

The Implementation of the *Tri Datu* Concept of Socio-Cultural Ergonomic Oriented to Maintain Entrepreneurial Attitude of Workers on The Covid-19 Pandemic

I Made Sutajaya and Desak Made Citrawathi

Biology Education Study Program, Faculty of Mathematics and Natural Sciences, Undiksha
imadesutajaya@gmail.com, dskcitra@gmail.com

Ni Putu Sri Arnita and Ni Luh Putu Mia Lestari Devi

Biomedical Engineering Study Program, Bali Dwipa University Denpasar Bali
sriarnita0803@gmail.com, mialestaridevi@ymail.com

Ni Made Citra Aryani

Occupational Health and Safety Study Program, Bali International University Denpasar Bali
citraaryani32@gmail.com

Abstract

The research objective was to determine the implementation of the *Tri Datu* concept oriented to socio-cultural ergonomics to maintain the entrepreneurial attitude of the community during the Covid 19 pandemic. This field experimental research involved 25 workers who switched professions to other occupations. Through observation, interviews, and questionnaires, data were recorded: (1) duration of determining job choices, (2) duration of adaptation to new jobs, and (3) entrepreneurial attitudes. The duration of determining job choice and adaptation to a new job was analyzed descriptively. Changes in workers' entrepreneurial attitudes between before and after the implementation were analyzed by using the dependent sample t test. The results showed that: (1) workers who changed professions after more than 2 months were 72% and 28% less than two months, (2) workers who could adapt to a new profession in less than two months were 84% and 16% over two months, and (3) the entrepreneurial attitude of workers increased significantly by 45.5% ($p < 0.05$) between before and after the implementation of *Tri Datu*. The conclusion is that the implementation of the *Tri Datu* concept which is oriented to socio-cultural ergonomics can improve the entrepreneurial attitude of the community.

Keywords

Pandemic Covid 19, Tri Datu, and Entrepreneurial Attitudes.

1. Introduction

The Covid 19 pandemic made workers in the tourism sector unemployed suddenly as a result of layoffs. This condition makes tourism actors feel confused about earning income. Accustomed to earning a fairly high income, suddenly having no income makes them stressed. They were apparently not ready to switch professions or other sectors. The biggest problem faced by the people of Peliatan Village who work in the fields of tourism, dance and music, crafts, transportation services, culinary, and trade, during the Covid 19 pandemic is experiencing a very concerning economic downturn. Currently most people who work in the tourism sector experience layoffs, because tourism managers are no longer able to pay them. This problem puts tourism actors at the peak of tremendous stress which is determined to have a negative impact on their health.

The concept of Tri Datu is one of the local wisdoms that Balinese people strongly believe have the power of nature that is able to motivate someone in a state of confusion and despair (Sutajaya, 2019). The concept of socio-cultural ergonomics is very relevant to synergize with local wisdom, because it can be used as a way of solving problems in society. Tri Datu comes from the word *Tri* which means three and *Datu* which means color. Tri Datu is often used as an antidote to bad forces that interfere with human civilization (Sutajaya, et al., 2019). In the conditions of the Covid

19 pandemic, it turns out that the concept of Tri Datu is oriented towards socio-cultural ergonomics which is very relevant to be used as a medium to motivate workers who experience termination of employment. In this case the Balinese people's belief in three colors (red, white, and black) which are used as an antidote to bad things that can happen to humans, turns out to be worthy of being used as a reference in overcoming the Covid 19 pandemic. It is stated so, because psychologically this belief will be able to increase the human immune system, because a person feels free from fear and depression.

