INSPIRATIONAL DESIGN BRIEFING PERFORMANCE

Petersen, Søren Ingomar; Joo, Jaewoo; Takahashi, Shelley
ingomar & ingomar - consulting, United States of America

Abstract

Design briefs provide the legal as well as inspirational basis for a design project's direction, design and development. The content of briefs has adapted to changing management practices, however, until now, no concerted effort has been made to make a brief that improves design team performance. We introduce the Inspirational Design Brief, by first describing the development of the approach, reviewing not only academic papers but also a wide variety of professional design briefs from industry and industry-sponsored projects. Next, we clarify the Inspirational Design Brief's role in bridging business and design; demonstrating with empirical evidence that the Inspirational Design Briefing outperforms current practices and discusses how Inspirational Design Briefings can align with the conventional design process in theory and practice. Finally, we offer suggestions as to how design briefs can be utilized in other business domains, such as the artistic fields and startups.

Keywords: Conceptual design, brief, metrics, performance

Contact:
Dr. Søren Ingomar Petersen
ingomar & ingomar - consulting
design science research
United States of America
soreningomar@earthlink.net

Please cite this paper as:
Surnames, Initials: *Title of paper*. In: Proceedings of the 20th International Conference on Engineering Design (ICED15), Vol. nn: Title of Volume, Milan, Italy, 27.-30.07.2015

1 INTRODUCTION

1.1 Challenges in academia and industry

Design projects rely on design briefs, proposals or comparable descriptions of requirements to communicate strategy, context and execution criteria to design teams. Due to the time and cost involved in creating a formal design brief in design consulting (which amounts to about fifteen percent of the total budget size) design proposals have largely fulfilled the function of briefing all professions on a project (Petersen 2010).

As industry clients' real and perceived needs have changed, proposals have evolved organically to include new perspectives, criteria and performance metrics. In organizations, the responsibility for creating a proposal is customarily relegated to either the new business development department, or the marketing or engineering department, with little cross-departmental co-creation taking place. The subsequent proposal content is based on the proposal writer's interpretation of the client's request for a proposal that was supplied (RFP), which could have been either written or verbal (Petersen 2011).

The cost of creating a design brief cannot customarily be allocated to a project since there is no guarantee of approval, so, it is considered to be a part of the departmental or general overhead. With medium chance of approval, brief writers have no incentive to labour on the process. To make matters worse, design briefs are habitually rushed though the internal system to meet, more or less, arbitrary deadlines dictated by the client. New design briefs are often slight modifications of previous approved briefs and may therefore not fit the actual context (Petersen 2011). Due to this fact, mistakes happen and it is known that, at times, the name of the previous client has been left unchanged and is buried somewhere in the legal verbiage.

Since brief writing and design project execution is often divorced, the brief writer is incentivized for a high design brief approval rather than for facilitating the outcome of the resulting design project. This often leads to over promises on cost, time and deliverables (Petersen 2011).

Is it any wonder that profitability on design projects is low and the risk of going over budget is high? (Petersen, Steinert and Beckman 2011) Regrettably, the development of the business strategy, business plan and briefing of designers is a linear process with no effective feedback loop, hampering learning and improvement of the briefing process (Petersen and Heebøll 2011). This historic, organic evolution of the briefing makes the design briefing process itself ripe for innovation.

1.2 Design briefs - part of the problem framing

Current development practices result in a thirty-five to forty percent failure rate among newly introduced products (Cooper 1998). To what extent this might be due to the briefing process and the concept development phase is uncertain. However, it has been established that the conceptual phase, which reflects only five percent of the development cost, results in decisions determining seventy percent of the final product's cost (Andreasen and Hein 2007). This suggests that initial framing has a considerable influence on conceptualization performance. Creating a design brief could therefore greatly benefit from being integrated with the upfront business definition process as well as the subsequent design process (Petersen 2013).

