

Original Article

The Design of Indonesian Furniture as a Solution to Human Life Balance Issues Post-COVID-19 Pandemic

Grace Mulyono^{1,*}, Chong Yi Yun Eunice¹, Ingrid Georgina¹, Christopher Kevin Purnomo¹

¹ Department of Interior Design, Faculty of Humanities and Creative Industries, Petra Christian University, 60236, Surabaya, Indonesia. ingit.georgina@gmail.com (I.G.), ckevinpurnomo@gmail.com (C.K.)

* Correspondence: gracem@petra.ac.id (G.M.)

Citations: Mulyono, G., Eunice, C.Y.Y., Georgina, I., & Purnomo, C.K. (2023). The Design of Indonesian Furniture as a Solution to Human Life Balance Issues Post COVID-19 Pandemic. *International Journal of Global Optimization and Its Application*, 2(2), 135-141.

Academic Editor: Aswin Nasution.

Received: 20 February 2023

Accepted: 2 June 2023

Published: 30 June 2023

Abstract: The focus on achieving life balance has been widely discussed in various aspects of human life after the COVID-19 pandemic. The increased stress level results from losing boundaries between work and other aspects of life due to the lack of physical and temporal limitations, causing an imbalance. As one of the world's furniture material producers, Indonesia needs to improve its design's quality for the export market. This paper discussed the solution of interior product design for the European export market as an activity that helps to address the imbalance of human life after the pandemic. The authors applied the Kelley design thinking method through the stages of empathizing, defining, ideating, prototyping, and testing. The wellness, sustainability, and home sweet home concepts were applied to the design as the emerging megatrends in Europe while also considering the sustainable global cultural and aesthetic aspects. Natural materials from Indonesia were applied with this consideration. The main focus of the design system is on the easy installation concept to achieve product shipping efficiency to the European market. Three designs are discussed in this paper, including the Rotan Storage Credenza, Multifunctional Lounge Chair, and Sisal Lounge Chair. The resulting designs are expected to solve the European market's problems after the pandemic. The designs must still be tested in the market through e-commerce and internationally recognized exhibitions.

Keywords: life balance; post-COVID-19 pandemic; export interior products, cocooning facilities.



Copyright: © 2022-2023 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

The issue of work-life balance after the pandemic is a serious matter that greatly affects human health. A comparative study conducted in companies in Poland, Lithuania, and Spain found that telework that emerged during the pandemic increased employee stress. The large-scale transformation requires quick adaptation that affects all aspects of human life (Erro-Garcés et al., 2022; Rymaniak et al., 2021). Life and work balance can be influenced if both do not have clear boundaries (Carvalho et al., 2021; Carvalho & Chambel, 2014). Well-being during the pandemic and beyond depends on job sustainability (Robinson et

al., 2022; Song & Gao, 2020). The COVID-19 pandemic has shaken many business sectors and impacted employee well-being. Many employees risk all their efforts and time to maintain their positions at work. Several studies reveal a serious relationship between work-life balance and well-being (Clark, 2000; Fotiadis et al., 2019; Talukder et al., 2018). The latest development of the telework system causes workers to have no clear boundaries between working hours and other aspects of their lives. This condition has led to the emergence of more workaholic people after the pandemic. This occurs in Asia and Europe (Krumov et al., 2022).

A person's ability to balance work and other aspects of life will positively impact a better life. The inability of workers in a work-life balance has a negative effect on the company and the work they do. To balance the two interests, several things can be done, one of which is to separate professional and personal aspects. This means that the place used for non-work activities is distinguished from work activities. To further study trends and issues that Europe is currently experiencing, the author reports on design trends developed by CBI. CBI is a promotion center for imports from developing countries to the European market. Some problems that arise after the pandemic are the issues of home sweet home, sustainability, and wellness. The problem often raised in achieving work-life balance is allocating time between work and non-work activities. The role of technology in various job fields blurs the boundaries of space and time (Cousins & Robey, 2015). To create these boundaries, an action of disconnection and cocooning is needed as a solution can be offered. Home can be a cocooning facility that is separate from all work activities. The design offered for residential furniture must support activities that support human needs for rest. Humans have the right to use time outside of working hours according to hobbies and activities of interest. This article discusses several alternative export furniture designs to solve the work-life balance problem for humans. The author collaborated with industry partners and SMEs in Indonesia who have the capacity in the export market, especially the European market.

