

S.S. LEE, G.Y. LEE, M.N. LEE, S.W. KWON, J.H. SHIN. **Introducing and applying a modified AHP (Analysis Hierarchy Process) to analyse productivity at the construction site.** *Gerontechnology* 2012;11(2):415; doi:10.4017/gt.2012.11.02.445.00

Purpose Improvement of on-site productivity has been a very important issue in the construction industry and construction companies struggle to overcome this problem^{1,2}. In Korea, a construction company considered adopting a newly developed construction tool from other countries. The company would like to measure productivity before and after adopting the tools. The objective of this study is to understand productivity analysis for selected advanced construction tools in the construction site where the tools were used. This study is aimed at valuation of productivity as a result of the application of the existing and advanced tools using analysis hierarchy process (AHP)³ which is a representative survey method. **Method** For this study, several surveys were conducted to obtain from the managers' and practitioners' viewpoint. By analyzing this, a tool-guiding method was developed and a construction tool application was selected before buying or adopting these tools. AHP is useful for understanding the complex structures which combine the macro-view of manager and the micro-view of practitioner. So in this study we used the AHP and evaluated the productivity. **Results & Discussion** Through survey and pairwise comparison, we obtained information on the evaluation factors that the manager focused on. Also, the practitioner evaluation was derived from the survey on a maximum scale of 7 points (Table 1). This way the existing and an adapted tool may be compared (Figure 1). Introducing and using the advanced tools, manager and practitioner succeeded in identifying priority factors.

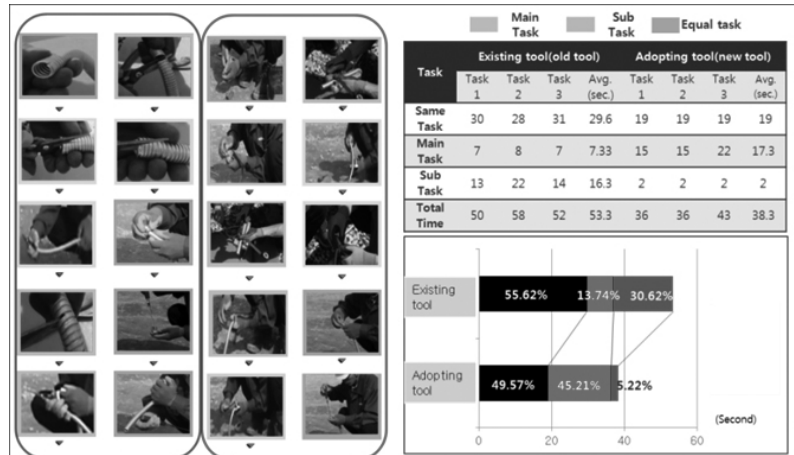


Figure 1. Productivity analysis (Existing tool vs. Adopting tool)

the managers' and practitioners' viewpoint. By analyzing this, a tool-guiding method was developed and a construction tool application was selected before buying or adopting these tools. AHP is useful for understanding the complex structures which combine the macro-view of manager and the micro-view of practitioner. So in this study we used the AHP and evaluated the productivity. **Results & Discussion** Through survey and pairwise comparison, we obtained information on the evaluation factors that the manager focused on. Also, the practitioner evaluation was derived from the survey on a maximum scale of 7 points (Table 1). This way the existing and an adapted tool may be compared (Figure 1). Introducing and using the advanced tools, manager and practitioner succeeded in identifying priority factors.

References

1. Won JS, Lee K. An analysis of the international competitiveness of productivity in the Korea. *Journal of KICEM* 2008;9(4)
2. Kim YS. Analysis of the Factors Influencing Construction Productivity. *Journal of AIK* 1994;10(10)
3. Jo HH, Seo DS, Kang KI. A Study on the Motion Analysis and AHP evaluating method in Construction Works. *Journal of AIK* 1997;17(2)

Keywords: productivity, work-sampling, AHP (Analysis Hierarchy Process), construction tool

Affiliation: Sungkyunkwan University, Seoul, South Korea; **E:** swkwon@skku.edu

Full paper: doi:10.4017/gt.2012.11.02.445.760

Table 1. Weight (manager) and practitioner-evaluation for analysis hierarchy process (AHP) of 3 advanced tools

Features	Bx / Flex Conduit cutter		Cable Striper		PVC Bender	
	manager-weight	practitioner-evaluation	manager-weight	practitioner-evaluation	manager-weight	practitioner-evaluation
Convenience	0.092	6.0	0.099	6.0	0.053	2.0
Safety	0.415	6.0	0.287	6.0	0.348	6.0
Workability	0.094	5.5	0.094	3.3	0.166	3.7
Productivity	0.160	4.1	0.074	4.6	0.137	4.4
Quality	0.239	5.3	0.446	4.1	0.296	5.0