Print ISSN: 2288-4637 / Online ISSN 2288-4645
doi:10.13106/jafeb.2021.vol8.no3.1035

# Operational Resilience and Human Capital Toward Corporate Sustainable Longevity in Indonesian "Jamu" Industry

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**Received: November 30, 2020 Revised: February 01, 2021 Accepted: February 16, 2021**

## Abstract

Corporate longevity is an interesting issue from a theoretical point of view. In today's uncertain economic climate, the first priority for a company is *survival*. The longevity of an organization is basically one of the areas that can classify the sustainability of a company. Known as the cultural heritage of Indonesia, the traditional herbal medicine industry faces challenges of longevity. The word *Jamu* is a generic expression for traditional herbal medicine in Indonesia. The *Jamu* industry as Indonesia's cultural heritage must be preserved with good support from a technical, regulatory, and commercial perspective so that *Jamu* companies do not go into the decline stage. Operational resilience is usually defined as the ability of an organization to adapt rapidly to changing environments. This study aims to identify the effect of operational resilience and human capital on corporate sustainable longevity through innovation performance. The questions are addressed through empirical research of 108 small companies that produce *Jamu*, traditional herbal medicine in Java, Indonesia. This study was conducted during July–September 2020. Data analysis is carried out with SEM-PLS using SmartPLS software version 3.0 to evaluate the data collected. The results indicated that operational resilience influences corporate sustainable longevity directly and indirectly through innovation performance. However, human capital could not play the antecedent role to corporate sustainable longevity directly or even indirectly through innovation performance. Human capital indicators require deeper exposure in the context of small industries.

**Keywords:** Operational Resilience, Human Capital, Innovation Performance, Corporate Sustainable Longevity

**JEL Classification Code:** M12, M14, M19

## 1. Introduction

Corporate longevity is an interesting issue from a theoretical point of view. Ahmad et al. (2019) distinguished between corporate longevity (CL) and corporate sustainable longevity (CSL). CSL refers to what enables a company to achieve longevity. CL refers to the longevity of the company compared to the average age of the company. Though CSL is a related concept, it is primarily different from "longevity" because it addresses the "ability" of a firm to sustain its longevity beyond average firm age. However, there is no explanation about how long a company can be called long-lived and successful. Davis (2014) stated that longevity is the biggest common challenge for companies. Geus (1997) stated that it is a commonly held notion that organizations exist in a constant struggle for survival. Companies and organizations cannot be viewed separate from the environment in which they exist, whether that be the customers they serve, the market in which they operate, or the other organizations with whom they either collaborate or compete. Longevity as a part of sustainability issues needs awareness of the environment (Khan et al., 2020), green finance (Lee, 2020), and corporate governance influencing stakeholders (Husnaini et al., 2020).

De Falco and Vollero (2015) mentioned that sustainability is closely related to corporate longevity. Previous research suggested corporate longevity and corporate sustainability need to consider the operational processes and ability to survive in its current environment. This key business role

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has led to the idea of corporate longevity. Longevity, in a business context, is a relative concept. Some industries (such as private banking, professional services, luxury watches, and insurance,) more naturally incline to long time frames, particularly when customer trust is of high importance. In other industries (such as fashion or technology) the pace of change tends to be much faster and barriers to entry structurally much lower (Davis, 2014).

Known as the cultural heritage of Indonesia, the traditional herbal medicine industry faces challenges of longevity. The word *jamu* is a generic expression for traditional herbal medicine in Indonesia. Apart from pandemic situations, the herbal medicine industry faces several business challenges. The Jamu Producers Association (GP Jamu) said that around 400 *jamu* factories were closed (Tribunnews, 2019). The *jamu* industry faces several challenges 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, digitizing industry revolution, and the quality of human resources. *Jamu* industry as Indonesian cultural heritage must be preserved with good support from a technical, regulatory, and commercial perspective so that *jamu* companies do not go into the decline stage.

*Jamu* as part of the pharmaceutical industry category needs to improve production quality, avoid human error, and increase production capacity in line with increasing market demand. Operational resilience is usually defined as the ability of an organization to adapt rapidly to changing environments. This includes both the resilience of systems and processes and more generally the ability of the organization to continue to operate its business in the event of disruptive events. In a pandemic situation, it becomes relevant to strengthen the ability of operational resilience and human capital to create innovation performance that ultimately ensures corporate sustainable longevity. Innovation performance can be understood as the ability to transform innovation inputs into outputs, and thus the ability to transform innovation capability and effort into market implementation. The result of innovative performance is innovation market success. Kwee et al. (2008) and Van Driel et al. (2015) call it co-evolutionary competence which emphasizes the interaction of management intentionality with the pressure of the changes in the external environment.

Most of the extant research is focused on corporate longevity that refers to the firm's long life beyond the average firm age. However, research on "what enables a firm to survive longer" that corresponds to CSL is relatively limited. Moreover, current literature on CSL is implicit in nature and denotes it with corporate success, performance, sustainability, and other variables. This study aims to identify the effect of operational resilience and human capital toward CSLy through innovation performance.