In the *Tri Datu* concept, it is implied that there are three colors that are protective in human life, namely: the red color symbolizes Lord Brahma as the creator, the black color symbolizes Lord Vishnu as the preserver, and the white color symbolizes Lord Iswara as a power generator. If the concept is synergized with the concept of ergonomics, especially in motivating someone to maintain an entrepreneurial attitude, the meaning of creating is defined as a person's way of creating a conducive work atmosphere, the meaning of maintaining is defined as a way to maintain work motivation and one's performance, and the meaning of melting or generating strength is one's way of convincing himself to change (Sutajaya & Arnyana, 2018, Sutajaya, 2018, and Sutajaya, 2019). The three meanings of the Tri Datu concept which are implemented in community empowerment and oriented with socio-cultural ergonomics can actually arouse one's morale. The touch of culture and belief that is very thick in the Tri Datu concept which is scientifically synergized with the science of socio-cultural ergonomics turns out to be able to motivate workers, especially those who experience termination of employment so they are forced to change or switch to other fields of work. These conditions are closely related to physiological, psychological, and biomechanical capacities which greatly affect human abilities, while task demands are influenced by the characteristics of the work material, the tasks to be performed, the organization and the environment in which the work is carried out (Manuaba, 2015; Wei, et al., 2014; Kim, et al., 2015; Fullemann, et al., 2016; Tsuno, et al., 2017; Akkarakittichoke and Prawit, 2017; Desmeules, et al., 2016; Karatepe, et al., 2014; Mehri, et al., 2017, Verbeek, et al., 2017).

The implementation of socio-cultural ergonomics which refers to the local wisdom of Tri Datu can reduce the negative impact of the use of science and technology. Ergonomic principles can be implemented in the community by integrating them with the social, cultural, and beliefs of the local community so that various occupational diseases, accidents, pollution, poisoning, job dissatisfaction, human error can be avoided or suppressed as little as possible (Manuaba, 2015). The application of ergonomic principles ensures that a person is always in a healthy, safe, and comfortable condition, and is free from stressful conditions and inadequate environmental conditions for activities, such as noise, pollutants, insufficient light intensity, ambient temperature that is too hot or cold, and inadequate air circulation (Manuaba, 2015; Lea, et al., 2017; Thepaksorn, et al., 2017; Ojima, 2017; Choi and Byoung, 2017; Saleh, et al., 2017; Helaly, et al., 2017; LuMeng, et al., 2017; Agyemang, et al., 2014).

Starting from the background of this problem, problem formulations can be made: (1) what is the attitude of workers when they change professions?, (2) what is the attitude of workers when adapting to a new profession?, and (3) whether the implementation of the Tri Datu concept can improve the entrepreneurial attitude of workers?

The research objectives are: (1) knowing the attitude of workers when changing professions, (2) knowing the attitude of workers in adapting to a new profession, and (3) proving that the implementation of the *Tri Datu* concept oriented to socio-cultural ergonomics can improve the entrepreneurial attitude of workers can be used as a reference in implementing the *Tri Datu* concept oriented to socio-cultural ergonomics, especially those related to entrepreneurship. The practical benefit is that it can be implemented by the community in overcoming efforts to switch to other professions and adapt to that profession.

2. Literature Review

Ergonomics comes from the Greek words *ergon* (work) and *nomos* (rule). The definition of ergonomics is science, technology and art to harmonize tools, methods of work and the environment with human abilities, abilities and limitations so that a healthy, safe, comfortable and efficient working condition and environment are obtained so that the highest productivity is achieved (Manuaba in Sutajaya, 2018). Ergonomics is indispensable in an activity that involves humans in it by taking into account the abilities and demands of the task.

Human ability is largely determined by profile factors, physiological capacity, psychological capacity and biomechanical capacity, while task demands are influenced by the characteristics of the work material, the tasks to be performed, the organization and the environment in which the work is carried out (Manuaba in Sutajaya, 2018). With

ergonomics, the negative impact of the use of science and technology can be suppressed, because with the ergonomics of various occupational diseases, accidents, pollution, poisoning, work dissatisfaction, human error, can be avoided or suppressed as little as possible (Manuaba in Sutajaya, 2018). In this case, socio-cultural ergonomics is interpreted as ergonomic concepts that can be implemented in the development of knowledge, understanding, and a person's caring attitude towards the socio-cultural conditions that accompany society in everyday life as local wisdom so that they are able to compete in the global era. and continue to maintain noble and noble values in social and cultural activities in the area.