2. Materials and Methods

The alternative furniture was developed using the Design Thinking method from Kelley (Camacho, 2016; Johansson-Sköldberg et al., 2013). The stages used in the design process include empathize, define, ideate, prototype, and test. The empathize stage involves understanding the existing problems or issues. It is the pure meaning of empathy towards a problem and getting to know it better. The design development process began with expressing the partner industry's desire to develop interior products marketed in the European and Australian markets. The industry partner wants to develop designs suitable for European society's needs, especially after the pandemic. The issues, dimensions, needs, market preferences, and trends raised must refer to the European market. Since the problems observed in different parts of the world are different, it must be carefully considered and studied what the problems are in the design that will be developed. Efficiency in the production and delivery processes needs to be considered in the design process so that the produced goods can be well received.

The Define stage refers to the data obtained in the Empathize stage and determines the needs and overall design outline. The defined process, programming, and framework are generated regarding market trend research, product typology research, and European dimension standards research. In addition, the mapping of various Indonesian materials and their processing processes is also carried out. Ultimately, the resulting framework can explain the direction of the design development. The main problem taken in this design is the concept of home sweet home, wellness, and sustainability. Manual or digital sketches are the results of the Ideate stage. Ideas conceived, possible or not, are visualized and can be understood through sight. The prototype stage is done to produce the actual shape of the selected product. The test stage is continued by marketing the produced products to partner companies. The article uses materials common in Indonesia, such as wood, rattan, and sisal. These materials are highlighted as one of Indonesia's natural resources that can increase commodity exports. Sustainable global design is incorporated to maximize user activity time outside of working hours. Using natural materials is expected to enhance the function of furniture as a cocooning facility.

3. Results and Discussion

As an export target market, Europe has many issues that differ significantly from Indonesia. As a continent with higher development and productivity levels, the stress level among European communities is also much higher. This is also driven by the COVID-19 pandemic, which has increased the level of stress experienced by workers in Europe. The concept used in this design is home sweet home, wellness, and sustainability, by the issues offered by CBI as the import promotion center for the European market concept.

Work-life balance is one of the issues that can affect the well-being of society. The work-life balance must be established by setting clear boundaries between work and other aspects of life. The pandemic that has been going on for two years has eliminated the boundaries between work and other aspects of life. This has led to an even higher level of stress among humans. The "home sweet home" concept proposed by CBI offers a new difference that users feel at home. Home becomes a cocooning facility that can hide users to relax and get out of work routines. There are several ways to achieve this goal, one of which is the application of other cultures that can provide a different atmosphere. Applying global cultures in spatial design can provide a different color that can prevent users from boredom. Indonesia has many cultural and material varieties that this concept offers. A touch of natural tropical materials can be an alternative in creating a cocooning effect.

Wellness has become more critical since the COVID-19 pandemic. The pandemic has had many impacts on the well-being of society, particularly on job security. Many workers are under pressure due to significant economic changes during the pandemic. Many workers are at risk of being laid off, and during this time, they experience a significant decline in mental health (Dawson & Golijani-Moghaddam, 2020; Pacheco et al., 2020). Human separation from their surroundings and fear of uncertain conditions make health a crucial factor. Health emphasizes not only physical health but also mental health conditions. Happiness is one of the measures of mental health after the pandemic. Some groups of society directly connected to health workers experience the highest stress levels (Dhingra & Dhingra, 2020).

European society has different cultures and habits from Indonesia. Europeans are more individualistic, dominant in renting housing because of high land prices, and like to spend time indoors due to weather changes. They do not like noise in their residential areas. Apartments with balconies or yards have added value. European society generally likes to engage in outdoor activities, such as gardening. After the pandemic, humans have become accustomed to increasing their activities through online activities. Some activities that can be done online will be done at home through technology (Bin et al., 2021).

Consumers need products that can facilitate their relaxation activities, which is the core of the Wellness mega-trend. They tend to prioritize their health more. This trend provides an opportunity to produce products that can "facilitate" that comfort with a more affordable concept. Wellness is also a tool to achieve the desired effect. Sustainability arises from the world's need for environmentally friendly materials to maintain the earth's sustainability. Natural and eco-friendly materials are one of the choices that can be utilized as products used in conjunction with humans. Natural materials can be easily recycled and do not have adverse environmental impacts during processing.