## 2. Literature Review

### 2.1. Corporate Sustainable Longevity

Business longevity, including the perspective of the long-term viability of the company, has been widely researched among business history and management researchers. Business longevity does not necessarily mean working to ensure a company exists beyond first-generation ownership. Rather, the meaning of longevity depends on the goals of ownership. (Riviezzo et al., 2015). Company performance is generally equated with business sustainability and longevity, as stated by Napolitano et al. (2015). It has become frequent to see a lot of businesses last only for few years. To survive the unpredictable dynamic business climate, it is vital for firms to invest in attaining business success in the area of managerial process. In management research, performance and business longevity are not considered as substitutes for each other. Good performance solely is not sufficient in predicting company longevity. Innosight's corporate longevity forecast of S&P 500 companies anticipates average tenure on the list is growing shorter and shorter over the next decade. Innosight provided key findings that the average age of companies in the S&P 500 in 1964 fell from 33 years to 24 years in 2016 (Anthony et al., 2018).

Furthermore, corporate longevity is predicted to shrink to just 12 years by 2027. Family businesses go through this cycle, only a few companies can survive in the long term (Hillebrand, 2018; Ahn, 2018; Cressy, 2006). Hnátek (2015) states that around 70% of family-owned businesses do not survive in the 2nd generation and 90% are no longer controlled by the 3rd generation of the founding family. Another finding on multinational companies by the Boston Consulting Group (BCG) states that the company longevity ranges from 40 to 50 years (Kuenen et al., 2011).

### 2.2. Operational Resilience

Holling (1973) defines resilience as an ability to absorb changes and to return to balance after experiencing a temporary disturbance. This concept is still developing and has been conceptualized differently in various disciplines (Birkie et al., 2013). Allen et al. (2012) through ecological literature stated that managing resilience focuses on system-level characteristics and processes, and the endurance of system properties in the face of social or ecological surprise. Managing for resilience consists of actively maintaining a diversity of functions and homeostatic feedbacks; steering systems away from thresholds of potential concern; increasing the ability of the system to maintain its identity

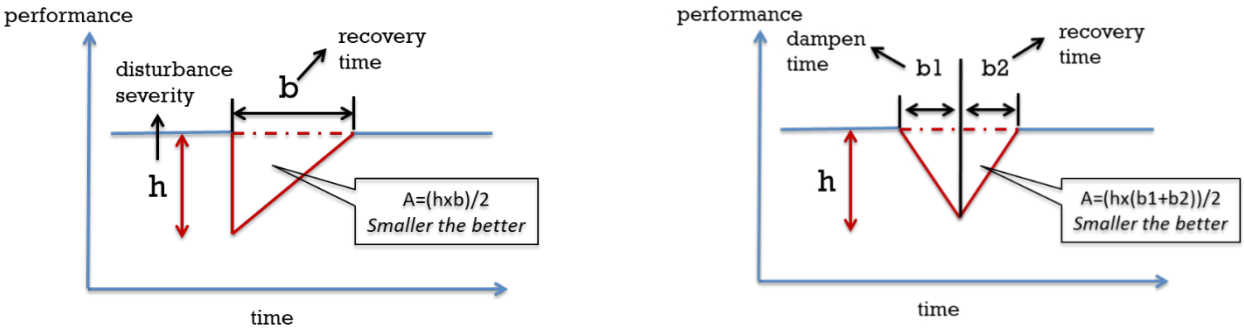


**Figure 1:** Resilience Triangle

Source: Carvalho et al. (2014)

under a wide range of conditions; and increasing the capacity of a system to cope with change through learning and adaptation. The critical aspect of managing for resilience, and therefore ecosystem management is undertaking adaptive management to reduce uncertainty and actively managing to avoid thresholds in situations where maintaining resilience is desired. Managing adaptively for resilience is the approach best suited for coping with external shocks, including global change, climate change, and the non-linear complex dynamics arising from linked social-ecological systems.

Dinh et al. (2014) defined resilience as the ability to bounce back when faced with unexpected events. The concept of resilience engineering has been treated in depth by Woods & Hollnagel (2006) who defined 'failure' as the result of the adaptations necessary to cope with the complexity of the real world, rather than a breakdown or malfunction. The performance of individuals and organizations must continually adjust to current conditions and because resources and time are finite, such adjustments are always approximate.

Resilient systems reduce the probabilities of failure; the consequences of failure—such as deaths and injuries, physical damage, and negative economic and social effects; and the time for recovery. Resilience can be measured by the functionality of an infrastructure system after a disaster and also by the time it takes for a system to return to pre-disaster levels of performance. Tierney and Bruneau (2007) introduced a resilience triangle image that emerged from research on disasters and represents the loss of functionality due to damage and disruption. The "resilience triangle" represents the loss of functionality from damage and disruption, as well as the pattern of restoration and recovery over time. Figure 1 shows an illustration of the resilience triangle as follows:

The depth of the triangle shows the severity or magnitude of loss damage and the length of the triangle shows the damping time and the recovery time. The smaller the triangle area is, the more resilient the system is. Actions, behaviors, and properties of social units, organizations, and networks all contribute to reducing the area of the resilience triangle in the event of a disruption occurrence. The ability to recover from a disturbance occurrence is related to the development of responsiveness capabilities through flexibility and redundancy. The more efficient the contingency strategies are the smaller the recovery time is (Carvalho et al., 2014).

## 2.3. Innovation Performance

Business growth results from innovation in an organization and also organizational sustainability (Jonathan et al., 2016; Carayannis et al., 2015; Yang, 2012; Crossan & Apaydin, 2010). In business dynamics, a variety of capabilities are required that complement organizational readiness to achieve sustainable competitive advantage (Arndt & Pierce, 2018; Breznik & Hisrich, 2014; Teece, 2007; Teece et al., 1997).

