EXPLORING THE MEANING OF SUCCESS IN OUTSOURCED PRODUCT DEVELOPMENT

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ABSTRACT  
Research on outsourced product development has focused primarily on the motives behind firms’ decisions to outsource, with less attention paid to the outcomes of those decisions. The few existing academic studies have reported high failure rates, but there is little consensus as to what is meant by “project success” and “failure” and some do not define success at all. Such ambiguity makes comparisons difficult and hinders explanation of observed variation in project outcomes. This paper explores the many meanings of project success in outsourced product development, based on in-depth interviews of thirty design consultants and clients. After reviewing the merits and limitations of each metric, we propose that the client’s willingness to recommend the consultant may be a suitable outcome variable for assessing project outcomes and comparing success rates across diverse projects, companies, and industries. We present preliminary data that suggests client willingness to recommend varies widely and is multimodal in distribution. Finally, we identify several commonly encountered failure modes, i.e., sequences of events that generate discrepancies between client expectations and project deliverables, thereby producing client dissatisfaction.

1. INTRODUCTION  
Firms that develop, brand, and sell products have long used selective outsourcing of production activities to achieve competitive advantage. Increasingly, these firms are outsourcing front end product development activities such as industrial design and design engineering as well. Although academic research is limited, evidence from the popular and trade literature suggests that firms struggle when outsourcing design.

Outsourcing-related problems on Boeing’s 787 cost the company $2.5 billion dollars in the third quarter of 2009 alone and have delayed the project by two and a half years overall [1]. A nationwide survey of electronics design outsourcing managers found that 65% had experienced a project that took longer than expected, 46% had experienced cost overruns, and 21% had received a project that failed to meet requirements [2]. Nearly one third of managers at large companies view design outsourcing as a “net liability” to their companies [3]. Collectively, these cost overruns, schedule delays, and lost opportunities cost firms dearly. By contrast, successful outsourcing projects can create enormous value. Reebok’s Pump sneaker, developed collaboratively with the design consultancy Continuum, is said to have generated $1 billion in new sales for Reebok [4]. A better understanding of the causes of failure and sources of success could turn more outsourced design projects from liabilities into assets.

Perhaps surprisingly, design outsourcing outcomes have received little scholarly attention. Research has instead focused on the motives behind firms’ decisions to outsource. One stream of literature considers strategic factors such as the dissemination of the firm’s intellectual property, the potential erosion of the firm’s internal capabilities, and the competitive risk of empowering suppliers [5-7]. A second, more tactical stream seeks to explain firms’ outsourcing decisions in terms of such factors as product complexity [8], technological uncertainty [9], and firm and supplier capabilities [9, 10]. These studies are descriptive rather than prescriptive; they describe what firms actually do, without regard for whether the decisions they make are sound. We are aware of only two academic studies that report the outcomes of outsourced design projects. Amaral and Parker [11] observed that nearly two thirds of outsourced
platform design projects at Fortune 1,000 companies “struggled or failed,” while Roy and Potter [12] reported that 27% of UK manufacturers receiving a grant to hire a design consultant “experienced problems” during the project. Approximately 42% of the projects studied were never implemented or not profitable [12].

Unfortunately, the strength of these findings, along with those in the trade literature, is tempered by lack of precision in how project outcomes are defined and measured. Some studies do not define their outcome measures, terms such as “success” [13], “struggled” and “failed” [11]. Others conflate causes of poor outcomes (e.g., “3rd party lacked management ability” [2]) with their effects (e.g., “project failed to meet requirements” [2]). None of the studies provide baseline data as to the outcomes of non-outsourced projects at the firms in their samples. Such ambiguity makes it difficult to assess the causes of poor project outcomes, and impossible to compare findings between studies.

As part of a larger effort to document and explain variation in outsourced product development outcomes, this paper explores the many meanings of “success” in this domain. Specific objectives are to: 1) understand how practitioners assess project outcomes, 2) identify and pilot test an appropriate output variable for future use in benchmarking studies and quantitative causal analysis, and 3) describe several failure modes commonly encountered in practice. By focusing on outcome measures, the paper complements our examination of the factors that influence project outcomes [14]. Together, the two papers lay the foundation for statistical and case-based analyses linking specific outcomes to explanatory factors.

