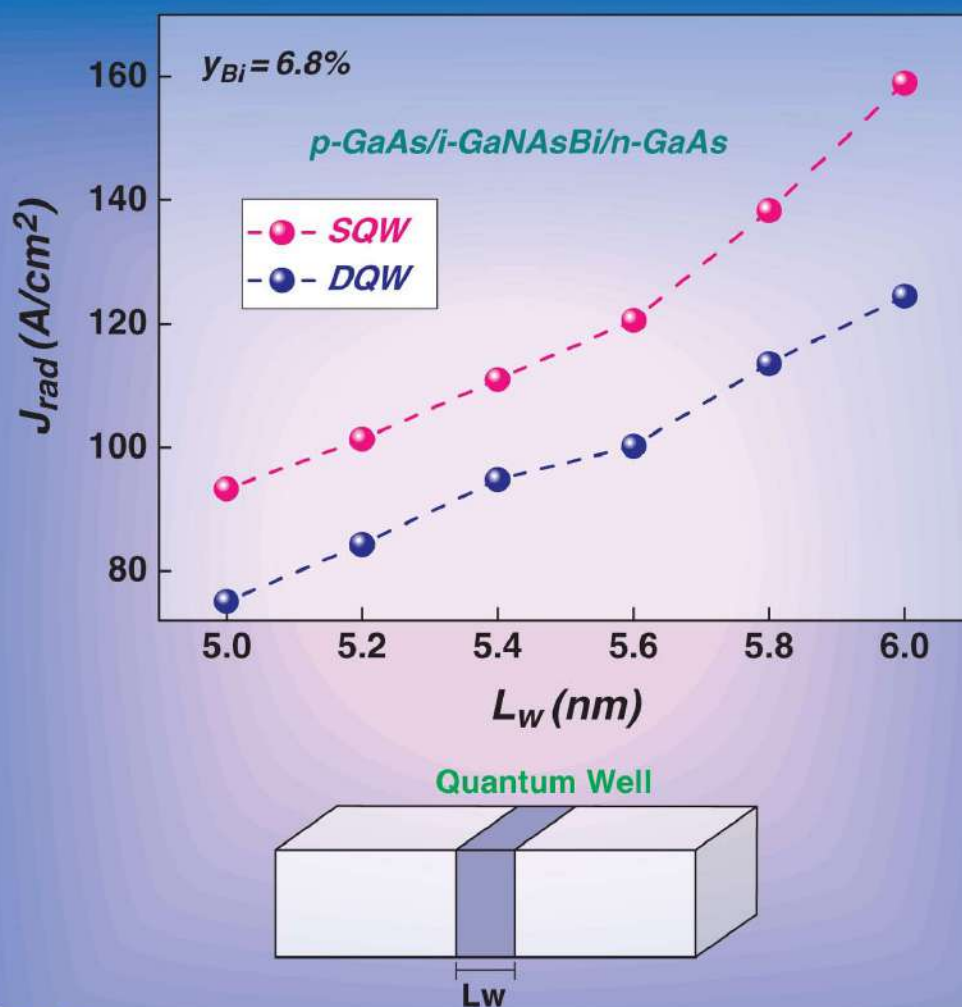


Journal of
Computational and Theoretical
NANOSCIENCE

For all Computational and Theoretical Aspects of Nanoscience and General Mathematical Procedures

www.aspbs.com/ctn

Editor-in-Chief: Prof. Rui-Hua Xie, China



Special Sections on

First International Conference on Engineering, Innovation Technology and Applied Sciences (ICEITAS2018), Liptsek University, Russia, 14–15 June, 2018—Part III

GUEST EDITOR: Mahdi Mahmoudi

Micro and Nano Fabrication Technology in Renewable Source for Low-Power Portable, Wearable and Autonomous Devices

GUEST EDITOR: Yuvaraja Teekaraman



AMERICAN
 SCIENTIFIC
 PUBLISHERS

Journal of Computational and Theoretical Nanoscience
ISSN: 1546-1955 (Print): EISSN: 1546-1963 (Online)
Copyright © 2000-2022 American Scientific Publishers. All Rights Reserved.

EDITOR-IN-CHIEF

Prof. Dr. Ali J. Chamkha
Dean of Faculty of Science of Engineering
Kuwait College of Technology
Doha, Kuwait

ASSOCIATE EDITORS

Asen Asenov (Device Modeling, Atomistic Simulations), *University of Glasgow, UK.*
Markus J. Buehler (Atomistic and Mesoscopic Modelling, Biological Materials), *Massachusetts Institute of Technology (MIT), USA.*
Xiaoshuang Chen (Nanomaterials Modeling/Simulation), *Shanghai Institute of Technical Physics, Chinese Academy of Sciences, China*
Dimiter S. Dimitrov (Computational Biophysics, Protein Interactions), *National Cancer Institute, NIH, USA.*
Dimitris Drikakis (Nano-fluidics, Materials Modeling), *University of Strathclyde, Glasgow, UK.*
Christian Hafner (Nano-optics, Materials Science), *ETH Zürich, Switzerland.*
Tomoya Ono (Nanostructures, First-Principles Treatments), *Osaka University, Osaka, Japan.*
Hans De Raedt (Quantum Computation, Nano-particles), *University of Groningen, The Netherlands.*
Asok K. Ray (Nano-electronics, Computational Methods), *University of Texas, Arlington, USA.*
San-Qiang Shi (Nanomaterials Modeling), *The Hong Kong Polytechnic University, China.*
Karl Sohlberg (Physical and Materials Chemistry), *Drexel University, USA.*
Jijun Zhao (Computational Nanoscience), *Dalian University of Technology, China.*

EDITORIAL BOARD

Alexei A. Abrikosov, *Argonne National Laboratory, USA*
Vladimir Basiuk, *Universidad Nacional Autonoma de Mexico, Mexico*
Sotiris Baskoutas, *University of Patras, Greece*
Artur Baumgaertner, *Forschungszentrum Juelich, Germany*
Estela Blaisten-Barojas, *George Mason University, USA*
Donald W. Brenner, *North Carolina State University, USA*
Felix A. Buot, *George Mason University, USA*
Roberto Car, *Princeton University, USA*
Gang Chen, *Massachusetts Institute of Technology (MIT), USA*
Shin-Ho Chung, *Australian National University, Canberra, Australia*
Ioana Cozmuta, *NASA Ames Research Centre, USA*
Peter T. Cummings, *Vanderbilt University, USA*
K. Eric Drexler, *Nanorex, Inc., USA*
Sakir Erkoc, *Middle East Technical University, Ankara, Turkey*
Robert A Freitas Jr., *Institute for Molecular Manufacturing, Los Altos, USA*
Yuri Galperin, *University of Oslo, Oslo, Norway*
Nasr M. Ghoniem, *University of California at Los Angeles, USA*
William A. Goddard III, *California Institute of Technology (Caltech), USA*
James Hickman, *University of Central Florida, Orlando, USA*
Yonggang Young Huang, *University of Illinois at Urbana-Champaign, USA*
David Hui, *University of New Orleans, USA*
Jeong-Won Kang, *Chungju National University, Chungju, Republic of Korea*
Nicholas Kioussis, *California State University Northridge, USA*
Aatto Laaksonen, *Stockholm University, Stockholm, Sweden*
Charles Lieber, *Harvard University, USA*
Bin Liu, *Tsinghua University, China*
Feng Liu, *University of Utah, Salt Lake City, USA*