Innovation performance is the use of ideas or creativity to improve the products, processes, procedures that increase the significance, usefulness, and performance of the products and services Previous empirical research have shown a positive relationship between innovation and company performance in the manufacturing industry (Iddris, 2016; Cheng et al., 2010; Lööf & Heshmati, 2005 and the service industry (Capaldo et al., 2014; Hogan et al., 2011; Balan & Lindsay, 2010; Akman & Yilmaz, 2008). However, several studies have also shown a negative relationship or no relationship at all (Subramanian & Nilakanta, 1996; Capon et al., 1994). Innovation may be a source of cash flow for the company. On the other hand, innovation is often synonymous with large investments by companies with the long-term realization of returns (Zizlavsky, 2016; Varis & Littunen, 2010).

The concept of business models and consequently business model innovation has its foundation in corporate

practice, strategic management, and industrial economics. However, business models are not a strategy but constitute the core and driver of a strategy as well as the key for decoding, understanding, and effectively communicating a strategy both within an organization as well as across its business ecosystem Carayannis and Provance (2008) focused on the organizational design and governance and the role different stakeholders, predominantly customers and partners play in the innovation process towards organizational sustainability. Finally, the ways by which organizational performance is influenced by different business models are also explored, aiming to shed light on this theoretical gap. The results provided insights to manufacturers in developing countries, overcoming their dependence on commoditized products and OEM manufacturing while maintaining a sustainable ecosystem.

## 2.4. Human Capital

Schultz (1961) considered that human resources were formed by knowledge, skills, and the role of education in shaping individuals. Mincer (1961) stated that skills are acquired through experience in the workplace. Schultz (1961) argued that both knowledge and skills are forms of capital. Followed by Becker (1962) defined human capital as a key element in increasing company and employee assets to increase productivity and maintain a competitive advantage.

Edvinsson and Malone (1997) added that human capital consists of factors, including skills, knowledge, experience, creativity, and innovation. In the context of intellectual capital, human capital is formed by talents, skills, abilities, and ideas through education. Improvements in education have also been shown to increase the wages of residents at the lower end of the income distribution and in the higher education group. Intellectual capital is a phrase covering corporate brainpower, information technology, and relationships with customers and suppliers, all of which influence a company's ability to make money. Goldberg and Pavcnik (2007) stated that exogenous push for technological and skills advancement has increased income or wages. Skills upgrading and reducing inequality in education will reduce income inequality. Teixeira (2014) stated that education and employment training are the most important investments in human resources.

The concept of human capital in this study is built from the understanding by Dar & Mishra, (2019), Volini et al. (2019), Vidotto et al. (2017), and Šlaus & Jacobs (2011) where human capital as a resource-based view to get value, use, and application of experience, qualifications, creativity, and mobility of talents as the main determinants of productivity.

# 3. Methodology

This study was conducted during July–September 2020, during the pandemic. Small-scale herbal medicine companies are limited in responding because they experience a decrease in production or cannot be reached due to moving locations. Data analysis is carried out with the structural equation modeling method (SEM) using Partial Least Square (PLS) or PLS-SEM. PLS-SEM can be used both for explanatory and predictive research. Henseler et al. (2016) stated that PLS path modeling is a variance-based structural equation modeling (SEM) technique that is widely applied in business and social sciences. Its ability to model composites and factors makes it a formidable statistical tool for new technology research.

The sample of the study consists of 108 *jamu* small scale companies (called as *UKOT, usaha kecil obat tradisional*) operating in Java, Indonesia/ The sampling techniques used was simple random sampling, with a margin error of 10%. Simple random sampling is a type of probability sampling in which the researcher randomly selects a subset of participants from a population. Each member of the population has an equal chance of being selected. Simple random sampling is a method used to cull a smaller sample size from a larger population and use it to research and make generalizations about the larger group. There are 874 *Jamu* small-scale companies in Indonesia, where more than 80 percent is located in Java. Likert scale is a question that contains 5 or 7 response options. The choices range from strongly agree to strongly disagree so the survey maker can get a holistic view of people's opinions and their level of agreement. The questionnaire was designed using the 5-point Likert Scale, where 1 means strongly unfit to 5 being strongly fit, we distributed 200 questionnaires to respondents and received 108 valid responses on which the data analysis is based. This study develops hypotheses tested as follows:

***H1:*** *There is a direct relationship between human capital and corporate sustainable longevity.*

Human capital provides value, added to human mental awareness, creativity, and social innovation so that it becomes the main determinant of resource productivity and sustainability (Šlaus & Jacobs, 2011). Human capital, as reflected in the level of experience, skills, education/ knowledge, and innovation are two important engines of economic growth (Dar & Mishra, 2019).

***H2:*** *Human capital resilience has a positive and significant relationship with innovation performance.*

Meijerink and Bondarouk (2018) proved that a higher level of human resources results in a higher level of competitive advantage. Buenechea-Elberdin et al. (2017) stated that intellectual capital is the main driver of innovation performance and competitive advantage.

***H3:*** *Innovation performance has a positive and significant relationship with corporate sustainable resilience.*

Wojan et al. (2018) showed that long-surviving firms overwhelmingly gravitate away from non-innovation strategies toward incremental or more far-ranging innovation orientations. The significant innovations, particularly new processes, non-patented and domestic ones, have been found to positively influence the probability of business survival (Ortiz-Villajos & Sotoca, 2018).

