; methodology, E.A.K.; software, N.T.; validation, D.I., H.P. and E.A.K.; formal analysis, N.T.; investigation, N.T.; resources, H.P.; data curation, D.I.; writing—original draft preparation, D.I.; writing—review and editing, N.T.; visualization, E.A.K.; supervision, H.P.; project administration, N.T.; funding acquisition, D.I. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

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