

Cost of decision making

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Where you are working continuously on as asset manager is making decisions. Some call this differently. The professional brothers with a tendency to percussive maintenance¹ often talk about giving “something a blow” or “cutting through knots”. The mathematically inclined amongst us have put it back on optimization and asset managers who have slept once with a code under their pillow talk about deliberation. But no matter how you look at it, there are several options to do something, and the asset manager must make a choice from it.

The size of the decisions has a lot of dispersion. Sometimes it's about small things, such as whether it has been necessary to change the oil or replace the tires. But it can also relate to the question whether an additional measuring point must be included in the inspection protocol. Even bigger decisions concern the maintenance strategy (periodically, depending on usage, condition or corrective). The ultimate choice ultimately is whether the asset should be maintained or that it might be better to replace it. Although, ultimately: of course this contains the replacement of the entire population, or perhaps maybe the entire asset base.

When people think about decision-making processes, they often have such a big decision in mind. Sometimes major interests are involved and the costs of decision making are often only a fraction of the total project cost. Take for example the question whether a new factory should be built, this could be an investment of several hundred million. Better methods than soon pay off. In practice, to about 10% of the project budget is spent on decision-making. This is not a law of the Medes and Persians, sometimes the difference in big decisions between the alternatives is very small and the cost of decision-making can increase rapidly, even beyond the difference between the alternatives. You may be better off by tossing with a coin to force a choice before real money is burned². But what happens when the projects are smaller? In general, it will apply that the smaller the decision, the smaller the difference between alternatives will be. After all, the biggest difference between alternatives will accomplish the choice whether or not, and then the amount of which shall be decided on is a reasonable estimate of the maximum difference. That also means that the costs which should be spent on a decision become smaller. If we apply rule of thumb of 10%, then this means for a project of 10.000 euros about a day³, with a choice on 1000 euros an hour, a choice on 100 euros for 5 minutes and a choice on 10 euros for 30 seconds. Even if you assume that the choices made on smaller amounts are taken by cheaper staff, then time doubles at most. It is clear that in 1 to 10 minutes no complete risk assessment and study on alternatives can be carried out. So this means you can then better choose then to determine a tradeoff. Yet in practice you rarely see maintenance technicians tossing with a coin to determine if they will change the oil. Are they all burning money?

Luckily the answer is no. For an individual decision it may be better to throw a coin, but if that decision is repeated many times, this will change of course. Take for example the replacement of fluorescent lighting in an office. A worn tube light flashes and is perceived as extremely bothersome by many people which reduces productivity and possibly even absenteeism will increase. So malfunctioning fluorescent lighting is expensive. Since an individual fluorescent tube only costs only a few euros, you may only think a few seconds about it, just long enough to toss a coin. That you obviously do not do every day, because that would mean on an average you swap a tube every two days, which of course is a bit exaggerated. In practice, it will therefore mean that you only replace the tube if it is broken. Only, in most offices no spare tubes are present and besides staff cannot or is not allowed to replace them. So a service technician must be called. The major cost of this change does not concern the tube (10 euros), not the time of the change (5 minutes = 5 euros), but the call-out cost of the mechanic (75 euros). So if you replace all the lamps individually you then will be six times more expensive than if you

¹ This is the lost art of kicking an asset as long as needed it does it again.

² See our column on paradox of choice. <http://www.assetresolutions.nl/en/column/paradox-of-choice>

³ Assuming a daily rate of an engineer of about 1000 euro

do everything at the same time. So somewhere there is a moment when you perform a preventive replacement, but how do you find it out?

Even in a medium-sized office (100 employees, two lamps per employee) you still talk about only 200 lights, of which a collective replacement cost 3.000 euros and 18.000 euros individually. For this money you cannot extensively study the lifetime of the fluorescent tubes. But the service organization that has perhaps 100 offices under its wing can. They will notice that a fluorescent tube becomes at its end of life time after about 10.000 hours (about 5 years office), and you best replace them collectively because otherwise it will roughly cost six times more on other expenses. Occasionally there will be lights which will break, but the service engineer will fix this.

The big question you should keep in mind of course is whether to include lights in a large-scale preventive replacement, which were already correctively replaced shortly before. And now we need the coin again. Namely, in order to be able to do so each lamp must be individually recorded in the first place (and which means cost in the information system), and secondly we will have to take a look to each lamp whether it has been already replaced. This will at least take a minute, plus the chance of mistakes. Also at the end of the lifetime, a mechanic needs to visit the lamp, while it can now be done at a fraction of the cost. If it does not concern too many lights, you'll soon discover that it is much cheaper to replace all the lamps at the same time, rather than making the best choice for each individual asset, even if it means that you have to throw away assets which still perform their function.

If you do not like to throw good stuff away as the asset manager, you can better give this stuff to someone who pulls out the last bit of life. For example someone who is able to replace the tube if it is worn. But what has actually gone wrong with us that we are no longer capable to?

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