Yi Luo, *Royal Institute of Technology, Stockholm, Sweden*
Constantinos Mavroidis, *Rutgers University, USA*
Majid Monajjemi, *Islamic Azad University, Tehran, Iran*
Dima Mozyrsky, *Los Alamos National Laboratory, USA*
Jun Ni, *University of Iowa, USA*
Risto Nieminen, *Helsinki University of Technology, Finland*
Abraham Nitzan, *Tel Aviv University, Israel*
Zhong-can Ou-Yang, *Chinese Academy of Sciences, Beijing, China*
Wounjhang Park, *University of Colorado at Boulder, USA*
A. John Peter, *Faculty of Physics, Govt.Arts College, Madurai, India*
Umberto Ravaioli, *University of Illinois at Urbana-Champaign, USA*
Ian Snook, *RMIT University, Australia*
Dragica Vasileska-Kafedziska, *Arizona State University, USA*
Hongyun Wang, *University of California, Santa Cruz, USA*
Jingbo Wang, *University of Western Australia, Australia*
Lin-Wang Wang, *Lawrence Berkeley National Laboratory, USA*
Yan Alexander Wang, *University of British Columbia, Canada*
Toshishige Yamada, *NASA Ames Research Center, USA*
Jie Yan, *National University of Singapore, Singapore*
Svetlana Yanushkevich, *University of Calgary, Canada*
Chuck Zhang, *Florida A & M University, USA*
Liangchi Zhang, *University of Sydney, Australia*

[Effect of Rotation, Gravity, Primary Stress and Magnetic Field on Shear Waves Spreading in an Anisotropic Incompressible Sandy Elastic Medium](#)

pp. 4443-4454(12)

Authors: *Elhag, S. H.; Bayones, F. S.*

[Mathematical Modelling of Wastewater Treatment in Oxidation Pond](#)

pp. 4455-4460(6)

Authors: *Muhammad, Nurul Nadiah; Chuan Ching, Dennis Ling; Syah Amir Hamzah, Amir Syafiq Syamin*

[Enhancing the Credit Card Fraud Detection Through Ensemble Techniques](#)

pp. 4461-4468(8)

Authors: *Barahim, Aisha; Alhajri, Amal; Alasaibia, Norah; Altamimi, Nouf; Aslam, Nida; Khan, Irfan Ullah*

[Natural Radioactivity Levels and Heavy Metal Contents in Selected Domestic Food Products in Qassim Province, Saudi Arabia](#)

pp. 4469-4473(5)

Author: *Alashrah, Saleh Abdullah*

[Spontaneous Emission Rate and Radiative Current Density in \$p\$ -GaAs/ \$i\$ -GaNAsBi/ \$n\$ -GaAs Quantum Well Lasers](#)

pp. 4474-4478(5)

Authors: *Guizani, Ikram Hassouna; Rebey, Ahmed Alhadi*

[Selected Peer-Reviewed Articles from the First International Conference on Engineering, Innovation Technology and Applied Sciences \(ICEITAS2018\), Liptsek University, Russia, 14–15 June, 2018—Part III](#)

pp. 4479-4480(2)

Author: *Mahmoudi, Mahdi*

[Synthesis Method and Investigation of \$o\$ -, \$m\$ -, \$p\$ -Nitrophenylarsonic Acid Properties](#)

pp. 4481-4485(5)

Author: *Yambyshv, Farid Dgamaletdinovich*

[Zooplankton as Water Quality Indicator in Shallow Lakes](#)

pp. 4486-4490(5)

Authors: *Derevenskaya, Olga Yurjevna; Prytkova, Evgenia Sergeevna; Unkovskaya, Elena Nikolaevna*

[Oil-Bearing Capacity of the Great Depths of the East of the Caspian Depression and the Conditions for the Formation of Oil and Gas Accumulations](#)

pp. 4491-4501(11)

Authors: *Obryadchikov, O. S.; Taskinbaev, K. M.*

[Analytical Multisensory Trainable System for Diagnosing Vocational Aptitude of Military Medical Specialists by Ion Content in the Expired Breath Condensate](#)

pp. 4502-4507(6)

Authors: *Kislyakov, Yury Ya.; Avdyushenko, Sergey A.; Kislyakova, Larisa P.; Zaitceva, Anna Yu.*

[Development of the Intelligent Core of Vehicles' Technical Inspection Management System](#)

pp. 4508-4512(5)

Authors: *Byuvol, Polina Aleksandrovna; Gabsalikhova, Larisa Mukhamatzakiyevna; Makarova, Irina Viktorovna; Mukhametdinov, Eduard Mukhamatzakievch*

[Calculation of the Geometrical Parameters of the Heat Exchanger Type “Pipe in Pipe” with a Spiral-Coiled Channel](#)

pp. 4513-4518(6)

Authors: *Vorontsova, Valeriya Leonidovna; Bagoutdinova, Alfiya Gizzetdinovna; Galemzianov, Almaz Fernandezovich*

[Etymology of Some Mathematical Terms](#)

pp. 4519-4522(4)

Authors: *Eremeeva, Guzel Rinatovna; Martynova, Ekaterina Vladimirovna; Valieva, Gulnara Firdusovna; Igorevich, Sukharev Vladimir*

[Development of Mathematical Model of Two-Contour Tomography Scanner: New Possibilities in Scanning](#)

pp. 4523-4530(8)

Authors: *Mavlyaviev, Rinat Mizhatovich; Sadykova, Elena Rashidovna; Razumova, Olga Viktorovna; Kharisova, Zemfira Rashidovna*

[Model of Food Security in the Russian Federation](#)

pp. 4531-4533(3)

Authors: *Battalova, Alina R.; Opokina, Nadezhda A.*

[The Chemical and Structural Peculiarities of the Kazan Khanate Cast-Iron Cookware in the 14th–15th Centuries](#)

pp. 4534-4539(6)

Authors: *Shaykhutdinova, Eugenia Flyurovna; Khramchenkova, Rezida Khavilovna; Vladimirovich, Belyev Alexander; Sitdikov, Airat Gabitovich; Orazov, Didar; Ilyasova, Asiya Mirgasimovna; Yanbaev, Ruslan Miskadesovich*

[Using of Fractal Analysis and Artificial Neural Networks to Build a Mathematical Model for Determining Trends](#)

pp. 4540-4545(6)

Authors: *Katz, David B.; Makletsov, Sergey V.; Opokina, Nadezhda A.*

[Potential Influence of Bilingualism on the Development of Abstract Thinking](#)

pp. 4546-4549(4)

Authors: *Zaripova, Rinata R.; Salekhova, Leila L.; Grigorieva, Ksenia S.; Azrou, Nadia*

[The Essential and Content Characteristics of Methodical Competence of the Future Teacher of Mathematics](#)

pp. 4550-4553(4)

Authors: *Akhmetzyanova, Guliya Nailevna; Bagateeva, Angelina Olegovna; Sirazov, Fannur Samatovich*

[Mathematical Models of the Ocurved Spring Tubes Surfaces](#)

pp. 4554-4559(6)

Authors: *Vorontsova, Valeriya Leonidovna; Bagoutdinova, Alfiya Gizzetdinovna; Gilemzianov, Almaz Fernandezovich*

[Usage of Simulating in Improving the Management of Maintenance and Repair at the Transportation Company](#)

pp. 4560-4564(5)

Authors: *Gabsalikhova, Larisa Mukhamatzakiyevna; Byuvol, Polina Aleksandrovna; Makarova, Irina Viktorovna*