Sources of work are defined as physical, social or organizational aspects of work that can: (a) reduce job demands and costs related to physiological and psychological factors; (b) functions in achieving work objectives; (c) stimulate individual growth, learning and development. The source of work is the most important predictor of engagement, because it is able to predict the commitment of an organization. Employment sources play a role in shaping the motivation process because employees are able to meet their basic needs such as economic needs, competence, and relating to other people. Recent research states that work is included at the task level as performance feedback, the interpersonal level as support from coworkers, and the organizational level as supervisor development (Sutajaya, 2019; Sutajaya, et al., 2020, Sutajaya, 2020, Sutajaya & Ristiati, 2019; Ruliati, et al., 2016; Ruliati, et al., 2017, Helaly, et al., 2017; LuMeng, et al., 2017; Choi & Byoung, 2017; Ojima, 2017; Arnita, 2020, Devi, 2020).

The use of ergonomic principles in designing a product makes the product more user friendly, satisfying, comfortable and safe (Sutajaya, 2019; Sutajaya, et al. 2020, Sutajaya, 2020, Sutajaya & Ristiati, 2019; Ruliati, et al., 2016; Helaly, et al., 2017). To facilitate and reduce the negative impacts that may arise, the application of ergonomics should use simple language, company language or community language. A systemic, holistic, interdisciplinary and participatory (SHIP) approach should always be used in every problem solving or planning something so that no more problems are left behind or arise at a later date (Sutajaya, 2018; Sutajaya, 2019). In addition, the SHIP approach should be applied in the selection and transfer of technology so that it becomes effective, with the following requirements: (a) the result is technically better; (b) economically more profitable; (c) socially and culturally acceptable; (d) health can be guaranteed and accounted for; (e) saving in energy consumption; and (f) does not damage the environment (Sutajaya, 2018; Sutajaya, 2019). From several ergonomic improvements, it is evident that the application of ergonomics is able to provide economic benefits, increase work safety and comfort. In fact, it has come to the conclusion that good ergonomics is good economic which is the main reference for the concept of ergo-entrepreneurship (Sutajaya, 2018).

Community empowerment is closely related to internal and external factors. Without underestimating the meaning and role of one of the factors, actually these two factors contribute and influence each other synergistically and dynamically. Although from some of the cases mentioned earlier, internal factors are very important as a form of self-organizing from society, it also needs to pay attention to external factors (Manuaba in Sutajaya, 2018). Community development is a concept related to efforts to improve or develop society in a positive direction. Community development is something that has the center of attention in helping people at various age levels to grow and develop through various facilitation and support so that they are able to decide, plan and take action to manage and develop their physical environment and social welfare. This process takes place with the support of collective action and networking developed by the community. That means that community empowerment through ergonomics training actually strives for people to realize how important health and fitness are at work. On the other hand, through ergonomics training, sustainable development can be realized, because it will create strong workers without being exposed to unsafe, unhealthy and uncomfortable working conditions. In the end, an effective, efficient and productive work mechanism will be obtained (Sutajaya, 2018; Sutajaya, 2019).

Local wisdom is an element of traditional culture that has a long history and lives in the collective consciousness of humans and the global community, related to natural resources, cultural resources, human resources, economy, law and security (Geriya in Sutajaya, 2018). Conceptually, local narrative is part of a simple knowledge system (Sarna in Sutajaya, 2018). Among the diversity of local wisdom types, there are several local wisdoms that have quality and superiority with the content of universal values such as historical, religious, ethical, aesthetic, science and technology which are called local genius.

Tri Hita Karana as a cultural heritage of Bali has a lot to do with ergonomics because it is rich in philosophies, values, local ethics, and with a focus on the configuration of the value of harmony. In this case, the ergonomics principle which prioritizes the elements of comfort, health, safety, efficiency, and effectiveness as well as work productivity is

closely related to the *Tri Hita Karana* concept which greatly influences the behavior of Balinese people in their activities. In addition, the ancestral heritage of the concept of balance known as *Tri Hita Karana* has always been an inspiration for natural resource management in Bali. In this case, the application of ergonomics in small industries based on local wisdom is actually trying to make a balance between human activities and the carrying capacity of the natural surroundings. Handling company waste and limiting working time is an ergonomic effort to harmonize the demands of the task with human capabilities and the environmental factors that accompany workers while on the move.

Balinese culture emphasizes the balance of the pattern of relationships with God, humans and the environment. The dynamics of the balance of this relationship pattern is closely related to the dynamics of time travel and the circumstances that occur (*desa, kala, patra*). The concept of the *kala patra* village is also a reference in repairing stations and work processes in small industries, because this concept greatly influences the success of ergonomic interventions in an area (Sutajaya, 2018).

