

## **Anecdotes Experiment 2 - Plan**

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## Addressing Experiment 1 limitations

- Limitation: only used negative anecdotes
  - Solution: add valence condition
    - \* Negative: anecdote is a case study of a failed project that is similar to the target project (as in Experiment 1)
    - \* Positive: anecdote is a case study of a successful project that is similar to the target project
- Limitation: unclear way to test the interaction effect
  - Solution: compare the relevant simple effects.
    - \* For instance, low similarity combined vs. high similarity combined, and high similarity combined vs. statistics only. The two differences should imply the interaction.
- Limitation: using the anecdote could be normative if it seems that it was chosen due to its similarity
  - Solution: change argument to be about people’s ability to use anecdotes when casual structure seems relevant, and to avoid them when it does not.<sup>1</sup>
    - \* Still clarify that the anecdotes were sampled randomly (as in Hayes et al., 2019).

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<sup>1</sup> Initially, the argument was that people are over-relying on anecdotes, while they should be using aggregated data instead. However, as Rob Goldstone’s example suggests, there are situations in which an anecdote is so similar (e.g., an identical twin) that it would be unwise not to use the anecdote. As such, the idea is to pivot to the argument to be that people might actually be sensitive to the relevance of the anecdote. That is, our data suggests that they (arguably wisely) use the anecdote when it seems to share causal structure, and use it less when it doesn’t (even though it’s the same type of project). In fact, people seem to actually integrate the anecdote with the statistical information.

Therefore, we can keep the anecdote descriptions the same as in Experiment 1 (i.e., either causally similar to the target, or not). Further, we do not need to include any further descriptions of the pool of anecdotes (such as the limit of similarity) other than the fact that it is large and anecdotes are randomly sampled.

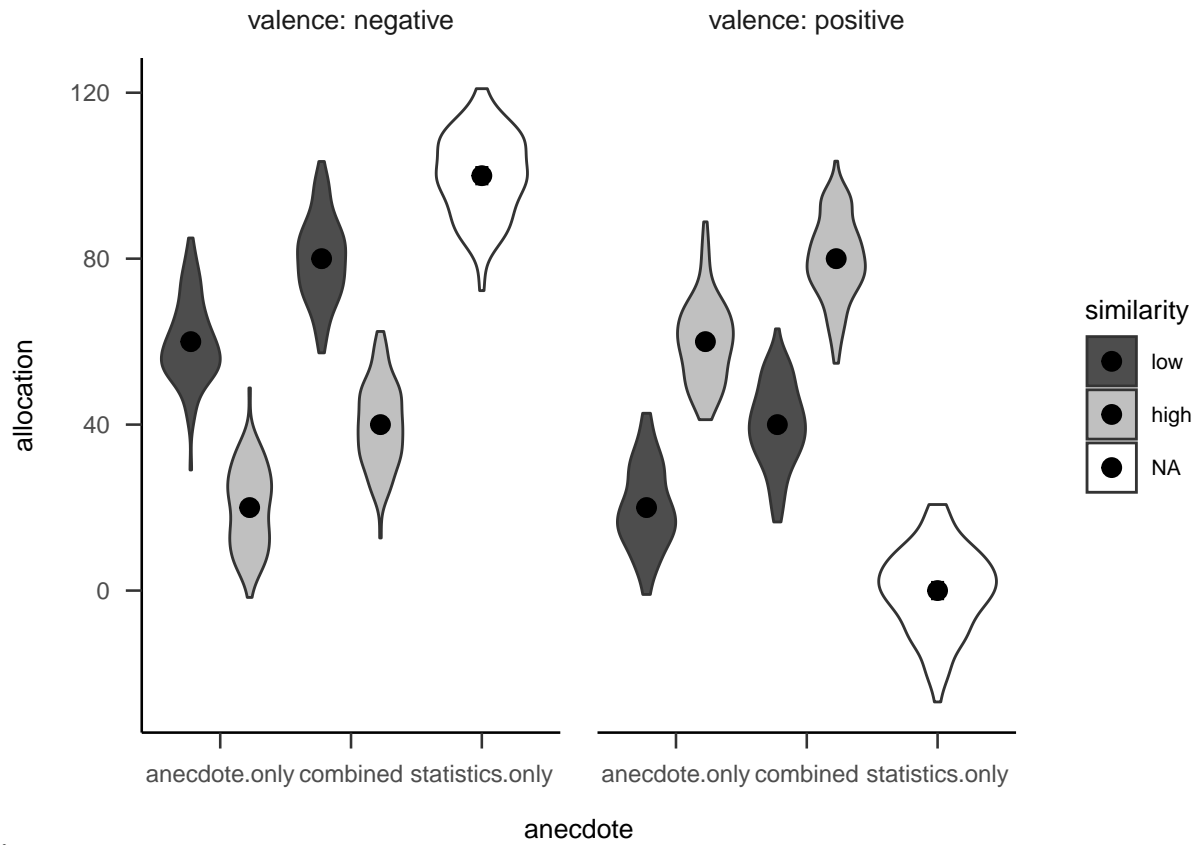
- \* Change the follow-up relevance question to be something like “how much do you think the reason the case study failed is relevant to the performance of the target project”

