

BAB V

PENUTUP

5.1. Kesimpulan

Berdasarkan hasil penelitian ini maka dapat disimpulkan sebagai berikut:

1. Hambatan yang paling dominan adalah kurangnya pelatihan dan pengalaman yang memadai bagi manajer proyek, dengan nilai rata-rata sebesar 4,02 dan standar deviasi 0,87.
2. Faktor keberhasilan tertinggi dalam penerapan EVM di wilayah tersebut adalah “prosedur & proses yang efisien untuk implementasi EVM”, yang mendapatkan nilai rata-rata 4,39 dan standar deviasi 0,86.

5.2. Saran

Berdasarkan hasil penelitian ini maka saran penelitian ini adalah sebagai berikut:

1. Pemerintah Sumatera Utara harus berkolaborasi dengan lembaga pendidikan dan pelatihan profesional untuk menyelenggarakan pelatihan dan sertifikasi khusus dalam EVM bagi manajer proyek dan tim proyek. Program ini akan meningkatkan pemahaman dan keterampilan praktisi terkait EVM.
2. Pemerintah Sumatera Utara harus mengalokasikan anggaran khusus untuk penerapan EVM dalam proyek konstruksi di Sumatera Utara, termasuk investasi dalam perangkat lunak, pelatihan, dan sumber daya tambahan. Kebijakan penetapan alokasi anggaran dalam RPJMD yang mempertimbangkan kebutuhan dana untuk implementasi EVM dalam proyek konstruksi di Sumatera Utara. Dukungan finansial tambahan dapat diberikan melalui subsidi atau insentif bagi perusahaan yang menerapkan EVM.

DAFTAR PUSTAKA

- Abas, N. (2015). *Research methodology* (pp. 1–36).
- Abdi, A., Taghipour, S., & Khamooshi, H. (2018). A model to control environmental performance of project execution process based on greenhouse gas emissions using earned value management. *International Journal of Project Management*, 36(3), 397–413. <https://doi.org/10.1016/j.ijproman.2017.12.003>
- Acebes, F., Pajares, J., Galán, J. M., & López-Paredes, A. (2013). Beyond Earned Value Management: A Graphical Framework for Integrated Cost, Schedule and Risk Monitoring. *Procedia - Social and Behavioral Sciences*, 74(May 2014), 181–189. <https://doi.org/10.1016/j.sbspro.2013.03.027>
- Ahmed, V., Opoku, A., & Aziz, Z. (2016). Choosing an appropriate research methodology and method (Issue July, pp. 33–47). Routledge Taylor & Francis Group.
- Al-fadhli, S. K. I., & Al-Bazaz, S. H. (2020). Applying Earned Value to Construction Projects. *IOP Conf. Series: Materials Science and Engineering*, 1–6. <https://doi.org/10.1088/1757-899X/737/1/012041>
- Aliyu, A. A., Singhry, I. M., Adamu, H., & Abubakar, M. M. (2015). Ontology, epistemology and axiology in quantitative and qualitative research: Elucidation of the research philosophical misconception. *Proceedings of The Academic Conference: Mediterranean Publications & Research International on New Direction and Uncommon*, 2(1), 1–27. <https://www.researchgate.net/publication/318721927>
- Ariffin, N. F., Md Jaafar, M. F., Ali, M. I., Ramli, N. I., Muthusamy, K., & Abdul Shukor Lim, N. H. (2018). Investigation on factors that contribute to the abandonment of building in construction industry in Malaysia. *E3S Web of Conferences*, 34(April). <https://doi.org/10.1051/e3sconf/20183401025>
- Baldwin, A., & Bordoli, D. (2014). *Handbook for Construction Planning and Scheduling* (first). John Wiley & Sons, Ltd.

- Becker, D. K. (2017). Predicting outcomes for big data projects: Big Data Project Dynamics (BDPD): Research in progress. 2017 IEEE International Conference on Big Data(BIGDATA). <https://doi.org/10.1109/BigData.2017.8258186>
- Bhosekar, S. K., & Vyas, G. (2012). Cost Controlling Using Earned Value Analysis in Construction Industries. International Journal of Engineering and Innovative Technology, 1(4).
- Buchanan, D. A., & Bryman, A. (2007). Contextualizing Method Choice in Organizational Research. SAGE Publication, 10(3), 483–501.
- Che Mat, M. M. (n.d.). VALUE MANAGEMENT – THE WAY FORWARD (pp. 1–18).
- Chou, J., Chen, H., Hou, C., & Lin, C. (2010). Visualized EVM system for assessing project performance. Automation in Construction, 19(5), 596–607. <https://doi.org/10.1016/j.autcon.2010.02.006>
- Choy, L. T. (2014). The Strengths and Weaknesses of Research Methodology : Comparison and Complimentary between Qualitative and Quantitative Approaches. Journal Of Humanities And Social Science, 19(4), 99–104.
- Christensen, C. J. (2010). Earned Value on Fixed-Price Projects. AACE INTERNATIONAL TRANSACTIONS, 1–13.
- Christensen, D. S. (2011). The Costs and Benefits of the Earned Value Management Process. Fall 1998, 373–386. <https://doi.org/10.1080/10157891.1998.10462568>
- Churcher, D. (2017). Value management and value engineering. RICS Guidance Note, UK, January, 1–23. <https://www.rics.org/globalassets/rics-website/media/upholding-professional-standards/sector-standards/construction/black-book/value-management-and-value-engineering- 1st-edition-rics.pdf>
- CIDB. (2019). Chapter 4 Chapter 4 E. <https://doi.org/10.1016/B978-0-12-382030-3.00004-0>
- De Marco, A., & Narbaev, T. (2013). Earned value-based performance monitoring of facility construction projects. Journal of Facilities Management, 11(1), 69–80. <https://doi.org/10.1108/14725961311301475>

