

Making the right choices less tough

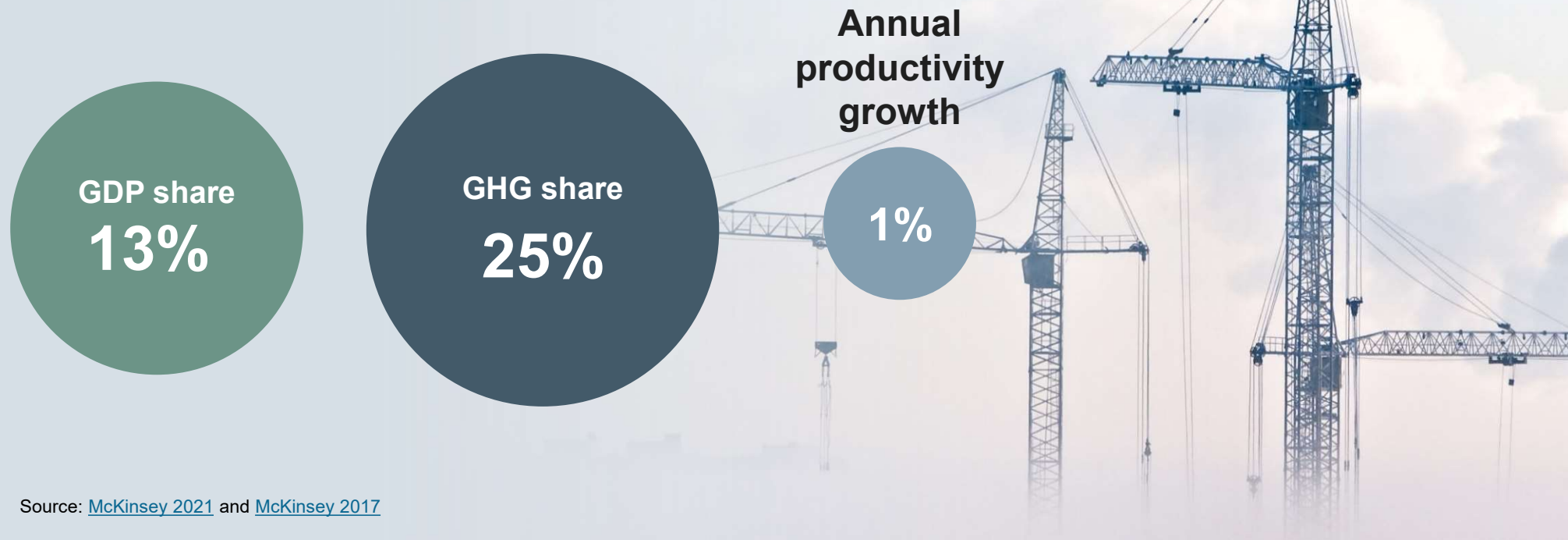
Randi M. Christensen
Sustainability Director, COWI

Lean Construction DK



Lean Construction DK

Three numbers challenging the construction industry



Source: [McKinsey 2021](#) and [McKinsey 2017](#)

Clear messages – challenging in practice

CANADIAN CONSULTING
Engineer

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COWI eschews fossil fuel projects

"This is one of the boldest decisions we have made." - Group CEO
Lars-Peter Søbye

January 25, 2022 By CCE

26.01.2022 | Strategi & ledelse

COWI vil kun have grøn omsætning om fem år

Det skal være slut med at arbejde på projekter, der ikke er drevet af bæredygtighed. Det er COWIs nye og modige strategi.