***H4:*** *There is a direct relationship between operational resilience and corporate sustainable longevity.*

From a technical point of view, resilience and sustainability could be integrated. However, it requires a long and thorough process with a multidisciplinary stakeholder team including technical, strategic, social, and political parties. A combination of incentives and policies would support this process and help people work towards integration. (Achour et al., 2015). Birkie et al. (2013) showed that resilience helps reduce the likelihood of decreased performance due to disruption.

***H5:*** *Operational resilience has a positive and significant relationship with innovation performance.*

Achour et al. (2015) stated that different stakeholders are interested in innovative ways to build an integrated resilience and sustainability. Teixeira and Werther (2013) stated that a strong organization anticipates and follows up with innovations against disruptive industrial changes.

## 4. Results

We tested the hypotheses using SmartPLS version 3.0 to analyze the data collected because of the nature of the model and sample. Figure 2 depicts the statistical model of the bootstrap path diagram of the study.

The study considered analysis regarding the reliability, construct reliability, average variance extracted (AVE), and discriminant validity of the indicators of latent variables. The study operationalized four constructs in the model as first-order reflective constructs (i.e., operational resilience, human capital, innovation performance, and corporate sustainable longevity). This study starts by examining the individual item reliability for the measurement model (Table 1). The indicators exceed the accepted threshold of 0.7 for each factor loading.

Based on the assessment of the results in Table 1, all compositions are reliable after reducing indicators that are lower than 0.7. Cronbach's alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. It is considered to be a measure of scale reliability. Composite reliability is a measure of internal consistency in scale items, much like Cronbach's alpha. The values for both the Cronbach alpha coefficient and composite reliability are higher than the 0.7. The average variance extracted (AVE) is a measure of the amount of variance that is captured by

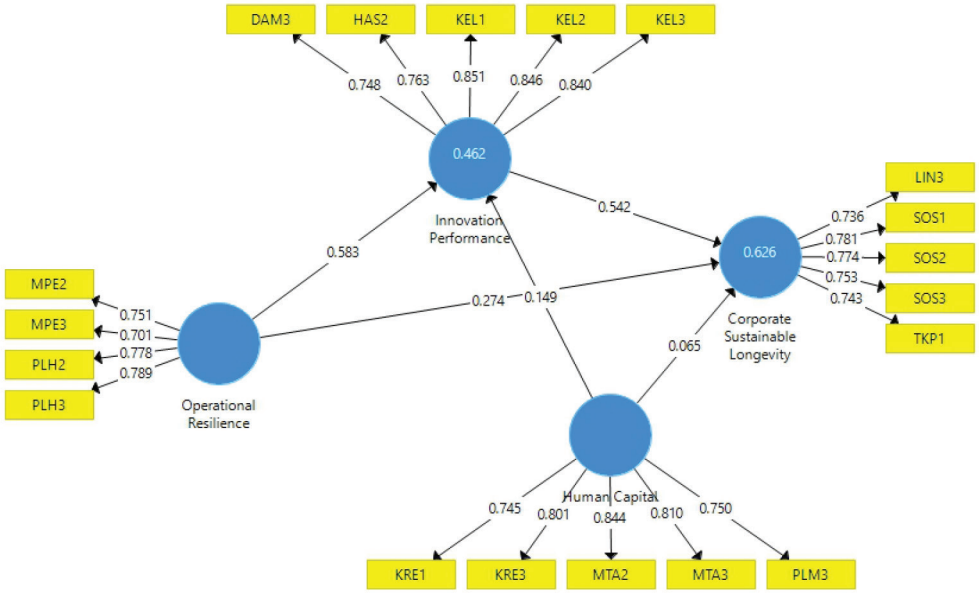


**Figure 2:** Statistical Model of a Bootstrap Path Diagram

**Table 1:** Construct Loadings

| Construct | Items | Loadings | AVE | CR | Cronbach's Alpha |
|---|---|---|---|---|---|
| Operational Resilience (OR) | MPE2 | 0.751 | 0.571 | 0.841 | 0.750 |
| | MPE3 | 0.701 | | | |
| | PLH2 | 0.778 | | | |
| | PLH3 | 0.789 | | | |
| Human Capital (HC) | KRE1 | 0.745 | 0.626 | 0.893 | 0.851 |
| | KRE3 | 0.801 | | | |
| | MTA2 | 0.844 | | | |
| | MTA3 | 0.810 | | | |
| | PLM3 | 0.750 | | | |
| Innovation Performance (IP) | KEL1 | 0.851 | 0.657 | 0.905 | 0.869 |
| | KEL2 | 0.846 | | | |
| | KEL3 | 0.840 | | | |
| | HAS2 | 0.763 | | | |
| | DAM3 | 0.748 | | | |
| Corporate Sustainable Longevity (CSL) | SOS1 | 0.781 | 0.574 | 0.871 | 0.814 |
| | SOS2 | 0.774 | | | |
| | SOS3 | 0.753 | | | |
| | LIN3 | 0.736 | | | |
| | TKP1 | 0.743 | | | |

Note: AVE = average variance extracted, CR = composite reliability.