### **Summary**

- Experiment 2 investigates the effects of anecdote similarity and valence on anecdotal bias.
- IVs
  - Similarity: low and high.
    - \* Within-subjects
  - Valence: low and high.
    - \* Within-subjects
  - Anecdote: statistics only, anecdote only, and combined.
    - \* Between-subjects anecdotes
    - \* Within-subjects statistics only
- DV
  - Allocation (0-100)
- Each participants is in one of two between-subjects anecdote conditions, and sees five displays (statistics only, and four anecdote displays).

### **Hypotheses**

- Statistics only condition will be higher (lower) than each anecdote condition for the negative (positive) valence condition.
- Main effect of similarity.
- Main effect of anecdote (excluding statistics only).
- Three-way interaction, such that the effects are reversed between the valence conditions.
- See Figure 1



**Figure 1**

*Anecdotes Experiment 2 predicted data*

**Power analysis**

## Materials

- Instructions
  - Similar wording to other experiments.
  - Includes a test of basic instructions understanding/attention check.
- Each participant will see five project displays.
  - One for each similarity/valence combination + statistics only.
  - Each display will have:
    - \* Specific instructions to that display, which varies by anecdote, similarity, and valence conditions.
    - \* A table describing the two target projects, with allocation inputs.
  - Displays with an anecdote will also have a paragraph of “analysis”, which describes why the project failed or succeeded (based on the valence condition).
  - Before each display, participants will see an “interstitial” page, whose role is 1. to introduce the next display, and 2. an attention check (not required to answer, so can be skipped if the interstitial text isn’t read).
- The following are counterbalanced:
  - Project variation (five latin square variations).
    - \* The association of each display content with each within-subject condition.
  - Anecdote variation (two variations).
    - \* The association of each project display and being either the target or comparison project.
- The following are randomised:
  - Table column order.
  - Project display order.
- The below figures show a sample of the possible project displays participants will see.
  - The first 16 Figures showcase the experiment materials and order for a participant in the combined anecdote condition.

- The final figure shows an example of a display from the anecdote only condition. All that differs here are the instructions.

## Screenshots

**Instructions**

Imagine you are an executive in a multi-business company and that you are presented with two projects to potentially invest in. Your job is to decide how to allocate the capital available in your budget between these two projects.

In total, you will see five of these project pairs (across five separate web pages). Each page will also contain relevant information about the projects.

Test yourself on the above instructions: How many pairs of projects will you see?

project pairs

**Figure 2**

*Instructions.*

You will now see project display #1. Please consider this display independently from all the other displays. That is, your allocation should be informed only by the instructions and project descriptions that are on the same webpage.

It is important that you pay attention and read through the task carefully. To show that you are reading and paying attention, please click on the following checkbox **before** clicking on "Continue": ☐

**Figure 3**

*Interstitial 1.*

**Instructions**

Managers often find it useful to consult with previous case studies before making important decisions. As well as seeing the two target projects, you will also be provided with an example of a failed project with some information that was available just before the company decided to invest in it. This project was randomly chosen from a pool of thousands of projects. Others rated the similarity of all the case studies to the below target project and this case study is on average as similar to the target as the others. Further, you are also provided with an analysis of this investment decision after it became clear that the project will not meet its expected return on investment.