The teachings of *Catur Purusartha* (*Dharma, Artha, Kama, Moksa*) are aimed at achieving the goal of eternal freedom and prosperity throughout the universe by the term *mokshartam jagadhita*. The goal to achieve this is by means of *Catur Marga* (*Karma, Bhakti, Jnana, Raja*). This concept is closely related to the principles of ergonomics which emphasize human efforts to increase work productivity in order to achieve a prosperous life and maintain the quality of physical and spiritual health.

Entrepreneurship is the ability possessed by a person to see and assess business opportunities; gather the resources needed to take appropriate action and take advantage of it for success. Entrepreneurship is essentially the nature, characteristics and character of a person who has a willingness to create innovative ideas into the real world creatively. Meanwhile, what is meant by an entrepreneur are people who have the ability to see and assess business opportunities; gather the resources needed to take the right action, take advantage and have the nature, character and willingness to create innovative ideas into the real world creatively in order to achieve success or increase income (Amperaningrum, I., & Ichyudin, Z., 2009).

Several entrepreneurial concepts seem to be synonymous with the abilities of entrepreneurs in the business world. Entrepreneurship covers all aspects of work, both private and government employees (Soeparman Soemahamidjaja in Amperaningrum, I., & Ichyudin, Z., 2009). Entrepreneurs are those who make creative and innovative efforts by developing ideas and gathering resources to find opportunities and life preparation (Prawirokusumo in Amperaningrum, I., & Ichyudin, Z., 2009). Entrepreneurship (entrepreneurship) appears when an individual dares to develop new businesses and ideas. The entrepreneurial process includes all functions, activities and actions related to obtaining opportunities and creating business organizations (Amperaningrum, I., & Ichyudin, Z., 2009).

3. Methods

The research method used is through field experimental with a randomized posttest only group design. This study involved 25 workers who switched professions to other occupations. Through observations and interviews, data was recorded: (1) the length of time determining the choice of work and (2) the length of time adapting to a new job. Through questionnaires, data were recorded on changes in people's entrepreneurial attitudes between before and after the implementation of the *Tri Datu* concept oriented to socio-cultural ergonomics as a way of solving problems caused by the COVID-19 pandemic.

4. Data Collection

Data collection from observations and interviews were analyzed descriptively by looking for the percentage. Data from the distribution of entrepreneurial attitude questionnaires conducted before and after the implementation of the *Tri Datu* concept oriented to socio-cultural ergonomics associated with entrepreneurial attitudes were analyzed using paired t test at a significance level of 5% because the data were normally distributed after being tested by the Kolmogorov-Smirnov test.

5. Results and Discussion

The results of data analysis obtained through observation and interviews in this study can be seen in Table 1.

Table 1. The results of the descriptive analysis of the duration of professional transfer and adaptation to new jobs (n = 25)

Variables	Percentage (%)
Change of professions before two months	28
Change of professions after two months	72
Adapt to a new profession before two months	84
Adapt to a new profession after two months	16

Based on the results of the analysis in Table 1, it can be explained that 72% of workers who are laid off can switch professions after more than two months. However, after pursuing a new profession, 84% were able to adapt quickly, because before two months of engaging in that profession, they were already used to a new job. This proves that workers who are in conditions of stress and confusion can still see opportunities to earn income. This attitude should be used as an example by other communities when they experience a similar fate, namely being laid off due to the Covid 19 pandemic which is increasingly prevalent in various parts of the world, especially with the discovery of new, more virulent variants. This condition shows that from the beginning, people who have high motivation to become entrepreneurs will find it easier to switch to other professions because they are supported by very adequate work experience and entrepreneurial attitudes. These findings are synergized with the results of research: (a) Sutajaya (2020) who reports that educating the public through the *Tri Datu* concept can increase the entrepreneurial attitude of tourism actors by 23.3% during the Covid 19 pandemic, (b) Arnita (2020) who reports that improvements Ergonomics-oriented work mechanisms can increase the productivity of *piranti upakara* workers in Peliatan Village Ubud Gianyar by 53.93%, and (c) Devi (2020) who reports that providing snacks and active rest can increase the productivity of *jaja gipang* makers by 23.31%. The results of different tests on entrepreneurial attitudes between before and after empowerment can be seen in Table 2.