An Inspirational Design Brief approach may assist in highlighting inconsistencies in the translation of business objectives into design reasoning and facilitate corrective measures when supported by Design Quantification (Petersen 2009). A congruent briefing of teams would increase the generation of a larger variety of usable concepts and could subsequently provide substantial financial benefits, cost savings as well as an increase in value creation for the corporation by as much as thirty percent (Petersen 2011).

2 INSPIRATIONAL DESIGN BRIEFING METHOD

2.1 State of the Art - Literature review

Professional designers understand design needs to address accounting, marketing, as well as, production in the product design process (Slack 2006). However, designers do not have a deep understanding about client business. Therefore, they often view the design brief as a combination of a business plan and creative design strategy (Phillips 2004), and consider it to be a vehicle for communication between the client and themselves (Slack 2006).

However, designers have limited opportunities to learn how to write design briefs. For instance, design students generally learn a design process including how to identify problems, how to inspire, how to conceptualize concepts, and how to explore opportunities (Aspeluna, 2006). While these aspects are necessary to design a product, they do not address the clients' business concerns. Concerns such as Corporate Philosophy, Structural Position and brand Expression along with an in-depth understanding of a clients' business, are all necessary to provide for product success. Although designers are aware of it, a design brief is often written in a rush and contains incomplete information. Sometimes, designers agree to unattainable deadlines or the use of boilerplate design brief formats, which result in a higher failure rate in new product development (Phillips 2004 & Petersen 2011).

Note that previous literature does not provide designers with a structure to succinctly create design briefs. It provides extensive practical advice concerning subject matters that become cumbersome for designers to follow. Research has concluded that people are overly optimistic when estimating the time for project tasks (Kahneman 2007). This tendency leads to planning fallacy. For instance, Kruger and Evans (2004) claimed that "one reason people may underestimate task completion times is that they do not naturally unpack those tasks into their various subcomponents." Designers need a practical and easy approach to design brief creation, which enables them to identify the tasks and subcomponents and maintain a budget, schedule and deliverables. This article focuses on devising an approach, through the use of the Inspirational Design Brief, which ensures that the appropriate content is included in the brief.

2.2 Design Quantification method

In addressing the content of a good design brief, metrics acting as early indicators of a projects success, are needed. The Design Quality Criteria (DQC) accomplishes this by collectively measuring a product's probability of receiving an Industrial Design Excellent Award (IDEA) (Petersen 2009). DQC is a set of nine criteria derived from auditing design awards and design briefs worldwide. These criteria comprehensively describe how the design community evaluates design, as well as how they form the content of design briefs. In addition, they are lead indicators of investors' evaluation of a new product (Petersen 2007a) as well as the products trendsetting ability (Petersen 2007b). The DQC align with the earlier established design maturity model the "Design Ladder" (National Agency for Enterprise and Housing 2003) where the Process criteria correspond to level 2 (integration with Process), and the Strategic criteria correspond to level 3 (integration with business). The nine criteria, grouped under Strategy, Context and Performance, are:

Strategic criteria

- Corporate Philosophy: What are the company's history, values, belief, vision, mission, and strategic intent? How is the brand communicated?
- Structural Position: In which business and category does the firm operate? What is its business model? How is it vertically and horizontally integrated, and what are its competitive advantages?
- Innovation Type/Level: What is the business's innovation area (that is, technical, financial, process, offering, or delivery)? Is the innovation type sustainable or disruptive? What is the organization's level of ambition?

Contextual criteria

- Social/human: What are the users' and other stakeholders' cultural connection, identity, needs, behaviour, and activities?

- Environmental: What are the environmental requirements and expectations?
- Viability: What are the expectations regarding market share, ROI, and so forth, as related to the time horizons?

Performance criteria
- Process: What are the project's budget, schedule, and deliverables? How are these aligned and coordinated with other projects?
- Function: What is the nature of the deliverables: platform, modular, or custom product? What are the unique selling points and required number of SKUs? What are their technical requirements?
- Expression: What are the brand's attributes, design language, and design principles (proportion, surface and details)?

