

Identifying Competency of Housing Construction Personnel in Indonesia

by Albani Musyafa

Submission date: 09-Aug-2024 04:35PM (UTC+0700)



Submission ID: 2429472455

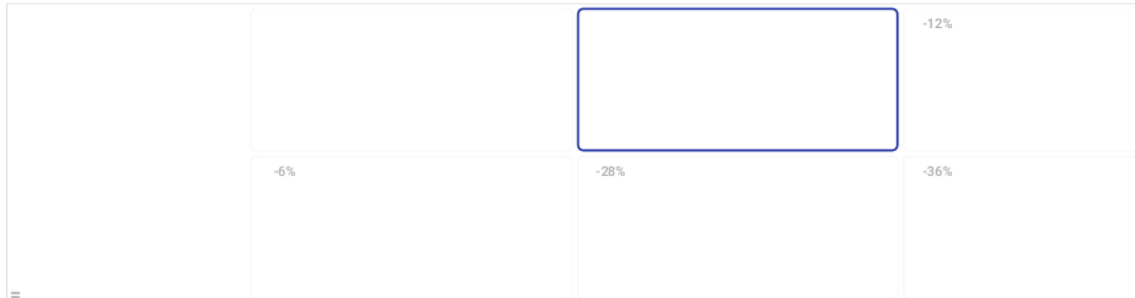
File name: SCESCM-Identifying.pdf (1.26M)

Word count: 8943

Character count: 53311

Lecture Notes in Civil Engineering

COUNTRY	SUBJECT AREA AND CATEGORY	PUBLISHER	H-INDEX
Switzerland  Universities and research institutions in Switzerland  Media Ranking in Switzerland	Engineering └ Civil and Structural Engineering	Springer Singapore	25
PUBLICATION TYPE	ISSN	COVERAGE	INFORMATION
Book Series	23662557, 23662565	1975, 2016-2024	Homepage How to publish in this journal giovanni.solari@unige.it



SCOPE

Lecture Notes in Civil Engineering (LNCE) publishes the latest developments in Civil Engineering - quickly, informally and in top quality. Though original research reported in proceedings and post-proceedings represents the core of LNCE, edited volumes of exceptionally high quality and interest may also be considered for publication. Volumes published in LNCE embrace all aspects and subfields of, as well as new challenges in, Civil Engineering.

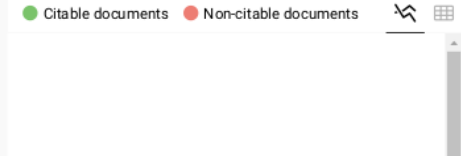
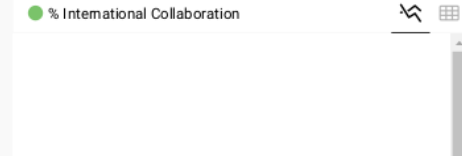
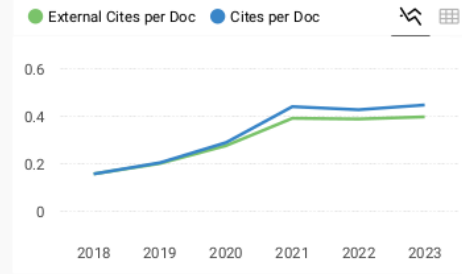
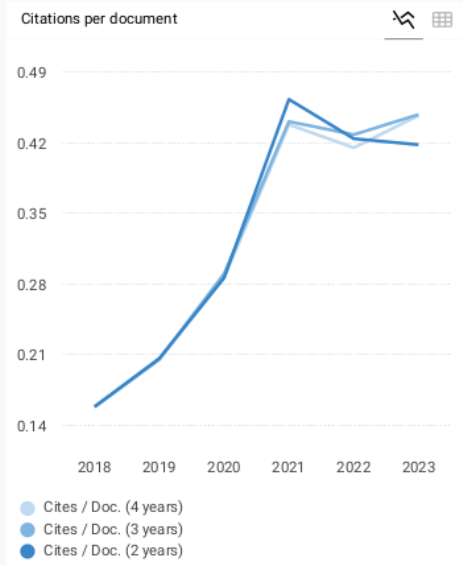
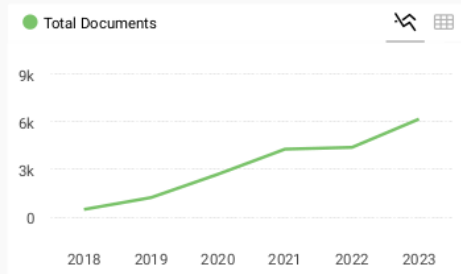
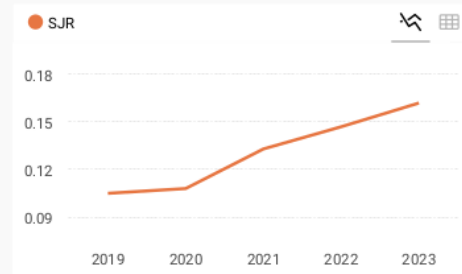


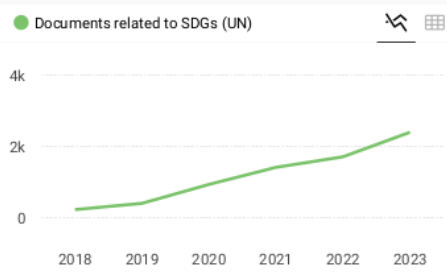
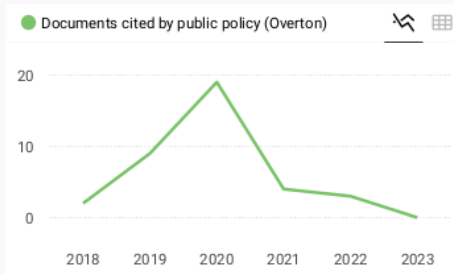
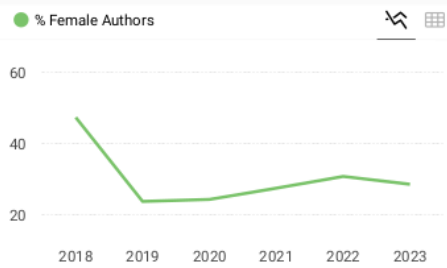
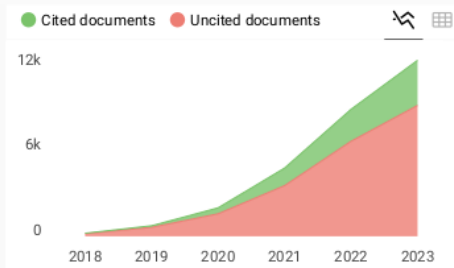
SAVE UP TO
YOU STAY LO...
Five-Star Li...
With Complimenta...

Quartiles



	Rp26.499.0...	Rp17.499.0...	Rp31.999.0...	Rp17.499.0...	Rp28.499.0...	Rp28.499.0...	Rp17.499.0...	Rp19.499.0...	Rp17.49





Lecture Notes in Civil Engineering

Q4 Civil and Structural Engineering
best quartile

SJR 2023 0.16

powered by scimagojr.com

Show this widget in your own website

Just copy the code below and paste within your html code:

```
<a href="https://www.scimagojr.com" style="color: #000080; text-decoration: none; font-weight: bold;">

```

SCImago Graphica

Explore, visually [communicate](#) and make sense of data with our **new data visualization tool**.