As a part of the relevant information that will be provided for each target project, you will be provided with measures of overall reliability and Net Present Value (NPV). The NPV is the company's estimation of the future returns of the project. An NPV that is greater than 0 (zero) indicates that there is an expectation of profit. The higher the NPV, the better the expectations for each project. Both these measures were collected as part of a research study conducted by an international consulting company that aggregated data from thousands of other projects in relevant industries.

Note that the project in the case study was included in the research study, so its features are subsumed in the aggregated data.

**Case study**

Dinerly struggled to establish itself in the regional market because of decreased tourism traffic in the Milan area. A decentralised organisational structure meant that communication across relevant business units was delayed with what needed to be a timely process. Being horizontally integrated meant that there was a greater regulatory scrutiny on the project, which slowed down some relevant processes. A post hoc analysis concluded that, to make up for these issues, the restaurants needed to be established at a rate of 14 a year and the number of Saturday night reservations needed to be 160. Further, the number of positive reviews the restaurant needed to have been estimated to get 64 a month. Further, the restaurant did not have many offerings for the recent health trend due to it operating fast food, and so added additional financial setbacks over the course of the project.

- Business details:
  - Business name: Dinerly
  - Location: Milan, Italy
  - Integration: horizontal
  - Structure: decentralised
- Investment: restaurant chain
- Predicted project features:
  - Restaurants established: 13 a year
  - Number of reservations on a Saturday night: 140
  - Positive reviews: 56 a month
  - Restaurant type: fast food

**Target projects**

Allocate your budget between the following two projects using percentage values (the two values should sum to 100):

Relevant information	target	comparison
Business name	Savaro	Poppin
Project type	restaurant chain	record label
Location	Rome, Italy	Stokholm, Sweden
Integration	horizontal	vertical
Structure	decentralised	centralised
Predicted project features	<ul style="list-style-type: none"> <li>• Restaurants established: 9 a year</li> <li>• Number of reservations on a Saturday night: 100</li> <li>• Positive reviews: 40 a month</li> <li>• Restaurant type: fast food</li> </ul>	<ul style="list-style-type: none"> <li>• Record projects completed: 8 a year</li> <li>• Radio listenership nationally: 2 million</li> <li>• Relevant network connections: 13</li> <li>• Genre: rock</li> </ul>
Project allocation (%)	Allocation: <input style="width: 50px;" type="text"/>	Allocation: <input style="width: 50px;" type="text"/>
Overall reliability rating (%)	93	86
NPV (\$)	903	102

Figure 4

*Project allocation - valence: negative, alignment: low, anecdote condition: combined.*

Follow-up

On a scale of 1 to 6, how similar do you think the Dinerly project (the case study) is to the Savoro project (the restaurant chain target project)? A choice of 1 indicates low similarity, and 6 indicates high similarity.

On a scale of 1 to 6, how relevant do you think the information about the Dinerly project is for determining whether to invest in the Savoro project? A choice of 1 indicates low relevance, and 6 indicates high relevance.

On a scale of 1 to 6, how relevant do you think the information about the Dinerly project is for determining whether to invest in      restaurant chain project? A choice of 1 indicates low relevance, and 6 indicates high relevance.

Justify your answer:

Press the button below to continue.

**Figure 5**

*Follow up 1.*



You will now see project display #2. Please consider this display independently from all the other displays. That is, your allocation should be informed only by the instructions and project descriptions that are on the same webpage.

It is important that you pay attention and read through the task carefully. To show that you are reading and paying attention, please click on the following checkbox **before** clicking on "Continue": ☐

Continue

**Figure 6**

*Interstitial 2.*

**Instructions**

Managers often find it useful to consult with previous case studies before making important decisions. As well as seeing the two target projects, you will also be provided with an example of a successful project with some information that was available just before the company decided to invest in it. This project was randomly chosen from a pool of thousands of projects. Others rated the similarity of all the case studies to the below target project and this case study is on average as similar to the target as the others. Further, you are also provided with an analysis of this investment decision after it became clear that the project will meet its expected return on investment.

