Information on the quality criteria of the management simulation "Next-Day Inc."

1) Results from the preliminary study (2018, N= 59)

Objectivity of the results

The management simulation is conducted entirely without instruction or interpretation by a moderator. The digital implementation ensures standardised execution and does not allow for variation by the participants. The design of the procedure with multiple-choice items and no open questions allows for clear and standardised evaluation. This evaluation is carried out by an algorithm that does not allow for different interpretations. Here, the simulation has an extremely high level of evaluation objectivity and guarantees consistent results when using the same standard sample.

The simulation can therefore claim a very high degree of **objectivity** in its **implementation, evaluation and** interpretation.

Reliability

The reliability of postbox exercises increases with the degree of standardisation. To assess reliability, both internal consistency (Cronbach's alpha) and split-half reliability were determined. However, it should be noted at this point that the interpretation of these results is only possible with reservations. Due to the conceptual structure of the simulation, in which certain dependencies (interdependence structure of the individual items) were defined (decisions at one point have an impact on the course of the management simulation), it cannot be assumed that all items can be evaluated independently of each other.

	Number of items	Cronbach α	Split-half
Analysis behaviour	36	0.58	0.32
Organisational behaviour	35	0.51	0.28
Decision-making behaviour	60	0.50	0
Management competence	131	0.67	0.41

Image: Reliability of the scales

Content validity

Due to the content focus of the management simulation (logistics) and the selection of participants in the standard sample, the management simulation can claim cross-industry content validity for lower to middle management levels in particular. In individual cases, the test user must check whether the management simulation "Next-Day Inc." is suitable for the specific company and target group.

The selection of participants for the standard sample from different industries and different functions, as well as the fact that no specific industry- e know-how is required for the successful implementation of the simulation, are proof that the management simulation can be used across industries and functions.

Due to the simulation nature of management tasks, the "Next-Day Inc." management simulation has a very high **face validity**.

Construct validity (intercorrelations)

The plus points for the analysis/organisation scale correlate with 0.31 and are also statistically significant (p= 1.6%). The plus points for analysis/decision correlate with 0.13, which means a weak effect in the standard sample. The plus points for organisation/decision correlate with 0.52 and therefore have a strong effect in the standard sample.

The negative points are consistently lower, with the correlation between organisation and decision-making at 0.42 in the middle range but highly significant (p=0.1%).

Overall, the results show that the "management competence" scale is more strongly influenced by the positive points (r = 0.71 to r = 0.78) than by the negative points (r = 0.53 to r = 0.65).

The partly low intercorrelations are not surprising and should be viewed as positive, as they indicate that **the scales are independent** of each other.

		Analytical skills	Analytical skills	Organizational skills	Organizational skills	Decision-making skills	Decision-making skills	Management skills	Management skills
		Plus points	Minus points	Plus points	Minus points	Plus points	Minus points	Plus points	Minus points
Analytical skills	Plus points	x	**r = 0,34** *(p = 0,9%)*	**r = 0,31** *(p = 1,6%)*	**r = -0,10**	**r = 0,13**	**r = 0,05**	**r = 0,71**	**r = 0,23**
Analytical skills	Minus points		x	**r = 0,01**	**r = -0,14**	**r = -0,22**	**r = -0,06**	**r = 0,08**	**r = 0,65**
Organizational skills	Plus points			x	**r = 0,28** *(p = 2,9%)*	**r = 0,52**	**r = 0,35** *(p = 0,7%)*	**r = 0,78**	**r = 0,30** *(p = 2,2%)*
Organizational skills	Minus points				x	**r = 0,26** *(p = 4,4%)*	**r = 0,42** *(p = 0,1%)*	**r = 0,18**	**r = 0,53**
Decision-making skills	Plus points					x	**r = 0,50**	**r = 0,72**	**r = 0,19**
Decision-making skills	Minus points						x	**r = 0,39**	**r = 0,62**
Management skills	Plus points							x	**r = 0,32** *(p = 1,3%)*
Management skills	Minus points								x

Image: Intercorrelations between the different scales

2) Results from analyses of the standard sample in 2024 (N= 1,264)

Reliability

The primary scale "Management Competence" measures the ability to find one's way analytically, effectively, sensibly and in a recognisably decision-oriented manner under time pressure in a wealth of issues and partial information that need to be prioritised. For this primary scale, the split-half reliability (using the odd/even method) is 0.73 and the internal consistency (Cronbach's alpha) is 0.68.

Content validity

The selection of participants for the standard sample from different industries and different functions, as well as the fact that no specific know-how from a particular industry is necessary for the successful completion of the simulation, are proof that the management simulation can be used across industries and functions. The management simulation "Next-Day Inc." has a very high face validity due to the simulation character of management tasks. The high level of acceptance by the participants also underlines this aspect. Participants are addressed by their own names, which helps them identify with the tasks. Furthermore, participants demonstrably experience the simulation as a "realistic, job-related tool." This statement is made by participants who provide feedback after completing the simulation on a voluntary and anonymous basis (2023-2025, N= 629) (see the detailed evaluation of the feedback survey among participants).

Correlation with the BOMAT cognitive performance test (= construct validity)

In a comparative study comparing the results of 96 people who completed both the management simulation and the "BOMAT advanced – short version", a correlation of 0.63 was found between the BOMAT result and the overall simulation score, which was also highly significant ($p < 1\%$). (see also the detailed description of the study).

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