We begin by reviewing the outcome measures used by previous studies, as well as highlights from the customer satisfaction literature. From there, we develop a process model of outsourced product development in which success results from alignment between the firm’s expectations and the project deliverables. We then describe the research setting – design consulting – in which we conducted in-depth interviews to gather previously unreported practitioner perspectives on success. We synthesize results from the literature with those from our empirical research to propose that the firm’s willingness to recommend the consultant may be a suitable project outcome measure for comparative analysis. We report and discuss pilot data using this metric, and then analyze the failure modes that subvert project success.

2. LITERATURE PERSPECTIVES ON “SUCCESS”

2.1. Outsourced Product Development Literature

Although the concepts of success and failure appear frequently in the design outsourcing literature, they are defined and operationalized in many different ways:

- One approach defines success in financial terms, measuring whether the project is implemented, whether it is profitable for the client firm, as well as its payback period [12]. The primary limitation of this approach is that few firms track financial performance at the outsourcing project level. They may have data for the financial success of the product whose design was outsourced, but this is influenced by many non-design factors, such as the client firm’s ability to distribute and sell the product. A second drawback of the purely financial approach is that it neglects other project benefits such as organizational learning or employee development [7].

- A second approach defines success as meeting the project’s initial objectives, particularly with regard to schedule, budget, and product performance [2]. The drawback with this approach is that such objectives are typically moving targets, continually renegotiated during the course of the project [15]. Many projects exceed the initial budget or schedule, but this should not be considered a failure if the client firm agreed to the revised terms.

- A third approach assesses the occurrence of “problems” [2, 12] or “interruptions to routine activity” [16] during the project. This can be a misleading metric, as the occurrence of problems does not necessarily imply project failure. Indeed, conflict identification and resolution is an essential aspect of new product development [17]. Learning and design changes are common in the early phases of a design.

- A recent, more holistic approach defines success in terms of client satisfaction with the project [18]. This corrects many of the shortcomings of the previous approaches, but results using this metric have not been reported to date.

2.2. Customer Satisfaction Literature

The assessment of customer satisfaction is both an academic discipline and an industry unto itself [19]. Numerous approaches exist, but central to nearly all is the premise that satisfaction results when the product or service meets or exceeds the customer’s expectations [19]. For example, the American Customer Satisfaction Index (ACSI) considers the customer’s overall satisfaction, the extent to which his experience with a hypothetical ideal [20].

Reichheld [21] has argued that the length and complexity of traditional customer satisfaction surveys such as the ACSI needlessly complicate data collection and interpretation, and that satisfaction can be assessed using a single question: “how likely is it that you would recommend [company X] to a friend or colleague?” Respondents answering 9-10 are deemed “Promoters” of the company, while those answering 6 or below are “Detractors.” The Net Promoter Score® (NPS) is calculated by subtracting the percentage of Detractors from the percentage of Promoters. The simplicity of administering, interpreting, and acting upon the NPS metric has led to its widespread adoption by major American corporations such as General Electric and American Express [22].
3. A PROCESS MODEL OF DESIGN OUTSOURCING

Based on the assumption that client satisfaction results when expectations are met or exceeded, Fig. 1 presents a process model for a successful project. The Client Firm begins with a Vision and Specifications it into a set of Requirements. The requirements and any necessary contextual knowledge are transferred to the Design Provider during a Briefing. The provider forms an Interpretation of the requirements, which is then Developed into a Design. Meanwhile, any Drift in the client's Expectations or the design is continuously managed by extensive Feedback between parties. Finally, the design is Transferred back to the client firm, and the client firm's Understanding of it compares favorably to their expectations.

The above description applies to the ideal case, but missteps during any of the italicized process steps can ultimately create discrepancies between Expectations and Understanding. Essentially, any break in the chain of processes by which the Vision is translated to Expectations for and Understanding of the Design represents a failure mode. Prior empirical research has focused primarily on the quality of the Briefing [12, 13, 15], deficiencies on the part of the Design Provider during Development [2, 12], divisions within the Client Firm [11, 12], and the quality of Feedback [2, 12, 16, 18]. In addition, our research suggests that failures can also be attributed to the capabilities of the Client Firm, the quality of the Specification, and the quality of the design Transfer [14]. The model in Fig. 1 ties these findings together into a useful holistic framework.