Table 2. Test results for different entrepreneurial attitudes (n = 25)

Variable	Before Implementation of Tri Datu		After Implementation of Tri Datu		t	p	Decision
	Mean	SD	Mean	SD			
Entrepreneurial attitude	39.80	0.981	57.92	2.141	37.399	0.0001	Increase by 45.5%

Based on the results of data analysis in Table 2, it can be explained that the entrepreneurial attitude of workers who changed professions still persisted during the Covid 19 pandemic as evidenced by high motivation to get a new job or profession. The analysis showed that the entrepreneurial attitude of the workers who changed professions experienced a significant increase of 45.5% ($p < 0.05$). This finding proves that when workers still have high entrepreneurial attitudes, they will remain consistent when they are in very poor conditions. Workers with adequate entrepreneurial attitudes will surely be able to rise again in the worst situations and conditions. This attitude will always accompany workers when they are in any profession.

Unlike the case with workers who have not had an adequate entrepreneurial attitude from the beginning, when they are hit by layoffs, which are so prevalent during the Covid 19 pandemic, they will feel confused and do not think about switching to another job. In addition, an adequate entrepreneurial attitude in a person will greatly assist them in changing professions and quickly being able to adapt to the new profession. The culinary business is a productive economic sector that can support people's lives during the Covid 19 pandemic. The profiles of *angkul-angkul* culinary traders before the Covid 19 pandemic are: (a) they sell food in front of their respective houses or in front of the house entrance gate (*angkul-angkul*), (b) this culinary is very popular with the local community and visitors to tourist objects, (c) the food sold is typical of the local village, and (d) the buyers are generally people or tourists who walk along the *rurung* (alley) Banjar Bucu. However, culinary players are currently experiencing a downturn due to the Covid 19 pandemic, because foreign and domestic tourists no longer cross the hallway and people are also reluctant

to leave the house. This condition resulted in a drastic drop in traders' income. In fact, this condition can be overcome through the implementation of the *Tri Datu* concept oriented to socio-cultural ergonomics which emphasizes that the adequate entrepreneurial attitude that was already possessed by every worker before the Covid 19 pandemic, so that it can be maintained. *Angkul-angkul* culinary development can be revived by involving new traders who change their professions from their original jobs as tourism actors. These findings are synergized with Sutajaya's (2020) report which states that the problem faced by people who are involved in the productive economy is an economic downturn, as evidenced by the data obtained which is compared between before and after the Covid 19 pandemic shows that: (1) the income of the square culinary traders (field area) decreased by 60.9% (from an average of Rp. 575,000, - down to Rp. 225,000, - per day), (2) income of *angkul-angkul* culinary traders (area in front of the house) decreased by 46.2% (from an average of Rp. 325,000, - down to Rp. 175,000, - per day), (3) the income of traders in traditional markets also decreased by 56.7% (from an average of Rp. 750,000, - down to Rp. 325,000 per day), (4) the craftsmen of art products (sculpture, painting, carving, and cloth handicrafts) have absolutely no income, so they turn into agricultural laborers and construction workers), (6) the perpetrators suit to transportation also never gets an income, and (7) the dance artists also cannot perform regularly so there is no income at all. This condition makes people panic, stressed, insecure, afraid, and unable to think clearly. If this is allowed to drag on and even more so for people who are always haunted by the ferocity of the corona virus which threatens their lives, the quality of their health will decline and their entrepreneurial spirit will also fade. Whereas prior to the covid 19 pandemic case, a community empowerment strategy had been implemented in the village through an ergo-entrepreneurship-oriented *Tri Datu* training program which was packaged in the form of an Appropriate Technology oriented brainwashing tourism program centered in *Rurung Banjar Bucu* (*bucu* lane) with findings in the form of: (1) the community empowerment strategy through the *Tri Datu* program training with an ergo-entrepreneurship orientation increases the entrepreneurial attitude of the community by 46.05%, (2) the community empowerment strategy through the *Tri Datu* program training with ergo-entrepreneurship orientation increases public awareness of environmental conditions by 55.82 %, and (3) inadequate working conditions can reduce the quality of public health seen from the increase in fatigue by 54.17%, musculoskeletal complaints by 44.09%, and workloads by 33.18% between before and after work which is the result evaluation of the *Tri Datu* with ergo-entrepreneurship oriented (Sutajaya & Ristiati, 2019).