Metrics based on Scopus® data as of March 2024

B MAHENDRA 3 years ago

im an post graduate student in structural engineering, how much time it will take for acceptance and publishing the journal

reply

Melanie Ortiz 3 years ago

SCImago Team

Dear Mahendra,
Thank you for contacting us.
We suggest you visit the journal's homepage or contact the journal's editorial staff , so they could inform you more deeply.
Best Regards, SCImago Team



Source details

Lecture Notes in Civil Engineering

Years currently covered by Scopus: 1975, from 2016 to 2024

Publisher: Springer Nature

ISSN: 2366-2557 E-ISSN: 2366-2565

Subject area: Engineering: Civil and Structural Engineering

Source type: Book Series

[View all documents >](#)

[Set document alert](#)

[Save to source list](#)

CiteScore 2023

0.8



SJR 2023

0.162



SNIP 2023

0.253



[CiteScore](#) [CiteScore rank & trend](#) [Scopus content coverage](#)

CiteScore 2023 ▼

$$0.8 = \frac{12,939 \text{ Citations } 2020 - 2023}{17,058 \text{ Documents } 2020 - 2023}$$

Calculated on 05 May, 2024

CiteScoreTracker 2024 ⓘ

$$0.6 = \frac{10,820 \text{ Citations to date}}{18,469 \text{ Documents to date}}$$

Last updated on 08 July, 2024 • Updated monthly

CiteScore rank 2023 ⓘ

Category	Rank	Percentile
Engineering		
Civil and Structural Engineering	#326/379	14th

[View CiteScore methodology >](#) [CiteScore FAQ >](#) [Add CiteScore to your site](#)

Lecture Notes in Civil Engineering

Sheila Belayutham ·
Che Khairil Izam Che Ibrahim ·
Anizahyati Alisibramulisi ·
Hazrina Mansor · Muntasir Billah *Editors*

Proceedings of the
5th International
Conference
on Sustainable
Civil Engineering
Structures and
Construction Materials

SCESCM 2020

 Springer

Lecture Notes in Civil Engineering

Volume 215

Series Editors

Marco di Prisco, Politecnico di Milano, Milano, Italy

Sheng-Hong Chen, School of Water Resources and Hydropower Engineering,
Wuhan University, Wuhan, China

Ioannis Vayas, Institute of Steel Structures, National Technical University of
Athens, Athens, Greece

Sanjay Kumar Shukla, School of Engineering, Edith Cowan University, Joondalup,
WA, Australia

Anuj Sharma, Iowa State University, Ames, IA, USA

Nagesh Kumar, Department of Civil Engineering, Indian Institute of Science
Bangalore, Bengaluru, Karnataka, India

Chien Ming Wang, School of Civil Engineering, The University of Queensland,
Brisbane, QLD, Australia

Lecture Notes in Civil Engineering (LNCE) publishes the latest developments in Civil Engineering - quickly, informally and in top quality. Though original research reported in proceedings and post-proceedings represents the core of LNCE, edited volumes of exceptionally high quality and interest may also be considered for publication. Volumes published in LNCE embrace all aspects and subfields of, as well as new challenges in, Civil Engineering. Topics in the series include:

- Construction and Structural Mechanics
- Building Materials
- Concrete, Steel and Timber Structures
- Geotechnical Engineering
- Earthquake Engineering
- Coastal Engineering
- Ocean and Offshore Engineering; Ships and Floating Structures
- Hydraulics, Hydrology and Water Resources Engineering
- Environmental Engineering and Sustainability
- Structural Health and Monitoring
- Surveying and Geographical Information Systems
- Indoor Environments
- Transportation and Traffic
- Risk Analysis
- Safety and Security

To submit a proposal or request further information, please contact the appropriate Springer Editor:

- Pierpaolo Riva at pierpaolo.riva@springer.com (Europe and Americas);
- Swati Meherishi at swati.meherishi@springer.com (Asia - except China, and Australia, New Zealand);
- Wayne Hu at wayne.hu@springer.com (China).

All books in the series now indexed by Scopus and EI Compendex database!

More information about this series at <https://link.springer.com/bookseries/15087>

Sheila Belayutham ·
Che Khairil Izam Che Ibrahim ·
Anizahyati Alisibramulisi · Hazrina Mansor ·
Muntasir Billah
Editors

Proceedings of the 5th
International Conference
on Sustainable Civil
Engineering Structures
and Construction Materials

SCESCM 2020

 Springer

Editors

Sheila Belayutham
School of Civil Engineering, College
of Engineering
Universiti Teknologi MARA
Shah Alam, Selangor, Malaysia

Che Khairil Izam Che Ibrahim
School of Civil Engineering, College
of Engineering
Universiti Teknologi MARA
Shah Alam, Selangor, Malaysia

Anizahyati Alisibramulisi
School of Civil Engineering, College
of Engineering
Universiti Teknologi MARA
Shah Alam, Selangor, Malaysia

Hazrina Mansor
School of Civil Engineering, College
of Engineering
Universiti Teknologi MARA
Shah Alam, Selangor, Malaysia

Muntasir Billah
Department of Civil Engineering
Lakehead University
Thunder Bay, ON, Canada

ISSN 2366-2557 ISSN 2366-2565 (electronic)
Lecture Notes in Civil Engineering
ISBN 978-981-16-7923-0 ISBN 978-981-16-7924-7 (eBook)
<https://doi.org/10.1007/978-981-16-7924-7>

© The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2022

This work is subject to copyright. All rights are solely and exclusively licensed by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer imprint is published by the registered company Springer Nature Singapore Pte Ltd. The registered company address is: 152 Beach Road, #21-01/04 Gateway East, Singapore 189721, Singapore

Contents

Structural and Material Engineering

Practical Measurement Method for Dynamic Structural Large Displacement Using a High-Speed Camera	3
Ashar Saputra and Aries Putra Purba	
Finite Element Analysis of CRTS III Slab Track Model	17
Mughtar Sufaat, Ali Awaludin, Iman Satyarno, Andreas Triwiyono, Akhmad Aminullah, Mukhlis Sunarso, and Guntar Muria Adityawarman	
Effect of Partial Replacement of Cement with Volcanic Ash on Mechanical Behaviour of Mortar	33
Md. Shahjalal, Jesika Rahman, Afia Farzana Haque, Lutful Habib, Khadiza Binte Jalal, and Mohd Mezanur Rahman	
Lateral Load–Displacement Behaviors of Reinforced Geopolymer-Concrete Column Using Finite Element Analysis	45
Kukuh Kurniawan Dwi Sungkono, Iman Satyarno, Henricus Priyosulistyo, and Indra Perdana	
Optimal Sensor Placement for Accelerometer in Single-Pylon Cable-Stayed Bridge	63
Akhmad Aminullah, Bambang Suhendro, and Raka Bagus Panuntun	
Seismic Performance of Instant Steel Frame House for Post Earthquake Reconstruction	81
Widarto Sutrisno, Iman Satyarno, Ali Awaludin, Ashar Saputra, and Angga Fajar Setiawan	
Nonlinear Numerical Model of Glued-Laminated Petung Bamboo Under Flexural Test Based on ASTM D 143-94	99
Abdul Widayat Abzarih, Inggar Septhia Irawati, and Bambang Suhendro	

