

# SAGE Research Methods Cases Submission for Consideration

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## **Case Title**

Evaluating new management tools: An exploratory quasi-field experiment

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## **Discipline**

Business and Management

## **Academic Level** of intended readership

Post Graduate

## **Contributor Biographies**

Bronte van der Hoorn's primary research interests are exploring the 'lived experience' of project work, and the use of visuals in management communications. She uses Continental philosophical concepts to provide alternative ways to conceptualize work and is committed to developing and evaluating new tools that assist managers in their practice.

## **Published Articles**

Not applicable

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## **Abstract**

There are increasing calls to deliver management research that benefits practitioners. Development of new tools is a potential avenue to provide such practice-relevant contributions. This case discusses and critiques the use of a quasi-field experiment to give a preliminary evaluation of a new toolset for project managers. The toolset was a catalogue of visual archetypes (templates) to communicate common project concepts to stakeholders. Eleven project managers were recruited to participate in this field experiment and seven chose to trial at least one of the visual archetypes and submitted a response to an online survey. This method was useful in providing initial feedback on the potential benefits of the toolset in real-life contexts and provided evidence for continued exploration of their use in practice. The main challenges were encouraging recruited participants to participate in trialling the archetypes and eliciting a survey response given the many demands on their time. Overall, the study design was useful as an exploratory research study to provide an initial evaluation of a new management toolset.

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## **Learning Outcomes**

By the end of this case, students should be able to:

- Describe a quasi-field experiment.
  - Differentiate between experiments and quasi-experiments.
  - Compare randomized controlled trials and field experiments.
  - Appraise the strengths and weaknesses of a quasi-field experiment.
  - Assess the suitability of a quasi-field experiment to meet a research need.
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## Case Study

### **Project Overview and Context**

Management researchers are increasingly being called upon to provide insights that have relevancy for managerial practice (Pasmore, Stymne, Shani, Mohrman, & Adler, 2008; Toffel, 2016; Wolf & Rosenberg, 2012). Specific areas of attention include identification of relationships between variables in organisations, undertaking more qualitative research and the need to closely partner with practitioners (Wolf & Rosenberg, 2012). This call for relevancy of research to practice applies to the management of project work (van der Hoorn & Whitty, 2019), where there is a growing interest in addressing the problems faced by practitioners as part of their lived experience (see, for example, van der Hoorn and Whitty (2015)).

Enabling project stakeholders to understand a situation or problem is a critical activity for project managers (van der Hoorn & Whitty, 2017a). Visuals can be effective when communicating information or to build a shared understanding of a situation in project work (Beckett, 2015; van der Hoorn & Whitty, 2017b). However, capability in creating visuals is not a standard competency for project managers (van der Hoorn, 2020).

This research study was designed as a pilot quasi-field experiment to provide an assessment of the impact of a toolset to support project managers in communicating with their stakeholders. Specifically, the researcher hypothesized that project managers' communication practices may benefit if they could draw upon a set of project visuals (archetypes) and use these as a basis to visualize their own messages (similar to a series of templates for creating a project management plan). The study attempted to contribute to management research relevancy through eliciting both

quantitative and qualitative data and also working closely with practitioners ‘in the field’.

The study’s results indicate that a large number of the participants experienced positive impacts from using the visuals. However, reflective of its pilot nature, the sample size is small and therefore the findings cannot be generalized without further research.

In the natural sciences, hypothesizing and undertaking experiments to establish cause and effect is common. For example, randomized controlled trials assess the impact of healthcare interventions on the symptoms or progression of a disease (Best, 2012; Moayyedi & Hunt, 2014). Such highly controlled experimentation is less common in the social sciences as it can be difficult to isolate variables to establish causality (Best, 2012; Byrne, 2017). However, field experiments and quasi-experiments similar to the method used in this research case are argued to be useful for management research (Gray, 2004; Maylor, Blackmon, & Huemann, 2017; Pasmore et al., 2008).

#### Section summary

- This research was designed to provide a pilot evaluation of the benefits (if any) of project managers having visual archetypes to support them in their communication practices.
- This study is exploratory and therefore generalizability is limited.
- Field (and quasi) experiments can be useful when a trial of an intervention in a practice environment is required.