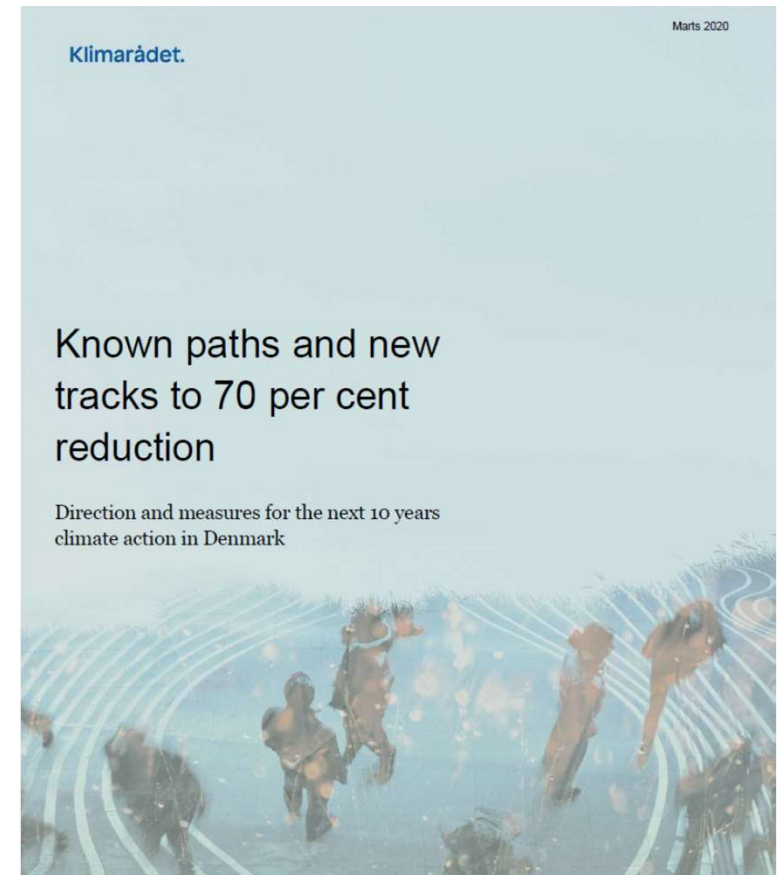
af CSR.dk - Forum for bæredygtig
forretning

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SUSTAINABILITY IN DECISION-MAKING

- > Annual Lecture 2020: Secretary-General Guterres's full speech – Nelson Mandela Foundation (Accessed Feb. 17, 2021): “**We must work together to integrate the principles of sustainable development into financial decision-making.** Financial markets must be full partners in shifting the flow of resources away from the brown and the grey to the green, the sustainable and the equitable.”
- > Klimarådet (2020): “The public sector is the largest player in Denmark and it can spearhead efforts in the climate field by leading the way. However, today, **inadequate measures make it far from certain that the climate is adequately considered in public decision-making processes.**”



Problem What blocks sustainable decisions?