As a part of the relevant information that will be provided for each target project, you will be provided with measures of overall reliability and Net Present Value (NPV). The NPV is the company's estimation of the future returns of the project. An NPV that is greater than 0 (zero) indicates that there is an expectation of profit. The higher the NPV, the better the expectations for each project. Both these measures were collected as part of a research study conducted by an international consulting company that aggregated data from thousands of other projects in relevant industries.

Note that the project in the case study was included in the research study, so its features are subsumed in the aggregated data.

**Case study**

Microxy performed really well in the regional market because of decreased silicon taxes in the Montreal area. A decentralised organisational structure meant that the individual teams had greater autonomy to complete their tasks, increasing the efficiency of important project stages. Being horizontally integrated meant that the project can be easily marketed to the customer base of the other business units in the company. A post hoc analysis concluded that, to take advantage of these benefits, the microchips needed to be produced at a rate of 2800 an hour and the semiconductor yield needed to be 48%. Further, the percent of compatible devices needed to be 60%. Further, the chip has a relatively low power consumption due to it operating Reduced Instruction Set Computing, and so added additional financial resilience over the course of the project.

- Business details:
  - Business name: Microxy
  - Location: Montreal, Canada
  - Integration: horizontal
  - Structure: decentralised
- Investment: microchip
- Predicted project features:
  - Microchips produced: 3600 an hour
  - Usable semiconductor yield after testing: 54%
  - Compatible devices in the market: 68%
  - Type of chip architecture: Reduced Instruction Set Computing

**Target projects**

Allocate your budget between the following two projects using percentage values (the two values should sum to 100):

Relevant information	target	comparison
Business name	Altchip	Solistics
Project type	microchip	shipping logistics
Location	Toronto, Canada	Kuala Lumpur, Malaysia
Integration	horizontal	vertical
Structure	decentralised	centralised
Predicted project features	<ul style="list-style-type: none"> <li>• Microchips produced: 4000 an hour</li> <li>• Usable semiconductor yield after testing: 60%</li> <li>• Compatible devices in the market: 75%</li> <li>• Type of chip architecture: Reduced Instruction Set Computing</li> </ul>	<ul style="list-style-type: none"> <li>• Packages shipped: 800 a week</li> <li>• Number of orders that do not spend time in a bottleneck: 400 a day</li> <li>• Average accuracy of shipments: 94%</li> <li>• Shipping type: parcel</li> </ul>
Project allocation (%)	Allocation: <input style="width: 50px;" type="text"/>	Allocation: <input style="width: 50px;" type="text"/>
Overall reliability rating (%)	90	93
NPV (\$)	105	905

Continue

Figure 7

*Project allocation - valence: positive, alignment: low, anecdote condition: combined.*

Follow-up

On a scale of 1 to 6, how similar do you think the Microxy project (the case study) is to the Altchip project (the microchip target project)? A choice of 1 indicates low similarity, and 6 indicates high similarity.

On a scale of 1 to 6, how relevant do you think the information about the Microxy project is for determining whether to invest in the Altchip project? A choice of 1 indicates low relevance, and 6 indicates high relevance.

On a scale of 1 to 6, how relevant do you think the information about the Microxy project is for determining whether to invest in *any* microchip project? A choice of 1 indicates low relevance, and 6 indicates high relevance.

Justify your answer:

Press the button below to continue.

**Figure 8**

*Follow up 2.*

You will now see project display #3. Please consider this display independently from all the other displays. That is, your allocation should be informed only by the instructions and project descriptions that are on the same webpage.

It is important that you pay attention and read through the task carefully. To show that you are reading and paying attention, please click on the following checkbox **before** clicking on "Continue": ☐

Continue

**Figure 9**

*Interstitial 3.*

Instructions

Managers often find it useful to consult with previous case studies before making important decisions. As well as seeing the two target projects, you will also be provided with an example of a failed project with some information that was available just before the company decided to invest in it. This project was randomly chosen from a pool of thousands of projects. Others rated the similarity of all the case studies to the below target project and this case study is on average as similar to the target as the others. Further, you are also provided with an analysis of this investment decision after it became clear that the project will not meet its expected return on investment.