#### **Research Design**

The defining feature of any experiment is the making of an intervention and then evaluating the impact of the intervention on a specific variable/s (Byrne, 2017). In the language of research design the intervention is termed the ‘independent’ variable/s and the variable that is being examined for any impact is the ‘dependent’ variable/s

(Gross, 2017; Ruble, 2017). Experiments are commonly undertaken to establish causality (Gross, 2017; Ruble, 2017). As will be explored in this section, there are various types of experimental design.

While subject to debate today, randomized controlled trials, such as those used in drug trials have historically been considered the ‘gold standard’ of empirical research (Bickman & Reich, 2009). This form of experiment utilizes a randomized control group and an intervention group. Researchers attempt to ensure that the participants in each group are as similar as possible prior to the intervention (Gamble, Haley, Buck, & Sista, 2015). The intervention group will be ‘treated’ with the independent variable, whereas the control group do not receive the intervention (Byrne, 2017). Both groups are monitored for changes to the dependent variable/s. Such trials have a large number of participants which enables statistical analysis to be reliably undertaken to generate a suitable level of confidence regarding the probability that an intervention has caused a particular effect (Byrne, 2017). For some social science research randomized control trials may be neither feasible nor desirable (Byrne, 2017).

In such cases, field experiments can permit the evaluation of the impact of an independent variable on a dependent variable in a real-life setting (Gross, 2017; Persaud, 2010), such as a workplace. Field experiments are particularly useful for applied research, and can result in findings that are arguably more realistic or applicable to the target population (Gross, 2017). They are also associated with pilot (exploratory) investigations on the impact of a particular intervention. In such situations they can result in greater clarity or specificity of variables for use in future

research designs (Tripodi & Bender, 2010). Field experiments may or may not use a control group to support the establishment of causality (Majchrzak & Markus, 2014).

Cole, Giné, and Vickery (2017) used a field experiment to explore the influence of risk management on farmers' production decisions. In their study, the independent variable was insurance against rainfall risk, and the dependent variables were investment and production decisions. This experiment recruited 1,479 farmers in India and included 3 data collection points (including a baseline collection prior to the intervention of the independent variable). This field experiment used a control group (who did not have the insurance policies) to accurately assess the impact of insurance on the production decisions.

A further example is a field experiment by Bradler, Dur, Neckermann, and Non (2016) which examined the effect of unannounced public recognition on employee performance. In Bradler et al's (2016) experiment, the independent variable was a type of announcement (thank you cards) given to data entry clerks. The dependent variable was the employee's productivity. This field experiment also included groupings of participants to test the effect of different types of announcements (e.g. no cards, some employees receiving cards, all receiving cards) on the dependent variable.

The absence of a control group in an experiment characterizes it as quasi-experimental (Gray, 2004). If there was also an absence of an independent variable the research design would no longer be classified as experimental (Gray, 2004).

However, it is possible that the independent variable within the experiment is not within the control of the researchers. Examples of types of quasi-experiments are provided in Table 1.

**Table 1: Types of quasi-experiments with examples**

Type of quasi-experiment	Description	Example
<b>One-group post-test only designs</b>	One group is given a treatment and is then observed for effects using one post-test observation	A group of project managers are asked to use a new reporting template and their use of the template is reviewed.
<b>Non-equivalent control group designs (post-test only)</b>	The outcomes of two or more treatment or control conditions are studied, but the experimenter does not control assignment to conditions	The project managers working in Canberra are allocated to one group. The project managers working in Sydney are allocated to another group. Template A is given to the Canberra Project Managers. Template B is given to the Sydney Project Managers. Their use of the two templates is reviewed.
<b>Interrupted time-series designs</b>	Many (ideally, 100 or more) consecutive observations over time are available on an outcome, and treatment is introduced in the midst of those observations to determine its impact on the outcome as evidenced by a disruption in the time series after treatment	All project managers in the organisation are required to report on project progress each week. Their reporting practices are reviewed every week for six months. At this point a new reporting template is introduced and the observations continue for a further eighteen months.
<b>Single-group or single-case designs</b>	One group or unit is repeatedly observed over time (more than twice, but fewer than in a time series) while the scheduling and dose of treatment are manipulated to demonstrate that treatment affects outcome	A project manager is given template A to use for reporting in January and their use of this is reviewed each week in January. They are then provided with template B in February and their use of this template is reviewed each week in February. In March, they are able to use their own template and each week their report is reviewed.