The implementation of the *Tri Datu* concept is oriented towards socio-cultural ergonomics that are trained during community empowerment, emphasizing efforts to motivate people when experiencing economic downturns. In this case, people who have been laid off are invited to be able to: (1) create (how to create) which is symbolized by red and the god is Lord Brahma, (2) how to maintain that which is symbolized in black and the god is Lord Vishnu, and (3) changing (how to change) which is caused by the white color and the god is Dewa Iswara. The mechanism for transferring and choosing a new profession for workers who have been dismissed can be done through the implementation of the *Tri Datu* concept, so that they truly believe and believe that God is testing the patience of people. These findings are in synergy with the results of previous studies, namely: (1) Sutajaya, et al. (2020) found that there was an increase in public awareness of the quality of their health by 31.09% after the implementation of the Socio-Cultural oriented *Tri Hita Karana* concept, clean and healthy living habits also increased by 27.39%, and public awareness to develop cultural tourism increased by 21.65%, (2) Sutajaya, et al. (2019) found that there was a significant increase in people's understanding of socio-cultural ergonomics by 38.21% and the synergy of *Tri Kaya Parisudha* with educational ergonomics by 32.35%, (3) Arnita, et al. (2019) found that the implementation of *Tri Mandala*-oriented ergotourism can support brackets tourism in Peliatan Village Ubud, Gianyar Bali, one of which is to improve the entrepreneurial attitude of *angkul-angkul* culinary traders who sell in the Banjar Bucu lane area, (4) Arnita (2020) found that improvements to ergonomics-oriented work mechanisms can increase productivity of workers making ceremonies by 53.93%, one of which is a result of the entrepreneurial attitude of workers, and (5) Devi (2020) found that providing snacks and active rest can increase work motivation by 28.20 %, and the productivity of *jaja gipang* makers is 23.31%, one of which is caused by the high entrepreneurial attitude of the workers.

6. Conclusions

Based on the research results that have been discussed in accordance with the findings in the field and relevant references, it can be concluded as follows.

1. Workers who change professions after more than 2 months are 72% and 28% less than two months.
2. The number of workers able to adapt to a new profession in less than two months is 84% and 16% more than two months.
3. Implementation of the *Tri Datu* concept oriented to socio-cultural ergonomics can significantly increase the entrepreneurial attitude of workers by 45.5% ($p < 0.05$).