On the other hand, the capacity of natural resources, resources, and the furniture industry in Indonesia also needs attention. Indonesia is one of the world's largest producers of natural materials such as wood and rattan. Data from the Ministry of Forestry shows that 80 percent of the world's rattan comes from Indonesia. Rattan has flexible and strong characteristics. Rattan processing can be done with bending, matting and vacuum techniques. Adequate natural resources need to be supported by skilled facilities and human resources that can process these materials into high-quality products with high value. Skilled labor capacity needs to be added to maximize export production. Production efficiency becomes an important focus in commodity export products. With a long shipping distance, products are targeted to be shipped efficiently, including covering compact packaging such as knockdown or foldable and resistance to shipping conditions. Competition between furniture manufacturers is also one of the obstacles to the growth of the furniture industry in Indonesia. Local manufacturers' products are sold below the existing standardization, damaging the marketing of established branded products.

4. Produced Design and Prototype

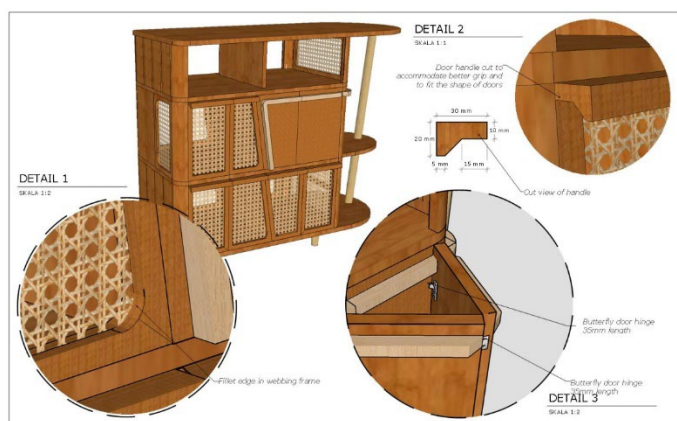
This article discusses three designs created to respond to wellness trends, home sweet home, and sustainability, emerging in Europe after the pandemic. The designs highlight the richness of local Indonesian materials in the interior product design used in residential homes. This article focuses on applying new designs that address European problems, with a furniture system that facilitates shipping and installation.

4.1. Rattan Storage Shelf

A home needs to be a cocooning facility that provides amenities that facilitate activities. Storage is one of the facilities that can organize the balance of life. This facility reflects how humans can arrange their lives, including the need for necessary items. Each user will have a different arrangement according to their respective needs. This product is developed as the first solution to the life balance issue after the pandemic. Humans need a container that helps them choose their needs according to their priorities. This product is a

versatile storage area that can be applied to the living room or dining room area. Each user is expected to have priorities regarding the position and placement of the items stored, which will reflect their life priorities. This product trains users to make arrangements that prioritize their life, including balancing work and personal time. Physically, the product consists of several closed and open shelves, which allow users to organize their storage needs freely. The shelves can be accessed from two sides. The storage design is tailored to the dimensions of the residential needs, such as for two sets of utensils, books, and other equipment. The product has 3 access points. This credenza can be placed in the middle of the room and functions as an island table or space divider. The storage options available to users are given (see Figure 1). The combination of rattan and solid wood materials provides a touch of Indonesian culture to the world audience.

The design uses natural materials, namely wood and rattan. Both local Indonesian materials can withstand and be applied in four-season conditions. The rattan weave is made semi-open, making it easier for users to access the inside of the storage visually. On the other hand, several parts use wood for the door leaves. This is intended to provide privacy for users to store more private belongings. The product applies circular shapes and trapezium-shaped stylization designed by applying the golden ratio of 1:1.6. The visual comfort of the shape, color, and material used underlies the emergence of this design. The shape, according to the golden ratio of 1:1.6 has been widely applied in historical buildings such as Borobudur Temple, Pyramids of Giza, and many more (Meisner, 2018; Thapa & Thapa, 2018). Elements such as round and non-sharp shapes with the right size and ratio are the initial foundation in starting the ideation process or visual design sketches. Using Indonesian natural materials maximizes sustainable local material processing in the export market and provides a different touch in design. In addition, using easy-to-assemble construction such as knockdown will maximize production efficiency and shipping processes.