**Table 2:** Fornell-Larcker Criterion for Discriminant Validity

| | CSL | HC | IP | OR |
|---|---|---|---|---|
| CSL | 0.758 | | | |
| HC | 0.487 | 0.791 | | |
| IP | 0.757 | 0.487 | 0.811 | |
| OR | 0.674 | 0.58 | 0.669 | 0.755 |

a construct in relation to the amount of variance due to measurement error. AVE is acceptable if values are higher than 0.5. In this case, it is concluded that the model construct indicators have met the reliability test.

Table 2 shows the discriminant validity based on the Fornell-Larcker criterion. For each construct, the discriminant validity values must be higher than 0.70. In this case, the discriminant validity has been fulfilled as a research model.

Hypothesis testing is run by resorting to a bootstrapping procedure as can be seen in Table 3, which shows that there is a less significant relationship between human capital and corporate sustainable longevity ($\beta$ = 0.065; $t$ = 0.769; $p$ = 0.042). Therefore, H1 is not supported. The hypotheses concerning H2 has an insignificant interaction ($\beta$ = 0.149, $t$ = 1.683, $p$ = 0.093) between human capital (HC) and innovation performance (IP), then H2 is not supported.

H3 which denotes a direct association between innovation performance (IP) and corporate sustainable longevity (CSL), demonstrated a significant positive relationship with 54.2% ($\beta$ = 0.542; $t$ = 5.799; $p$ = 0). H4 depicts a direct effect on CSL from operational resilience (OR) ($\beta$ = 0.274; $t$ = 2.605; $p$ = 0.009). H4 is thus supported. H5 has a significant impact on the relationship ($\beta$ = 0.583, $t = 5.504, p = 0$) between operational resilience and innovation performance. Hence H6 is supported.

## 5. Discussion

The insignificance of the relationship between human capital, either directly or indirectly, to corporate sustainable longevity through innovation performance becomes questionable (H1, H2). This result is different from general academic studies and practices of how important

**Table 3:** Path Coefficients

| Hypothesis | Relationship | *β* | STDEV | *t*-statistics | *p*-values | Remarks |
|---|---|---|---|---|---|---|
| H1 | HC → CSL | 0.065 | 0.084 | 0.769 | 0.442 | Not supported |
| H2 | HC → IP | 0.149 | 0.088 | 1.683 | 0.093 | Not supported |
| H3 | IP → CSL | 0.542 | 0.094 | 5.799 | 0 | Supported |
| H4 | OR → CSL | 0.274 | 0.105 | 2.605 | 0.009 | Supported |
| H5 | OR → IP | 0.583 | 0.106 | 5.504 | 0 | Supported |

human capital is in supporting innovation and business sustainability. Withinthe scope of the small-scale herbal medicine industry, human capital is still of less concern and has not been a priority to support long-term achievement. Human capital in this industry deals with operational routines that are material in nature. Human capital has not been a strong factor for innovation performance and sustainability. The results of this research do not prove the research statement of Meijerink and Bondarouk (2018) and Buenechea-Elberdin et al. (2017) who stated that a higher level of human resources results in a higher level of competitive advantage and innovation performance. This finding requires another explanation beyond the dimensions and indicators presented in this study.

On the other hand, awareness, or sensitivity to change and how to ensure operational resilience to successfully passthrough difficult stages in the business life cycle has been a concern as a determining factor, either directly or indirectly, on the sustainability of business life by creating innovation performance (H4, H5)**.** Business challenges and the existence of *jamu* companies require the ability to be resilient. Birkie (2016) stated that companies that have operational resilience tend to prevent or reduce negative potential in the form of operational disruptions. Reducing the likelihood of distraction and increasing endurance can be achieved by creating flexibility or increasing flexibility.

Length of service, competence, training intensity, satisfactory employee performance achievement in terms of workforce quality, and a broad view of the work do not adequately explain the human capital construct. For small scale industries with a limited number of employees and monotonous work routines, there are no strategic initiatives to improve performance, apart from adaptability, managing complexity, improving performance, and mastering technology. Considering the above indicators, human capital as a construct is not sufficient to mediate the relationship between innovation performance and corporate sustainability.

In terms of operational resilience, the ability to absorb change requires the use of existing operational assets and available resources to respond to business challenges. The ability to recover requires distribution, alternative suppliers, and a choice of various markets. The ability to collaborate and produce in a minimum capacity is not sufficient to explain this operational resilience construct.

Innovation performance is characterized by the launch of a new product or service in the last 2 years accompanied by a wider market share and the product's survivability in the market. This has not influenced revenue and we can say that *Jamu* companies cannot call itself an innovative company whose products are difficult to imitate by competitors.

In the last two years, efforts have been made to use domestic raw materials by reducing imported materials. Increasing the benefits and safety of the product is prioritized to increase customer and stakeholder satisfaction which results in increased performance following the predetermined strategy. Increased cash flow, profit, and financial control do not show sufficient explanation for the construct of corporate sustainable longevity.

## 6. Conclusion

Corporate sustainable longevity (CSL) is the biggest common challenge for companies. Changes in industrial structure, markets, demographics, regulations, and technology are unpredictable and often cause operational disruptions. This uncertainty urges companies in various capacities to plan. Operational resilience influences corporate sustainable longevity directly and indirectly through innovation performance. However, human capital could not play the antecedent role to CSL directly or even indirectly through innovation performance. Human capital indicators require deeper exposure in the context of small industries. Human capital in this industry deals with operational routines that are material in nature. Human capital has not been a strong factor for innovation performance and sustainability.