4. THE RESEARCH SETTING: DESIGN CONSULTING

Two general forms of design outsourcing are commonly observed in practice (Fig. 2). In black box outsourcing, a single supplier designs and produces the product to meet the client firm's general specifications [23]. Black box outsourcing is commonly utilized in the automotive, aerospace, and electronics industries, and performed by companies such as Magna-Steyr, Hamilton Sundstrand, and Flextronics. In design consulting, design activities are outsourced to a consultant who does not perform production activities on the product [24]. Production may be outsourced to a contract manufacturer or retained within the client firm. Design consulting is commonly utilized in consumer, medical, and industrial products, and performed by companies such as IDEO, Battelle, and Wipro.

Although most research to date has focused on black box outsourcing [6, 8, 9, 11, 25], design consulting may be a better context in which to understand outsourced design outcomes. First, because design activities are performed independently of production activities, it is possible to isolate the effects of outsourced design from those of outsourced production. Second, design consulting is typically applied at a smaller scale than black box outsourcing. It is generally agreed that project difficulty increases with increasing project size [26]; studying large projects makes it difficult to untangle the effects of scale from those of design outsourcing. Finally, because design consulting projects are relatively small, they turn over quickly, making design consultancies the “fruit flies” of the design outsourcing world and giving practitioners in this domain an extensive number of project experiences to draw from [7].

Design consulting is practiced in a range of industries, from software [27] to biotechnology [28], but we focus on durable consumer, medical, and industrial goods. Such products are small enough to be studied yet complex enough to be interesting, requiring the coordination of expertise from several functional specialties (e.g., consumer research, industrial design, mechanical and electrical engineering, etc.).
5. METHODS

Our research approach is to leverage the collective wisdom of experienced professionals, using methods that complement or improve upon existing research. Prior empirical studies have primarily used mass surveys of mid-level client personnel [2, 11, 12], but the questionnaire format is unlikely to elicit the nuance and multiple meanings of project success. Response rates are often very low (e.g., 2.7% [2]) or unstated [11], jeopardizing the representativeness of the samples. In addition, surveying only client personnel reveals a limited perspective: most will have experienced only a few outsourcing projects in their careers, whereas consultants experience that number every few months. What’s more, client personnel may be unduly critical of “outsourcing” if they fear it threatens their jobs.

A number of journalistic interviews with senior consultants offer richer accounts than the client surveys [13, 15], but they are no less biased. The interviewees are typically founders and spokesmen of major consultancies. They naturally want to represent the design consulting model in the best possible light.

To address these issues, we performed in-depth interviews with client personnel, consultants, and persons with work experience in both sides of the industry. The work is ongoing; we present what we have learned to date with confidence that more data will enrich but not overturn the findings.

5.1. Sample Selection

The populations of interest were the billable staff of design consultancies specializing in durable consumer, medical, and industrial products [29], and the client personnel with whom they collaborate. To ensure a variety of perspectives, a statistically non-representative stratified sampling technique [30] was used to balance variation in employer type, work experience, job title, and current or former employment status. Respondents were recruited through a combination of word-of-mouth and targeted solicitation of thought leaders within the study population. Of the 40 individuals approached to date, 30 agreed to participate, representing a total of 25 companies. Respondents had an average of 14 years experience with consulting (range 3 to 29 years).

5.2. Data Collection

Two methods of data collection were used. First the respondent was interviewed using an in-depth, semi-structured approach [31]. All interviews were conducted by the first author, and lasted from one to two hours, depending on the enthusiasm of the respondent. To encourage candor, 25 were performed in a private office or away from the respondent’s workplace. After completing the interview, the respondent was surveyed using an 82-item, closed-form questionnaire.

After a few interviews had been conducted, as it became clear that the client’s willingness to recommend might be a good measure of project success, we began to collect pilot data using the Net Promoter® method [21]. Each respondent who currently or formerly was a client of design consulting services was asked to rate the last three consultants he or she had used. Respondents were instructed to consider a design consultant as ‘any vendor who performs design activities on a product but does not perform production activities on that product.’ This definition was intentionally broad, to see if we could reproduce a range of variation in outcomes comparable to what has been reported in the literature.

5.3. Data Analysis

Audio recordings of the interviews were fully transcribed by the first author. The transcripts and interview notes were then coded and analyzed using a grounded theory approach [32]. Iterative analysis of both the coded interview data and the questionnaire results produced the process model shown in Fig. 1 and a typology of project outcome measures, described below. Direct quotations have been edited slightly for readability and to protect confidentiality.
6. PRACTITIONER PERSPECTIVES ON “SUCCESS”

Our interviews suggest that “project success” is multifaceted and means different things to consultants and clients. Consultants in particular view success as multi-dimensional: a project might do well on one dimension but poorly on another. Clients tend to view success more narrowly, as the achievement of their expectations for a reasonable price.