Design parameters



~~SUSTAINABILITY~~



~~ECONOMY~~



~~RISKS~~



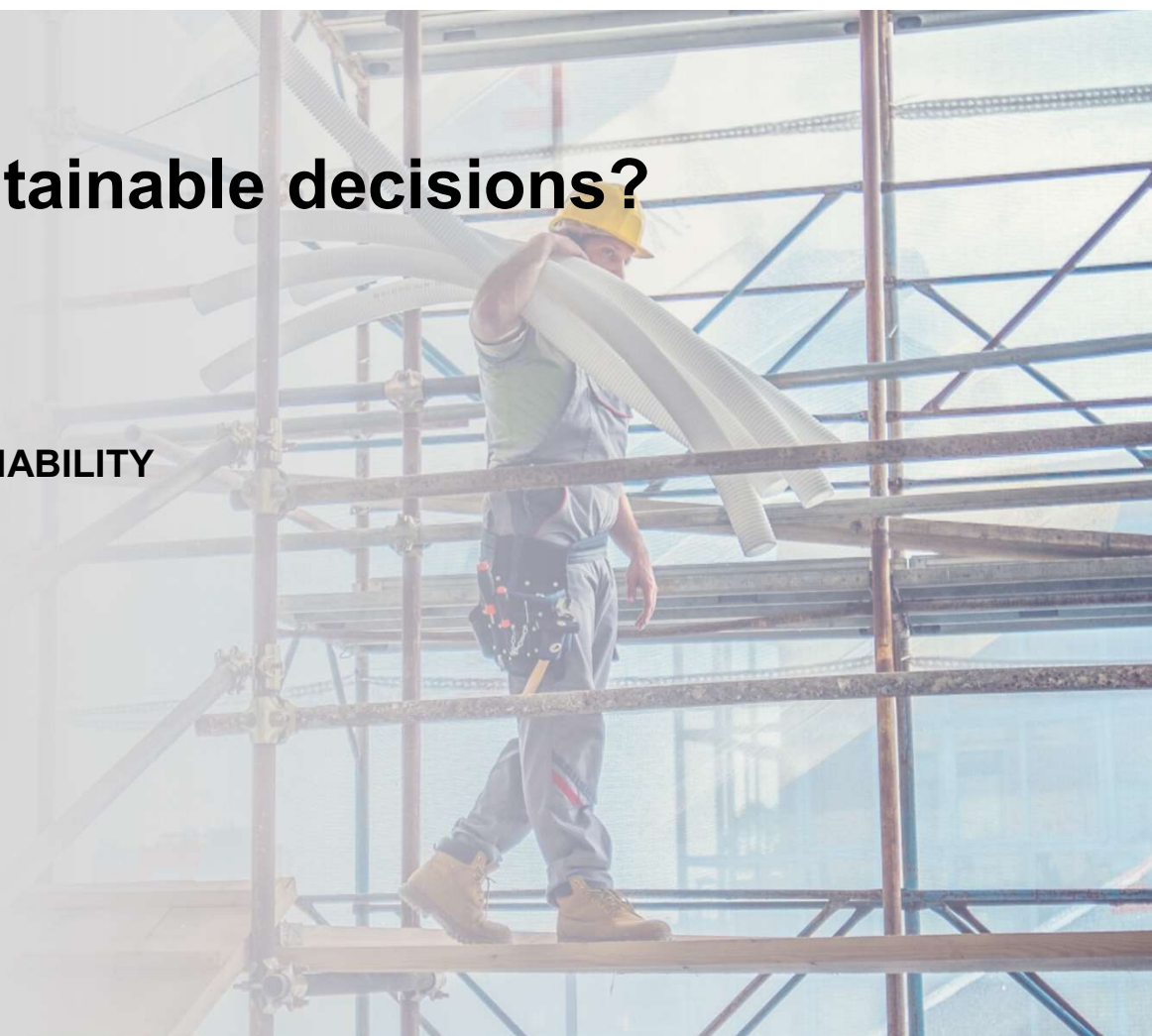
~~RISKS~~



~~SUSTAINABILITY~~



SUSTAINABILITY



Early choices matter most

Volume



Structure



Detailing



Level 1

Level 2

Level 3

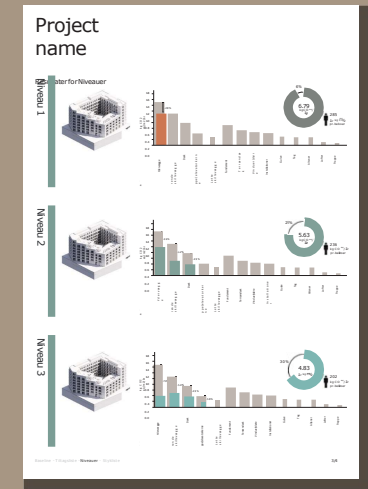
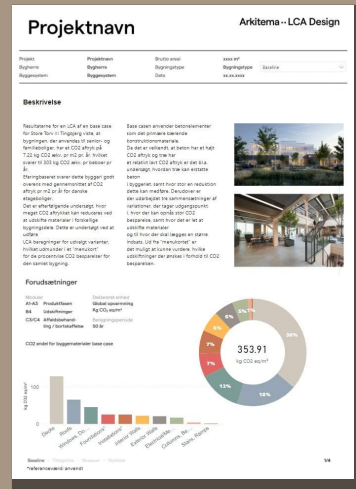
Transparency entails more sustainable decisions

Report

Baseline

List of actions

Levels



No time for heroisme!