(a)

(b)

Figure 1. Design of Rattan Storage Rack (a) Detailed picture of the rattan storage rack.;
(b) Prototype of Rattan Storage Shelf.

4.2. Multifunctional Relax Chair

This chair is designed based on a survey of lifestyle and problems people in several European countries face. Most European residents live in apartments or tiny houses. The habit of share living is very common, where several generations live in one house. Several people from different generations inhabit the house. This has a significant impact, especially after the pandemic. Some countries require workers to work from home. This phenomenon has resulted in high-stress levels due to the lack of clear boundaries between work and other life activities. This has led many people to adopt pets to reduce boredom. Owning a pet is one technique to reduce stress; owning a pet can help increase self-esteem, reduce loneliness, and minimize negative thoughts; this will reduce stress levels in humans. The habit of adopting pets has increased after the pandemic. People seek ways to balance their lives through hobbies and activities outside of work (Ho et al., 2021). Shared living lifestyles also require furniture to have dual functions. In this design, a joint design can accommodate the user's needs for relaxation while also being a facility for playing with pets. The facilities and materials used are tailored to the needs of the user and the pet's facilities. The dimensions are made according to European size restrictions. The chair legs are equipped with a scratcher facility made of twine. Pet cats can use this twine to scratch and sharpen their claws on a surface. This habit marks ownership

or territory, exercise, and entertainment. Sharpening a cat's claws should be done by providing a facility to sharpen its claws with a surface that is not too rough or slippery. In addition to the scratcher, the chair has a hammock-like facility under the user's seat for pet cats to lie down (see Figure 2)

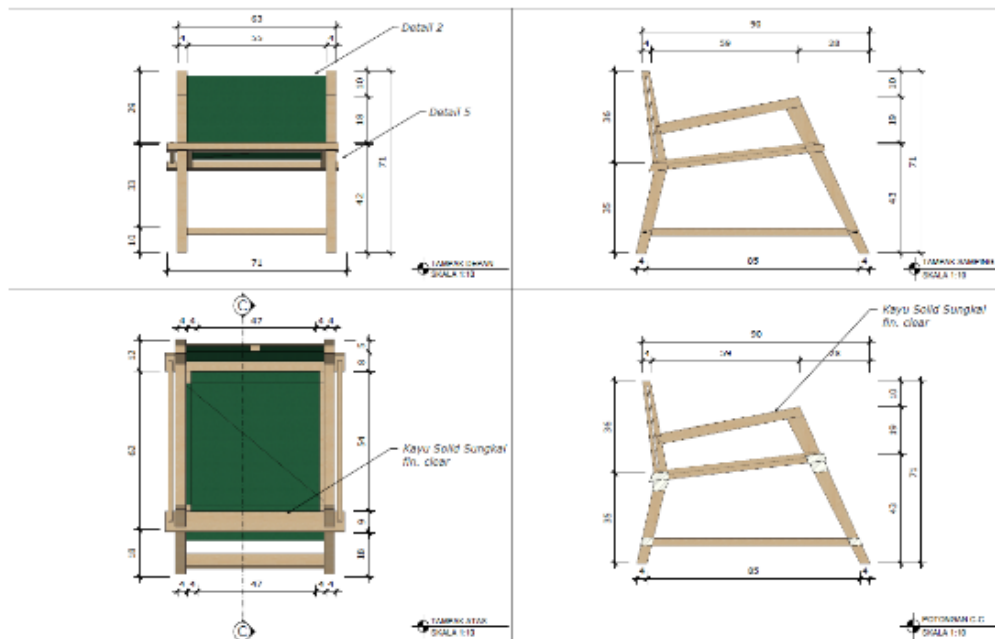


Figure 2. Multiview Drawing of Multifunctional Relax Chair

The chair is made of Sengkai wood material, as it has a good and prominent grain. Soft velvet fabric is used for the seat and backrest, making it comfortable. This material was chosen because it has no threaded texture that a pet cat's claws can tear. The product is designed and can be assembled using a knock-down system. This system simplifies the shipping transportation process. In addition, with the limited living space, the product can be easily dismantled when not needed. The flat pack storage system makes the product easy to store (see Figure 3)