[Development of Methods and Tools for the Internal Combustion Engines Diagnostics](#)

pp. 4565-4568(4)

Authors: *Galiullin, Lenar Ajratovich; Galiullin, Ilnar Ajratovich*

[Development of Technical Diagnostic System for Internal Combustion Engines](#)

pp. 4569-4572(4)

Authors: *Galiullin, Lenar Ajratovich; Valiev, Rustam Asgatovich; Galiullin, Ilnar Ajratovich*

[Development of Pumping Equipment for Oil and Gas Production in Complicated Conditions](#)

pp. 4573-4578(6)

Authors: *Mokhov, M. A.; Sazonov, Yu. A.; Mulenko, V. V.; Frankov, M. A.; Tumanyan, Kh. A.; Timoshenko, V. G.; Kruglov, S. V.*

[Microbiological and Geochemical Problems of Urban Areas with Abundant Dispersed Rocks](#)

pp. 4579-4583(5)

Authors: *Khansivarova, Nadezda M.; Kostyuk, Yuri N.; Kharchuk, Vladislav V.*

[Efficiency Analysis of the Geological-Technical Activities in Severo-Ostrovnoe Field](#)

pp. 4584-4588(5)

Authors: *Pogrebnaya, I. A.; Mikhailova, S. V.*

[Investigating the Position of Color in the Urban Townscape \(Case Study: Mashhad, Imam Reza Street\)](#)

pp. 4589-4600(12)

Authors: *Yavari, Morteza; Afkham, Mohammad Rezaei; Dehghaninejad, Zeinab*

[Functional and Elemental Composition of Humic Acids of Sapropels of the River Ob's Left Bank of Khmao-Yugra](#)

pp. 4601-4604(4)

Authors: *Osnitsky Evgeny, M.; Gurova Olga, A.; Boroduy Davyd, V.; Litvinenko Natalia, V.; Grekhova Iraida, V.*

[A Special Section on Micro and Nano Fabrication Technology in Renewable Source for Low-Power Portable, Wearable and Autonomous Devices](#)

pp. 4605-4605(1)

Author: *Teekaraman, Yuvaraja*

[Role of Essence, Objectives, and Content of Entrepreneurship Education Programs on Their Performance: Moderating Role of Learner Disability in Thailand](#)

pp. 4606-4613(8)

Authors: *Aeknarajindawat, Nataporn; Karuhawanit, Preecha; Maneechay, Sumneung*

[Driving an Entrepreneurial Mindset and Intentions Through Entrepreneurial Education in Thailand with the Mediation of Entrepreneurial Inspiration](#)

pp. 4614-4621(8)

Author: *Phrakhruopatnontakitti*

[Can Entrepreneurial Motivation Mediate Between Entrepreneurial Education, Training, and Its Intention? An Empirical Study of Thailand](#)

pp. 4622-4629(8)

Authors: *Toogajank, Sriparinya; Fongtanakit, Ratchada; Charoenwiriyaikul, Chandej*

[Promoting New Venture Creation in Thailand Through Entrepreneurship Education: Role of Entrepreneurial Awareness, Mindset and Skill Development](#)

pp. 4630-4637(8)

Authors: *Somjai, Sudawan; Girdwichai, Luedech; Pongsiri, Thaniya*

[Promoting Female Entrepreneurial Growth Intention in Thailand's Tourism Industry: Role of Education Driven Ability, Opportunities and Advisory](#)

pp. 4638-4645(8)

Authors: *Chetthamrongchai, Paitoon; Jermsittiparsert, Kittisak*

[Mobilizing Business Opportunity Identification Through Entrepreneurial Education in Thailand with the Mediation of Entrepreneurial Self-Efficacy and Orientation](#)

pp. 4646-4652(7)

[Role of Human Values in Relationship Between Entrepreneurial Education and Entrepreneurial Career Intentions: An Empirical Study in Thailand](#)

pp. 4653-4659(7)

Authors: *Fongtanakit, Ratchada; Toogajank, Sriparinya; Rungsawanpho, Duangsamorn*

[The Impact of Entrepreneurial Education on Entrepreneurial Activity: With the Moderating Role of Future Time Perspective and Mediating Role of Opportunity Identification](#)

pp. 4660-4667(8)

Authors: Charoenwiriyakul, Chandej; Toopgajank, Sriparinya; Thammasane, Sittichai

[Driving Entrepreneurial Success in Thailand Through a Triangle of Entrepreneurship Education, Psychological Capital, and Social Competence](#)

pp. 4668-4675(8)

Authors: Suksod, Pornkul; Somjai, Sudawan; Suteerachai, Boonsri

[A Hybrid of Cognitive Entrepreneurial Training and Education and Their Impact on Business Opportunity Recognition in Thailand: Moderating Role of Entrepreneurial Passion](#)

pp. 4676-4683(8)

Authors: Suteerachai, Boonsri; Suksod, Pornkul; Somjai, Sudawan

[The Role of Corporate Social Responsibility Initiatives in Determining Customer Satisfaction in Indonesia: An Employee Perspective](#)

pp. 4684-4691(8)

Authors: Somjai, Sudawan; Chandarasorn, Voradej; Toopgajank, Sriparinya

[Influence of International Financial Reporting Standards on Earnings Management: Comparative Study of Pre-Post IFRS Era in Malaysia](#)

pp. 4692-4697(6)

Authors: Chancharoen, Suramon; Vasuvanich, Saroge; Laosillapacharoen, Khomsan

[Innovation and Firm's Success: The Case of Thai-Based High-Tech Firms](#)

pp. 4698-4705(8)

Authors: Kerdpitak, Chayanan; Somjai, Sudawan; Pokmontree, Avasada

[The Effect of Service Quality on Customers' Intention: A Case of Internet Service Provider in Malaysia](#)

pp. 4706-4713(8)

Authors: Burananuth, Nopadol; Panthong, Panyarat; Mephong, Sumalee

[Job Performance of Malaysian Academic Institutes with the Mediating Role of Entrepreneurial Leadership](#)

pp. 4714-4721(8)

Authors: Jamjumrus, Tawee; Rungsawanpho, Duangsamorn; Sirirat, Aernporn

[Impact of Atmospheric Stimuli on Revisit Intention: Some Evidence on Stimulus-Organism-Response Model: A Case of International Five-Star Hotels in Indonesia](#)

pp. 4722-4730(9)

Authors: Saengchai, Sakapas; Joemsittiprasert, Watcharin; Jermstittiparsert, Kittisak

[The Effect of Shopping Mall Image on Consumer Behavior in Indonesia](#)

pp. 4731-4737(7)

Authors: Jermstittiparsert, Kittisak; Thaiprayoon, Khajornsak; Prianto, Andi Luhur; Kurniasih, Dewi

[The Mediating Role of Customer Satisfaction in the Relationship Between Atmospherics on Customer Behaviour: Stimulus Organism Response Model Approach in the Spa Industry of Thailand](#)

pp. 4738-4747(10)

Authors: Jermstittiparsert, Kittisak; Sriyakul, Thanaporn; Kunathikornkit, Kulkanith

[Sensory Marketing Cues and Behavioural Intention: An Application of Stimulus Organism Response Model in the Hospitality Industry of Thailand](#)

pp. 4748-4756(9)

Authors: *Saengchai, Sakapas; Thaiprayoon, Khajornsak; Jermsittiparsert, Kittisak*

