

Final Project

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Lecture 10

Resources & Procurement

جامعة الجميع الذكية

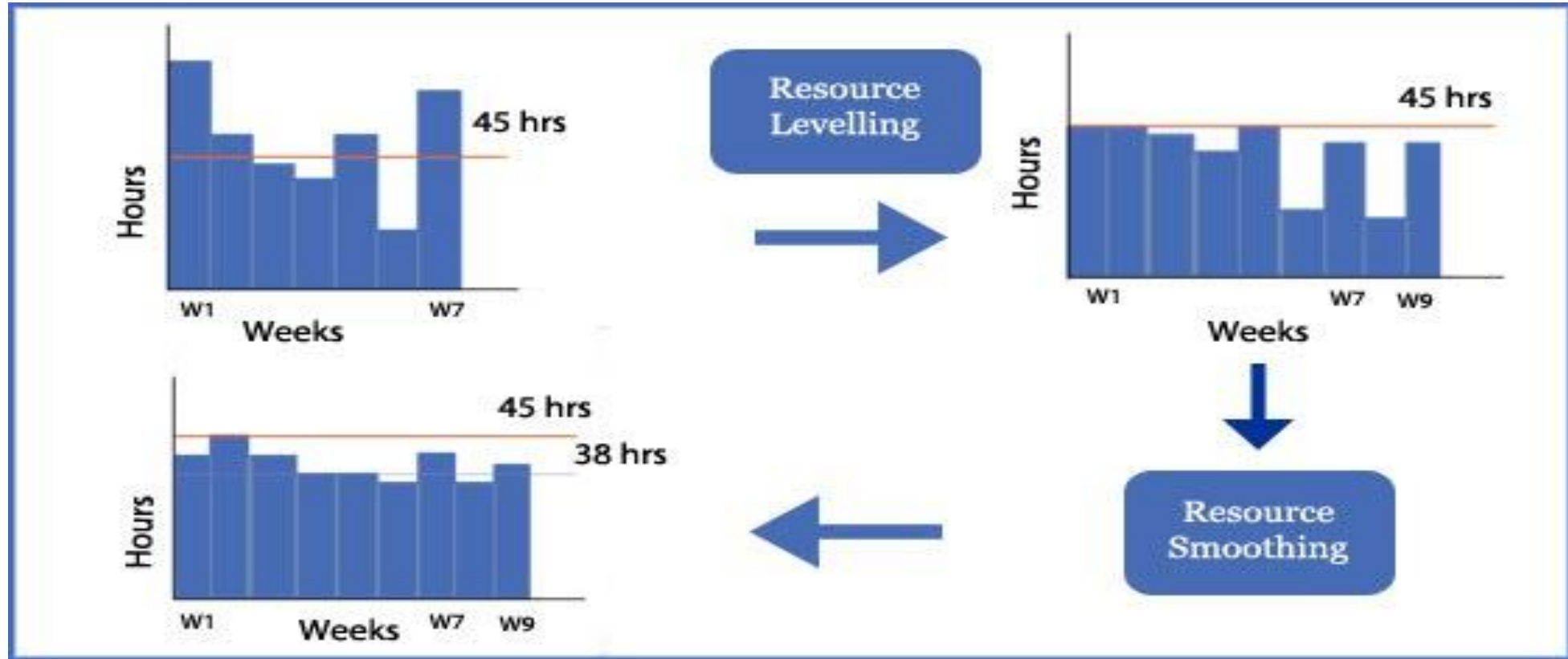
تسعى لتكون الكيان الأول الذي يتبنى مبدأ المجتمع التعليمي
التعاوني ويقدم العلم مقابل العمل لتنمية وبناء المجتمعات.

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جامعة الجميع الذكية
EVERYONE'S SMART UNIVERSITY

Resource leveling and Smoothing



What is Resource leveling?

“A technique in which start and finish dates are adjusted based on resource constraints with the goal **of balancing** the demand for resources with **the available supply**.”

We can use Resource Levelling both for human and material resources.

We need this tool when shared or critical resources are available only at:

- defined times,
- In limited quantities, or over-allocated

Resource leveling Example

For example: when we assign a resource to two or more activities at the same time, it **is over-allocation**. A resource cannot work beyond 8 hours in a day. Here, it needs resource-leveling. We need to take care of available supply and based on that we can adjust work duration.

What is Resource Smoothing?

After applying resource-leveling we have a resource-constrained schedule. But we may still need the desired level of allocation in the project plan.