As a part of the relevant information that will be provided for each target project, you will be provided with measures of overall reliability and Net Present Value (NPV). The NPV is the company's estimation of the future returns of the project. An NPV that is greater than 0 (zero) indicates that there is an expectation of profit. The higher the NPV, the better the expectations for each project. Both these measures were collected as part of a research study conducted by an international consulting company that aggregated data from thousands of other projects in relevant industries.

Note that the project in the case study was included in the research study, so its features are subsumed in the aggregated data.

Case study

Cweb struggled to establish itself in the regional market because of changes in privacy laws (that reduced consumer confidence in the business' apps) in the Mumbai area. A centralised organisational structure meant that poor performers took longer to be replaced, so some tasks needed considerable revision. Being vertically integrated meant that the project was reliant on in-house manufacturing and so was slow to adopt the newest technologies used by competitors. A post hoc analysis concluded that, to make up for these issues, the developers needed to write 900 lines a day and the the application needed to be certified with a security rating of 54%. Further, the number of potential first-year customers needed to be 3 million. Further, the problems in the application were slow to solve because of the lack of large-scale quantitative data due to it being for enterprise, and so added additional financial setbacks over the course of the project.

- Business details:
  - Business name: Cweb
  - Location: Mumbai, India
  - Integration: vertical
  - Structure: centralised
- Investment: software
- Predicted project features:
  - Code written: 700 lines a day
  - Security rating: 42%
  - Number of potential customers in first year: 2 million
  - Target users: enterprise

Target projects

Allocate your budget between the following two projects using percentage values (the two values should sum to 100):

Relevant information	target	comparison
Business name	Codeck	Enfuel
Project type	software	oil well
Location	Austin, USA	Houston, USA
Integration	horizontal	vertical
Structure	decentralised	centralised
Predicted project features	<ul style="list-style-type: none"> <li>Code written: 1000 lines a day</li> <li>Security rating: 60%</li> <li>Number of potential customers in first year: 3 million</li> <li>Target users: ordinary consumers</li> </ul>	<ul style="list-style-type: none"> <li>Oil extracted: 2000L an hour</li> <li>Time the machinery lasts before requiring maintenance: 7 years</li> <li>Probability of finding oil: 80%</li> <li>Type of well: onshore</li> </ul>
Project allocation (%)	Allocation: <input type="text"/>	Allocation: <input type="text"/>
Overall reliability rating (%)	91	90
NPV (\$)	901	100

Continue

Figure 10

*Project allocation - valence: negative, alignment: high, anecdote condition: combined.*

Follow-up

On a scale of 1 to 6, how similar do you think the Cweb project (the case study) is to the Codeck project (the software target project)? A choice of 1 indicates low similarity, and 6 indicates high similarity.

On a scale of 1 to 6, how relevant do you think the information about the Cweb project is for determining whether to invest in the Codeck project? A choice of 1 indicates low relevance, and 6 indicates high relevance.

On a scale of 1 to 6, how relevant do you think the information about the Cweb project is for determining whether to invest in *any* software project? A choice of 1 indicates low relevance, and 6 indicates high relevance.

Justify your answer:

Press the button below to continue.

Continue

**Figure 11**

*Follow up 3.*

You will now see project display #4. Please consider this display independently from all the other displays. That is, your allocation should be informed only by the instructions and project descriptions that are on the same webpage.

It is important that you pay attention and read through the task carefully. To show that you are reading and paying attention, please click on the following checkbox **before** clicking on "Continue": ☐

Continue

Figure 12

*Interstitial 4.*

**Instructions**

Managers often find it useful to consult with previous case studies before making important decisions. As well as seeing the two target projects, you will also be provided with an example of a successful project with some information that was available just before the company decided to invest in it. This project was randomly chosen from a pool of thousands of projects. Others rated the similarity of all the case studies to the below target project and this case study is on average as similar to the target as the others. Further, you are also provided with an analysis of this investment decision after it became clear that the project will meet its expected return on investment.