6.1. Consultant Perspectives

6.1.1. Contribution to client profitability. For the consultants, the ultimate dimension of success is that the project increased the client’s profits, either by increasing revenues, - “The biggest measure I use for whether or not we’ve been successful is, ‘did we have an impact in the marketplace?’ For me that’s the highest bar.” – Consultant COO #2

Or by reducing costs:
- “Some of our successes have been helping clients avoid making huge mistakes. Early on, we’re able to show clients ‘you know, maybe this isn’t going to align to your business goals like you think it is.’” – Consultant VP of Design #1

Consultants were quick to note, however, that profitability is not an ideal metric for evaluating consulting project outcomes. Client firms often consider product-level financials confidential. Marketplace impact may not be visible in the short term. Success requires no small measure of luck, as well as the alignment of many factors beyond the consultant’s control, such as manufacturing, distribution, sales, and even the original product specification itself. Furthermore, some projects are exploratory in nature and not intended to go to market. For these reasons, consultants aspire to improve their clients’ profitability but do not and cannot evaluate projects by it.

6.1.2. Third party validation of design quality. Because profitability is usually confidential and may be confounded by non-design factors, consultants sometimes measure the success of their design efforts using objective public appraisals such as patents, design awards, and critical or consumer reviews. This approach is not always feasible, however, as patent and award applications require significant investment of resources, while product reviews are only possible if the product goes to market.

6.1.3. Fulfillment of contract. Whereas the first two dimensions of success concern the product of the consulting engagement, a third focuses on the engagement itself:
- “Did we meet the schedule? Did we meet the budget? Did we fulfill the design purpose?” – Consultant Senior Engineer #5

Most consultancies carefully track schedule and budget performance, but note that they can be moving targets:
- “It’s often difficult to meet the original numbers, because scope changes are inevitable.” – Consultant Director of Engineering #4
- “If there’s a lot of R&D, new technology involved, that’s when projects start out one place and end up somewhere else. Success can be difficult to define on those projects because you don’t always end up where the client thought they were going.” – Consultant Senior Engineer #4

Quality of deliverable is often more subjective, particularly if the project involved aesthetic or creative design:
- “Sometimes, what we might consider successful the client might not feel is as successful. That’s mainly in industrial design.” – Consultant COO #1
- “There often aren’t quantitative specs when you’re trying to innovate. ‘Give me something really different and innovative,’ but how do you measure that to plus or minus tolerance? You can’t.” – Consultant Senior Engineer #4

Thus, traditional project performance measures such as Quality, Time, and Cost can be difficult to apply when pursuing radical innovation.

6.1.4. Client satisfaction. Because “objective” metrics such as profitability, design quality, and contractual performance are difficult to assess, consultants’ primary measure of success is client satisfaction:
- “Are they delighted with the engagement?” – Consultant COO #2

Satisfaction is typically assessed informally, throughout the project and perhaps in a post-mortem lunch or phone call. Few consultancies use formal satisfaction evaluation systems:
- “I would have loved if there was some sort of mechanism where six months later there was actual follow-up. Only on those projects where I was leading it and had a collaborative relationship was that possible. Most of the times, I’m at the meetings, I know the people a little bit, but you don’t get that feedback.” – Consultant Program Manager #1

Client satisfaction is a broad concept, encompassing all three dimensions of success discussed above. In addition, several other aspects were mentioned, as describe below

6.1.4.a. Quality of the working relationship. While satisfaction of the contract is important, some consultants felt that satisfaction with the relationship was even more critical:
- “If you were to ask the client, ‘what do you remember about the project?’ I would be surprised if they said, ‘the project was great, it was right on budget, it was right on time.’ I think they’d say, ‘the project was great, we did good work, and they’re a great group of people.’” – Consultant Project Manager #4
- “If there’s still a good working relationship with the client, and the [client] team feels like they learned something new, to me that’s the first level of success.” – Consultant Project Manager #2

As with client satisfaction, most consultants assess the quality of relationships informally:
- “I think a reasonable question is, ‘am I exchanging casual emails with this person six months later?’ If you’ve established a rapport and you have a relationship that can
carry over to other areas, it speaks to the relationship you had on the project." – Consultant Project Manager #4