- Dissanayake, P. B. G. (2010). EARNED VALUE MANAGEMENT SYSTEM AS A PROJECT MANAGEMENT TOOL FOR MAJOR MULTIDISCIPLINARY PROJECTS. International Conference on Sustainable Built Environment, December, 14–21.
- Dodson, M., Defavari, G., & Carvalho, V. De. (2015). Quality : the third element of earned value management. Procedia - Procedia Computer Science, 64, 932– 939. <https://doi.org/10.1016/j.procs.2015.08.610>
- Emuze, F. A. (2011). PERFORMANCE IMPROVEMENT IN SOUTH AFRICAN CONSTRUCTION (Issue September).
- Fincham, J. E. (2008). Response rates and responsiveness for surveys, standards, and the Journal. American Journal of Pharmaceutical Education, 72(2), 43. <https://doi.org/10.5688/aj720243>
- Fleming, Q. W., & Koppelman, J. M. (2003). What ' s Your Project ' s Real Price Tag ? Financial Management.
- Gliem, J. A., & Gliem, R. R. (1992). Calculating, Interpreting, and Reporting Cronbach's Alpha Reliability Coefficient for Likert-Type Scales. Studies in Inorganic Chemistry, 14(C), 349–372. <https://doi.org/10.1016/B978-0-444-88933-1.50023-4>
- Gomarn, P., & Pongpeng, J. (2018). Project failure Indicators: Perceptions of Thai and Malaysian engineers. MATEC Web of Conferences, 192, 4–7. <https://doi.org/10.1051/matecconf/201819202021>
- Gowan, J. A., Mathieu, R. G., & Hey, M. B. (2006). Earned value management in a data warehouse project. Information Management & Computer Security, 14(1), 37–50. <https://doi.org/10.1108/09685220610648364>
- Greener, S. (2008). Business Research Methods. In Ventus Publishing Aps. BookBoon.http://gent.uab.cat/diego_prior/sites/gent.uab.cat.diego_prior/files/02_e_01_introduction-to-research-methods.pdf
- Gustafsson, J., & Marzec, C. (2007). Value stream mapping – A case study of the construction supply chain of massive timber floor element. VÄXJÖ UNIVERSITY.

- Hanid, M. (2014). Design Science Research as an Approach to Develop Conceptual Solutions for Improving Cost Management in Construction.
- Hox, J. J., & Boeije, H. R. (2004). Data Collection, Primary vs. Secondary. In Encyclopedia of Social Measurement (pp. 593–599). <https://doi.org/10.1016/B0-12-369398-5/00041-4>
- Ibrahim, M. N., Thorpe, D., & Mahmood, M. N. (2019). Risk factors affecting the ability for earned value management to accurately assess the performance of infrastructure projects in Australia. *Construction Innovation*, 19(4), 550–569. <https://doi.org/10.1108/CI-07-2018-0058>
- Ismail, H. (2018). COUNTERMEASURE FRAMEWORK TO ADDRESS NON-VALUE-ADDING ACTIVITIES IN CONSTRUCTION (Issue April).
- Jaapar, A. (2008). VALUE MANAGEMENT STUDY TO THE MALAYSIAN.
- Jaapar, A., Endut, I. R., Ahmad Bari, N. A., & Takim, R. (2009). The Impact of Value Management Implementation in Malaysia. *Journal of Sustainable Development*, 2(2), 210–219.
- Jaapar, A., Maznan, N. A., & Zawawi, M. (2018). Current State of Value Management Implementations in Malaysian Public Projects. *Asian Journal of Environment-Behaviour Studies*, 3(8), 71–78. <https://doi.org/10.21834/aje- bs.v3i8.280>
- Jaapar, A., Zawawi, M., Ahmad Bari, N. A., & Ahmad, N. (2011). Value Management in the Malaysian Construction Industry : Addressing a Value Management in the Malaysian Construction Industry : Addressing a Theory and Practice Gap. *Asia Pacific International Conference on Environment-Behaviour Studies*, 757–763. <https://doi.org/10.1016/j.sbspro.2012.02.146>
- Khamidi, M. F., Ali, W., & Idrus, A. (2011). Application of Earned Value Management System on an Infrastructure Project : Application of Earned Value Management System on an Infrastructure Project : A Malaysian Case Study.
- International Conference on Management and Service Science, 8, 1–5.
- Kim, B. C., & Reinschmidt, K. F. (2011). Combination of Project Cost Forecasts in Earned Value Management. *Journal of Construction Engineering and*