[Entrepreneurial Intentions of Graduation Students in Thailand: Moderating Role of Characteristics of Entrepreneurship Education Programmes](#)

pp. 4757-4764(8)

Authors: *Koolrojanapat, Siravit; Mephong, Sumalee; Chindachot, Piyawadee*

[The Attitude of Graduation Students Towards the Entrepreneur Education: A Case Study of University Students in Thailand](#)

pp. 4765-4772(8)

Authors: *Wongwiwat, Piyada; Pongsiri, Thaniya; Ruengsawat, Achara*

[Factors Affecting the Entrepreneurial Intentions Among University Students of Thailand](#)

pp. 4773-4781(9)

Authors: *Tamprateep, Polamorn; Tanaboriboon, Chayaporn; Rathprasert, Borwornpun*

[Role of Personality Traits and Education Towards the Entrepreneurial Intentions of Students](#)

pp. 4782-4788(7)

Author: *Phraudomsitthinayok*

[Employee Turnover Intentions: The Role of the Supervisor's Support and Job Autonomy with Job Satisfaction Acting as a Mediator: A Case of Paramedical Staff in Thai Government Hospital](#)

pp. 4789-4797(9)

Authors: *Saengchai, Sakapas; Thaiprayoon, Khajornsak; Jermsittiparsert, Kittisak*

[Predictors of Entrepreneurial Intentions: Mediating Role of Self-Efficacy](#)

pp. 4798-4806(9)

Authors: *Anesukanjanakul, Jetsalid; Cholsuk, Dumrong; Rattamane, Komkrit*

[Energy Balance Analysis—An Impact of Temperature Variation in Unified Hydrogen Based Opto-Source](#)

pp. 4807-4811(5)

Authors: *Ramya, K.; Yuvaraja, T.; Lorate Shiny, M.; Saanjanna, Y.*

[Multilevel Secure Digital Image Steganography Framework Using Random Function and Advanced Encryption Standard](#)

pp. 4812-4825(14)

Author: *Srayyih Almaliki, Mohsin N.*

[Electronic Payment Systems: Architecture, Elements, Challenges and Security Concepts: An Overview](#)

pp. 4826-4838(13)

Authors: *Ali, Mostafa A.; Hussin, Nazimah; Abed, Ibtihal A.*

[Wireless Body Area Sensor Network: Tutorial Review](#)

pp. 4839-4852(14)

Authors: *Hussein, Safa Saad; Rashidi, C. B. M.; Alrikabi, Hanan Ali; Aljunid, S. A.; Salih, Muataz H.; Abuali, Mohammed Sabri*

[Preparation and Analytic of Intelligence Big Data for Smart Systems](#)

pp. 4853-4862(10)

Authors: *Annajar, Wessam; Alnasrallah, Ahmed Muqdad; Alrikabi, Hanan Ali*

[An Adaptive Noise Removal Framework for Medical Images](#)

pp. 4863-4876(14)

Authors: *Anusha, A.; Vijayasaradhi, T.*

[Convolution Neural Networks for Binary Classification](#)

pp. 4877-4882(6)

Authors: *Srinivas, K.; Kavitha Rani, B.; Varaprasad Rao, M.; Madhukar, G.; Venkata Ramana, B.*

[Template Protection Using Multi Biometric Web Modulo Graph](#)

pp. 4883-4888(6)

Authors: *Kumaran, P.; Ashoka Rajan, R.; Veeramani, T.; Thilagavathy, R.*

[Solar Powered Multi-Controlled Smart Wheelchair for Disabled: Development and Features](#)

pp. 4889-4900(12)

Authors: *Sharmila, A.; Saini, Ankur; Choudhary, Shubham; Yuvaraja, T.; Rahul, S. G.*

The Effect of Shopping Mall Image on Consumer Behavior in Indonesia

Kittisak Jermsittiparsert^{1,2,*}, Khajornsak Thaiprayoon³, Andi Luhur Prianto⁴, and Dewi Kurniasih⁵

¹Department for Management of Science and Technology Development, Ton Duc Thang University, Ho Chi Minh City, 758307, Vietnam

²Faculty of Social Sciences and Humanities, Ton Duc Thang University, Ho Chi Minh City, 758307, Vietnam

³Command and General Staff College, Royal Thai Army, Bangkok, 10300, Thailand

⁴Faculty of Social and Political Sciences, Universitas Muhammadiyah Makassar, South Sulawesi, 90221, Indonesia

⁵Faculty of Social and Political Science, Universitas Komputer Indonesia, Bandung, 40132, Indonesia

This study investigates the effect of shopping mall image on customer behavior in Indonesia. We hypothesized that shopping mall image strongly effect consumer behavior, to be specific, the probability of buying, coming back to the shopping mall and spreading positive word of mouth WOM. Be that as it may, congruity-reflected by 'self-image congruity' and 'social-image congruity'—had no impact on. We ascribe this unforeseen finding to Indonesians scoring low on Hofstede's components of Individualism and Indulgence. The survey conducted showed that there was high self-image congruity among consumers just as congruity with different customers, however most of them were reluctant to let it be known influences their shopping conduct-seemingly, that would act as self-indulgent and show an absence of restriction with deference to controlling their wants.

Keywords: Shopping Mall Image, Consumer Behavior, Congruity, Indonesia.

1. INTRODUCTION

The retail organizations which are build up in numerous nations and societies around the world, are known as Shopping centres (SC), or essentially malls [1]. It is indicated by the International Council of Shopping Centres [2] that there are around 127 thousand SCs which are presently operating in 40 countries around the globe. In the second quarter of twentieth century, SCs were introduced as an effective answer to help urban communities' development towards the suburbs, labeled as a commercial centre overseen as a solitary property, 'made in the U.S.A.' In the mid of 1960s, when the SC idea was presented in Europe, at the point, two barriers were faced by them that did not have any existence in USA at the time. The constrains in urban planning limitations inflicted by government and establishments was the first restriction, and therefore the development of the out-of-town shopping (malls) has been impeded by arranging confinements. The already well-established and traditional shopping streets also posed itself as a second challenge [3]. Later on, SCs were bit by bit set up in rising nations, during the late 1990s, where shopping avenues offered solid challenge, and social and cultural contrasts demonstrated to be a test to SC designers.

The concept of store image reflects a consumers' view about the practical functions and psychological characteristics of the store. The tangible aspects which are observable are the functional characteristics which may include stock arrangement, quality and value, deals and post-deals administrations, physical offices-, for example, climate security, accommodation of area and facility of parking. The intangible aspects which are not that directly observable are the psychological characteristics that may include store atmospherics and the picture of the general population that disparage the store [3]. Thus, the consumers' view of both tangible and intangible characteristics of shopping mall is reflected in the concept known as mall image that are normally found in retail stores, for example, the shopping centres.

Serious competition among shopping centres has intimated shopping centre supervisors to make separation between their shopping centre and that of close-by contenders. They begin to do this via cautiously understanding what their objective purchasers' fairly estimated valuations are, thus, what drives their shopping conduct. More than 40 years prior it was perceived that clients at retail store look for something other than utilitarian benefits, for example, cost and comfort. Kesari [4] remarked: Shopping malls have tried to gain loyalty of shoppers by appealing to their social motives as well as providing

*Author to whom correspondence should be addressed.

access to desired goods. Malls are becoming giant entertainment centre.