Numerical Simulation Reinforcement of RC T-Beam with Carbon Fiber Reinforced Polymer (CFRP)	119
A. Mahendra, Muslikh, and A. S. Fajar	
Development Experimental Investigations of Truss Bridge Model for Vibration-Based Structural Health Monitoring	137
Sukamta, Angga Alfiannur, Susilo Adi Widyanto, and Han Ay Lie	
Parameter Identification of Bouc-Wen Model Using Firefly Algorithm	155
Richard Frans, Yoyong Arfiadi, and Junaedi Utomo	
Mechanical Properties of Fly Ash Bottom Ash (FABA) Geopolymer Hybrid Concrete Using Portland Cement	173
Monita Olivia, Rizky Noviandri, Gunawan Wibisono, and Iskandar Romey Sitompul	
Investigation of Confined Masonry Using Non-standard Quality of Concrete and Reinforcement	187
Andreas Triwiyono, I. Gusti Lanang Bagus Eratodi, Dian Eksana Wibowo, and Suprpto Siswosukarto	
Prospective of Passive Control Structural Devices for Existing Low-Rise Building at Earthquake-Prone Region of Developing Countries: A Literature Review	201
Yenny Nurchasanah, Bambang Suhendro, and Iman Satyarno	
Numerical Modelling of Concrete-Filled Steel Tube Columns Under Eccentric Loading	221
Joarder Md. Sarwar Mujib, Avijit Pal, Ibriju Ibrahim, and Tanvir Mustafy	
Maturity Method to Predict Strength Development of Concrete Made of Portland Cement Composite (PCC)	241
G. Turuallo, H. Mallisa, N. Rupang, and Z. Mallisa	
Study on Partial Replacement of Cement with Limonite in Mechanical Strength of Mortar	255
Md. Shahjalal, Jesika Rahman, Afia Farzana Haque, Lutful Habib, Khadiza Binte Jalal, and Mohd Mezanur Rahman	
Development of Numerical Model for Highly-Flowable Strain Hardening Fiber Reinforced Concrete (HF-SHFRC) Columns Subjected to Lateral Displacement Reversals and High Axial Loading Level	269
Wisena Perceka, Wen-Cheng Liao, and Li-Wei Tseng	

Mechanical Properties of Eco-Friendly Self-consolidating Concrete Containing Ground Granulated Blast Furnace Slag and Calcined Dolomite	285
Herry Suryadi Djayaprabha, Ta-Peng Chang, Jeng-Ywan Shih, and Hoang-Anh Nguyen	
An Overview of the Development of Replaceable Links in Eccentrically Braced Frame Steel Structures	297
Naomi Pratiwi, Helmy Hermawan Tjahjanto, and Muslinang Moestopo	
The Evaluation of Six Indonesian Hardwood Species According to SNI 7973:2013	311
Wiryanto Dewobroto, Christian Gerald Daniel, Ricky Weinata Kurniawan, and Au Chuenliana Audi	
Image Analysis of the Color Change on Concrete Surface Under the Change of Temperature and Humidity	329
Naoki Tosaka, Deng Pengru, and Takashi Matsumoto	
Dynamic Formation of Spontaneous Corrugation on Sand Surface Due to Repeated Loading of Moving Vehicle	349
Shunji Kanie, Hao Zheng, Kai Hashimoto, and Risa Endo	
Assessment and Back Analysis of a Swaying-Jetty in Dumai Indonesia	363
Merdeka Sandi Tazakka, M. Adecar Nugroho, and Budiwan Adi Tirta	
Seismic Assessment of Reinforced Concrete Frame with Unreinforced Masonry Infill Walls in Malaysia	379
Nurbaiah Mohammad Noh, Nur Izzah Aznin, Muhamad Hafizi Mohamed Zin, Muhammmad Azamuddin Mohd Ghari, Muhammad Ammar Zahari, and Muhammad Faiz Rushdi	
High Temperature Performance of Concrete Incorporating Recycled Glass Powders	391
Joarder Md Sarwar Mujib, Nayeem Ahmed Shuvo, Abu Bakar Siddique Ishmam, and Tanvir Mustafy	
The Effect of Palm Oil Fuel Ash (POFA) and Steel Fiber Addition to the Mechanical Properties of Ultra High Performance Concrete (UHPC)	405
Hafizuddin Zakare, Anizahyati Alisibramulisi, Muhd Norhasri Muhd Sidek, Aidan Newman, Nadiah Saari, Suraya Hani Adnan, and Norshariza Mohd Bhkari	

Investigation on Fire Resistance of Concrete Incorporating Recycled Ceramic Fine Aggregate	417
Joarder Md. Sarwar Mujib, Md. Maruf Hasan, Md. Rasel Molla, Tahsin Md. Zahid, and Tanvir Mustafy	
Image Analysis on the Deformation Behaviors of RC Beams with Simulated Deteriorations Under Moving Wheel Load Fatigue	435
Takamasa Nagai, Ko Kakuma, Hiroaki Nishi, Pengru Deng, and Takashi Matsumoto	
Investigation of Catalyzed Biomass Thermoelectric Concrete with Palm Oil Fuel Ash	451
Hoong-Pin Lee, Wan-Foong Chak, Kar-Loke Teow, Wen-Zhang Lee, Nurharniza Binti Abdul Rahman, and Abdullah Zawawi Awang	
Examination on the Processes of Structural Performance Evaluation of SRC Deep Beams by FEA with NDT Results	465
Motonori Yasui, Deng Pengru, and Takashi Matsumoto	
Development of Time Histories Based on Shallow Crustal Earthquake Sources Considering the New Version of the Indonesian Earthquake Map	483
Wisnu Erlangga, Mochamad Teguh, and Imam Trianggoro Saputro	
Bamboo Reinforced Concrete Beam	497
Nurharniza Abdul Rahman, Choo Li Rong, and Lee Hoong Pin	
Shear Strength Parallel to Grain for Selected Malaysian Tropical Timber According to BS EN408	511
M. B. Norshariza, W. C. Lum, Z. Ahmad, A. Alisibramulisi, and M. S. Nordin	
Effect of Pineapple Leaf Fibre as Additional Material in Concrete Mixture	525
Siti Khadijah Che Osmi, Mohamad Asrul Zainuddin, Noor Aina Misnon, Suriyadi Sojipto, and Hapsa Husen	
Flexural Behavior of SCC Beams with Different Shear Span to Effective Depth Ratio	539
Oh Chai Lian, Mohd Raizamzamani Md Zain, Norrul Azmi Yahya, Lee Siong Wee, and Balqis Md Yunos	
Flexural Strength and Ductility of Green Engineered Cementitious Composites Containing High Volumes of Fly Ash	553
Siong Wee Lee, Mohd Raizamzamani Md Zain, Chai Lian Oh, Norrul Azmi Yahya, and Nadiah Saari	

