Mizan Market

The contract decision

Fictional teaching case for QBA201. Company, correspondence and data are constructed.

From Mariam, owner · Monday morning

> “We cannot afford a bad contract. We also cannot keep postponing every decision until we are certain.”

The 90-day software trial at your grocery delivery depot is ending. A busy campaign opens next week. The vendor’s offer expires at 5 p.m. You are the management team advising the owner.

Team challenge bonus. Each verified member of a top-scoring team receives one course percentage point. Tied top teams are joint winners. The captain saves three scored rounds. Fifteen independent questions earn 2 points each, for 30 total. Scores and team ranks update automatically when each round closes. No speed points or instructor marking.

The commercial facts

Term	Offer
Cash authorised today	AED 10,000
Contract horizon	180 operating days
Licence fee	AED 240 per operating day, paid from operating cash flow
Implementation	AED 7,200 paid upfront from the current cash authorisation
Reservation	AED 1,000 non-refundable to preserve the price for seven days

The four available actions

Sign the full offer, buy seven days, negotiate conditions, or decline. A negotiation is conditional on vendor agreement. You must defend the cash requirement, evidence, customer risk and opportunity cost of your recommendation.

The vendor’s sales pitch

> “Average savings were AED 340 a day. That easily beats a licence price of AED 240. The pilot already proves the business case.”

Pilot summary includes 12 selected quiet operating days, mean daily gross savings AED 340, sample SD AED 60. The vendor used experienced staff and did not attach a dispatch report.

The management briefs

Join your team in the class lobby before Round 1. Aim for five or six members and choose one captain to submit answers. You can combine roles or leave some open. Bring a concern to the decision, then listen to the other briefs.

Finance director

“I can authorise AED 10,000 today.”

The offer covers180 operating days, with a fee of AED 240 per day and setup of AED 7,200 upfront. Audits and reservation come from the same cash. Later licence bills use operating cash flow. Include every contract cost when deciding whether gross savings cover the project.

Operations director

“Waiting also has a cost.”

The manual batching process requires overtime. Implementation takes five working days. The campaign opens next week. Signing today permits implementation in time. A non-refundable AED 1,000 reservation holds the price for seven days but misses the opening week. Explain the commercial cost of waiting as well as the risk of rushing.

Customer experience lead

“Saving money cannot be the only measure.”

Your recommended condition is population mean dispatch lateness below 2 minutes. Lateness is measured against the scheduled release time. Negative values mean early dispatch. Consider how to monitor customer performance if the evidence is inconclusive.

Independent analyst

“Which population does the spreadsheet describe?”

For this exercise, verified records are independent representative observations from stable normal populations for the proposed operation. Population SD of daily savings is unknown. Population SD of dispatch lateness is stipulated to be 2.4 minutes. Challenge the vendor’s sample selection.

The internal evidence

Open this page after recording your first position.

The trial archive spans 90 operating days. The internal savings report uses 16 sampled days. The independent audit can verify a separate, preselected 64-day sample from unused trial records. Audit dispatch records are also disjoint from the first sample. Assume the representative, independent normal models described in the analyst brief remain valid for the planned operation.

Report	Savings	Dispatch
Sample unit	Operating day	Dispatch
Sample size	16	36
Sample mean	AED 300 gross saving per day	1.6 minutes lateness
Variability	Sample SD AED 80; population SD unknown	Known population SD 2.4 minutes

Gross labour savings exclude licence and implementation charges. Dispatch lateness is measured relative to the scheduled release time. The customer lead recommends a population mean below 2 minutes.

What the owner needs

1. A threshold that includes the complete contract.
2. A conclusion about the population mean saving.
3. A conclusion about the population mean dispatch performance.
4. A recommendation with a condition and a reason.

Use 5% significance, chosen before seeing the internal reports. Use the general tables or a suitable calculator.

One diligence plan before the deadline

Plan	Cost	What is delivered
Savings audit	AED 1,800	Verified results from 64 unused trial days
Dispatch audit	AED 1,800	Verified results from 100 unused dispatch records
Both	AED 3,600	Both fixed-sample reports
Neither	AED 0	Proceed with the existing evidence

The auditors already hold the records in sealed report packages. Fees pay for verification and release today. Choose once before opening the new results.

Reference tables

Student’s t

Entries are critical values for the upper-tail probabilities in the headings. Use symmetry for the lower tail.