*Source (types and description content): Boslaugh (2008)*

A quasi-field experiment undertaken by Huang, Lin, and Lin (2011) explored whether training can mitigate against email time management issues. In this quasi-field experiment, the independent variable was a training program and there were four dependent variables relating to email practices. There were 175 participants who received the training, and 105 participants were in a control group (i.e. did not receive the training) and data was collected before and after the training to assess changes in the dependent variables. The researchers classify their experiment as ‘quasi’ based on the use of a non-equivalent control group.

Larsen, Kristensen and Søgaaard's (2018) study on self-selection of performance metrics and quality of performance is an example of a quasi-field experiment without a control group. This quasi-field experiment undertaken in Denmark involved eight hospital departments who were able to choose their own performance focus (the independent variable) over a period of three years. Analysis of their performance (dependent variable) was undertaken using an interrupted time series design which enabled consideration of performance before and after the intervention (i.e. the ability to self-select performance metrics).

A further quasi-experiment with no control group and a small sample size examined the impact of mindfulness (independent variable) on the job-related wellbeing (dependent variables) of university staff (Wongtongkam, Krivokapic-Skoko, Duncan, & Bellio, 2017). Along with pre and post questionnaires, interviews with five participants were used to elicit information about the impact of the intervention on the dependent variables. Wongtongkam et al. (2017) propose that the coupling of interviews with survey data was a particular strength of their approach.

The research study in this case can be classified as a quasi-field experiment for three reasons. First, the experiment was undertaken in the project manager's natural (or real-world) setting; this designates it as a 'field' experiment. Second, it is a 'quasi' experiment because there was no control group, all participants in the study received the intervention. It is an 'experiment' because there was the deliberate use of an independent variable and then monitoring of dependent variables. The independent variable in this study was the project manager's use a visual from the provided

catalogue to develop a visual communication for their stakeholders. The dependent variables were:

- project manager's confidence in presenting information visually; and
- the ease with which project manager could present information visually.

#### Section summary

- Quasi-experiments determine the impact of an independent variable on a dependent variable.
- In this study the independent variable was the use of a visual archetype (from the provided catalogue).
- The dependent variables included: project manager confidence in presenting information visually, and the degree of ease in developing a visual.

### **Research Practicalities**

#### *Creating the independent variable*

The catalogue of visual archetypes was developed based on the researcher's own practice experience. Feedback from a small number of practicing project managers and executives was elicited on the draft catalogue and some refinements were made prior to running the experiment. The catalogue contained introductory information regarding using visuals as part of management practice, 11 visual archetypes and 11 explanatory tables (one per archetype) to help the project managers tailor the visual to their practice.

#### *Recruiting and briefing participants*

Participant recruitment was undertaken initially through the researcher's professional networks, and then snowballing. Snowballing is a recruitment strategy where recruited participants make referrals to the researcher of other potential participants who may be interested in partaking in the study (Tenzek, 2017). The key requirement for participation was that the participant was a project manager with the capability to use a sample of the visual archetypes in the catalogue over a six-month period (i.e.

they needed to be currently working on a project for the next six months). A total of 11 participants were recruited. This small sample size is reflective of the exploratory nature of the research study. Briefly, exploratory research refers to studies that are in their preliminary stages and are designed to help build an understanding of a situation or problem as a foundation for future studies (McGregor, 2018; Sue & Ritter, 2012). The study's promotional material highlighted that the benefits of participating included receiving a copy of the catalogue of visual archetypes for participants' ongoing use.

Each recruited participant undertook a briefing with the researcher to explain the catalogue and the experiment. For many of the participants this briefing happened via a web conference using screenshare capabilities (specifically, Zoom) to enable the participant to see the catalogue as the researcher explained the various archetypes. During this briefing demographic information relating to the participant was elicited and qualitative baseline information relating to their current use of visuals captured. At the conclusion of the briefing the participant nominated a four-digit code (rather than their name) that they would use when reporting their experience with the independent variable. This four-digit code enabled linking of the participants' demographic and baseline data elicited during the interview with their reports on using the catalogue visuals while supporting protection of their privacy. During the briefing, the researcher also confirmed that the participant had software (such as PowerPoint) which they could use as part of the experiment.