As a part of the relevant information that will be provided for each target project, you will be provided with measures of overall reliability and Net Present Value (NPV). The NPV is the company's estimation of the future returns of the project. An NPV that is greater than 0 (zero) indicates that there is an expectation of profit. The higher the NPV, the better the expectations for each project. Both these measures were collected as part of a research study conducted by an international consulting company that aggregated data from thousands of other projects in relevant industries.

Note that the project in the case study was included in the research study, so its features are subsumed in the aggregated data.

**Case study**

Railmont performed really well in the regional market because of an increase in local fuel prices, changing commuter behaviour in the Belo Horizonte area. A centralised organisational structure meant that employees had a clearer chain of command, so were able to take care of important challenges early. Being vertically integrated meant that there was less reliance on other (under-performing) suppliers that competitors had to use. A post hoc analysis concluded that, to take advantage of these benefits, the railway lines needed to be built at a rate of 7 a decade and the number of paying customers at peak hour needed to be 2800. Further, the carriages needed to be estimated to last in good shape 17 years. Further, the railway did not have much competition from other modes of transport due to it operating intracity, and so added additional financial resilience over the course of the project.

- Business details:
  - Business name: Railmont
  - Location: Belo Horizonte, Brazil
  - Integration: vertical
  - Structure: centralised
- Investment: railway
- Predicted project features:
  - Railway lines built: 8 a decade
  - Number of seats filled by paying customers at peak hour: 3200
  - Time before the train carriages will need to be serviced: 19 years
  - Operation type: intracity

**Target projects**

Allocate your budget between the following two projects using percentage values (the two values should sum to 100):

Relevant information	target	comparison
Business name	Rural Pass	Refit
Project type	railway	high-rise construction
Location	Guangzhou, China	London, UK
Integration	horizontal	vertical
Structure	decentralised	centralised
Predicted project features	<ul style="list-style-type: none"> <li>• Railway lines built: 5 a decade</li> <li>• Number of seats filled by paying customers at peak hour: 2000</li> <li>• Time before the train carriages will need to be serviced: 12 years</li> <li>• Operation type: intercity</li> </ul>	<ul style="list-style-type: none"> <li>• High-rises built: 8 a year</li> <li>• Probability that the builders complete construction within a month of the due date: 70%</li> <li>• Number of tenant expressions of interest: 100</li> <li>• Primary use: apartment</li> </ul>
Project allocation (%)	Allocation: <input style="width: 50px;" type="text"/>	Allocation: <input style="width: 50px;" type="text"/>
Overall reliability rating (%)	87	95
NPV (\$)	102	900

Figure 13

*Project allocation - valence: positive, alignment: high, anecdote condition: combined.*



Follow-up

On a scale of 1 to 6, how similar do you think the Railmont project (the case study) is to the Rural Pass project (the railway target project)? A choice of 1 indicates low similarity, and 6 indicates high similarity.

On a scale of 1 to 6, how relevant do you think the information about the Railmont project is for determining whether to invest in the Rural Pass project? A choice of 1 indicates low relevance, and 6 indicates high relevance.

On a scale of 1 to 6, how relevant do you think the information about the Railmont project is for determining whether to invest in *any* railway project? A choice of 1 indicates low relevance, and 6 indicates high relevance.

Justify your answer:

Press the button below to continue.

**Figure 14**

*Follow up 4.*

You will now see project display #5. Please consider this display independently from all the other displays. That is, your allocation should be informed only by the instructions and project descriptions that are on the same webpage.

It is important that you pay attention and read through the task carefully. To show that you are reading and paying attention, please click on the following checkbox **before** clicking on "Continue": ☐

Continue

Figure 15

*Interstitial 5.*

**Instructions**

As a part of the relevant information that will be provided for each target project, you will be provided with measures of overall reliability and Net Present Value (NPV). The NPV is the company's estimation of the future returns of the project. An NPV that is greater than 0 (zero) indicates that there is an expectation of profit. The higher the NPV, the better the expectations for each project. Both these measures were collected as part of a research study conducted by an international consulting company that aggregated data from thousands of other projects in relevant industries.