A failure to recognize factors by the management that at last influence shopping practices that could prompt in making a mall image that isn't harmonious with the consumers' self-idea. One technique to make an ideal shopping mall image is by overseeing characteristics inalienable to the shopping centre. Malik and Hanafi (2018) recommend these traits incorporate marketing, openness, administration, atmospherics, amusement, sustenance, and security. These traits are controllable and can serve to fulfill utilitarian needs; yet Malik and Hanafi (2018) recommend clients look to fulfill non-practical needs as well, which originate from affiliations one has with the shopping centre.

Lu and Xu [26] defined Self-image congruency as the match between a shopper's self-idea and their picture of a given shopping centre. Their investigation included looking over vehicle proprietors, and they found that the more noteworthy the mental self-image congruency, the more prominent was the devotion towards the brand. A similar thinking can be connected to why a client chooses to visit and shop at a specific shopping centre. Here, we investigate the relationship between the shopping mall image and the consumer behavior in the setting which is a top of the line shopping centre in Indonesia.

The second largest city of Indonesia is Surabaya and as indicated by the Association of Shopping Mall Management in Indonesia, it has around 33 shopping centres more or less, extending from low value quality level shopping centres to premium, rich shopping centres. Normally, this calls for serious competition, and mall managers are reacting by seeking after strategies of differentiation. The management objective of one of the new shopping centres in Surabaya, Indonesia, which was set up in 2011, was to build up a rich shopping mall image via cautiously thinking about the shopping centre's structure, the choice of retailers just as offering outstanding hospitality all under one rooftop, where shoppers can express their cutting edge way of life. In any case, there are unanswered inquiries regarding the viability of the picked methodology on customers' practices. Consequently, the aim here is to give understanding into how view of the shopping centre (its image and how consistent it is with one's self-idea) influences purchaser's shopping practices, specifically the probability of obtaining, coming back to the shopping centre, and escalating constructive word of mouth (WOM).

2. LITERATURE REVIEW AND HYPOTHESES

The constructions of various shopping malls have been witnessed in Indonesia in recent years, with a rough number of almost around 200 malls from an unofficial source. Among these, some of the malls possess a national image whereas some of them have been constructed keeping

in mind the necessity of specific zones of a city. Shopping centres considerably affect the customers' way of life [4], in light of the fact that they are seen as a spot for exchange as well as viewed as social and networking centres [5]. For sure, construction of the enormous number of shopping centres with their specialized and non-specialized characters, for example, huge and little stores, cinemas, carnivals, drive-thru eateries, social gatherings, bistros, etc., appears for their role in an individuals' way of life. Then again, the customers' value and process of decision-making changes with the capacity to give information, which is easily accessible and the options to purchase online. These occasions place customers in a prevalent position and make them progressively inaccessible. Consequently, considering the enormous number of shopping centres and developing web based shopping mall, one of the essential objectives of administrators in this competitive market is keeping up their present customers or drawing in new customers. In a competitive market, it is very crucial to keep up the market share with loyal consumers.

The beginning position taken thus is that there is a connection between the shopping mall image, which is the latent construct and consumer behavior. However, what are the indicator variables that are positively correlated and observable that would serve to reflect the latent construct which is shopping mall image? recommended that there are characteristics of a shopping centre that assume a huge role in forming the image of the shopping centre; be that as it may, there is not any particular set of properties on which researchers have settled upon. The point of view given by Rahman et al. (2016) that there are seven shopping centre traits will be taken here. These items inherently link up to the basis of being inter-linked which is in-line with reflective measurement models; they share a common subject matter, and subsequently including or laying off one of the variables would not change the significance or theoretical area of the latent construct shopping mall image. A favorable position of grasping is that, it gives granularity without being overpowering from an exact sense, and every one of the traits are characteristic for the shopping centre and controllable by the authorities. We recognize that components influencing the consumer encounter, for example, the presence of crowds or the perceived crowd which influence customer satisfaction can be eliminated.

Taking help from Malik and Hanafi (2018), seven indicator variables will be taken here for the study. The variables are as under:

Merchandising, which alludes to the items that are sold at the shopping centre, Ayadi [6] express that merchandising consist of variety of product such as quality, valuing, and design or style. Rahman et al. (2016) remarked that a few shopping centres are so centreed around getting to be spots of diversion "almost to the point that their traditional retail occupants seem like an afterthought."

Accessibility is the ease with which the consumers get in, enter and move about inside the shopping centre. There are two parts of accessibility as per, macro accessibility and micro accessibility. Macro accessibility incorporates street conditions, street patterns, regular and counterfeit obstructions, and separation from home or office. Micro accessibility incorporates limit of parking, blockage, and the simplicity of perusing and finding stores inside a shopping centre. The location of shopping centre and its distance from the purchasers are the most important criteria for customers. A shopping centre which is promptly open to customers is probably going to be assessed progressively positive. This idea is examined by different analysts under a similar title or under different titles, similar for convenience [7].

Services, according to Malik and Hanafi (2018) have three types which are personal service, amenities service and communal service.

Atmospherics incorporates the configuration, fragrance, music, lighting, and so forth, factors that make full of quality that has effect. All in all, these all collectively are responsible for the ambiance inside the shopping centre. As far as positivism paradigm is concerned in view of atmospherics, which converge on the stimulus-organism-response (S-O-R) approach [5] in three different ways, may get reaction from a customer: excitement, predominance, and charm. As indicated by this methodology, the stimulus (S) is the atmosphere, influencing shopper intrinsic reactions (organism) and bringing about the social reaction (R). Notwithstanding the different components of the inner atmosphere of a retailer, for example, music and colors influence customers' view of a store. In fact, the atmosphere of the mall can be ordered in three interior components: social classes (for example, representative nearness, kind of consumer and closeness), physical classifications (for example lighting, format, and structure), and surrounding highlights, (for example, smell and music). The atmosphere of the mall likewise impacts different parts of mall image, for instance, impression of physical properties by customers altogether influences item quality, cost, and administration quality.

Entertainment facilities inside the mall consist of two dominant categories i.e., permanent entertainment which includes movie theatres, stations for karaoke and beauty and spa centres; and the second category consist of occasional entertainment which includes different types of exhibitions, fashion shows and seasonal displays [8–16].

Food or food stalls inside shopping centres urge consumers to remain longer and seem to animate motivation of impulse purchasing [17].

Security, which refers to the safety of customers inside the shopping mall as well as when they are entering and leaving the mall.

El Hedhli et al. [7] opine that when consumers have positive view of a store's characters, it expands customers'

repurchase expectations just as their shopping recurrence at the store. In addition, Malik and Hanafi (2018) expressed that positive assessments of store characteristics builds consumer loyalty and consumer satisfaction. Consumer loyalty refers to consumers deliberately continuing associating with or acquiring certain items over the long period of time [18–24]. There is a contrast between present long period and short period consumer loyalty.

The short period loyal consumers may show dedication yet switch effectively when they discover other better alternatives; whereas on account of long period loyalty, the client will remain steadfast despite the fact that there might be possibly better alternatives accessible [25]. Faithful clients display standard purchasing conduct over a given timeframe. We can refer here loyalty as customers' aims to consistently visit and shop at shopping centre in Surabaya despite the fact that there are other top of the line shopping centres in Surabaya. Keeping in mind these insights, the following hypotheses can be given forward:

H1: Shopping mall image significantly effects consumer behavior; where shopping mall image, a latent construct is reflected by shopping mall attributes and the likelihood of buying, again visiting the shopping centre and escalating the positive WOM reflects consumer behavior.