Figure 3. Prototype of Multifunctional Relax Chair

4.3. The Sisal Relax Chair

This chair adopts the concepts of wellness, home sweet home, and sustainability into its design. It is a comfortable and relaxing chair that allows users to experience comfort, tranquility, and privacy within their homes to take a break from all activities. Its sturdy cocooning design is made from lightweight and strong materials that are easy to move around. The dimensions are adjusted to fit European users, and the chair can

accommodate various sitting positions, such as cross-legged and lying down. It is made using local Indonesian materials such as wood, cotton fabric, and ramie rope that are easily recyclable. Despite its large size, it is lightweight and easy to move. The seating system is decorated with ramie rope knots, giving the chair strong resistance against the user's weight. The Sisal Relax Chair has a knock-down concept to facilitate users who like to move their residence. The Home sweet home concept is raised as an application of a house concept that becomes a cocooning facility for its users. The size is made larger, adapted to the dimensions of Europeans, creating a comfortable and warm impression when sitting. Users can freely use this chair in various sitting positions. They can sit cross-legged and raise their feet, making sitting on a relaxing swing comfortable. The main structure uses wood, with soft cotton fabric on the backrest and seat. It is also equipped with Sisal weaving to apply local materials in European design. This facility can be a container for users to watch TV, read books, or even use electronic devices such as phones and tablets (see Figure 4).

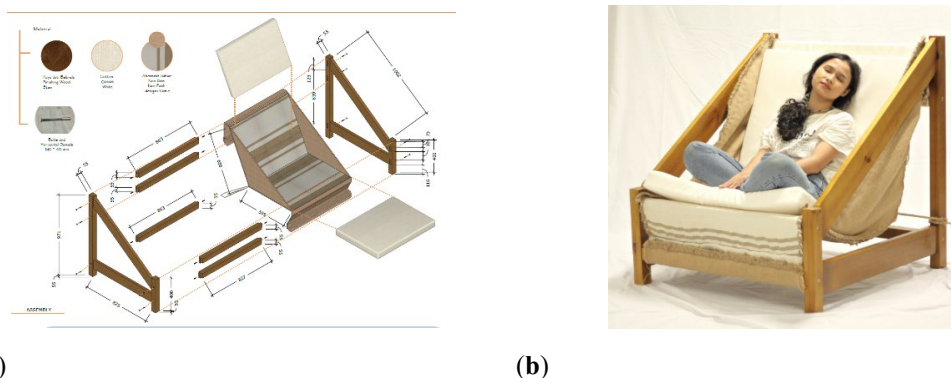


Figure 4. Design of Sisal Relax Chair (a) Detailed picture of Sisal Relax Chair; (b) Prototype of Sisal Relax Chair

5. Conclusions

The designs produced are a result of addressing the issues that emerged after the pandemic. The interior product aims to provide individuals with the opportunity to allocate time for themselves by managing the balance between work and social life, to maintain their physical and mental health. The interior products would allow users to relax and engage in various activities at home while providing the best possible comfort. Sustainable materials are used, and the knock-down joint system is practical for transportation and usage. The design aims to assist individuals in organizing their daily necessities and other needs to achieve a balanced lifestyle. Further market testing is needed to evaluate the effectiveness of the design and its application when in use. The next step is to intensify cooperation with the industry, small business partners, and the government to market the existing products. Experienced industrial partners in the export field have provided input on the existing design. Construction, materials, and delivery details are essential considerations in the export market. Ease of installation is also highly considered and influenced the final design produced.

Author Contributions: Conceptualization, G.M.; methodology, G.M.; software, C.Y.Y, I.G.H, and C.K.; formal analysis, G.M., C.Y.Y., I.G.H., and C.K.; investigation, G.M., C.Y.Y., I.G.H, and C.K.; resources, G.M.; writing—original draft preparation, G.M., C.Y.Y., I.G.H., and C.K.; writing—review and editing, G.M.; visualization, G.M.; supervision, G.M.; project administration, G.M.; funding acquisition, G.M. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the Ministry of Education and Culture of Indonesia, prototype grant aid in 2022.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Not applicable.

Acknowledgments: The authors would like to thank all the students of Interior Products for Commercial and Retail Space for the academic year 2022/2023, especially Chong Yi Yun, Ingrid Georgina, and Kevin Christopher. The authors would also like to thank the reviewers for all their constructive comments.