An Experimental Study on the Influence of Ground Granulated Blast-Furnace Slag (GGBS) on Bending Strength of Green Engineered Cementitious Composites	565
Mohd Raizamzamani Md Zain, Siong Wee Lee, Chai Lian Oh, Ching Hua Goh, and Norrul Azmi Yahya	
The Correlation Between Split Tensile and Flexural Strength with Compressive Strength of Crumb Rubber-Rice Husk Ash Concrete	581
Habib Abdurrahman, Gunawan Wibisono, Iskandar Romey Sitompul, and Monita Olivia	
Finite Element Dynamic Analysis of Double-Span Steel Beam Under an Instantaneous Loss of Support	593
Nur Ezzaryn Asnawi Subki, Hazrina Mansor, Yazmin Sahol Hamid, and Gerard A. R. Parke	
Effect of Replacement Area Ratio on Bearing Capacity Improvement of Peat Soil Columns Stabilized Using MUF-P Polymer Resin	611
Mohd Nazrin Mohd Daud, Nik Norsyahariati Nik Daud, and Jestin Jelani	
Ettringite: Influence of Steam Curing and Excessive Sulphate Content	625
M. Y. Balqis, H. M. K. Saiful, and M. M. Z. Raizamzamani	
Geoforensic Investigation of Cavity and Settlement for Abutment Bridge Using Electrical Resistivity Imaging	639
A. S. A. Rahman and I. B. M. Jais	
Strength Predictions of Normal Concrete Beam with Corner Notch	653
Hilton Ahmad and Noor Yasmin Zainun	
Structural Condition Assessment of a Log Bridge Under Heavy Traffic Load (Case Study: 105 Tons Gas Engine Delivery in Central Borneo Project)	669
Angga T. Yudhistira, Angga S. Fajar, Irfani N. Hud, Budi Suanda, and Ali Awaludin	
The Application of Inserted Steel Pipe as an Alternative Confinement Design in Reinforced Concrete Column Plastic Hinge Regions	685
Johanes Januar Sudjati, Iman Satyarno, Andreas Triwiyono, Bambang Supriyadi, and Angga Fajar Setiawan	

Influence of Solvable Connections on the Life Cycle Assessment of a Facade System	705
Leonie Scheuring, Melanie Werner, Franziska Rehde, and Bernhard Weller	
Seismic Performance Comparison of Pile Supported Slab Viaduct with PHC Pile and RC Bored Pile in South Part of Java Island	719
Muhamad Fauzi Darmawan, A. S. Fajar, Iman Satyarno, Ali Awaludin, and Bonifacius Adiguna Yogatama	
Finite Element Analysis for Developing Multi-direction Crossing Web Type Shear Panel Damper	735
N. U. Bagas, I. Satyarno, A. S. Fajar, A. Awaludin, and M. A. Guntara	
Numerical Model of Finned Tubular Shear Panel Damper for Multi-direction Seismic Excitation	751
A. M. Emilidardi, A. S. Fajar, A. Awaludin, I. Satyarno, and M. Sunarso	
Investigation of Fast Connection (Clamped Pocket Mechanics) for Modular Instant Steel House with Finite Element Analysis: Back to Build Post-disaster	767
A. S. Fajar, A. Saputra, I. Satyarno, and L. Himawan	
Method Assessment of Bridge Conditions Using Vibration Mode Patterns	787
Sukamta, Bagus Acung Billahi, Susilo Adi Widyanto, and Han Ay Lie	
Quantification of Bacteria Self-healing Efficiency on Concrete Cracks	803
M. S. Hamidah, H. Noor Hana, K. M. G. Iqmal, and K. Kartini	
Feasible Design Tensile Capacity of Post-installed Anchors Based on the New Eurocode 2: Part 4 (2018)	819
L. T. Ng, E. S. W. Wong, and D. T. W. Looi	
The Maximum Allowable Peak Ground Acceleration of a Six Storey Building Based on Micro Tremor and Numerical Analysis	837
Agustinus Sri Pandu and Henricus Priyosulistyo	
The Bond Strength and Damping Properties of Mortar Joint Using Rubber Tire Crumbs	857
Restu Faizah, Henricus Priyosulistyo, and Akhmad Aminullah	
Using Calcium Oxide and Accelerator to Control the Initial Setting Time of Mortar in 3D Concrete Printing	871
Antoni Antoni, David Christian Widjaya, Alexander Ricardo Koentjoro Wibowo, Jimmy Chandra, Pamuda Pudjisuryadi, and Djwantoro Hardjito	

Contents	xiii
Numerical Simulation of Spalling and Moisture Evaporation in Concrete Tunnel Linings Exposed to Fire	881
Zobaer Saleheen and Renga Rao Krishnamoorthy	
Optimization on Geometry Design of Double-Layer Space Trusses	895
Yazmin Sahol Hamid and Nurul Najihah Abd Rahim	
Numerical Investigation of Structural Behavior of Timber-Glass Composite Wall Panel	911
M. A. N. Abuzaid, M. K. Kamarudin, and M. Yussof	
Effect of Palm Oil Bottom Ash (POBA) on Concrete Mechanical Properties of Fresh and Hardened Ultra High Performance Concrete (UHPC)	929
Izzani Farhana Baharudin, Nurul Huda Suliman, Sakhiah Abdul Kudus, and Nuradila Izzaty Halim	
Impacts of Steel LNG Tank Aspect Ratio on Seismic Vulnerability Subjected to Near-Field Earthquakes	941
N. Sharari, B. Fatahi, A. Hokmabadi, and R. Xu	
Load–Displacement Behavior of Soil–Pile Interaction Under Lateral Action	957
Thevaneyan K. David and Renga Rao Krishnamoorthy	
Shear Failure of Pile in Clay Due to Soil–Structure Interaction	973
Thevaneyan Krishta David, Syahrie Safri Peter, and Renga Rao Krishnamoorthy	
RC Beams Strengthened with Near Surface Mounted Carbon Fiber Reinforced Polymer Plate at Short Term Saltwater Exposure	987
Amiruddin Mishad, Mohd Hisbany Mohd Hashim, Azmi Ibrahim, Mohammad Hazizi Jamal, and Dicken Anak Baboh	
Assessment on Bonding Strength of Cross Laminated Timber Made from Light Red Meranti Manufactured by Vacuum Press Method	999
M. S. Nordin, M. B. Norshariza, W. C. Lum, N. S. Zainal, and Z. Ahmad	
Effect of Kenaf Core to the Physical Properties of Cement-Sand Brick for Non-load Bearing Walls	1013
Mohd Fadzil Arshad, Nurul Aini Salehuddin, Zakiah Ahmad, Mohd Zaim Mohd Nor, and Abdul Hadi Hassan	

Bond Strength of Different Mechanically Rebar-Spliced Embedded in Concrete Under Pull Out Test	1027
Nursafarina Ahmad, Nur Fitriah Mohd Rohzi, N. S. N. Ain Fatimah Nik Mahmood, and M. Hadri Hamidun	
Construction Management	
Construction Supply Chains for Strategic Materials of Building Contractors in the Greater Bandung Areas	1045
I. Made Bhisma Pranandya, F. S. C. S. Maisarah, and Muhamad Abduh	
Social Sustainability in Education: An Insight into the Civil Engineering Curricular	1063
Nurul Elma Kordi, Sheila Belayutham, Che Khairil Izam Che Ibrahim, and Nur Shuhada Nor Shahrudin	
Legacy of the Games: Portable Architecture Transforming the Host City—The Pre-game, Game and Post-game Phase	1077
Shivangi Varma and Himanshu Sanghani	
Cost Structure Identification for Third-Party Logistics Services in Construction Projects	1107
Fauziah S. C. S. Maisarah and Muhamad Abduh	
Constraint and Fault Tree Analysis in Safety Construction System Integration	1119
N. Fitri, A. Bhaskara, and A. Purbiantoro	
Identifying Competency of Housing Construction Personnel in Indonesia	1137
Albani Musyafa', Dhanoë Seto Nugroho, and Nelly Buldan Afifa Hidayati	
Experiment to Determine Worker Needs Index in Brick Work with Space Mold Tools	1151
Albani Musyafa', Irsyad Hanif Ansori, and Muchammad Rizky Anugrah	
Development of Entry Mode Assessment Criteria (EMAC) Model for Malaysian Construction Companies to Sustain in International Operations	1161
Norizzati Ibrahim and Che Maznah Mat Isa	
Development of Automated Web-Based Condition Survey System for Heritage Monuments Using Deep Learning	1179
Lukman E. Mansuri and D. A. Patel	