- Management, 137(11), 958–966. [https://doi.org/10.1061/\(asce\)co.1943-7862.0000352](https://doi.org/10.1061/(asce)co.1943-7862.0000352)
- Kim, E., Wells, W. G., & Duffey, M. R. (2003). A model for effective implementation of Earned Value Management methodology. International Journal of Project Management, 21, 375–382. [https://doi.org/10.1016/S0263-7863\(02\)00049-2](https://doi.org/10.1016/S0263-7863(02)00049-2)
- Kim, S., Lee, Y., Nguyen, V. T., & Luu, V. T. (2016). Barriers to Applying Value Management in the Vietnamese Construction Industry. Journal of Construction in Developing Countries, 21(2), 55–80.
- Kothari, C. R. (2004). Research Methodology (second). New Age International (P) Limited. <http://library1.nida.ac.th/termpaper6/sd/2554/19755.pdf>
- Kumar, R. (2019). Research Methodology: a step-by-step guide for beginners (A. Owen (ed.); fifth). SAGA Publishing.
- Kwak, Y. H., & Anbari, F. T. (2010). Project Management in Government : An Introduction to Earned Value Management (EVM) Improving Performance Series Project Management in Government : An Introduction to Earned Value Management (EVM). IBM Center, 1–43.
- Macdonald, S., & Headlam, N. (1999). Research Methods Handbook. CLES limited.
- Maznan, N. A., Jaapar, A., Azmi, N., Bari, A., & Zawawi, M. (2012). Value Management : Private Sector ' s Perception. ASEAN Conference on Environment-Behaviour Studies, 50(July), 383–391. <https://doi.org/10.1016/j.sbspro.2012.08.043>
- Mishakova, A., Vakhrushkina, A., Murgul, V., & Sazonova, T. (2016). Project control based on a mutual application of pert and earned value management methods. International Scientific Conference “Underground Urbanisation as a Prerequisite for Sustainable Development,” 165, 1812–1817. <https://doi.org/10.1016/j.proeng.2016.11.927>
- Mkansi, M., & Acheampong, E. A. (2012). Research Philosophy Debates and Classifications : Students ' Dilemma. Electronic Journal of Business Research Methods, 10(2), 132–140.

- Morad, M., & El-Sayegh, S. (2018). Critical Success Factors for Earned Value Analysis in Managing Construction Project. *PM World Journal*, VII(Ix), 1–10.
- Muhibul, H. (2014). A Comparative Analysis of Qualitative and Quantitative Research Methods and a Justification for Adopting Mixed Methods in Social Research. Annual PhD Conference, 1–22.
- Murray, J. (2013). Likert Data: What to Use, Parametric or Non-Parametric? *International Journal of Business and Social Science*, 4(11), 258–264.
- Mydin, M. A. O., Sani, N., Salim, N. A. A., & Alias, N. M. (2014). Assessment of Influential Causes of Construction Project Delay in Malaysian Private Housing from Developer 's Viewpoint. Emerging Technology for Sustainable Development Congress, 7, 1–8.
- Naderpour, A., & Mofid, M. (2011). Improving Construction Management of an Educational Center by Applying Earned Value Technique. *Procedia Engineering*, 14, 1945–1952. <https://doi.org/10.1016/j.proeng.2011.07.244>
- Naeni, L. M., Shadrokh, S., & Salehipour, A. (2011). A fuzzy approach for the earned value management. *International Journal of Project Management*, 29(6), 764–772. <https://doi.org/10.1016/j.ijproman.2010.07.012>
- Neville, C. (2007). Effective Learning Service Introduction to Research and Research Methods.
- Nkiwane, N. ., Meyer, W. G., & Steyn, H. (2016). The use of Earned Value Management for initiating directive project control decisions : A case study. *South African Journal of Industrial Engineering*, 27(1), 192–203. <https://doi.org/10.7166/27-1-1260>
- Noble, H., & Smith, J. (2015). Issues of validity and reliability in qualitative research. *Evidence-Based Nursing*, 18(2), 34–35. <https://doi.org/10.1136/eb-2015-102054>
- Nouban, F., Alijl, N., & Tawalbeh, M. (2020). Integrated earned value analysis and their impact on project success. *International Journal of Advanced Engineering, Sciences and Applications (IJAESA)*, 1(1), 34–39. <https://doi.org/10.47346/ijaesa.v1i1.18>