6.1.4.b. Repeat business. Few consultants mentioned repeat business without prompting, because it is obvious to them:
- “I just took that for granted, because one of our missions is long-term relationships, that’s part of our culture.” – Consultant COO #1

As with client profitability, consultants cautioned that repeat business is not a perfect metric for project outcomes. The client may have been very satisfied with the work but not have need for additional services. An additional complication arises from the fact that many repeat engagements are initiated by a key client contact who has changed firms:
- “The project I’m currently working on is with a guy that we’ve been doing work with for 20 years. This is probably his 5th or 6th [client] company.” – Consultant Director of Engineering #3

It is unclear whether repeat business should be assessed at the level of the firm or the individual.

6.1.4.c. Willingness to rehire or recommend. Because of the issues identified above, most consultants felt that willingness to rehire or recommend is a better indicator of client satisfaction:
- “We’re big on recommendation letters around here. So if the client is willing to write a recommendation letter for us, or if they say ‘we’re willing to work with you in the future’ we’d consider that a success, regardless of whether the product is successful in the market or not.” – Consultant VP of Design #1
- “If the client was happy and would come back to us it’s successful. Even if the product failed, if they thought we did excellent work . . . that to me indicates success.” – Consultant Director of Engineering #4

Most consultancies have some process for documenting willingness to recommend on successful projects, as client references are a common element of project sales and negotiation. Few, however, systematically measure client satisfaction on all projects. Part of the challenge with self-assessment is that clients may be reluctant to be forthright with the consultants if the working relationship was strained:
- “Very rarely is a client going to come out and tell you ‘that project went great,’ or ‘man, that was a mess.’ You’re actually more likely to hear that it went well than it went poorly, because if it went poorly there was probably some personality issue and they just would prefer not to deal with it again.” – Consultant Director of Engineering #1

To circumvent this problem, some consultants hire third party audits of client satisfaction, but most cannot afford to do so frequently. Several expressed interest in participating in an academic study of client satisfaction and its causes.

6.2. Client Perspectives

6.2.1. Fulfillment of contract. In contrast to the range of responses provided by the consultants, most client respondents viewed success as achieving the terms of the contract:
- “In my experience, most companies are focused on the narrow project specifics, e.g., did it get completed on time and within budget? The greater divergence from plan is inversely proportional to how successful the project is regarded.” – Client Project Manager #2
- “Project success means that the project meets all the criteria specified in the design standards, to the satisfaction of the review board.” – Client Senior Engineer #3
- “In my book, if 80% of the objectives were met, it was a success.” – Client Project Manager #1

As these quotes suggest, success along this dimension is measured formally in some companies and informally in others. Relatively few respondents mentioned broader objectives such as market success or impact on profitability. This may reflect their view that the typical project is just a small piece of the development process. Alternately, the focus on project performance may result from a compartmentalization of outsourcing strategy and outsourcing management. Profitability is seen as a consideration for the decision-to-outsource and the specification of requirements. Once those decisions have been made, “the project” begins with the briefing (Fig. 1), and success requires achieving the specified objectives. Some, however, questioned this approach:
- “The problem I see with a narrow focus on budget, schedule, etc., is that outside consultants are too often concerned with literally producing what the customer wants. I have seen egregious examples where the customer was essentially asking for a stick in the eye, and the consultants were perfectly happy giving it to them (and cashing the check!) Consulting firms often don’t peel enough layers off the onion to determine what the customer really wants. To be fair, some customers are dismissive of consultants’ attempts to peel back the onion.” – Client Project Manager #2

6.2.2. Value. Beyond simply achieving the contract, some respondents focused on the value they received:
- “This comes down to getting what you paid for. To me it’s about value.” – Client Manager of Innovation #1
- “One time we explored using another company and we didn’t do it because [the original consultant] was cheaper, so maybe it’s just cost. My company is very cost conscious.” – Client Engineering Manager #1