The shopping malls that have congruent image with the customers' self-idea are tended to be more visited by and shopped at by the customers, which stems from the conviction one holds about themselves just as from the reactions (suppositions, decisions) by others when associating with them. Oyserman et al. (2017) recommends that self-idea is the person's point of view about his/her life that grows naturally through communications with others. Lu and Xu [26] characterize mental self-image congruency as "the match between consumers' self-concept (actual self, ideal self, etc.) and the user image (or 'personality') of the given product, brand, store, etc. In this manner, when a consumer buys an item or become a frequent visitor of a store, especially one of a hedonic sort which is probably going to be very much present at an upscale shopping centre, all things considered, one of the inspirations fulfilled can be understood through a symbolic interactionism perspective which emphasizes the importance of products in setting the stage for the multitude of social roles that people play. Shopping represents a social act where symbolic meanings, social codes, relationships, and the consumer's identity and self may be produced and reproduced [27]. At the point when items are congruent with their self-idea, then they become faithful to those items. Shopping centre directors should subsequently try to comprehend their objective market's self-idea and equipped with that information make a shopping centre image that is consistent with it. Self-image congruency will expand customers' dedication. The following hypotheses can be put forward: H2: Congruity significantly effects consumer behavior; where congruity is reflected by self-image congruity and congruity with other consumers and the

likelihood of buying, again visiting the shopping centre and escalating the positive WOM reflects consumer behavior.

3. METHODOLOGY

A mall intercept survey was used to conduct this research study. A total of 200 respondents filled the survey at one of the well-renowned shopping mall in Surabaya, Indonesia. The survey consists of two sections. The first section consists of demographic information of the respondents which include age, gender, and education, occupation and monthly income; whereas the second section consists of the items that were reflective of the indicator variable which is discussed below.

The three latent constructs were reflected by collecting twelve measures.

Shopping mall image (referred to now as 'shopping') is the first construct. It comprised of the perceptions of the customers of the seven below described indicator variables:

- Merchandising (SMA1) which is the quality and the product arrangement which is sold by different stores in a shopping mall;
- Accessibility (SMA2) is the ease with which the customers have the access to the mall and the comfortable way in which they can enter and leave the mall;
- Service (SMA3) is the presence of different service facilities that are offered inside a shopping mall;
- Atmospherics (SMA4) is the general vibe that includes the environment and the ambience which is experienced by the shoppers within the shopping mall;
- Entertainment (SMA5) is the assortment of different entertaining activities within a shopping centre;
- Food (SMA6) which is the availability of different choices of eatables present in a shopping mall;
- Security (SMA7) is the safety of the shoppers that they feel when they visit the shopping mall and during their whole visit.

'Congruity' is the second latent construct that incorporates two reflective indicator variables: self-image congruity (SC1) which apparent congruity between the people's self-idea and the shopping centre image, and social self-congruity (SC2) which is the congruity between the consumers' self-image and their view of different clients at the shopping centre. Third and the last construct is consumer behavior (hereby now referred to as 'loyalty') and incorporates three indicators: purchasing repetitively (CL1) which is the consumers' objective to repurchase items at the shopping centre; word-of-mouth (CL2) which is the recommendation of the shopping mall given by consumers to other consumers; and future shopping expectations (CL3) which is the consumers' aims to keep going to the shopping centre.

A 5-point likert scale was used to measure all the reflective indicator variables. SPSS v.19 was used to carry out the analysis with the help of correlation analysis.

4. RESULTS AND ANALYSIS

4.1. Descriptive Analysis

Predominately, 71% of the women consumers visit the mall used in the study. The education of the consumers ranges from senior high school to university graduates in majority. Students, entrepreneurs, government officers and people from professions and executives were in major occupations of the consumers. The average income of the consumers ranged from Rp 1 up to Rp 10 million (~\$1000 AUD) per month [28–32].

4.2. Model Estimation

By doing a comparison of the reflective indicator store with the latent variable score, convergent validity was estimated. It is evident from Figure 1 that all the reflective indicator score possess the value which is more than 0.5, which is the cutoff value. This shows that the research model presented here fulfills the least requirement of the convergent validity. Among all the variables of shopping mall attributes, merchandising has the least reflective indicator score which is 0.584. This suggests that this characteristic has a very little contribution to the overall construct of shopping mall image but caution should be exercised here since merchandising was correlating with four of the other six variables ($p < 0.05$). The two congruity reflective indicator scores is more than 0.83, also showing that both the congruity measures also fulfill requirements of convergent validity. The two congruity variables were also correlated to each other ($p < 0.05$). Word-of-mouth which is a reflective indicator for consumer loyalty has the lowest score with the value of 0.585, which shows that consumers' objective to repurchase items at the shopping centre and revisiting the shopping mall has more effect to drive the latent construct of consumer loyalty. WOM is correlated with revisiting the shopping mall ($p < 0.05$) but with a p -value greater than 0.05, WOM is not correlated to consumers' objective to repurchase items at the shopping centre. AVE must be above 0.5 to achieve convergent validity [33]. The value of AVE (average variance extracted) was more than 0.5, thus the discriminant validity is good for research model. The value of R -square was 0.574 for the inner model. Moreover, Figure 1 highlighted the factor loadings.

For all the reflecting indicator variables for 'shopping' have the mean value which is greater than 4.29/5, which indicates that all these characteristics of shopping mall have an effect on performance of the mall and in the presence of the characteristics shopping mall functions well. In the same manner, the reflective indicator variables for the consumer loyalty have a mean which is greater than 4.26. As shown in the Figure 1, the value of gamma