References

- Agyemang, C.B., Nyanyofio, J.G. Gyamfi, G.D., 2014, Job, stress, sector of work, and shift-work pattern as correlates of worker health and safety: a study of a manufacturing company in Ghana, *International Journal of Business and Management*: vol. 9, no. 7, 2014.
- Akkarakittichoke, N. And Prawit, J., Seat pressure distribution characteristics during 1 hour sitting in office workers with and without chronic low back pain, *Journal Safety and Health at Work*, vol. 8, issue 2, pp. 212-219, 2017.
- Amperaningrum, I., & Ichyudin, Z., Hakekat Kewirausahaan, Available: <http://adesyams.blogspot.com/2009/09/hakekat-kewirausahaan.html>, Accessed on September 10, 2018.
- Arnita, N.P.S., Perbaikan mekanisme kerja berorientasi ergonomi mengurangi keluhan muskuloskeletal dan stres kerja serta meningkatkan produktivitas pekerja pembuat piranti upakara di Desa Peliatan Ubud Gianyar, *Tesis*. Program Pascasarjana Program Studi S2 Ergonomi Fisiologi Kerja, Universitas Udayana, 2020.
- Arnita, N.P. S, Sutajaya, I.M. dan Mia Lestari Devi, N.L.P., Implementasi ergotourism berorientasi tri mandala untuk menunjang wisata rurung di Desa Peliatan Ubud Gianyar. *Prosiding Seminar Nasional 2019 Perhimpunan Ergonomi Indonesia*, Surabaya, 2019.
- Choi, G.H. and Byoung, G., Control of industrial safety based on dynamic characteristics of a safety budget-industrial accident rate model in Republic of Korea. *Journal Safety and Health at Work* vol. 8, issue 2, pp. 189-197, 2017.
- Desmeules, F., Jennifer, B., Clermont, E. D., Pierre, F., Veronique, L., Joy, C. M. and Jean-Sébastien, R., Efficacy of exercise therapy in workers with rotator cuff tendinopathy: a systematic review. *J Occup Health*, vol. 58, pp. 389-403, 2016.
- Devi, N.L.P.M.L., Pemberian istirahat aktif dan kudapan mengurangi kelelahan dan meningkatkan motivasi kerja serta produktivitas pembuat jaja gipang di Desa Sading Mengwi Badung. *Tesis*. Program Pascasarjana Program Studi S2 Ergonomi Fisiologi Kerja, Universitas Udayana, 2020.
- Fullemann, D., Rebecca, B., Gregor, J. J. and Georg F. B., Individual and group-level job resources and their relationships with individual work engagement. *J. Occup Health*, vol. 58, pp. 255-268, 2016.
- Helaly, M.E., Hanan, H., Balkhy, and Vallenius, L., Carpal tunnel syndrome among laboratory technicians in relation to personal and ergonomic factors at work. *J. Occup. Health*, vol. 59, pp. 513-520, 2017.
- Karatepe, O.M., Baradani, S., Olya, Ilkhnizadeh, S., Raoofi, A., The effects of high performance work practices on critical performance outcomes: evidence from the hotel industry. *European Journal of Tourism, Hospitality, and recreation*, vol. 5, issue 3, pp. 49-67, 2014.
- Kim, C. and Youngtae, C., Working conditions and leisure-time physical activity among waged workers in South Korea: a cross-sectional study. *J. Occup Health*, vol. 57, pp. 259-267, 2015.
- Lea, M. Naczenski, J.D., Madelon, L. M. V. H. and Michiel, A. J. K., Systematic review of the association between physical activity and burnout. *J. Occup. Health*, vol. 59, pp. 477-494, 2017.
- LuMeng, Marilyn, B.W.K.A., Mattick, David, M.D., Mark, G.W., and Matthew, L.S., Strategies for worksite health interventions to employees with elevated risk of chronic diseases. *Journal Safety and Health at Work*, vol. 8, issue 2, pp. 117-129, 2017.
- Manuaba, A., Total ergonomic approach to anticipate multidimensional development problems. *Ergonomic Seminar*. Bali Udayana University, 2015.
- Mehri, A., Roohalah, H., Somayeh, F.D., Parvin, N., Sayed, M.J., Fereshteh, T., Seyed, A., and Zakerian., Safety evaluation of the lighting at the entrance of a very long road tunnel: a case study in Ilam. *Journal Safety and Health at Work*, vol. 8, issue 2, pp. 151-155, 2017.
- Ojima, J., Decline of the performance of a portable axial-flow fan due to the friction and duct bending loss of a connected flexible duct, *J. Occup. Health*, vol. 59, pp. 210-213, 2017.
- Ruliati, L.P., Adiputra, N., Sutjana, I.D.P., Sutajaya, I.M., The ergonomics improvement on work conditions reducing fatigue and musculoskeletal disorders of rice milling workers in J village. *Proceedings - Joint International Conference on Electric Vehicular Technology and Industrial, Mechanical, Electrical and Chemical Engineering, ICEVT 2015 and IMECE 2015*, 2016.
- Ruliati, L.P., Adiputra, N., Sutjana, I.D.P., Sutajaya, I.M., Modification of working conditions based on ergo THK reducing workload, muscle tension, and fatigue of rice milling workers in J Village, *AIP Conference Proceedings*, 2017.
- Saleh, S. Susan, W., and Anila, B., The use of noise dampening mats to reduce heavy-equipment noise exposures in construction. *Journal Safety and Health at Work*, vol. 8, issue 2, pp. 226-230, 2017.
- Sutajaya, I.M., *Ergonomi*, Rajawali Pers, PT. Rajagrafindo Persada, Depok, 2018.
- Sutajaya, I.M., *Ergonomi Pendidikan*, Media Akademi, Yogyakarta, 2019.