### *Assessing the dependent variable*

Post intervention, information relating to the effect of the independent variable on the dependent variable was collected via an online survey. Each time participants used one of the visual archetypes in their practice they were asked to complete the online survey. The first question required the participants to enter their four-digit code. The survey then asked for qualitative information relating to which archetype had been used, for what purpose and for whom. It is noted that these questions did not require the participants to disclose identifying information about their project or workplace. The dependent variables were assessed by asking Likert scale questions which appraised the degree of confidence and ease of presenting information visually. This Likert scale was also complemented with qualitative data. Questions regarding the usefulness of the tool in communicating to stakeholders were also asked to inform dependent variable selection in future studies. In total there were 20 questions in the online survey.

Seven of the eleven briefed participants provided survey submissions within the required timeframes. From these seven participants, a total of fourteen survey responses were received. Given the small data-set, NVivo was used along with Microsoft Excel to provide initial analysis of the data and to inform future research designs.

#### Section summary

- This study required the identification and recruitment of participants who would have the opportunity to use the toolset (i.e. practicing project managers).
- This study required various technologies to support participant recruitment, the initial interviews, the experiment, the capture of the results, and data analysis.
- The interview proforma and online survey were designed to protect the privacy of the participant, their project and stakeholders.

## **Method in Action**

### *Sample size*

In designing this research study, efforts were made to balance research rigour and the demands placed on participants. For example, the number of questions asked in the survey were kept to as few as possible to minimize participant time demands beyond actually using the archetypes. However, despite these design considerations and sending of email reminders, the actual number of responses provided were somewhat limited and disappointing. Survey responses were strongly positive; i.e. thirteen of the fourteen responses indicated that the archetype gave them confidence to present the information visually. However, the size of the dataset infers that participants were hindered in their ability to actually participate in the experiment.

Possible causes include more pressing demands that were prioritized over participating in the experiment or lack of opportunity to use the archetypes. Both of these factors are related to this study design being a field experiment. It is difficult for the researcher to mitigate against the first challenge as there may be a wide range of factors that hindered the ability to try the archetypes (for example: available time, higher priority demands). For the second matter, the researcher was not able to manipulate the field environment to create opportunities for the archetypes to be used, nor to observe whether opportunities existed and they were not taken, or opportunities to use the archetypes did not exist. Ultimately, participation in the experiment was voluntary.

### *Limitations to generalisability but informing future research*

The size of the dataset does limit the generalisability of results. However, given that this quasi-field experiment was an exploratory study concerns regarding this situation

are reduced. The experiment filled its exploratory purpose in identifying future hypothesis and potential dependent variables (largely through the collected qualitative data) that could then be used with a broader range of participants.

### *Limited qualitative information*

To minimize the time demands on participants, rather than interviewing participants after each use of an archetype an online survey that the project manager could complete anytime and anywhere was used. However, participants' responses to the 'open' questions were somewhat limited. While this is not of significant concern in an exploratory study it would be important that if qualitative data were being sought in future studies that interviews complemented quantitative data to enable probing regarding responses. As per Gross (2017) one of the benefits of field experiments is that they can disclose more information relating to perceptions or relationships between factors than laboratory experiments.

### Section summary

- The limited number of participants necessitates that further research is required to confirm generalizability of results.
- Encouraging the project managers to participate in the experiment in a timely manner (i.e. actually trial the visual archetypes and report on use) was challenging.
- Participants did not provide highly detailed responses to the qualitative survey questions.

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### **Practical Lessons Learned**

#### *Experimenting in the real-world: Be realistic about the limitations*

As researchers we want to ensure our methods are as robust as possible, however, this case highlights some of the challenges we face in balancing research rigour and

contributing to practice. When progressing this research beyond an exploratory stage it would be ideal if the following could occur:

- a significantly larger number of participants;
- diversity in measurement types (i.e. observed and self-reported) in relation to the dependent variable; and
- mechanisms to assess if nonparticipation is related to a problem with the independent variable or another issue (discussed further below).

However, in incorporating several of these items many participants may be discouraged from participating in the study and this hinders capturing any data. For example, potential participants may be uncomfortable with facilitating the researcher having observational access at their workplace (or do not have the necessary authorisation to allow this). Similarly, if more extensive pre and post measurements (interviews or surveys) were required this may discourage participation due to the time commitment. This balance between what is an achievable research design (given the participants are volunteers) and what provides the most reliable research results is often challenging. As researchers we are called to make a contribution to practice, however, we are also reliant on practitioners' volunteering their time to advance knowledge.