Degrees of freedom	0.100	0.050	0.025	0.010	0.005
11	1.363	1.796	2.201	2.718	3.106
15	1.341	1.753	2.131	2.602	2.947
24	1.318	1.711	2.064	2.492	2.797
30	1.310	1.697	2.042	2.457	2.750
60	1.296	1.671	2.000	2.390	2.660
63	1.295	1.669	1.998	2.387	2.656
99	1.290	1.660	1.984	2.365	2.626

Standard normal

Entries give the probability to the left of a standard normal value. The row gives units and tenths. The column gives hundredths.

z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5753
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	0.6331	0.6368	0.6406	0.6443	0.6480	0.6517
0.4	0.6554	0.6591	0.6628	0.6664	0.6700	0.6736	0.6772	0.6808	0.6844	0.6879
0.5	0.6915	0.6950	0.6985	0.7019	0.7054	0.7088	0.7123	0.7157	0.7190	0.7224
0.6	0.7257	0.7291	0.7324	0.7357	0.7389	0.7422	0.7454	0.7486	0.7517	0.7549
0.7	0.7580	0.7611	0.7642	0.7673	0.7704	0.7734	0.7764	0.7794	0.7823	0.7852
0.8	0.7881	0.7910	0.7939	0.7967	0.7995	0.8023	0.8051	0.8078	0.8106	0.8133
0.9	0.8159	0.8186	0.8212	0.8238	0.8264	0.8289	0.8315	0.8340	0.8365	0.8389
1.0	0.8413	0.8438	0.8461	0.8485	0.8508	0.8531	0.8554	0.8577	0.8599	0.8621
1.1	0.8643	0.8665	0.8686	0.8708	0.8729	0.8749	0.8770	0.8790	0.8810	0.8830
1.2	0.8849	0.8869	0.8888	0.8907	0.8925	0.8944	0.8962	0.8980	0.8997	0.9015
1.3	0.9032	0.9049	0.9066	0.9082	0.9099	0.9115	0.9131	0.9147	0.9162	0.9177
1.4	0.9192	0.9207	0.9222	0.9236	0.9251	0.9265	0.9279	0.9292	0.9306	0.9319
1.5	0.9332	0.9345	0.9357	0.9370	0.9382	0.9394	0.9406	0.9418	0.9429	0.9441
1.6	0.9452	0.9463	0.9474	0.9484	0.9495	0.9505	0.9515	0.9525	0.9535	0.9545
1.7	0.9554	0.9564	0.9573	0.9582	0.9591	0.9599	0.9608	0.9616	0.9625	0.9633
1.8	0.9641	0.9649	0.9656	0.9664	0.9671	0.9678	0.9686	0.9693	0.9699	0.9706
1.9	0.9713	0.9719	0.9726	0.9732	0.9738	0.9744	0.9750	0.9756	0.9761	0.9767
2.0	0.9772	0.9778	0.9783	0.9788	0.9793	0.9798	0.9803	0.9808	0.9812	0.9817
2.1	0.9821	0.9826	0.9830	0.9834	0.9838	0.9842	0.9846	0.9850	0.9854	0.9857
2.2	0.9861	0.9864	0.9868	0.9871	0.9875	0.9878	0.9881	0.9884	0.9887	0.9890
2.3	0.9893	0.9896	0.9898	0.9901	0.9904	0.9906	0.9909	0.9911	0.9913	0.9916
2.4	0.9918	0.9920	0.9922	0.9925	0.9927	0.9929	0.9931	0.9932	0.9934	0.9936
2.5	0.9938	0.9940	0.9941	0.9943	0.9945	0.9946	0.9948	0.9949	0.9951	0.9952
2.6	0.9953	0.9955	0.9956	0.9957	0.9959	0.9960	0.9961	0.9962	0.9963	0.9964
2.7	0.9965	0.9966	0.9967	0.9968	0.9969	0.9970	0.9971	0.9972	0.9973	0.9974
2.8	0.9974	0.9975	0.9976	0.9977	0.9977	0.9978	0.9979	0.9979	0.9980	0.9981
2.9	0.9981	0.9982	0.9982	0.9983	0.9984	0.9984	0.9985	0.9985	0.9986	0.9986
3.0	0.9987	0.9987	0.9987	0.9988	0.9988	0.9989	0.9989	0.9989	0.9990	0.9990