Literature search on design briefs revealed that design briefs contained the same elements as design award applications (Petersen 2010) and that there was serious gaps between business plans, content and design brief content (Petersen & Heebøll 2011).

2.3 Constructing an Inspirational Design Brief

The next step in a new Inspirational Design Brief based on Design Quality Criteria and conducive to concept synthesis is to make it memorable and thus actionable. The most reliable way to communicate complex contextual information is by storytelling. The Design Quality Criteria framework's heretical structure lends itself to storytelling. Therefore, storytelling methods that are widely used in screenwriting are used (Seger 1990).

To ensure the communicated content will be remembered, we propose applying the design brief writers format formulated by Petersen (2010). The Inspirational Design Brief approach consists of:

a. The complete set of Design Quality Criteria (Petersen 2009)
b. Information included (DQCs) as described in the aggregated proposal (Petersen 2010)
c. Storytelling format (Seger 1990)
d. Stickiness elements: Simplicity, unexpectedness, concreteness, emotional and storytelling (Heath and Heath 2007)

2.4 Assessment of model

Providing an initial impression of the usefulness of the Inspirational Design Brief, an assessment was conducted using an expert panel. Two variations of a fictitious design brief were used and after reading the two briefs, there was agreement among the experts that the Inspirational Design Brief was most useful (Petersen 2010). This outcome of the initial validation encouraged us to proceed with more comprehensive testing with design students.

3 DESIGN BRIEFING EMPIRICAL STUDY

3.1 Pilot study of CSU design briefs/no brief vs. grade received

First, we conducted a pilot study. The first author of this paper gave a lecture about Inspirational Design Briefing to the undergraduate-level product design students at the California State University, Long Beach. Students interested in applying it to their semester-long projects were asked to obtain more detailed information by reading a step-by-step guide article on how to include DQCs in a brief (Petersen and Phillips 2011). Then, half of the students wrote design briefs and the other half did not while performing three design projects.

More specifically, in the first project called "Handle It," students were asked to "design a handheld object that performs a specific task in the kitchen, bathroom or garden. It could be a tool of some sort that cuts, picks, and holds or any other defined operation. The object should be mobile and has to be able to be picked up by one person easily. It can be with or without mechanics but should show its' function clearly to the consumer. The handle part should lie fully in the user's hand. Think about a

wide range of possible users and associated task to define an interesting object. The function can be very simple and you can concentrate on the aesthetic, ergonomic and material."

In the second project called "Control It," students were asked to "find your market segment and specify the controller, explore customer profile, user experience and expectations, form language, material and colour. Assemble and present the findings together with your concept conclusion (hypothesis). Two must haves are, that the product includes a screen and some dials or buttons interacting with each other and controlling some object or process. Develop your design through intense sketch work and create an interface design and orthographic views before starting your 3D model. You are not allowed to start a 3D Model before the design development has been completed!"

Finally, the third project called "Win It," students were asked to "develop their own products within their chosen competition. Read the description carefully to create an innovative product solving defined customer needs. It is necessary to tell a compelling story through research, need definition and concept to the final design. Besides short written descriptions, your sketches, 3D and physical model will tell the story. An animation/movie besides the documentation can grab the jury emotionally to tip them in favour of your work."

The course instructor collected and evaluated three design outcomes on a 100-point Likert scale (1 = very poor vs. 100 = excellent). In total, twenty-one students submitted their design outcomes. Among them, eleven students had written a design briefs and ten students had not. We obtained evidence that writing Inspirational Design Briefs increases design quality. The outcome evaluation made by the instructor differed between two groups of students; students who completed Inspirational Design Brief outperformed those who did not in each of three design projects in the "Handle It" project (Brief = 81.57 vs. No brief = 71.82, $F(1,20) = 13.93$, $p < .01$), in the "Control It" project (Brief = 87.63 vs. No brief = 80.40, $F(1,20) = 6.30$, $p < .05$), and in the "Win It" project (Brief = 87.31 vs. No brief = 73.11, $F(1,20) = 10.95$, $p < .01$).