From this perspective, “the project” extends upstream to include the process of selecting a consultant and negotiating the contract. Success is regarded as the absence of failure, for a reasonable price, much like ordering a custom machined prototype. Consultants, on the other hand, were wary of using value as an outcome measure:
success, we suggest that the client’s willingness to recommend is a holistic measure that incorporates diverse dimensions of success such as profitability, quality of working relationship, and indirect benefits such as organizational learning. Second, it is conceptually precise. Practitioners and academics alike understand what “willingness to recommend” means, whereas broader concepts such as “customer satisfaction” are somewhat ambiguous [19]. Third, it is relatively easy to measure, requiring only a brief survey of the relevant client personnel. In contrast, product profitability data may be strictly proprietary, and Quality, Time, Cost metrics difficult to assess. Fourth, willingness to recommend is highly relevant in design consulting because most consultants thrive on new business. Few client firms have continual need for design services. Even when repeat business is possible, it is desirable only to a certain extent, as much of a consultancy’s value derives from its breadth of experience and ability to broker knowledge across diverse industries [33]. For these reasons, positive word-of-mouth is essential, and client willingness to recommend an important project outcome. Fifth, the widespread commercial adoption of the Net Promoter® method allows for benchmarking of the design consulting industry against other service industries. What’s more, the metric’s prevalence could motivate consultancies to participate in academic research, as they are familiar with the metric and eager to know where they stand.

The chief limitation with this approach is that it is not directly applicable to non-outsourced design projects, making it difficult to compare the success of outsourced projects to a non-outsourced baseline. This is an important area for study, but not our specific focus at this time. A second limitation is that willingness to recommend only measures the value of the project to the client firm, and not the value to the consultancy. It may therefore overstate the success of a project on which the consultant took a loss, either unintentionally or strategically. Care must be taken to ensure that the sample is large enough and random enough to be representative of the company or industry under study. A third limitation, common to any benchmarking study of supplier performance, is that consultants’ identities cannot be made public. Otherwise, a client firm might deliberately understate its ratings so as to conceal its better consultants from its competitors. A well-designed academic benchmarking study would anonymize the results to disincentivize gaming by consultants and clients alike.

7. PILOT DATA ON WILLINGNESS TO RECOMMEND

Synthesizing the literature and practitioner perspectives on success, we suggest that the client’s willingness to recommend the consultant may be a useful outcome measure for comparing the relative success of multiple outsourced design projects and investigating the causes of variation between project outcomes. We see several benefits to this approach. First, willingness to recommend is a holistic measure that incorporates diverse dimensions of success such as profitability, quality of working relationship, and indirect benefits such as organizational learning. Second, it is conceptually precise. Practitioners and academics alike understand what “willingness to recommend” means, whereas broader concepts such as “customer satisfaction” are somewhat ambiguous [19]. Third, it is relatively easy to measure, requiring only a brief survey of the relevant client personnel. In contrast, product profitability data may be strictly proprietary, and Quality, Time, Cost metrics difficult to assess. Fourth, willingness to recommend is highly relevant in design consulting because most consultants thrive on new business. Few client firms have continual need for design services. Even when repeat business is possible, it is desirable only to a certain extent, as much of a consultancy’s value derives from its breadth of experience and ability to broker knowledge across diverse industries [33]. For these reasons, positive word-of-mouth is essential, and client willingness to recommend an important project outcome. Fifth, the widespread commercial adoption of the Net Promoter® method allows for benchmarking of the design consulting industry against other service industries. What’s more, the metric’s prevalence could motivate consultancies to participate in academic research, as they are familiar with the metric and eager to know where they stand.

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7.1. Quantitative results. The thirteen respondents who were current or former clients of design consulting services rated 30 different projects, the results of which are depicted in Fig. 3. The ratings nearly span the range of the scale, with large clusters at the high and low ends and a somewhat uniform distribution across the middle. Per the Net Promoter® breakdown, 23% are Promoters and 40% are Detractors, yielding a Net Promoter Score (NPS) for the sample of -17%. This compares poorly with other industries for which NPS data is publicly available: the banking industry is reported to have an NPS of +15%, whereas the telecommunications industry trails most others with a score of -7% [34]. Nonetheless, the results may be plausible considering the high project failure rates reported to date [2, 3, 11], and the fact that design consulting is a relatively less mature industry than the others.