Developing Indicators of Green Operation and Maintenance of Green Supply Chain Management in Construction Industry	1193
Mochamad Agung Wibowo, Naniek Utami Handayani, and Nur Farida	
Proposed Workflow of 3D Modelling Conversion and Enhancement in Quantity Surveying Profession	1207
Lam Tatt Soon, Hasnanywati Hassan, Nazirah Zainul Abidin, Myzatul Aishah Kamarazaly, Boon Tik Leong, and Kenn Jhun Kam	
Industry 4.0 in the Malaysian Construction Industry and Its Adoption Challenges	1223
Mohd Afiq Azinuddin Bin Tayib, Nor Azmi Bakhary, and Che Khairil Izam Che Ibrahim	
Customers' Interests in Sustainable Townships and Smart Housing Features in Malaysia	1235
Sahithi Ajarapu, Che Maznah Mat Isa, Divya Ganesan, Nur Kamaliah Mustaffa, Ahmad Yazed Yahaya, and Christopher Nigel Preece	
Technology? Financial Viability or What? Challenges and Benefits of Eco and Reflective Roof in Malaysia	1251
Boon Tik Leong, Cheng Fern Tey, Lam Tatt Soon, Kenn Jhun Kam, and Fuey Lin Ang	
Reviewing Quality Control Management of Road Construction Projects	1261
Debby Willar, Anak Agung Diah Parami Dewi, and Febriane P. Makalew	
Review of Previous Research Methods in Evaluating BIM Investments in the AEC Industry	1273
Jeri Adin Ardani, Christiono Utomo, Yani Rahmawati, and Cahyono Bintang Nurcahyo	
Sustainable Built Environment	
Seismic Performance Evaluation of Horseshoe Tunnel on Weathered-Sedimentary Rock Formation	1289
J. R. K. Nur Aji, A. S. Fajar, T. F. Fathani, and W. Wilopo	
Sustainable Construction and Its Challenges	1305
Adhilla Ainun Musir, Siti Rashidah Mohd Nasir, Siti Hafizan Hassan, Nur Farah Asyikin Abdul Rahim, and Nurul Farah Afiqah Harun	
Removal of Nutrients, Organic Matter and Total Suspended Solids from River Water by Adsorption on Chicken Eggshell	1319
Wen-Pei Low, Fung-Lung Chang, and Shwu Ying Loo	

Effect of Roofing Material on the Quality of Harvested Rainwater	1335
Nordila Ahmad, Muhammad Faiz, Zuliziana Suif, Maidiana Othman, and Siti Khadijah Che Osmi	
Impact of Proposed Bus Rapid Transit (BRT) Peshawar on Modal Shares of Private Modes	1347
Jawad Mehmood, Sameer-Ud-Din, Muhammad Jawed Iqbal, and Nasir Ali	
Design of Groundwater Filter Media Using Activated Carbon for Emergency Purpose	1357
Zuliziana Suif, Siti Khadijah Che Osmi, Maidiana Othman, Nordila Ahmad, and Adam Muhammad Ezzat Aripin	
Prediction of HMA Mixture Performance from Rheological and Rutting Evaluation of Nanopolymer Asphalt Binder	1371
Ekarizan Shaffie, Ahmad Kamil Arshad, Juraidah Ahmad, Wardati Hashim, Ramadhansyah Putra Jaya, Khairil Azman Masri, Mohd Amin Shafii, and Haryati Yacoob	
Study on Nitrogen Removal Capability of Selected Regional Sewage Treatment Plants in Klang Valley, Malaysia	1385
Suzana Ramli, Jurina Jaafar, and Raja Baharudin Raja Mohamad	
Sustainable Use of Plastic Waste on Laterite Soil as Stabilizer	1397
Nurul Ain Binti Ibrahim, Tan Jia Jun, Muhammad Irfan Shahrin, and Nur'Ain Mat Yusof	
Exploration of Palm Kernel Use in Construction: A Review	1411
Donald Kwabena Dadzie, A. K. Kaliluthin, and D. Raj Kumar	
Evaluation of the Physical and Mechanical Properties of Concrete with Partial Replacement of Coarse Aggregates with Epoxy-Based E-Waste (EBEW)	1425
Joseph Berlin Juanzon and Jaime Aquino	
The Potential of Plastic Waste as Building Material	1441
Chong Lih Yen, Myzatul Aishah Kamarazaly, Soon Lam Tatt, Nurulhuda Hashim, Shirley Chin Ai Ling, and Azrina Md. Yaakob	
Identification Characteristic of Energy Efficient Timber House	1465
Febriane Paulina Makalew, Rilya Rumbayan, and Novatus Senduk	
The Effect of Dominant Rainfall Duration on the Planning of Dimensions of Infiltration Well and the Reduction of Surface Runoff	1477
Sri Amini Yuni Astuti and Dinia Anggraheni	

Evaluation of Hot Mix Asphalt Mixtures Design Modified with Hydrate Lime	1493
Noorfaizah Hamzah, Nur' Ain Mat Yusof, Adnan Derahman, and Mustaqim Mohamad	
Effectiveness of Waste Glass as Filler in Hot Mix Asphalt	1507
Noorfaizah Hamzah, Nur' Ain Mat Yusof, Adnan Derahman, and Ahmad Hafizi Rosely	
Evaluating the Impact of Junction Type on Emissions Level	1531
Masria Mustafa and Nur Amirah Mohammad Noor	

Identifying Competency of Housing Construction Personnel in Indonesia



Albani Musyafa', Dhanoe Seto Nugroho, and Nelly Buldan Afifa Hidayati

Abstract House is one of the main human needs, and the Government must guarantee the fulfilment of these rights. However, at present, Indonesia is experiencing a backlog that is the lack of descents houses for the Indonesian society and this continues to grow as population growth with insufficient housing supply. Increasing the capacity of descent houses production can overcome the backlog in Indonesia so that this problem does not worsen. To increase the capacity of house production, supporting factors must be prepared. These factors include the human resources, especially construction executor who have positions as leaders. The objective of this paper is to determine the critical competencies that must be mastered by the construction executor of house construction. This is useful for improving the education and training for the construction executor. In this study, the method used includes two main steps, first is data collection methods and data processing methods. Data collection was carried out by interviewing and giving questionnaires to those who have knowledge of the construction executor of houses construction work. Data processing is carried out by sorting the mean rank of competencies so that it can be seen the important sequence of competencies that must be owned by the construction executor in the construction of houses. The results of this study get the most important types of competencies for construction executor, namely: competence in reinforcement work, concrete mix work, measurement work, painting work, easel work, and roof covering work.