Although the findings obtained from our pilot study suggest that Inspirational Design Briefing can improve the outcome of design, it has two critical limitations. First, a single person made evaluations. Second, she made evaluations comprehensively. In order to overcome the two limitations, we recruited multiple professional designers and then evaluated design outcomes based on multiple analytic criteria.

3.2 Full study of CSU design brief vs. expert evaluation of outcome

We paid additional attention to the final project called "Win It" to firmly establish the relationship between writing an Inspirational Design Brief and design quality. For this project, we recruited nine professional designers and asked them to evaluate the collected outcomes on a seven-point Likert scale (1 = very poor vs. 7 = excellent) in terms of three components: (a) novelty, (b) appropriateness, and (c) commercial appeal. We expected that students who wrote Inspirational Design Briefs generated better concepts than the students who did not. Note that the recruited professional designers were blinded to the intervention; we provided student projects in a random order and they evaluated each project quantitatively.

As expected, we obtained further evidence from the outcome evaluation made by professional designers. In particular, when we divided nine designers into two groups, three designers with teaching & practicing experience (10 plus years of experience (10-30) in teaching design at an undergraduate level and practicing designers) and six designers with only practicing experience, the former group showed that writing Inspirational Design Brief for the "Win It" project improved the appropriateness of the concepts but not their novelty, which results in improving their commercial appeals. Sum of the novelty scores about design concepts did not differ between two groups (Brief = 14.267 vs. No brief = 12.432, $F(1,57) = 2.067$, $p = .168$). However, design concepts submitted by the brief writers scored higher in terms of appropriateness (Brief = 14.833 vs. No brief = 11.366, $F(1,57) = 4.124$, $p = .057$) and commercial appeal (Brief = 15.099 vs. No brief =11.866, $F(1,57) = 4.480$, $p = .048$) than those who did not write a brief. To sum up, we demonstrated that writing an Inspirational

Design Brief improves design quality by improving the appropriateness of the concept without improving its novelty.

Figure 1. Inspirational Design Brief and final deliverable for the for LEGO project, exemplify how to address all nine Design Quality Criteria individually and in a top-down order.

Although we successfully established the relationship between Inspirational Design Briefing and design quality once more, study 2 also has two limitations; subjects were students and their design

outcomes were not controlled. In the future, researchers should recruit professional designers for research subjects and then provided them with an identical task to firmly establish the relationship.

3.3 Discussion

How does writing a design brief improve design outcome? We see three reasons why going through the design briefing process benefits the designers' execution. (1) In effect, formulating a design brief is a framing activity. How a challenge is framed, to a large extent, determines which problems are considered and therefore which solutions are synthesized. Investing time in exploring different framing options increases the probability that a useful framing is applied from the beginning. This may also prevent unconscious switching between frames, solutions or mixing these two up during the design execution. (2) Considering the Strategy, Context and Execution criteria comprehensively up front and clarifying these in a short brief may not just help in understanding the challenge, but also in the realistic planning of the design execution. With a more clear, detailed and realistic understanding of budget (for students time available), schedule and deliverables, it is more likely that a realistic plan is formulated and followed. (3) Spending a significant amount of focused time on writing a brief early in the design process may also jumpstart the incubation of ideas, arriving at useful concepts earlier and allowing more time for concept testing, detailing and refinement.