- Sutajaya, I.M., dan Arnyana, I.B.P., Pemberdayaan masyarakat melalui pelatihan ergo-entrepreneurship untuk meningkatkan kualitas kesehatan dan sikap kewirausahaan pematung di Gianyar Bali. *Laporan Penelitian Statistis Nasional*. Universitas Pendidikan Ganesha, 2018.
- Sutajaya, I.M., Candiasa, I.M., Sri Armita, N. P., dan Mia Lestari Devi, N.L.P, Implementasi sinergitas tri kaya parisudha dengan ergonomi pendidikan untuk meningkatkan pemahaman masyarakat terhadap socio-cultural ergonomic. *Prosiding Seminar Nasional 2019 Perhimpunan Ergonomi Indonesia*, Surabaya, 2019.
- Sutajaya, I.M., & Ristiati, N.P., Implementation of tri datu based ergo-entrepreneurship oriented to support lane tourism and improve the health quality entrepreneurship and care of community to environmental conditions in Peliatan Vilage Ubud Gianyar. *Proceeding*. The 3th International Conference on Innovative Research across Disciplines (ICIRAD), 2019.
- Sutajaya, I.M., Sukra Warpala, W., Oka Riawan, I.M., dan Sri Ratna Dewi N.P., Implementation of tri hita karana with socio-cultural ergonomic oriented on the kecak dance performance to improve community health and supporting cultural tourism in Peliatan Ubud Gianyar. *Journal of Physics: Conference Series* 1503, 2020.
- Sutajaya, I.M., Mendidik masyarakat melalui konsep tri datu untuk memertahankan sikap kewirausahaan saat pandemik covid 19, *Prosiding Webinar*, Fakultas MIPA Universitas Pendidikan Ganesha, 2020.
- Thepaksorn, P., Supawan, T., Salee, I., Wattasit, S., Kouji, H., and Akio, K., Job safety analysis and hazard identification for work accident prevention in para rubber wood sawmills in Southern Thailand. *J. Occup. Health*, vol. 59, pp. 542-551, 2017.
- Tsuno, K., Norito, K., Akihito, S., Kyoko, S., Akiomi, I., and Michael, P.L., Workplace incivility in Japan: reliability and validity of the japanese version of the modified work incivility scale. *J. Occup Health*, vol. 59, pp.237-246, 2017.
- Verbeek, J., Christina, M., Rachel, R., Sharea, I. Paul, K. Arthur, K. Anneli, O., and Kaisa, N., Occupational exposure to knee loading and the risk of osteoarthritis of the knee: a systematic review and a dose-response meta-analysis, *Journal Safety and Health at Work*, vol. 8, issue 2, pp. 130-142, 2017.
- Wei, L.T., & Yazdanifard, R., The impact of positive reinforcement on employee's performance in organization. *American Journal of Industrial and Business Management*, vol. 4, pp. 9-12, 2014.

Biography

I Made Sutajaya born in Gianyar, December 17, 1968. In 1993 he became a lecturer in the Biology Education Study Program (now the Department of Biology, Faculty of Mathematics and Natural Sciences, Ganesha University of Education). He has been pursuing the field of Ergonomics since attending his master's degree in Ergonomics-Work Physiology at Udayana University (1996 s.d.1998). In 2002, he continued his Doctor of Medicine at Udayana University with a concentration in Ergonomics (2002-2006). In 2007 he became Professor of Biology Education when he was 38 years old. Apart from being a teaching staff at UNUD's Masters in Ergonomics-Work Physiology, he also teaches in the Doctoral Program of Medical Science UNUD, S3 in Undiksha Education, and as an external examiner and promoter at S3 IHDN Bali. He is also a member of the Bali Human Ecology Study Group, the Association of Indonesian Physiologists, and the Indonesian Ergonomic Association. Being the executive editor of the Indonesian Journal of Ergonomics and guest editor of the Suluh Pendidikan Journal of IKIP Saraswati Tabanan. He was selected as an outstanding lecturer at the National Level in 2008. Winner of the top three best speakers in the 9th National Seminar on Ergonomics, Diponegoro University Semarang (2009) and the Top 16 Author of articles at the International Symposium & Seminar at IPB (2009). His writings are widely published in accredited national journals and national journals. Scientific publications published in Google Scholar have been cited by 1.224 citators with h-index 37. There are 7 publications in Scopus indexed journals with h-index scopus 2.