Keywords Competence · Construction · Descent house

A. Musyafa' · D. S. Nugroho (✉) · N. B. A. Hidayati
Civil Engineering, Universitas Islam Indonesia, Jl. Kaliurang KM 14.5, Sleman, Yogyakarta
55582, Indonesia
e-mail: 17511193@students.uii.ac.id

A. Musyafa'
e-mail: 955110102@uui.ac.id

N. B. A. Hidayati
e-mail: 17511211@students.uii.ac.id

© The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2022
S. Belayutham et al. (eds.), *Proceedings of the 5th International Conference on Sustainable Civil Engineering Structures and Construction Materials*, Lecture Notes in Civil Engineering 215, https://doi.org/10.1007/978-981-16-7924-7_73

1137

1 Introduction

Currently Indonesia undergoes a great backlog of decent residential houses. Census 2019 shows that almost seventy percent of the residential house in Indonesia is in the category of houses that are not worth of live from its sanitary aspect [1]

If other aspects are taken into account, the backlog has reached more than 7 million housing units. This number continues to grow along with population growth and the quantity/quality of inadequate supply of houses. As a result of population growth, housing needs reach around 500,000 to 700,000 housing units per year [1, 2]. Meanwhile, housing production from official developers is only around 1 million houses per year [3]. Although housing construction has increased, it is not enough due to less land and increasing population growth. The shortage of housing supply is met by the independent house constructions whose quality is difficult to control.

Often those who have positions or jobs as executors or executors on a project do not pay attention to the ability that must be had to maximize their work. The executor of the project itself is the executor of a construction in general or housing construction project, has an understanding of a person or body that receives or carries out construction work according to the costs provided and carries out in accordance with the rules and conditions and drawings of a predetermined plan, in general called a contractor.

The executor can be in the form of an individual body or company that is a legal entity or a legal entity that is engaged in carrying out construction work. The main task of the executor is the business entity or person appointed by the project owner to carry out the physical work of the project in accordance with the design made by the Planning Consultant in the plan drawing.

In order to become an executor, specific skills are needed to be able to run a project. In general, the capabilities possessed by project executors are the same, but it will be different if the projects carried out are also different. In accordance with the rules that a construction executor must have the ability to work in the field. Therefore, a clear capability standard is needed so that the implementation of housing construction is not constrained in terms of the ability of the housing project executor. Thus, the Indonesian people need to build better quality housing units to overcome the backlog. One of the efforts in meeting the needs of the settlement is housing. One of the efforts to meet the residential need is housing.

In accordance with the government's program to increase the production of liveable houses, human resources (HR) in the housing industry must also be prepared. One of the important human resources is the expert in implementing housing construction. The housing executor must have the competencies needed so that housing has decent quality, however, the price is affordable, and the construction duration is shorter so that the backlog can be overcome in a relatively short time.

However, at present the education institution/training to produce housing construction experts has not worked as expected [4]. Therefore, support for this institution needs to be given. One way is to find out the competencies needed by these experts.

2 Purpose and Objective

The purpose of this paper is to determine the critical competencies that must be mastered by a building construction executor. This is very useful for improving education and training for construction executors in housing construction in Yogyakarta in particular and in Indonesia in general.

This critical competency sequence is used to determine the priority of education and training for the construction executor. The education and training need to be done to print more implementing experts that are needed to overcome the backlog of liveable homes in Indonesia. This education and training are needed to produce more competent human resources especially construction executors to overcome backlog problems in Indonesia.

3 Literature Review

Research on human resource competencies in the field of construction needs to be encouraged. This is because the applicable regulations require that every worker has a certificate of expertise or work skills which include Construction executor or labour qualifications and other classifications [5]. This certification must go through a series of education, training and competency tests including in the field of housing construction.

A decent house is the right of every Indonesian. At present, Indonesian people lack a very large liveable house (backlog) [2]. This backlog will be difficult to overcome without the implementation of good housing construction due to increased demand for housing due to population growth and the quality of home products is still low. Therefore, Indonesia needs a very large workforce in the housing sector, including the experts.

3.1 *Experts Executor*

Experts. Are individuals who have special expertise in providing services based on their expertise and are not bound by work relations (doing free work/providing professional services), for example accountants, doctors, lawyers, notaries, actuaries, tax consultants, architects, designers and so on.

Executor. Is the person (committee, organization, etc.) working or executing (design and so on).

3.2 Construction Executor

Construction. Construction is an activity to build facilities and infrastructure. In civil engineering, a construction is also known as a building or infrastructure unit in an area or in several areas. In summary construction is defined as the object of the whole building (an) which consists of parts of the structure. For example, Building Structure Construction is the overall shape/shape of the building structure. Other examples: Road Construction, Bridge Construction, Ship Construction, etc.

Construction Executor. Is a classification of workers who work at the construction stage to realize the plans that have been made previously. The main task of the executor in the field of housing construction is to realize buildings that meet the specified quality, time and cost plans. For this reason, executors must develop methods of construction that are appropriate to the conditions, efficient and easy. The implementation can be divided into pre-construction and construction stages [6]. Therefore, the role of the executor is very influential on the quality and cost of implementing residential buildings. This role is increasingly important in large-scale projects such as the current handling of the housing backlog.

3.3 Housing

Housing is a group of houses or other buildings that are built together as a single development. The shape varies in any country. Housing is usually built by a living contractor with only a few styles of house or building design, so that the appearance is uniform.

3.4 Building

Buildings are man-made structures consisting of walls and roofs that are permanently erect somewhere. Buildings are also commonly referred to as houses and buildings, which are all means, infrastructure or infrastructure in culture or human life in building their civilization.

3.5 Residential Building

Judging from its structure, residential buildings can be divided into three main parts namely the foundation, walls and roof. In general, building houses in housing complexes are made of brick, especially on the walls [7]. This structure must be strong enough so that it is not easily damaged/collapsed by common events. The

foundation parts are a structure that supports a building and distributes its load to the earth. The implementation of this section requires building design skills learned in civil engineering.

The wall and roof are generally equipped with facilities for ventilation, natural lighting/artificial and so forth. The interior of the house building is typically divided into several sections, such as a bedroom, kitchen-dining room, bathroom, toilet, laundry and washing place, prayer room, family room, living room, study room, patio, garage and so forth. Meanwhile, the exterior of the building needs to be equipped with a front yard, backyard, garden, carport and others. The houses generally also need utilities such as power cables, communication cables, water pipes, sewage pipes, sewage treatment/trash. However, part of the foundation, walls, roof, interior and exterior home building requires good execution in order to house more secure, convenient, beautiful and can improve the productivity of its occupants. It can be said that a decent residential building has specifications that must meet both its structure, interior, exterior and utilities. The building plan was made by consultant planners. This plan includes pictures, look, cut and detail. Implementing work on the plan. However, in implementation, procedures and methods of implementation should be developed.

3.6 Public Facilities and Social Amenities

Housing requires public facilities and social facilities to support the activities of its citizens. These include public roads, pedestrian street, drainage systems, public lighting, sewerage/water pipes, duct/pipe dirty water, a business centre, health/fitness, parks, games, school buildings, telephone lines, gas pipelines, processing residential waste, security systems, transportation and so forth. The facility should be well planned so that it is safe, orderly, beautiful and easy to maintain. This facility was planned by consultant planners. However, in implementation, procedures and methods of implementation should be developed.