4 CONCLUSION & RECOMMENDATIONS

The paper's contribution to the field of design is three-fold. (1) A description of how design briefing is taught at design schools, including the factors that prevent innovation in brief writing. (2) Highlighting that writing design briefs improves the performance of design students through deliberately framing and planning problem solving steps. Our classroom exercise clearly demonstrated that the students writing inspirational Design Briefs outperformed the students who did not, in terms of outcome quality (3) By validating the usefulness and performance enhancement of applying the Inspirational Design Brief approach. According to the analysis of our studies, Inspirational Design Briefing improves the appropriateness and the commercial appeal of design outcomes, however not their novelty.

Most experimental research papers have limitations and this paper is no exception. First, students in the control condition did nothing. Although we are aware that a comparison of our proposed method against any existing methods would significantly improve the quality of our paper, we are interested in examining whether writing design briefs improves design quality or not. Second, we could not assess how much of an investment they have made for their own projects since students performed their projects at their own pace. We understand that these variables could be another reason for our findings. In the next experiments, existing methods should be introduced and investment must be controlled.

In general, less experienced design students find it difficult to write a design brief. Without one, however, they cannot communicate with counterparts and cannot persuade their clients. Design students should understand that writing and sharing a brief with non-designers in the early stage of their work pays off handsomely. Further research opportunities include exploring how briefs and the brief writing process can increase the synthesis of novel, useful and marketable concepts that support established business opportunities, as well as startups. Applying the Inspirational Design Briefing approach could also benefit artistic fields in clarifying Strategy, Context and Execution by identifying a profitable fit between the artist's capability and style/expression/aesthetics, innovation level and the market. In so doing, they could increase the probability of having their designs/art accepted.

REFERENCES

Andreasen, M. and Hein, L. (2007) Integrated Product Development, Technical University of Denmark, Lyngby
Aspelund, K (2006). The Design Process. New York: Fairchild. Print
Cooper R. (1998) Product Leadership - Creating and Launching Superior New Products, Perseus Books, Cambridge MA
Heath, C. and Heath, D. (2007) Made to Stick, Randomhouse, New York
Kahneman, D. (2011) Think Fast, and Slow, Farrar, Strauss and Gioux, New York

Kruger, J. and Evans M. (2004) "If You Don't Want to Be Late, Enumerate: Unpacking Reduces the Planning Fallacy." Journal of Experimental Social Psychology 40.5 586-98. Web.
National Agency for Enterprise and Housing (Denmark) (2003): The Economic Effects of Design, Copenhagen
Phillips, P. (2004) Creating the Perfect Brief, DMI Allworth Press, New York
Petersen, S. (2010), Inspirational Design Briefing, International Design Conference, Dubrovnik, May
Petersen, S. (2011) Profit from Design, ingomar&ingomar - publishing, South Pasadena
Petersen, S., Steinert, M. and Beckman, S. (2011) Design Driven Portfolio Management, ICED'11, Copenhagen
Petersen, S. and Heebøll, J. (2011) Business Plans Informed by Design, ICED'11, Copenhagen
Petersen, S. (2013) Design & Business Model Experimentation, ICED'13, Seoul
Petersen, S, (2009) Design Quantification, ICED'09 Stanford
Petersen S. (2007a) The Idea Award As A Design Quality Metric: Part-B, Predicting Investor Valuation, ICED'07, Paris
Petersen S. (2007b) The IDEA Award as a Design Quality Metrics: Part-A, Driving Web Citations and Public Awareness, ICED07 Paris, August 2007
Seger, L. (1990) Making a Good Script Great, Henry Holten and Company, New York
Slack, L (2006) What Is Product Design? Mies, Switzerland: RotoVision. Print.
Turner, S. (1994) Improving the content and utility of design briefs, Planning Practice and Research, 9 (3), 289-311

ACKNOWLEDGMENTS

The authors is indebted to Bryon Fitzpatrick, Joe Del Rosario, John von Bülow, Andre Frey, Leif Petersson, Cary Chow, Hector Santos, Kit Mok and Matt Duncan, for assessing student performance as well as to the product design students at CSU Long Beach, class of 2013 and their instructor, Max Beach, for participating in our experiments.