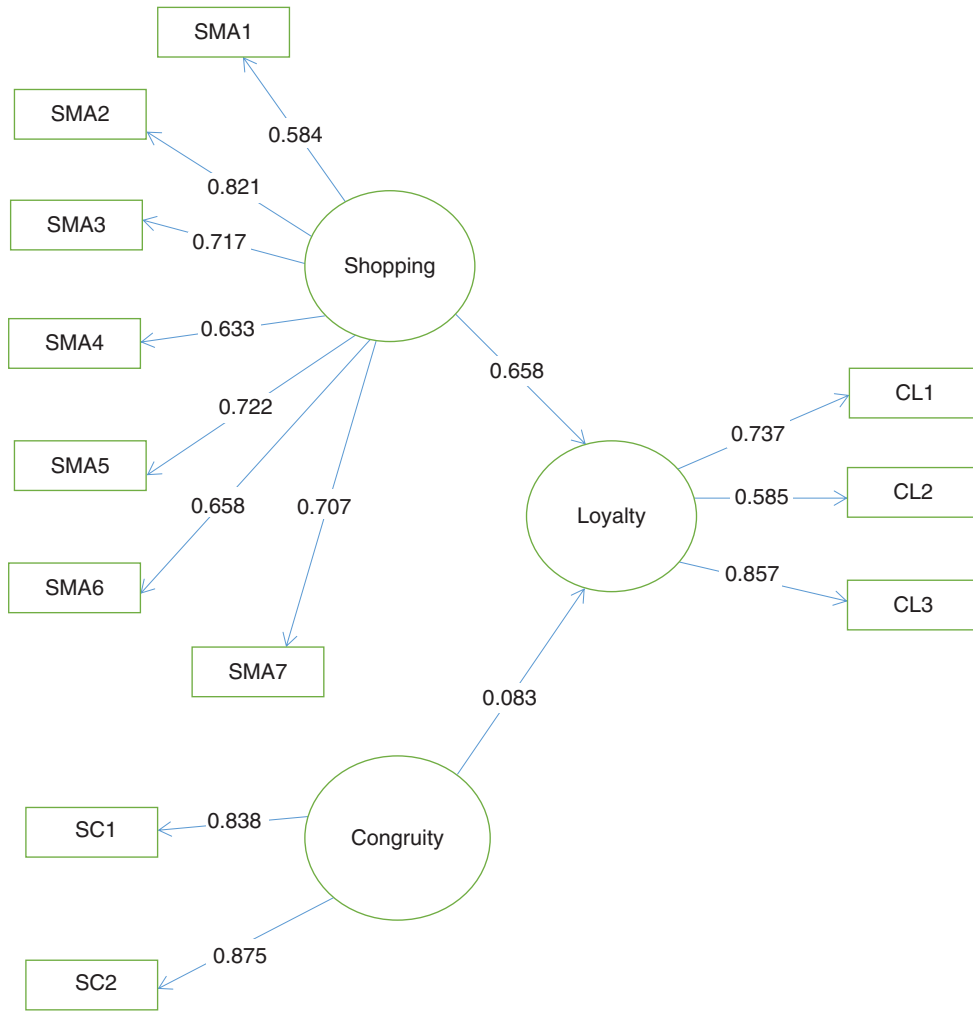


Fig. 1. Factor loadings.

coefficient is 0.658 (t -statistics = 6.949, $p < 0.01$), ultimately it can be said that shopping mall image referred as ‘shopping’ significantly effects consumer behavior referred here as loyalty as given in hypotheses 1. Table I shows descriptive statistics and correlations for the study variables of ‘Shopping Mall Image.’ Moreover, Table II shows descriptive statistics and correlations for the study variables of ‘congruity.’ Table III shows descriptive statistics and correlations for the study variables of ‘consumer behavior.’

Table I. Descriptive statistics and correlations for the study variables of ‘shopping mall image.’

Variables	<i>M</i>	<i>SD</i>	SMA1	SMA2	SMA3	SMA4	SMA5	SMA6	SMA7
SMA1	4.39	0.36	–	–	–	–	–	–	–
SMA2	4.35	0.52	0.876**	–	–	–	–	–	–
SMA3	4.29	0.36	0.795**	0.859**	–	–	–	–	–
SMA4	4.38	0.90	0.589	0.759**	0.456	–	–	–	–
SMA5	4.32	0.67	0.689**	0.824**	0.854**	0.856**	–	–	–
SMA6	4.47	0.91	0.745**	0.844**	0.544	0.651	0.742**	–	–
SMA7	4.31	0.48	0.564	0.798**	0.845**	0.788**	0.832**	0.534	–

Note: **Correlation is significant at 0.05 level (2-tailed).

Taking the mean values for congruity variables, 3.67 was the mean for self-image congruity while 4.10 was the mean for social image congruity. By taking the help of The Hofstede Centre, a possible explanation for this can be given. According to Hofstede Centre, Indonesia has a low score of 14 on Individualism and also a low score of 38 on Indulgence. Taking into account the Hofstede’s analysis, more stress should be placed by Indonesia on adjusting to the desires of society and that of large number of people to which they have a sense of belonging (Indonesians rarely shop without anyone), that is why the social-image congruity has a mean score of 4.10 which is relatively higher. In the meantime, it can be seen through the indulgence score that they are limited by social

Table II. Descriptive statistics and correlations for the study variables of ‘congruity.’

Variables	<i>M</i>	<i>SD</i>	SC1	SC2
SC1	3.67	0.36	–	–
SC2	4.10	0.90	0.852**	–

Note: **Correlation is significant at 0.05 level (2-tailed).

Table III. Descriptive statistics and correlations for the study variables of 'consumer behavior.'

Variables	M	SD	CL1	CL2	CL3
CL1	4.38	0.85	–	–	–
CL2	4.26	0.81	0.581	–	–
CL3	4.28	0.75	0.864**	0.769**	–

Note: **Correlation is significant at 0.05 level (2-tailed).

standards, and they should attempt to control their wants, which could clarify the generally lower mean for mental self-image congruity (3.67). The value of gamma coefficient is 0.083 (t -statistics = 0.856, $p > 0.05$), which shows that congruity does not have a significant effect on customer behavior, thus we fail to accept hypotheses 2. This shows that consumers are willing to show that they have high self-image congruity along with congruity with other consumers but at the same time they are unwilling to accept that it has any effect on their loyalty to the mall—which can be argued as self-indulgent and points towards the absence of self-control in come to have a control over their wants.

5. DISCUSSION AND CONCLUSION

A model which can be accepted generally does not exist that can explain what components are responsible to drive the consumers' value despite the fact that consumers have utilitarian needs to fulfill-components characteristic to the shopping centre—just as non-practical desires, which come from affiliations one has with the shopping centre. In that capacity, two latent constructs are present in the inner model of Figure 1: the primary marked 'shopping' attempts, to catch utilitarian needs, and the second, 'congruity,' to catch nonfunctional desires. As for the previous we quantified the seven shopping centre traits presented by Sing and Prashar (2013) to mirror the latent construct 'shopping'—these traits are characteristic to a shopping centre and controllable by the administration. The connection among 'shopping' and 'loyalty' was critical, subsequently which supported H1.

All seven indicator variables reflective of shopping mall image had mean value more than 4.29/5, which shows that efforts have been put it by management to deliver these characteristics. As the factors are relied upon to have inter-item relationship and the consideration or removal of a measure isn't intended to modify the applied concept of the latent construct of interest, shopping centre image it will be wrong to come to any conclusion with respect to the general commitment of one reflect or variable contrasted with the others. In any case, while a correlation was expected from these items, some exceptions can also be made: no correlation existed between merchandise and atmospherics or security and also no correlation was seen between food and service and atmospherics ($p > 0.05$ for all correlations). The only correlated variables out of all

seven items were accessibility and entertainment recommend that entertainment is often "neglected" along with food and security when it comes to molding the shopping mall image.

There was no significance of gamma coefficient between 'congruity' and 'loyalty' which failed to support H2. This result was not expected. Almost 40 years ago, suggested that "[M]any retailers would benefit from defining their business as being part of the social-recreational industry." An empirical support was provided by Malik and Hanafi (2018) about the shopping experience at department store that concluded that "our insights suggest expending effort that boosts one's status or self-esteem could be a viable differentiation strategy as it would create social value." In this study, we can see that a significant correlation exist between two indicator variables reflecting the 'congruity,' when one of the variable measured congruity between the people's self-idea and the shopping centre image, and the other measured congruity between the consumers' self-image and their view of different clients at the shopping centre, however the relationship between 'congruity' and 'loyalty' had no significance. The mean value for these two indicator variables were 3.67/5 and 4.10/5, respectively, but regardless of such high means, it had not translated into loyalty. It can be suggested that the reason behind this could be the low ranking of Indonesians in Individualism and Indulgence. Conceding that they like to enjoy shopping and satisfy wants through utilization would appear to run counter to these hidden social inclinations. In any case, we firmly caution against reasoning that congruity and shopping practices have no relationship. Till to-date research has been saturated with a Western point of view that recommends there is a social measurement to retail chain shopping that ought not to be disregarded.

In any case, maybe the absence of a huge relationship is progressively trite: there are other top of the line shopping centres in Surabaya, Indonesia, and these shopping centres might just additionally rate high on congruity, consequently loyalty is not driven by congruity, yet rather attributes of the shopping centre that shape its image. We along these lines urge further research to investigate this potential relationship and to dissect these various perspectives. A culturally diverse correlation could reveal insight into the Hofstedian view, and an intra-city shopping centre examination could uncover the role, assuming any, of congruity and consumer loyalty among Indonesian customers.