Operational resilience is a necessary framework to navigate an increasingly uncertain world. Operational resilience is the ability of an organization to continue to

provide business services in the face of adverse operational events by anticipating, preventing, recovering from, and adapting to such events. The life span of a company generally contains shocks from disruption and attempts at recovery. Capability is required to quickly identify the scale of the impact of the disruption. Operational resilience is usually defined as the ability of an organization to adapt rapidly to changing environments. This includes both the resilience of systems and processes and more generally the ability of the organization to continue to operate its business in the event of disruptive events.

Human capital, which is an antecedent variable in several previous studies, requires relevant indicators in the scope of small-scale industries, especially the herbal medicine industry in this study. The dimensions of experience, quality, creativity, and labor mobility require exposure to items that are better able to explain these variables.

CSL is a variable that can still be explored for its internal and external determinants. As a key determinant, operational resilience position can be used as moderating or mediating variables in future studies. Human capital indicators require deeper exposure to be able to explain human capital constructs in the context of small-scale industries. This research requires testing in a more diverse range of industries. Pandemic conditions may be a force majeure condition that limits this research to the generalization of industrial practice. Research under relatively normal conditions is highly recommended.

## References


Achour, N., Pantzartzis, E., Pascale, F., & Price, A. D. F. (2015). Integration of resilience and sustainability: From theory to application. *International Journal of Disaster Resilience in the Built Environment*, *6*(3), 347–362. https://doi.org/10.1108/IJDRBE-05-2013-0016

Ahmad, S., Omar, R., & Quoquab, F. (2019). Corporate sustainable longevity: Scale development and validation. *SAGE Open*, *9*(1), 1–19. https://doi.org/10.1177/2158244018822379

Ahn, S. Y. (2018). Founder succession, the imprint of founders' legacies, and long-term corporate survival. *Sustainability*, *10*(5), 1–15. https://doi.org/10.3390/su10051485

Akman, G., & Yilmaz, C. (2008). Innovative capability, innovation strategy and market orientation: An empirical analysis in the Turkish software industry. *International Journal of Innovation Management*, *12*(1), 69–111. https://doi.org/10.1142/S1363919608001923

Allen, C. R., Cumming, G. S., Garmestani, A. S., Taylor, P. D., & Walker, B. H. (2012). Managing for resilience. *Wildlife Biology*, *17*(4), 337–349. https://doi.org/10.2981/10-084

Anthony, S. D., Viguerie, S. P., Schwartz, E. I., & Landeghem, J. Van. (2018). *2018 corporate longevity forecast: Creative destruction is accelerating*. https://www.innosight.com/wp-content/uploads/2017/11/Innosight-Corporate-Longevity-2018.pdf

Arndt, F., & Pierce, L. (2018). The behavioral and evolutionary roots of dynamic capabilities. *Industrial and Corporate Change*, *27*(2), 413–424. https://doi.org/10.1093/icc/dtx042

Balan, P., & Lindsay, N. (2010). Innovation capability, entrepreneurial orientation and performance in Australian hotels: An empirical study. *Cooperative Research Centre for Sustainable Tourism, 36,* 1–59. https://sustain.pata.org/wp-content/uploads/2015/02/90028b-Balan-AHA-Report-Stage-2-WEB.pdf

Becker, G. S. (1962). Investment in human capital: A theoretical analysis. *The Journal of Political Economy, 70*(5), 9–49. https://doi.org/10.1086/258724

Birkie, S. E., Trucco, P., & Kaulio, M. (2013). State-of-the-art review on operational resilience: Concept, scope, and gaps. *IFIP Advances in Information and Communication Technology*, *398*(2), 273–280. https://doi.org/10.1007/978-3-642-40361-3_35

Breznik, L., & Hisrich, R. D. (2014). Dynamic capabilities vs. innovation capability: Are they related? *Journal of Small Business and Enterprise Development, 21*(3), 368–384. https://doi.org/10.1108/JSBED-02-2014-0018

Buenechea-Elberdin, M., Sáenz, J., & Kianto, A. (2017). Exploring the role of human capital, renewal capital, and entrepreneurial capital in innovation performance in high-tech and low-tech firms. *Knowledge Management Research Practice, 15,* 369–379. https://doi.org/10.1057/s41275-017-0069-3

Capaldo, G., Iandoli, L., Raffa, M., & Zollo, G. (2014). The evaluation of innovation in small software firms : Capabilities a methodological approach. *Small Business Economics*, *21*(4), 343–354. https://link.springer.com/article/10.1023%2FA%3A1026158904245

Capon, N., Fakley, J. U., & Hulbert, J. M. (1994). Strategic planning and financial performance: More evidence. *Journal of Management Studies, 31*(1), 45–60. https://doi.org/https://doi.org/10.1111/j.1467-6486.1994.tb00335.x

Carayannis, E. G., & Provance, M. (2008). Measuring firm innovativeness: towards a composite innovation index built on firm innovative posture, propensity, and performance attributes. *International Journal of Innovation and Regional Development*, *1*(1), 90. https://doi.org/10.1504/ijird.2008.016861

Carayannis, E. G., Sindakis, S., & Walter, C. (2015). Business model innovation as a lever of organizational sustainability. *Journal of Technology Transfer*, *40*(1), 85–104. https://doi.org/10.1007/s10961-013-9330-y

Carvalho, H., Azevedo, S. G., & Machado, V. C. (2014). Supply chain management resilience: A theory-building approach. *International Journal of Supply Chain and Operations Resilience*, *1*(1), 3. https://doi.org/10.1504/ijscor.2014.065453