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

References

- Bin, E., Andruetto, C., Susilo, Y., & Pernestål, A. (2021). The trade-off behaviours between virtual and physical activities during the first wave of the COVID-19 pandemic period. *European Transport Research Review*, 13, 1–19.
- Camacho, M. (2016). David Kelley: From Design to Design Thinking at Stanford and IDEO. In She Ji (Vol. 2, Issue 1). <https://doi.org/10.1016/j.sheji.2016.01.009>
- Carvalho, V. S., & Chambel, M. J. (2014). Work-to-family enrichment and employees' well-being: High performance work system and job characteristics. *Social Indicators Research*, 119, 373–387.
- Carvalho, V. S., Santos, A., Ribeiro, M. T., & Chambel, M. J. (2021). Please, do not interrupt me: Work–family balance and segmentation behavior as mediators of boundary violations and teleworkers' burnout and flourishing. *Sustainability*, 13(13), 7339.
- Clark, S. C. (2000). Work/family border theory: A new theory of work/family balance. *Human Relations*, 53(6), 747–770.
- Cousins, K., & Robey, D. (2015). Managing work-life boundaries with mobile technologies: An interpretive study of mobile work practices. *Information Technology & People*.
- Dawson, D. L., & Golijani-Moghaddam, N. (2020). COVID-19: Psychological flexibility, coping, mental health, and wellbeing in the UK during the pandemic. *Journal of Contextual Behavioral Science*, 17, 126–134.
- Dhingra, V., & Dhingra, M. (2020). Effect of perceived stress on psychological well-being of health care workers during COVID 19: Mediating role of subjective happiness. *Eur. J. Mol. Clin. Med*, 7(02), 2020.
- Erro-Garcés, A., Urien, B., Čyras, G., & Janušauskienė, V. M. (2022). Telework in Baltic Countries during the Pandemic: Effects on Wellbeing, Job Satisfaction, and Work-Life Balance. *Sustainability*, 14(10), 5778.
- Fotiadis, A., Abdulrahman, K., & Spyridou, A. (2019). The mediating roles of psychological autonomy, competence and relatedness on work-life balance and well-being. *Frontiers in Psychology*, 10, 1267.
- Ho, J., Hussain, S., & Sparagano, O. (2021). Did the COVID-19 pandemic spark a public interest in pet adoption? *Frontiers in Veterinary Science*, 444.
- Johansson-Sköldberg, U., Woodilla, J., & Çetinkaya, M. (2013). Design thinking: past, present and possible futures. *Creativity and Innovation Management*, 22(2), 121–146. <https://doi.org/10.1111/caim.12023>
- Krumov, K. D., Larsen, K. S., Liu, J., Schneider, J. F., Kimmelmeier, M., Krumova, A. K., Widodo, E., Gungov, A. L., Juhasz, M., & Garvanova, M. Z. (2022). Workaholism across European and Asian cultures during the COVID-19 pandemic. *PsyCh Journal*, 11(1), 85–96.
- Meisner, G. B. (2018). *The golden ratio: The divine beauty of mathematics*. Race Point Publishing.
- Pacheco, T., Coulombe, S., Khalil, C., Meunier, S., Doucerain, M., Auger, E., & Cox, E. (2020). Job security and the promotion of workers' wellbeing in the midst of the COVID-19 pandemic: A study with Canadian workers one to two weeks after the initiation of social distancing measures. *International Journal of Wellbeing*, 10(3), 58-76
- Robinson, E., Sutin, A. R., Daly, M., & Jones, A. (2022). A systematic review and meta-analysis of longitudinal cohort studies comparing mental health before versus during the COVID-19 pandemic in 2020. *Journal of Affective Disorders*, 296, 567–576.
- Rymaniak, J., Lis, K., Davidavičienė, V., Pérez-Pérez, M., & Martínez-Sánchez, Á. (2021). From stationary to remote: Employee risks at pandemic migration of workplaces. *Sustainability*, 13(13), 7180.
- Song, Y., & Gao, J. (2020). Does telework stress employees out? A study on working at home and subjective well-being for wage/salary workers. *Journal of Happiness Studies*, 21(7), 2649–2668.
- Talukder, A. K. M., Vickers, M., & Khan, A. (2018). Supervisor support and work-life balance: Impacts on job performance in the Australian financial sector. *Personnel Review*, 47(3), 727–744.
- Thapa, G. B., & Thapa, R. (2018). The relation of Golden Ratio, mathematics and aesthetics. *Journal of the Institute of Engineering*, 14(1), 188–199.