### *Incentivising participation*

A potential mechanism to increase the size of the dataset would be to incentivize participation in the study. Incentivisation of participation in research studies can be ethically problematic. For example, it is important to ensure the offering of incentives does not result in a form of unintended coercion (Head, 2009). Incentives can take a

variety of forms including monetary payment, vouchers, or an opportunity to win a prize (non-monetary). They can also be prepaid, conditional, or post-paid based on meeting a particular requirement (Toepoel, 2016). In this type of research case it would be important to ensure that the incentive does not coerce the project manager into using an archetype that they would not have used if the incentive did not exist as this would skew the results. However, incentives could be used to encourage the completion of a monthly survey where either the participant explains why they did not use one of the archetypes or provides their feedback on the archetype they have used in terms of the dependent variables.

#### *Capturing the 'no' response*

As discussed previously, a key learning in this exploratory study was the difficulty in determining whether the absence of a survey response indicated that the project manager was not willing to use the archetype and/or the opportunity just had not arisen (during the experiment period) for its use. It would be useful if further experiments regarding the independent variable captured this data. In this exploratory study, those who used the archetypes found them to be useful with favourable reports regarding the dependent variables. However, field research has the potential to point towards particular contextual factors relating to the impact of independent variables on dependent variables and it would be valuable to include such insights in the experiment's findings through capturing the feedback of those who did not use the archetypes during the study period.

#### Section summary

- It can be challenging to balance the need for research rigour with the voluntary nature of research participation.
- Providing incentives to participate in the experiment may have increased participation rates.

- It would be useful to include a mechanism to capture information relating to why a participant did not use or had limited use of the archetypes during the study period.

### **Conclusions**

This case has discussed an exploratory quasi-field experiment with the aim of providing an initial assessment of a toolset to support project managers in presenting information visually. It demonstrates how an experimental mindset can be used to evaluate new management ideas in practice if research interests are conceptualized in terms of independent and dependent variables.

The research study discussed in this case was useful as an exploratory pilot study to inform future research. However, expanding the study design to provide more generalisable results will be challenging. Specifically, to increase the rigour of the results greater time commitment from participants would be required and this may necessitate the use of incentives. We also noted how insights regarding the relationship between independent and dependent variables can be maximized through a mixture of quantitative and qualitative measurements in field experiments.

### **Section summary**

- It can be challenging to advance knowledge (in this case, to evaluate the impact of an independent variable) without burdening the volunteering participants.
- Undertaking pilot studies (such as this case) can be worthwhile to inform future research directions and refinement of research designs.
- Conceptualising a research interest in terms of independent and dependent variables can be useful in management and organisational science.

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## **Classroom Discussion Questions**

1. To which quasi-experiment type (refer Table 1) does the presented research case best align? Provide evidence for your choice.

2. What technology elements would be required to reproduce this exploratory study?

Consider the recruitment, data collection and analysis elements.

3. Describe a research situation that you think would be suited to a similar research design. Justify your selection.

*Tip:* Consider both the research question and the stage of exploration.

4. What alterations to the research design would be required to extend the validity of findings in a research case similar to this study (i.e. to move beyond an exploratory study)?
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## Multiple Choice Quiz Questions

Q1: The efficacy of medical treatments is commonly tested using:

- A) Quasi-experiment
- B) Randomized Controlled trials [CORRECT]
- C) Field experiment

Q2: The **purpose** of experiments is to determine:

- A) The impact of an independent variable on a dependent variable/s [CORRECT]
- B) The impact of a dependent variable on an independent variable/s
- C) Why a particular situation arises

Q3: What phrase best describes the **independent variable** in this research case?

- A) Catalogue of visual archetypes [CORRECT]
- B) The project managers
- C) The skill level of the project manager

Q4: What were the **dependent variables** in this research case?

- A) Project managers confidence in presenting information visually, ease in presenting information visually. [CORRECT]
  - B) Catalogue of visuals
  - C) The skill level of the project manager
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## Further Reading

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## Web Resources

*Independent and dependent variables explains*  
[https://www.youtube.com/watch?v=\\_hY\\_Vy-my4Y](https://www.youtube.com/watch?v=_hY_Vy-my4Y) [3 min]

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