Cheng, M. Y., Lin, J. Y., Hsiao, T. Y., & Lin, T. W. (2010). Invested resources, competitive intellectual capital, and corporate performance. *Journal of Intellectual Capital*, *11*(4), 433–450. https://doi.org/10.1108/14691931011085623

Cressy, R. (2006). Why do most firms die young? *Small Business Economics*, *26*(2), 103–116. https://doi.org/10.1007/s11187-004-7813-9

Crossan, M. M., & Apaydin, M. (2010). A multi-dimensional framework of organizational innovation: A systematic review of the literature. *Journal of Management Studies*, *47*(6), 1154–1191. https://doi.org/10.1111/j.1467-6486.2009.00880.x

Dar, I. A., & Mishra, M. (2019). Human capital and SMEs internationalization: Development and validation of a measurement scale. *Global Business Review, 56*(2), 402–411. https://doi.org/10.1177/0972150918817390

Davis, I. (2014). Reflections on corporate longevity. *McKinsey Quarterly*, *9*(3), 118–122. https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/reflections-on-corporate-longevity

De Falco, S. E., & Vollero, A. (2015). Sustainability, longevity and transgenerational value in family firms. The case of Amarelli 1. *Italian Journal of Management*, *33*(97), 291–309. https://ojs.sijm.it/index.php/sinergie/article/download/208/146

Dinh, J. E., Lord, R. G., Gardner, W. L., Meuser, J. D., Liden, R. C., & Hu, J. (2014). Leadership theory and research in the new millennium: Current theoretical trends and changing perspectives. *Leadership Quarterly*, *25*(1), 36–62. https://doi.org/10.1016/j.leaqua.2013.11.005

Edvinsson, L., & Malone, M. S. (1997). *Intellectual capital: Realizing your company's true value by finding its hidden brainpower.* New York: Harper Business.

Geus, A. D. (1997). The living company. *Harvard Business Review*. https://hbr.org/1997/03/the-living-company

Goldberg, P. K., & Pavcnik, N. (2007). *Distributional effects of globalization in developing countries* (NBER Working Papers 12885). http://www.nber.org/papers/w12885

Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS path modeling in new technology research: updated guidelines. *Industrial Management and Data Systems*, *116*(1), 2–20. https://doi.org/10.1108/IMDS-09-2015-0382

Hillebrand, S. (2018). Innovation in family firms: A generational perspective. *Journal of Family Business Management*, *8*(1), 1–24. https://doi.org/10.1108/jfbm-04-2018-0011

Hnátek, M. (2015). Entrepreneurial thinking is a key factor of family business success. *Procedia: Social and Behavioral Sciences*, *181*, 342–348. https://doi.org/10.1016/j.sbspro.2015.04.896

Hogan, S. J., Soutar, G. N., McColl-Kennedy, J. R., & Sweeney, J. C. (2011). Reconceptualizing professional service firm innovation capability: Scale development. *Industrial Marketing Management*, *30*, 1–10. https://doi.org/10.1016/j.indmarman.2011.10.002

Holling, C. S. (1973). Resilience and sustainability of the ecological system. *Annual Review* of *Ecology and Systematics*, *4*(1), 1–23. https://doi.org/10.1146/annurev.es.04.110173.000245

Husnaini, W., Husnaint, W., & Basuki, B. (2020). ASEAN corporate governance scorecard: sustainability reporting and firm value. *Journal of Asian Finance, Economics, and Business*, *7*(11), 315–326. https://doi.org/10.13106/jafeb.2020.vol7.no11.315

Iddris, F. (2016). Innovation capability: A systematic review and research agenda. *Interdisciplinary Journal of Information, Knowledge, and Management, 11,* 235–260. https://doi.org/10.28945/3571

Jonathan, O. A., Seun, A. A., & James, O. O. (2016). Managerial capability and the innovative prowess of entrepreneurial firms in Nigeria. *World Journal of Research and Review, 2*(3), 18–21. https://www.neliti.com/publications/262984/managerial-capability-and-the-innovative-prowess-of-entrepreneurial-firms-in-nig

Khan, U., Haque, M. I., & Khan, A. M. (2020). Environmental sustainability awareness in the Kingdom of Saudi Arabia. *Journal of Asian Finance, Economics, and Business*, *7*(9), 687–695. https://doi.org/10.13106/JAFEB.2020.VOL7.NO9.687

Kuenen, J. W., Osselaer, J. V., Berz, K., Kaye, C., Sander, A., Schouten, W. J., & Tsusaka, M. (2011). *Global aging: How companies can adapt to the new reality*. https://www.bcg.com/documents/file93352.pdf

Kwee, Z., Van Den Bosch, F. A. J., & Volberda, H. W. (2008). *Coevolutionary competence in the realm of corporate longevity: How long-lived firms strategically renew themselves*. Bingley, UK: Emerald Publishing Limited. https://doi.org/10.1016/S1744-2117(08)04008-5

Lee, J. W. (2020). Green finance and sustainable development goals: The case of China. *Journal of Asian Finance, Economics, and Business*, *7*(7), 577–586. https://doi.org/10.13106/jafeb.2020.vol7.no7.577

Lööf, H., & Heshmati, A. (2005). *The impact of public funding on private R&D investment: New evidence from a firm-level innovation study* (MTT Discussion Papers 11862). http://www.infra.kth.se/cesis/documents/WP06.pdf