ICE: Crossrail-style 'heroic' leadership no longer fit for purpose

21 APR, 2022 | BY ROB HORGAN

Construction's traditional "heroic" style of leadership is no longer fit for purpose, according to an ICE review of major project delivery.

NCE NEWS WRAP



What we need is transparency

- > A common understanding of the issue at hand
- > To include the right data, people and knowledge
- > A trusted process and terminology to discuss decisions in relation to subjective values
- > To be able to record assumptions and risks – and to be able to learn



Endorsement of Choosing by Advantages

“I believe CBA is the most powerful and effective approach for making decisions available. I am most impressed with the way **it uses both objective and subjective data**. Once you can understand and apply CBA, I challenge you to find a decision making process that offers a more important advantage. We use the approach informally for all manner of daily choices and more formally when the stakes are large.”

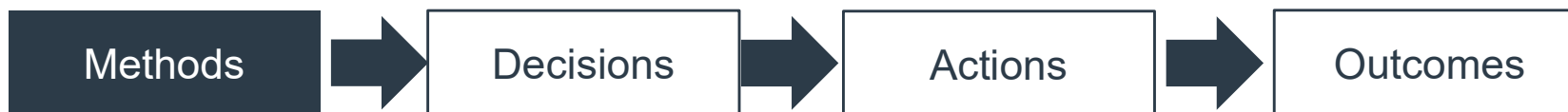
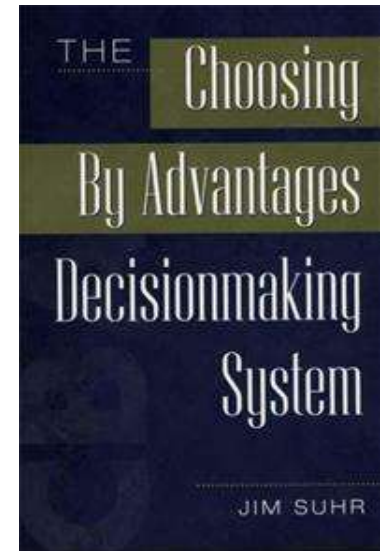
Gregory A. Howell, MSCE Stanford

President, Lean Construction Institute

Feb 8, 2011

CHOOSING BY ADVANTAGES (CBA)

- > CBA is a multi-criteria decision-making system developed by Jim Suhr (1999) that based on an anchored judgement compares the advantages of alternatives.
- > CBA uses well-defined vocabulary, a transparent and structured framework and separates clearly between value and cost.
- > Decisions are organized in a logical manner.



CBA terms:

Alternative:

- Two or more people, things, or plans from which one is to be chosen

Factor:

- Element, part, or component of a decision

Criterion:

- Any standard in which a judgment is based – *must have (Minimum criteria) or want to have (Success criteria)*

Attribute:

- Characteristic, quantity, or quality of one alternative

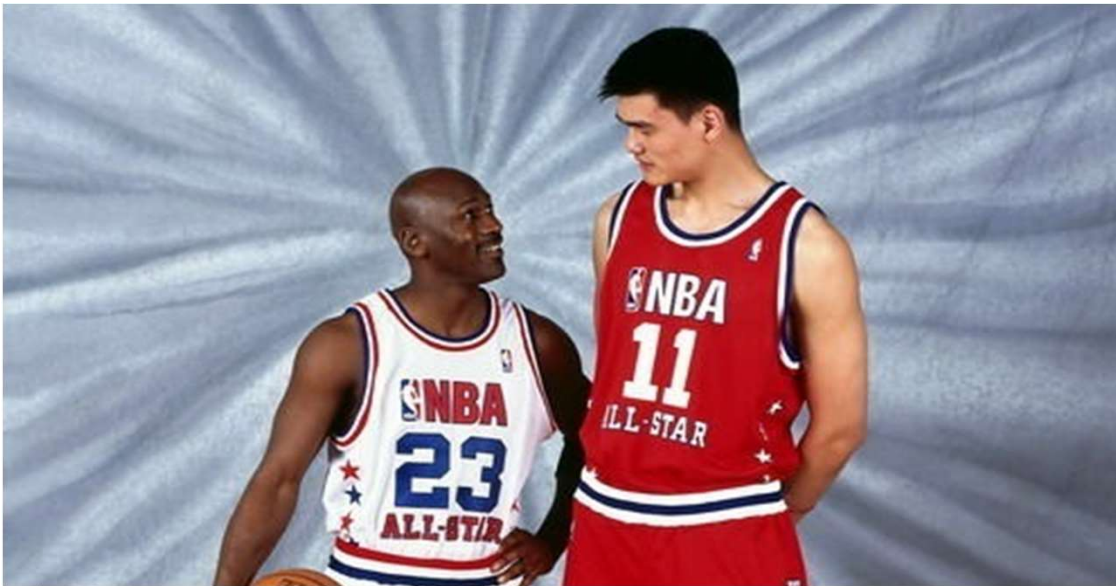
Advantage:

- The beneficial difference between the attributes of two alternatives (one of which is the least preferred)

Advantage: A beneficial difference

Alternative: Michael Jordan
Attribute: 6ft 5in height

Alternative: Yao Ming
Attribute: 7ft 6in height



Advantage:
Difference in height: 1ft 1in

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Weighting Factors vs. Weighting Advantages

Choosing between construction methods.

- What is more important safety or productivity?
- What is the value of alternative A in terms of safety?

	Alternative A	Alternative B
Safety	Very Safe	Safe
Productivity		

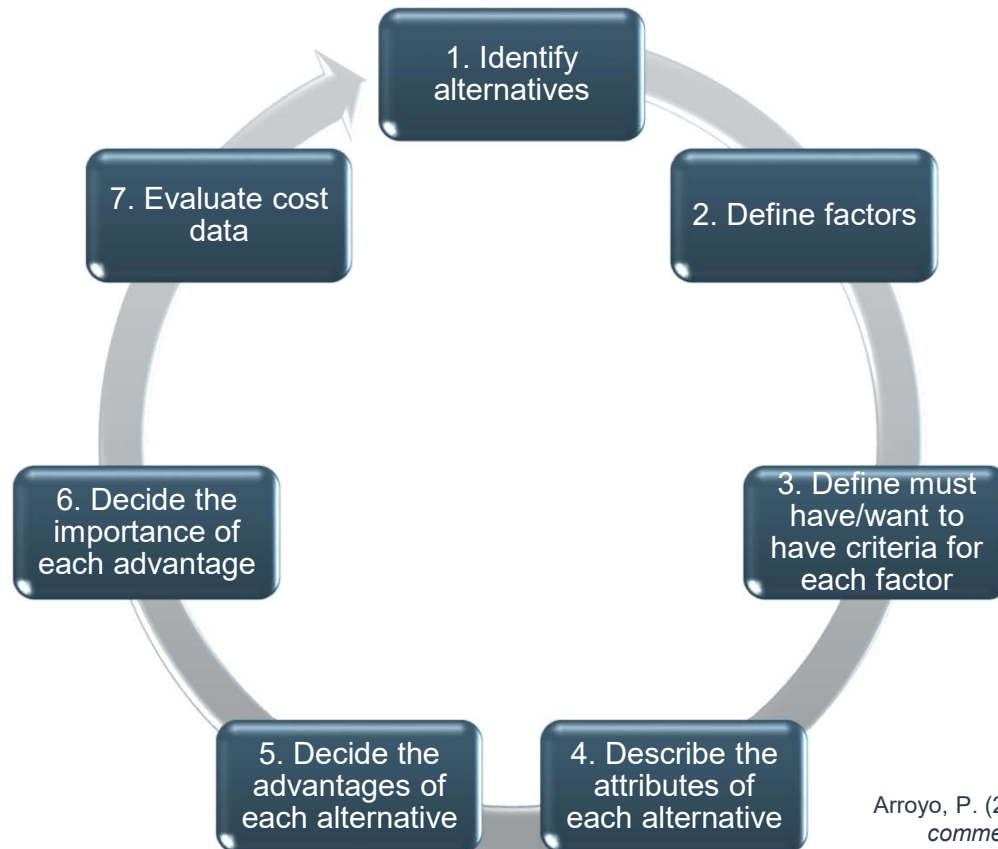
Right question: What is the context?

