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# Integrated Earned Value Gantt Chart (EV-Gantt) Tool for Project Portfolio Planning and Monitoring Optimization

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## Abstract

Project portfolio management (PPM), as a way to manage multiple projects, is becoming a key managerial skill needed by most organizations, especially those engaged in multiple projects concurrently. These multiple projects usually have different characteristics and functions, yet most existing project portfolio theories do not provide an efficient planning and monitoring tool at the operational level. This research aims to integrate the two most efficient planning and monitoring tools—namely, earned value analysis and the Gantt chart to develop a new PPM tool named earned value Gantt chart (EV-Gantt) for portfolio planning and monitoring. EV-Gantt was tested through scenario analysis and a pilot run using a portfolio of real cases. Results show that EV-Gantt performed satisfactorily in resource allocation, systematic reporting, and

monitoring enhancement. A standard operating procedure was developed to facilitate implementation of the EV-Gantt tool by engineering managers.

Keywords:

- Earned Value Analysis
- Project Portfolio Management
- Gantt Chart

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- Program & Project Management

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## Additional information

### Notes on contributors

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Hong Yeow Ong received a degree in Land Administration & Development from the University of Technology Malaysia, Skudai in 2010. He earned his Master’s Degree in Project Management from the University of Malaya in Kuala Lumpur in 2014. Currently, he is working in a well-known multi-national development firm in Malaysia. His research interests focus on project management, particularly in Earned Value Analysis.

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Chen Wang is an Associate Professor of Construction Innovation, Surveying, and Project Management in the Faculty of Built Environment at the University of Malaya in Kuala Lumpur. He is also an adjunct scientist in Faculty of Civil Engineering, Huaqiao University, China. He was a senior engineer of China State Construction Engineering Corporation (CSCEC), which is the main contractor of the 2008 Olympics Beijing National Aquatics Center known as the “Water Cube.” His research interests include mathematical modeling for civil engineering, swarm intelligence, sustainability in construction management, international build-operate-transfer (BOT) projects, energy conservation, and building integrated solar application. He has a large number of publications in these areas. He is an IEEE member (U.S.), RICS member (U.K.), and also a perpetual member of The Chinese Research Institute of Construction Management (CRIOCM), Hong Kong (International).

## Nurshuhada Zainon

Nurshuhada Zainon received degrees in Quantity Surveying from the University of Malaya in Kuala Lumpur in 2005 and in Construction Economics and Management from the Bartlett, University College London in 2008. She earned her Doctorate in Construction IT Management from the University of Malaya in 2013. Currently, she is a Senior Lecturer in the Department of Quantity Surveying at the University of Malaya. Her research interests focus on construction economic impact, construction in healthcare industries, as well as construction project management.

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