Meijerink, J., & Bondarouk, T. (2018). Uncovering configurations of HRM service provider intellectual capital and worker human capital for creating high HRM service value using fsQCA. *Journal of Business Research*, *82*, 31–45. https://doi.org/10.1016/j.jbusres.2017.08.028

Mincer, J. (1961). *On-the-job training: costs, returns, and some implications* (September 03, 2016). http://www.journals.uchicago.edu/t-and-c

Napolitano, M. R., Marino, V., & Ojala, J. (2015). In search of an integrated framework of business longevity. *Business History, 57*(7), 955–969. https://doi.org/10.1080/00076791.2014.993613

Ortiz-Villajos, J. M., & Sotoca, S. (2018). Innovation and business survival: A long-term approach. *Research Policy*, *47*(8), 1418–1436. https://doi.org/10.1016/j.respol.2018.04.019

Riviezzo, A., Skippari, M., & Garofano, A. (2015). Who wants to live forever: Exploring 30 years of research on business longevity. *Business History*, *57*(7), 970–987. https://doi.org/10.1080/00076791.2014.993617

Schultz, T. W. (1961). Investment human capital. *The American Economic Review*, *51*(1), 1–17. http://www.jstor.org

Šlaus, I., & Jacobs, G. (2011). Human capital and sustainability. *Sustainability, 3*(1), 93–111. https://doi.org/10.3390/su3010097

Subramanian, A., & Nilakanta, S. (1996). Organizational innovativeness: Exploring the relationship between organizational

determinants of innovation, types of innovations, and measures of organizational performance. *Omega, 24*(6), 631–647. https://doi.org/10.1016/S0305-0483(96)00031-X

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, *18*, 509–533. https://doi.org/10.1002/(Sici)1097-0266(199708)18:7<509::Aid-Smj882>3.0.Co;2-Z

Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, *28*, 1319–1350. https://doi.org/10.1002/smj.640

Teixeira, E. D. O., & Werther, W. B. (2013). Resilience: Continuous renewal of competitive advantages. *Business Horizons*, *56*(3), 333–342. https://doi.org/10.1016/j.bushor.2013.01.009

Teixeira, P. N. (2014). Gary Becker's early work on human capital: Collaborations and distinctiveness. *IZA Journal of Labor Economics*, *3*(12), 1–20. https://doi.org/10.1186/s40172-014-0012-2

Tierney, K., & Bruneau, M. (2007). Conceptualizing and measuring resilience: A key to disaster loss reduction. *TR News.* https://onlinepubs.trb.org/onlinepubs/trnews/trnews250_p14-17.pdf

Tribunnews. (2019). 400s of herbal medicine factories in Indonesia roll mats, this said GP Jamu. https://jateng.tribunnews.com/2019/09/02/400an-pabrik-jamu-di-indonesia-gulung-tikar-ini-kata-gp-jamu

Van Driel, H., Volberda, H. W., Eikelboom, S., & Kamerbeek, E. (2015). A co-evolutionary analysis of longevity: Pakhoed and its predecessors. *Business History*, *57*(8), 1277–1305. https://doi.org/10.1080/00076791.2015.1026261

Varis, M., & Littunen, H. (2010). Types of innovation, sources of information, and performance in entrepreneurial SMEs. *European Journal of Innovation Management*, *13*(2), 128–154. https://doi.org/10.1108/14601061011040221

Vidotto, J. D. F., Ferenhof, H. A., Selig, P. M., & Bastos, R. C. (2017). A human capital measurement scale. *Journal of Intellectual Capital*, *18*(2), 316–329. https://doi.org/10.1108/JIC-08-2016-0085

Volini, E., Schwartz, J., Roy, I., Hauptmann, M., Durme, Y. Van, Denny, B., & Bersin, J. (2019). *Global human capital trends 2019*. https://www2.deloitte.com/content/dam/insights/us/articles/5136_HC-Trends-2019/DI_HC-Trends-2019.pdf

Wojan, T. R., Crown, D., & Rupasingha, A. (2018). Varieties of innovation and business survival: Does the pursuit of incremental or far-ranging innovation make manufacturing establishments more resilient? *Research Policy*, *47*(9), 1801–1810. https://doi.org/10.1016/j.respol.2018.06.011

Woods, D. D. D., & Hollnagel, E. (2006). Prologue: Resilience engineering concepts, In: *E. Hollnagel*, D. *Woods* & N. Leveson (Eds.), *Emergence: Resilience: the challenge of the unstable* (pp. 397–403). UK: Aldershot. https://doi.org/10.1136/qshc.2006.018390

Yang, J. (2012). Innovation capability and corporate growth: An empirical investigation in China. *Journal of Engineering and Technology Management*, *29*(1), 34–46. https://doi.org/10.1016/j.jengtecman.2011.09.004

Zizlavsky, O. (2016). Innovation performance measurement: Research into Czech business practice. *Economic Research-Ekonomska Istrazivanja*, *29*(1), 816–838. https://doi.org/10.1080/1331677X.2016.1235983

## Appendix A

| Sample Characteristics | Total |
|---|---|
| **Number of employees** | |
| < 10 | 50 |
| 10–50 | 37 |
| > 50 | 21 |
| **Status** | |
| owner | 33 |
| management | 75 |
| **Long time of operation** | |
| < 10 years | 31 |
| 10–30 years | 68 |
| > 30 years | 9 |