- What is more important, the advantage in safety of alternative A over alternative B or the advantage in productivity of alternative B over alternative A?

	Alternative A	Alternative B
Safety	Very Safe	Safe
Productivity	Productive	10 x More Productive than A

COWI

CBA TABULAR METHOD



Step 1: Identify alternatives



iPhone
12

iPhone
12
mini?

Step 2: Define factors & Step 3: Define criteria

Only consider factors that differentiate alternatives.

Factor (Criterion)	iPhone 12 mini		iPhone 12	
Dimensions (bigger is better*)				
Weigh (Less is better)				
LCD screen resolution (More is better)				
Camara (optical zoom is better)				
Battery life (more is better)				
Total Importance				

Step 4: Describe the attributes of each alternative

Underline the least preferred attribute
in each factor

Factor (Criterion)	iPhone 12 mini	iPhone 12
Dimensions (Smaller is better*)	Att.: 5.4"/ 131.5 x 64.2 x 7.4 mm	Att.: <u>6.1" /146.7 x 71.5 x 7.4 mm</u>
Weigh (Less is better)	Att.: <u>135 g</u>	Att.: 164 g
LCD screen resolution (More is better)	Att.: <u>340 x 1080 pixels (476 ppi)</u>	Att.: 2532 x 1170 pixels (460 pp)
Camara (optical zoom is better)	Att.: <u>12MP TrueDepth camera (Front) / Dual 12MP camera system (Wide and Ultra Wide) (Back)</u>	Att.: 12MP TrueDepth camera (Front) / Dual 12MP camera system (Wide and Ultra Wide) (Back)
Battery life (more is better)	Att.: up to 15 hours video playback	Att.: <u>up to 17 hours video</u>
Total Importance		

Step 5: Decide the advantages of each alternative

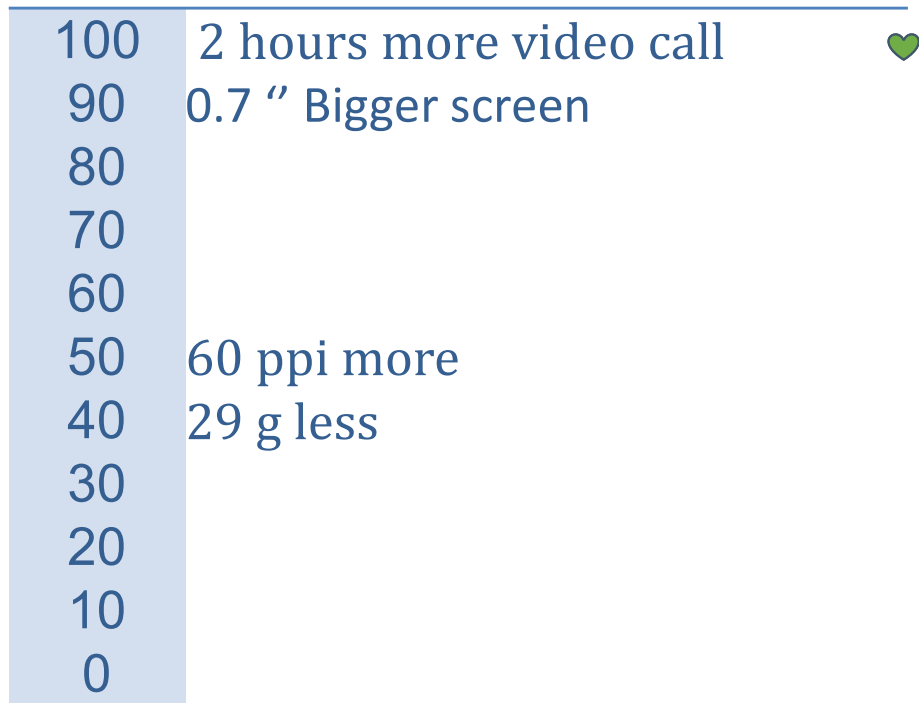
Factor (Criterion)	iPhone 12 mini	iPhone 12
Dimensions (Bigger is better*)	Att.: 5.4" / 131.5 x 64.2 x 7.4 mm	Att.: 6.1" / 146.7 x 71.5 x 7.4 mm Adv.: 0.7" bigger
Weight (Less is better)	Att.: 135 g Adv.: 29 g less	Att.: 164 g
LCD screen resolution (More is better)	Att.: 340 x 1080 pixels (476 ppi) 16 ppi more	Att.: 2532 x 1170 pixels (460 pp)
Camera (optical zoom is better)	Att.: 12MP TrueDepth camera (Front) / Dual 12MP camera system (Wide and Ultra Wide) (Back)	Att.: 12MP TrueDepth camera (Front) / Dual 12MP camera system (Wide and Ultra Wide) (Back)
Battery life (more is better)	Att.: up to 15 hours video playback	Att.: up to 17 hours video Adv.: 2 hours more
Total Importance		