Competency of Executor based on the description, then the housing executor should have the competence to develop creative ideas for the realization of a plan into a real building. An executor housing must be able to translate these plans into operational measures both before construction and during construction [8]. Given the extent of the executor job, these competencies are divided into the pre-construction and construction phase. In the pre-construction stage, the housing executor must be able to develop creative, effective and efficient ideas for the construction and put it in the construction plan. While at the construction stage, the housing executor should be able to realize, correct and improve the initial idea so that the construction process can work well [6].

Based on the study and interview with the interviewees, the competence of the executors in the pre-construction stage are:

1. Budgeting/scheduling

2. Site plan planning for construction
3. Making shop drawings
4. Location mapping
5. Preparation of work contract agreements
6. Anticipating problems occupational Health and Safety
7. Planning of labour

While the executive competence of the construction phase are:

1. Method of implementation of the roof frame
2. The method of implementation of the beam-column reinforcement plate
3. The method of implementation of scaffolding and formwork
4. The method of concreting
5. Electrical work and plumbing jobs
6. Control of materials and equipment
7. Control of time and quality

4 Research Method

The research methods used in this paper includes two main methods, there are data collection and data processing methods. The following is an explanation of the used research methods.

4.1 Data Collection Method

Data was collected by interview and questionnaire. The interview is intended to identify the types of competence while a questionnaire intended to determine the level of importance of these competencies.

Respondents in this study are taken from samples randomly selected from developers who have worked on housing construction in the Yogyakarta region in recent years. This research was conducted by taking the primary data. Thirty samples in this study were people who were leaders of the housing implementation team. They met at the construction site of homes scattered in the Yogyakarta area. Their participation is voluntary.

4.2 Data Processing Method

The main data from this study are tabulated by scoring as Table 1. The score shows the important level in five levels, namely very important, important, doubt, not important, very unimportant. From the table it appears that the data of this study are ordinal or

Table 1 Scoring data

Answer	Score
Very unimportant	1
Not important	2
Doubt	3
important	4
Very important	5

non-parametric [9]. Data processing is intended to rank in order to know the order of importance of competencies that should be owned by the housing executors in carrying out their work. Ranking obtained from the sample data is validated with statistical probability of obtaining a valid generalization [10].

The technique used to obtain the order based on the ranking is the mean rank analysis [10]. Validation test rankings are calculated by using Kendal-W (Kendall's Coefficient of Concordance) which the formula is shown in Eqs. 1 and 2 [10].

$$W = \frac{12\sum R_i^2 - 3\pi^2 k(k+1)^2}{\pi^2 k(k-1)^2} \quad (1)$$

$$x^2 = m(k-1)W \quad (2)$$

With:

W Kendall's Coefficient of Concordance

K Census variable

N Census sample

R_i Chi Square

4.3 Description Data

Because there are 14 main questions for 30 respondents, the respondent's answer forms a matrix of 30 × 14. The data are described in Table 2, which shows each question answered by the respondents so that there are no empty variable values. In addition, standard deviation, minimum and maximum values, as well as the average value of each score in variable are also known.

Some of these mean have the same value as happened to competency variables no. 1 and 8 or competency variables no. V3 and V7 and V10 or V8. However, the variables that have the same mean value have a different implementation group. Because ranking is made for each group of stages, this does not matter. Therefore, the order of competence variables can be based on the mean value or mean rank [9]. Appropriate determination of the score, the higher the rank, the more important mean competence. The results of the ranking analysis construction executor competence housing

Table 2 Description data and executor competence

No.	Pre-construction stage competencies	N	Min	Max	Mean	Std. deviation
V1	Budgeting/Scheduling	30	4	5	4.9	0.305
V2	Site plan for construction planning	30	4	5	4.97	0.183
V3	Making shop drawings	30	5	5	5	0.000
V4	Location mapping	30	4	4	4	0.000
V5	Preparation of employment contract agreement	30	3	4	3.53	0.507
V6	Anticipating health and safety issues	30	3	4	3.83	0.379
V7	Workforce planning	30	4	5	4.83	0.379
No.	Construction stage competencies	N	Min	Max	Mean	Std. deviation
V8	Roof truss Implementation methods	30	4	5	4.83	0.379
V9	Beam, column, and plate reinforcing method	30	4	5	4.9	0.305
V10	Scaffolding and formwork implementation methods	30	5	5	5	0.000
V11	Concreting method	30	4	5	4.8	0.407
V12	Electricity and plumbing work	30	4	5	4.47	0.507
V13	Material and equipment control	30	4	5	4.13	0.346
V14	Time and quality control	30	4	5	4.5	0.509

construction executive at pre-construction stage show that sequentially, expert executors of residential buildings have to master the following 7 competencies: Preparation of shop drawings, site plan for construction planning, budgeting, scheduling, workforce planning, locations mapping, anticipation occupational health and safety issues, as well as preparation of contractual agreements. In general, the competencies required in the pre-construction phase have been studied in the course of civil engineering. However, its application in the field of housing still needs to be provided through training especially regarding technical application. Whereas at the construction stage, housing construction executor must master the following 7 competencies: Scaffolding and formwork implementation methods; beam, column, and plate reinforcing method; roof truss implementation methods; concreting method; electricity and plumbing work; time and quality control; as well as material and equipment control.

5 Result and Analysis

Data analysis is intended to obtain a ranking of the types of competencies that are considered important to master by experts in housing construction executives. These competencies are divided into two groups, namely the competence of the pre-construction and construction phase. Based on the competence division, an important level of competence in each stage of the work can be seen in Tables 3 and 4.

According to the score determination, the higher the mean rank value, the more important the competence is. The results of the competency ranking analysis of the experts in the implementation of housing construction at the pre-construction stage show that in sequence, the experts implementing the housing construction must master the following 7 competencies: Making shop drawings, Planning site plans for construction, Budgeting, Scheduling, Workforce planning, Mapping locations, Anticipating occupational health and safety issues, and Preparation of work contract agreements. In general, competencies at the pre-construction stage have been studied in Civil Engineering college, but in terms of implementation, good practice and experience is needed so that application in the housing sector is still needed for training on these competencies, especially regarding technical applications. Whereas in the

Table 3 Important sequence of competencies in pre-construction stage

No.	Pre-construction stage competencies	Mean Rank	Ranking	Description
V1	Budgeting/Scheduling	4.9	3	
V2	Site plan for construction planning	4.97	2	
V3	Making shop drawings	5	1	Most Important
V4	Location mapping	4	5	
V5	Preparation of employment contract agreement	3.53	7	
V6	Anticipating health and safety issues	3.83	6	
V7	Workforce planning	4.83	4	

Table 4 Important Sequence of Competencies in Pre-Construction Stage

No.	Construction stage competencies	Mean rank	Ranking	Description
V8	Roof truss implementation methods	4.83	3	
V9	Beam, column, and plate reinforcing method	4.9	2	
V10	Scaffolding and formwork implementation methods	5	1	Most important
V11	Concreting method	4.8	4	
V12	Electricity and plumbing work	4.47	6	
V13	Material and equipment control	4.13	7	
V14	Time and quality control	4.5	5	

Table 5 Kendall's W test result

Item	Important sequences	
	Pre-construction stage competencies	Construction stage competencies
Number of sample	30	30
Kendall's coefficient of concordance	0.872	0.432
Chi-square	156.898	77.693
Df	6	6
Significance	0.000	0.000
Description	Valid	Valid

construction stage, housing construction experts must master the following 7 competencies: Scaffolding and formwork implementation methods; beam, column, and plate reinforcing method; roof truss implementation methods; concreting method; electricity and plumbing work; time and quality control; as well as material and equipment control. In general, the competencies needed at the construction stage have been studied in the civil engineering study program too. However, competence at the construction implementation stage has also been studied in civil engineering college, but in this case the main milestone is how the ability of the executors to apply the competencies that have been previously learned which greatly determines the performance of the workforce and the results of the work. To determine the effect of the addition of respondents (if done) then the sequence is tested by Kendall's W or the Coefficient of Concordance [9]. The test results can be seen in Table 5.