- Nulty, D. D. (2008). The adequacy of response rates to online and paper surveys: What can be done? *Assessment and Evaluation in Higher Education*, 33(3), 301–314. <https://doi.org/10.1080/02602930701293231>
- Pan, B., Woodside, A., & Meng, F. (2013). How Contextual Cues Impact Response and Conversion Rates of Online Surveys. *Journal of Travel Research*, 53(1), 58–68. <https://doi.org/10.1002/jtr.2230>
- Pandey, P., & Pandey, M. M. (2015). Research Methodology: Tools and Techniques. In Bridge Center (First). Bridge Center. <https://doi.org/10.1016/B978-0-12-396961-3.00002-0>
- PMI. (2013). A Guide to The Project Management Body of Knowledge-(PMBOK Guide) Fifth Edition.
- Raby, M. (2000). Project management via earned value (Vol. 49, Issue 1, pp. 6–9).
- Ray, R. S., Hornibrook, J., & Skitmore, M. (1999). Ethics in tendering: A survey of Australian opinion and practice. *Construction Management and Economics*, 17(2), 139–153. <https://doi.org/10.1080/014461999371646>
- Rodrigues, A. (2008). PM WORLD TODAY – FEATURED PAPER – MAY 2008 The trend of Earned Value Management as a Cross- Industry Best Practice : Conclusions and Lessons Learned From Real-Life Implementations. *PM WORLD TODAY*, X(V), 1–12.
- Saunders, M. N. K., Lewis, P., & Thornhill, A. (2019). “Research Methods for Business Students” Eight Edition (P. E. Limited (ed.); Fifth, Issue January). Pitman Publishing.
- Sekaran, U. (2003). Research Methods for Business - A Skill Building Approach. In John Wiley & Sons. John Wiley & Sons, Ltd. <https://doi.org/http://dx.doi.org/10.1108/17506200710779521>
- Sruthi, M. D., & Aravindan, A. (2020). Performance measurement of schedule and cost analysis by using earned value management for a residential building. *Materials Today: Proceedings*, 33, 524–532. <https://doi.org/10.1016/j.matpr.2020.05.210>
- Sunarti, N., Mastan, Z. P., & Cin, L. S. (2018). The Application and Challenges of

- Earned Value Management (EVM) As Cost Monitoring Tool in the Construction Industry. International Journal of Engineering & Technology, 7.
- Sutton, J., & Austin, Z. (2015). Qualitative research: Data collection, analysis, and management. Canadian Journal of Hospital Pharmacy, 68(3), 226–231. <https://doi.org/10.4212/cjhp.v68i3.1456>
- Tufail, M. (2015). Branches of Philosophy : Axiology (Issue October 2012, pp. 1–30). <https://doi.org/10.13140/RG.2.1.2456.8408>
- Ullah, K., Khan, M. S., Lakhiar, M. T., Vighio, A. A., & Sohu, S. (2018). RANKING OF EFFECTS OF CONSTRUCTION DELAY : EVIDENCE FROM MALAYSIAN BUILDING PROJECTS. Journal of Applied Engineering Sciences, 8(1), 79–84. <https://doi.org/10.2478/jaes-2018-0011>
- Vaibhava, S., & Rao, B. P. (2019). Challenges of Earned Value Management- Application in Indian Construction Industry. International Journal of Recent Technology and Engineering, 8(2), 733–735. <https://doi.org/10.35940/ijrte.B1777.078219>
- Von Wangenheim, G. C., Savi, R., & Borgatto, F. F. (2012). DELIVER ! – An educational game for teaching Earned Value Management in computing courses. Information and Software Technology, 54(3), 286–298. <https://doi.org/10.1016/j.infsof.2011.10.005>
- Votto, R., Ho, L. L., & Berssaneti, F. (2020). Multivariate control charts using earned value and earned duration management observations to monitor project performance. Computers & Industrial Engineering, 148(July), 1–12. <https://doi.org/10.1016/j.cie.2020.106691>
- Walliman, N. (2011). RESEARCH METHODS : The Basics (First). Routledge Taylor & Francis e-Library.
- Wu, C.-H. (2007). An Empirical Study on the Transformation of Likert-scale Data to Numerical Scores. Applied Mathematical Sciences, 1(58), 2851–2862.
- Zulkefli, N. S., Waris, M., Firdaus, K., Khan, A., & Adeleke, A. Q. (2017). EXPLORING THE PERCEPTION OF EARNED VALUE. International Economics and Business Management Conference, 337–346.