Step 6: Decide the importance of each advantage

- Circle (highlight) most important advantage per factor.
- Select the paramount advantage.
- Weigh the most important advantages.
- Weigh importance of remaining advantages.

Factor (Criterion)	iPhone 12 mini	iPhone 12
Dimensions (Bigger is better*)	Att.: 5.4" / 131.5 x 64.2 x 7.4 mm	Att.: 6.1" / 146.7 x 71.5 x 7.4 mm Adv.: 0.7" bigger Imp.: 90
Weigh (Less is better)	Att.: 135 g Adv.: 29 g less Imp.: 40	Att.: 164 g
LCD screen resolution (More is better)	Att.: 340 x 1080 pixels (476 ppi) 16 ppi more Imp.: 50	Att.: 2532 x 1170 pixels (460 pp)
Camara (optical zoom is better)	Att.: 12MP TrueDepth camera (Front) / Dual 12MP camera system (Wide and Ultra Wide) (Back)	Att.: 12MP TrueDepth camera (Front) / Dual 12MP camera system (Wide and Ultra Wide) (Back)
Battery life (more is better)	Att.: up to 15 hours video playback	Att.: up to 17 hours video Adv.: 2 hours more Imp.: 100
Total Importance		90
		190

Scale of Importance



HOW CBA HELPS ASSESS VALUE BASED ON VALUES

- › **CBA offers a systematic process that**
 - › Helps to translated customer value into decisions and dilemma.
 - › Considers that value is not a static measurement.
 - › Helps to better understand the values of the customer, which drive and direct every decision and often unconsciously.
- **Supports the social process**
 - › Promotes inclusiveness to overcome groupthink
 - › Promotes psychological safety
- **To balance social, environmental, and economical considerations**

Schöttle, A., Arroyo, P., and Christensen, R. (2020). „Does Your Decision-Making Process Protect Customer Value?“ *Proc. 28th Annual Conference of the International Group for Lean Construction (IGLC)*. Berkeley, California, pp 49-58.

Schöttle, A. , Christensen, R., and Arroyo, P. (2019). „Does Choosing by Advantages Promote Inclusiveness in Group Decision-Making?“ *Proc. 27th Annual Conference of the International Group for Lean Construction (IGLC)*. Dublin, Ireland, pp 797-808.

FURTHER INFORMATION

- > Introduction to CBA (Blog post):
<https://collabdecisions.com/blog/f/why-and-how-to-make-collaborative-decisions>
- > Blog post on LTC CBA training program:
<https://collabdecisions.com/blog/f/learning-decisions-making>
- > Example: <https://leanconstructionblog.com/applying-choosing-by-advantages-step-by-step.html>
- > Video: [\(2123\) An Introduction to Choosing by Advantages \(CBA\) – YouTube](#)



Collabdecisions.com