From the test, it is known that the significance number of the competency sequences is less than 0.05. This means that the competencies sequence in both pre-construction and construction stages are valid [10].

6 Discussion

To overcome the backlog that occurs in Indonesia, it is very dependent on the construction executors and the competencies they have, but many construction executors do not know what competencies are needed and need to be improved. Most assume that management expertise is needed, but not only that expertise is needed there are many more skills needed and need to be improved. For discussion, these competencies are compared with those developed in the study program which are relatively close to the housing sector, namely civil engineering. As shown by Table 3, in the pre-construction stage, there are seven most important competencies that must be possessed by experts implementing housing construction. Of the seven competencies, there are three competencies that should receive more attention for

civil engineering graduates who want to become experts in implementing housing construction, namely making shop drawings, planning site plans for construction, and preparing work contract agreements.

The first competency is the ability of executors to plan and make a good site plan so that the circulation of work does not interfere with each other, with the arranged circulation of work, the work will be more efficient and quickly completed. The second competency is the ability to draw pictures of the housing plan that will be implemented, in accordance with the plan and the description given. The third competency is the ability to make employment contracts agreement. The work contract is used if a field executor gets a job as an executor in the auction model with the housing developer, to avoid fraud that harms the field executor.

Meanwhile, at the construction stage, of the seven competencies that must be mastered, three competencies that need more attention from civil engineering graduates who want to become experts are the scaffolding and formwork implementation method, the roof truss implementation method, as well as the electrical work and pipeline. These competencies are centred on the ability of the executor to properly direct and supervise the work, including in choosing what method to use in carrying out the construction in accordance with the situation and conditions so that the work can run smoothly, safely, and on time.

7 Conclusion

This research resulted in two groups of competencies that must be mastered by experts in the field, namely: pre-construction stage competencies and construction stage competencies.

The important sequence of competencies in the group is as follows. In the pre-construction stage, housing construction experts must master: Preparation of shop drawings, site plan for construction planning, budgeting, scheduling, workforce planning, locations mapping, anticipation occupational health and safety issues, and as well as preparation of contractual agreements. In general, competencies at the pre-construction stage have been studied in Civil Engineering college, but in terms of implementation, good practice and experience is needed so that application in the housing sector is still needed for training on these competencies, especially regarding technical applications.

Whereas in the construction phase, housing construction experts must master: Method of scaffolding and formwork implementation, Method of reinforcing plate column reinforcement, Method of roof truss implementation, Concrete method, Time and quality control, Electrical work and plumbing, Material and equipment control. In general, the competencies needed at the construction stage have been studied in the civil engineering study program too. However, competence at the construction implementation stage has also been studied in civil engineering college, but in this case the main milestone is how the ability of the executors to apply the competencies

that have been previously learned which greatly determines the performance of the workforce and the results of the work.

It is recommended for graduates of educational and training institutions to add and deepen these competencies so that the alumni have the competencies needed to become experts in implementing housing construction which are much needed. Working as a field executor of a housing project is not an easy job, where a career is at stake in the results of the housing construction. The better the results achieved, the greater the opportunity to continue working in the field of building construction, especially housing. When becoming a field executor of a housing development project, it is expected to master the skills needed to work. It is expected that with the high skills acquired as executors can help overcome the existing backlog more efficiently.

8 Research Limitation

Limitations need to be made for this broad scope of research. These limits are:

1. Housing is housing with a land area of more than 1 ha;
2. Respondents in this study are housing developers who have carried out housing construction of an area of more than 1 ha;
3. The house construction under review is to have a reinforced concrete beam-column structure and brick wall
4. Data collection was conducted in 2019 in the Yogyakarta region.

References

1. BPS (2019) Presentase Rumah Tangga menurut Provinsi, Tipe Daerah dan Sanitasi Layak 2009–2019
2. Prabowo D, Tinggi KM (2020) Program Sejuta Rumah Berlanjut Dua Periode. <https://properti.kompas.com/read/2019/08/07/210000521/kebutuhan-masih-tinggi-program-sejuta-rumah-berlanjut-dua-periode>. Last accessed 2020/09/22
3. Husaini A (2019) Kementrian PUPR: Jumlah backlog rumah capai 7,6 juta unit per 8 Maret 2019. <https://industri.kontan.co.id/news/kementerian-pupr-jumlah-backlog-rumah-capai-76-juta-unit-per-8-maret-2019>. Last accessed 2020/09/19
4. Tribunjogja (2015) REI-DIY.: Awas Banyak Developer Oportunis. <https://issuu.com/tribunjogja/docs/tribunjogja-14-02-2015>. Last accessed 2020/09/19
5. LL-SETNEG (2017) Undang –Undang Republik Indonesia No 2 Tahun 2017 Tentang Jasa Konstruksi, Jakarta
6. Imam S (1999) Manajemen Proyek: dari Konseptual sampai Operasional. 1st edn. Penerbit Erlangga, Jakarta Pusat
7. CEVEDS-International (2007) The reports of dissemination and training of BARRATAGA (Bangunan Rumah Rakyat Tahan Gempa – Earthquake Resistant People House) to The Government Officers of Construction Agency, CEVEDS UII in collaboration with ARPRO, Yogyakarta

8. Kemnakertrans (2009) Penetapan SKKNI Sektor Konstruksi Bidang Konstruksi Gedung dan Bangunan Sipil Sub Bidang Konstruksi Gedung Jabatan Kerja Ahli Geodesi dan Bangunan Gedung, Kementerian Tenaga Kerja dan Transmigrasi Republik Indonesia, Jakarta
9. Sugiyono (2008) Statistik Nonparametris, 1st edn. Alabeta, Bandung
10. Singgih S (2000) Buku Latihan SPSS: Statistik Parametrik, 1st edn. Elex media Komputindo, Jakarta

Identifying Competency of Housing Construction Personnel in Indonesia

ORIGINALITY REPORT

16%

SIMILARITY INDEX

15%

INTERNET SOURCES

11%

PUBLICATIONS

8%

STUDENT PAPERS

MATCH ALL SOURCES (ONLY SELECTED SOURCE PRINTED)

7%

★ "Proceedings of the 18th International Conference on Computing in Civil and Building Engineering", Springer Science and Business Media LLC, 2021

Publication

Exclude quotes On

Exclude matches < 1%

Exclude bibliography On