**Target projects**

Allocate your budget between the following two projects using percentage values (the two values should sum to 100):

Relevant information	target	comparison
Business name	Grown Media	Healthgenic
Project type	national newspaper	pharmaceutical
Location	Sydney, Australia	St Petersburg, Russia
Integration	horizontal	vertical
Structure	decentralised	centralised
Predicted project features	<ul style="list-style-type: none"> <li>• Newspapers printed: 50000 a day</li> <li>• Number of weekly advertisers: 80</li> <li>• Ink that is not discarded due to impurities: 5000L a day</li> <li>• Payment model: subscription</li> </ul>	<ul style="list-style-type: none"> <li>• Pills pressed: 300000 an hour</li> <li>• Shelf life: 20 months</li> <li>• Probability of symptom reduction after a week: 90%</li> <li>• Drug type: prescription-only</li> </ul>
Project allocation (%)	Allocation: <input style="width: 50px;" type="text"/>	Allocation: <input style="width: 50px;" type="text"/>
Overall reliability rating (%)	95	90
NPV (\$)	904	102

Figure 16

*Project allocation - statistics only.*

**Press the button below to continue.**



**Figure 17**

*Follow up 5.*

**Instructions**

Managers often find it useful to consult with previous case studies before making important decisions. As well as seeing the two target projects, you will also be provided with an example of a failed project with some information that was available just before the company decided to invest in it. This project was randomly chosen from a pool of thousands of projects. Others rated the similarity of all the case studies to the below target project and this case study is on average as similar to the target as the others. Further, you are also provided with an analysis of this investment decision after it became clear that the project will not meet its expected return on investment.

**Case study**

Dinerly struggled to establish itself in the regional market because of decreased tourism traffic in the Milan area. A decentralised organisational structure meant that communication across relevant business units was delayed with what needed to be a timely process. Being horizontally integrated meant that there was a greater regulatory scrutiny on the project, which slowed down some relevant processes. A post hoc analysis concluded that, to make up for these issues, the restaurants needed to be established at a rate of 14 a year and the number of Saturday night reservations needed to be 160. Further, the number of positive reviews the restaurant needed to have been estimated to get 64 a month. Further, the restaurant did not have many offerings for the recent health trend due to it operating fast food, and so added additional financial setbacks over the course of the project.

- Business details:
  - Business name: Dinerly
  - Location: Milan, Italy
  - Integration: horizontal
  - Structure: decentralised
- Investment: restaurant chain
- Predicted project features:
  - Restaurants established: 13 a year
  - Number of reservations on a Saturday night: 140
  - Positive reviews: 56 a month
  - Restaurant type: fast food

**Target projects**

Allocate your budget between the following two projects using percentage values (the two values should sum to 100):

Relevant information	target	comparison
Business name	Savoro	Poppin
Project type	restaurant chain	record label
Location	Rome, Italy	Stokholm, Sweden
Integration	horizontal	vertical
Structure	decentralised	centralised
Predicted project features	<ul style="list-style-type: none"> <li>• Restaurants established: 9 a year</li> <li>• Number of reservations on a Saturday night: 100</li> <li>• Positive reviews: 40 a month</li> <li>• Restaurant type: fast food</li> </ul>	<ul style="list-style-type: none"> <li>• Record projects completed: 8 a year</li> <li>• Radio listenership nationally: 2 million</li> <li>• Relevant network connections: 13</li> <li>• Genre: rock</li> </ul>
Project allocation (%)	Allocation: <input style="width: 50px;" type="text"/>	Allocation: <input style="width: 50px;" type="text"/>

Continue

**Figure 18**

*Project allocation - valence: negative, alignment: low, anecdote condition: anecdote only.*

## References

- Hayes, B. K., Navarro, D. J., Stephens, R. G., Ransom, K., & Dilevski, N. (2019).  
The diversity effect in inductive reasoning depends on sampling assumptions.  
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