Let's say our desired level of allocation per week is 38 hours. Now by doing Resource Smoothing; we try to adjust activities in such a way that we achieve this desired level of resource allocation

What is Resource Smoothing?

So we do it only wherever slack is available. We are not aiming to change the project duration; we smoothed the project schedule by playing around the free and total float.

Read More: <https://www.apm.org.uk/resources/find-a-resource/difference-between-resource-smoothing-and-resource-levelling/>

Resource leveling	Resource Smoothing
It applies the resource constraints to the project and may result in a change in project duration.	We apply resource smoothing after doing resource-leveling. Since we need to first accommodate the resource constraints before we can optimize it. Here we make use of slack and will not result in a change of project duration. Because the total allocation of a certain resource remains the same.
Resource Leveling is primarily driven by resource constraints like you do not have more than 45 hours of the given resource for a week.	Resource smoothing is more to do with desired limits like we do have 45 hours available for a given resource, but we wish that we allocate 38 hours per week, so we have some breathing space.
The allocation limits identified in resource leveling must be applied.	The desired limit identified in resource smoothing may not be applied in some cases, if we do not have slack. It is optimized within the float boundaries
When Resource Leveling changes the project dates, may also change the critical path, since constraints drive it.	Resource smoothing will not change the critical path; it tries to make the best use of slack.

Resource leveling and Smoothing

<https://youtu.be/3uZk6Y49PR8>

The scoring model

The scoring model in project management is an objective technique: the project selection committee lists **relevant criteria**, **weighs** them according to their *importance and their priorities*, then adds the weighted values. Once the scoring of these projects is completed, the project with the highest score is chosen.

The scoring model

- A weighted scoring model (aka weighted scorecard) is a project management technique used for weighing certain decisions, such as prioritizing project actions, prioritizing the development of product features, purchasing new software, etc.

The scoring model

- While a weighted scoring model can be used for all kinds of decisions and actions, in terms of project management, this model will help you **figure out your priorities** during the planning phase of the project life cycle.

The scoring model

How to create and use a weighted scoring model:

Step 1: List out your options

All you need to do is **list out all the options** you'd like to incorporate into your project or product without regard to the difficulty, priority, or any other factor. These options can include:

- Product features
- Project steps
- Software options
- Potential candidates for hire

The scoring model

Step 2: Brainstorm your criteria:

- figure out the criteria that will impact the weight of each option. These criteria include:
 - Cost
 - Quality
 - Time
 - Return on investment
 - Risk
 - Effort
- The criteria you use in your weighted scoring model are unique to your project or product.
- there will always be consistent measurements you'll want to take into consideration, such as cost management and return on investment. It all depends on the projects you're working on.



The scoring model

Step 3: Assign weight values to your criteria

- No two criteria carry the same importance, which proves the usefulness of a weighted scoring model. That's why you must assign specific weight values to each criterion in the form of a percentage.
- You start with 100% and then assign weighted percentages based on your own priorities, like so:
 - **Return on investment: 20%**
 - **Cost: 20%**
 - **Effort: 15%**
 - **Sustainability: 15%**
 - **Risk 10%**
 - **Time 10%**
 - **Quality 10%**



The scoring model

Step 4: Create your weighted scoring chart:

- Now that you have your options, criteria, and weights, you can begin creating your weighted matrix.
- Once you've created your chart, you can fill in your options with whatever it is you are looking to prioritize, then score each option with a value of 1 through 5, or whatever range you wish to use.
- Now that you've scored each option, you'll want to multiply each score by the weight, and then calculate the total score average for each one, like so (weighted scores are in bold)
- After you've completed these calculations, you'll find the weighted order of importance for each option.

The scoring model

Criteria	Weight	Requirement score				
		A	B	C	D	E
Value	20%	80	45	40	15	35
Risk	20%	60	85	30	20	75
Difficulty	15%	55	80	50	15	25
Success	10%	30	60	55	65	30
Compliance	5%	35	50	60	50	50
Relationships	5%	80	70	50	85	80
Stakeholder	15%	25	50	45	60	60
Urgency	10%	60	25	40	65	80
Weighted Scores	100%	54.8	60.0	43.3	38.0	52.3

The scoring model

<https://www.youtube.com/watch?v=FefJ1paq750>

Read More: <https://www.berkeleybridge.com/blog/what-are-the-scoring-models-and-how-do-they-come-about/>