References

1. Gomes, R.M. and Paula, F., 2017. Shopping mall image: Systematic review of 40 years of research. *The International Review of Retail, Distribution and Consumer Research*, 27(1), pp.1–27.
2. Miyaji, I., 2018. Comparison of useful activities of improving awareness in blended classes in java script and PHP programming. *International Journal of Educational Technology and Learning*, 3(2), pp.78–92.

3. Mohammad Shafiee, M. and Es-Haghi, S.M.S., **2017**. Mall image, shopping well-being and mall loyalty. *International Journal of Retail & Distribution Management*, 45(10), pp.1114–1134.
4. Kesari, B. and Atulkar, S., **2016**. Satisfaction of mall shoppers: A study on perceived utilitarian and hedonic shopping values. *Journal of Retailing and Consumer Services*, 31(1), pp.22–31.
5. Bigne, E., Llinares, C. and Torrecilla, C., **2016**. Elapsed time on first buying triggers brand choices within a category: A virtual reality-based study. *Journal of Business Research*, 69(4), pp.1423–1427.
6. Ayadi, K. and Cao, L., **2016**. Exploring children's responses to store atmosphere. *International Journal of Retail & Distribution Management*, 44(10), pp.1030–1046.
7. El Hedhli, K., Chebat, J.-C. and Sirgy, M.J., **2013**. Shopping well-being at the mall: Construct, antecedents, and consequences. *Journal of Business Research*, 66(7), pp.856–863.
8. Yuvaraja, T. and Ramya, K., **2016**. Modelling the interface of multifarious networks. *Far East Journal of Electronics and Communications*, 16(3), pp.493–509.
9. Yuvaraja, T. and Gopinath, M., **2016**. New gen algorithm for detecting sag and swell voltages in single phase inverter system for micro grid. *Automatika*, 57(3), pp.599–609.
10. Yuvaraja, T., Ramya, K. and Gopinath, M., **2018**. Meandering vector control strategy as D-STATCOM in renewable cluster grid for power optimization. *Materials Today: Proceedings*, 5(1), pp.1257–1263.
11. Yuvaraja, T. and Ramya, K., **2018**. Discretionary controller for hybrid energy storage system based on orderly control considering commercial value in decentralised microgrid operation. *COMPEL—The International Journal for Computation and Mathematics in Electrical and Electronic Engineering*, 37(6), pp.1969–1980.
12. Yuvaraja, T. and Ramya, K., **2018**. Analysis of wind turbine modelling using TSMC techniques. *COMPEL—The International Journal for Computation and Mathematics in Electrical and Electronic Engineering*, 37(6), pp.1981–1992.
13. Yuvaraja, T. and Ramya, K., **2018**. Vector control of PMSM take over by photovoltaic source. *Applied Computational Electromagnetics Society Journal*, 33(2), pp.228–231.
14. Teekaraman, Y., Ramya, K., Manoharan, H. and Manoharan, A., **2019**. State approximation in power system by using quasi derived originating procedure. *Measurement*, 146(1), pp.924–929.
15. Tejeswini, M., Raglend, I.J., Yuvaraja, T. and Radha, B., **2019**. An advanced protection coordination technique for solar in-feed distribution systems. *Ain Shams Engineering Journal*, 10(2), pp.379–388.
16. Teekaraman, Y., Kuppasamy, R. and Nikolovski, S., **2019**. Solution for voltage and frequency regulation in standalone microgrid using hybrid multiobjective symbiotic organism search algorithm. *Energies*, 12(14), pp.1–16.
17. Kaihatu, T.S. and Spence, M.T., **2016**. The relationship between shopping mall image and congruity on customer behaviour: Evidence from Indonesia. *Australasian Marketing Journal (AMJ)*, 24(2), pp.141–145.
18. Arunasiri, V.T., **2019**. A study on the importance of buddhist meditation as psycho therapeutic with especial reference to suttaPITAKA. *Journal of Social Sciences, Humanities and Economics*, 1(1), pp.5–8.
19. Anwesh Reddy, N., Madhurya, N., Ayyagari, K.R. and Kumar, S.P., **2019**. Comparative evaluation of micronuclei in reverse smokers in affected and unaffected sites in India. *Journal of Social Sciences, Humanities and Economics*, 1(1), pp.1–4.
20. Anam Fayyaz, M.H., Syed Kamran, Zair Mehmood Hashmi, Kashif Munir and Fahad Hassan, **2019**. Corporate political connection and corporate social responsibility disclosures: A review. *Journal of Social Sciences, Humanities and Economics*, 1(1), pp.18–25.
21. Yuvaraja, T. and Ramya, K., **2019**. Statistical data analysis for harmonic reduction in 3 ϕ -fragmented source using novel fuzzy digital logic switching technique. *Circuit World*, 45(3), pp.148–155.
22. Yuvaraja, T. and Ramya, K., **2018**. Hierarchical distributed model scheme implementation in DC μ grid for numerous ground faults condition. *International Journal of Electrical Engineering Education*, 56(4), pp.348–363.
23. Yuvaraja, T. and Ramya, K., **2016**. Visual and surface properties of CdTe thin films on CdS/FTO glass substrates. *International Journal of Electrical and Computer Engineering*, 6(2), pp.468–473.
24. Yuvaraja, T. and Ramya, K., **2016**. Implementation of control variables to exploit output power for switched reluctance generators in single pulse mode operation. *IJE Transactions A: Basics*, 29(4), pp.505–513.
25. Liu, C.-T., Guo, Y.M. and Lee, C.-H., **2011**. The effects of relationship quality and switching barriers on customer loyalty. *International Journal of Information Management*, 31(1), pp.71–79.
26. Lu, J. and Xu, Y., **2015**. Chinese young consumers' brand loyalty toward sportswear products: A perspective of self-congruity. *Journal of Product & Brand Management*, 24(4), pp.365–376.
27. Deshwal, P., **2016**. Customer experience quality and demographic variables (age, gender, education level, and family income) in retail stores. *International Journal of Retail & Distribution Management*, 44(9), pp.940–955.
28. Yuvaraja, T. and Ramya, K., **2016**. Innovative gen practice analysis towards culpability recognition in earthing structure. *IIOAB Journal*, 7(7), pp.12–23.
29. Sruthi, **2019**. A survey on attrition management with reference to glaxosmithkline consumer health care limited, Rajamahendravaram. *Journal of Social Sciences, Humanities and Economics*, 1(1), pp.105–113.
30. Shpak, T.M., **2019**. Examining the emergence of buddhism and its role in the enlightenment era. *Journal of Social Sciences, Humanities and Economics*, 1(2), pp.5–8.
31. Sai Shankar, K., **2019**. A novel mechanism of multi criteria decision making: An operations research approach by using AHP and topsis method. *Journal of Social Sciences, Humanities and Economics*, 1(1), pp.64–74.
32. Ramya, B., Samatha, Y. and Kiran, A.R., **2019**. Smart phones "or" scorch phones. *Journal of Social Sciences, Humanities and Economics*, 1(1), pp.13–17.
33. Yuvaraja, T. and Ramya, K., **2016**. A vigorous simple most extreme force point tracker for PV battery charger. *Environmental System Research*, 5(25), pp.1–11.

Received: 7 July 2019. Accepted: 11 September 2019.