Several cautions must be made in the interpretation of these results. First, the sample is small. Second, three of the “1” ratings were provided by a single respondent, who also provided two of the “10” ratings. Removing this respondent’s ratings creates a fairly unimodal skewed distribution, and raises the NPS to -10%. Third, because of our broad definition of ‘design consultant,’ the results include many very different types of consultancies, from large global technical services providers to mid-sized product development consultancies to sole proprietorships. One might point out, correctly, that this is comparing apples to oranges. Indeed, this is exactly what the literature has done to this point [e.g., 3]. What is novel and
useful about our results is the depiction of the distribution of outcomes, which strongly suggests that industry-wide averages can be deceptive. Need exists to study project outcomes at a finer resolution, either by comparing outcomes across consultancy types, or project types, etc. Due to the small size of our sample, we do not attempt to do so here.

7.2. Reasons for ratings. Respondents’ reasons for giving the ratings they did were less diverse than the ratings themselves. Consistent with how the clients defined success, most of the reasons reflected the quality of the design and the perceived value of the engagement. Amongst the positive ratings:

- Mid-sized multinational product development consultancy, rating of 10, “They were the experts at that stuff, and undoubtedly, no matter what we gave them, they thought of some things that we simply didn’t.” – Client Project Manager #1
- Sole proprietorship market trend expert, rating of 9.5, “She was really on top of stuff, had the data to back it up, she was very good at it.” – Client Senior Engineer #3
- Small foreign contract manufacturer with design capabilities, rating of 8, “When this guy finds a problem, he solves it before he even notifies you.” – Client Senior Engineer #1

Amongst the neutral ratings:

- Small domestic industrial design consultancy, rating of 7.5, “They’re pretty nice people. We’ve been using them for fifteen years. Are they good designers? [Shrugs] Creativity is almost non-existent.” – Client Engineering Manager #1
- Large foreign product development consultancy, rating of 7.5, “I thought what they delivered was good, what I was involved with.” – Client Project Manager #2

Amongst the poor ratings:

- Mid-sized domestic industrial design firm, rating of 3, “We’d always get really interesting stuff from them, beautiful looking models, but they just weren’t manufacturable.” – Client Senior Engineer #3
- Sole proprietor engineering consultant, rating of 1, “the contract wraps up and I pretty have to take it from stage 1 to stage 2, and it’s like ‘this is crap, I can’t use this, this is absolute junk! We paid this guy for six months worth of nothing.’” – Client Project Manager #2

8. FAILURE MODES

Having conceptualized project success as client satisfaction with the engagement, and measured it using the Net Promoter® approach to willingness to recommend, we now turn to explaining the sources of client dissatisfaction with outsourced development projects.

Building off the process model described in Fig. 1, Fig. 4 depicts several possible failure modes. Solid arrows represent well-executed process steps, while dashed arrows represent a misstep that breaks the chain between expectations and deliverable. Some failure modes can be caused by several distinct missteps. For example, problems can occur during Development because the consultant lacks capability, or because of the emergence of technical problems not anticipated by either party at the outset of the project. Likewise, Drift of client expectations may be caused by unanticipated shifts in the marketplace [15], or because of turnover within the client development team. Due to space constraints, we cannot detail all the possible variations here, and direct the reader to [14]. Note that nearly all failure modes can be mitigated or eliminated by proper use of Feedback during Development.

Our interviews suggest that each of the illustrated modes occurs in practice. However, diagnosis by a single party can be difficult, as certain failure modes can alias for others. For example, from the client’s perspective, poor Briefing, poor Development, and poor Transfer of the design all look the same. This may explain why trade surveys of client personnel focus almost exclusively on deficiencies by the consultant during development [e.g., 2]. To ascertain the true cause of failure, both parties’ perspectives must be considered. Due to the small size of our study, we cannot describe the relative frequency of the various failure modes, but leave that to future work.

9. CONCLUSIONS

Although prior research has reported high failure rates in outsourced product development, progress in this field has been hindered by lack of consensus as to the meaning and measures of “project success.” This ambiguity makes it difficult to evaluate design outsourcing success rates or explain the causes of failures. In this paper, we empirically explored the many meanings of success, identified and pilot-tested a potentially suitable outcome measure, and developed a failure mode framework for understanding the origins of unsatisfactory project outcomes. We extend the literature by clarifying previously imprecise concepts and by reframing the problem to consider the perspectives of both the client and the consultant.

Our results confirm previous findings that poor outsourcing outcomes do occur at disappointing high rates. However, our results suggest that prior studies may underestimate the significant variation in project outcomes. Some projects are very successful, and reporting only the mean buries this important fact. The significant variation we observed suggests there is need to analyze the data more finely. What types of outsourced projects are more or less likely to succeed? What types of client firms, or consultancies, or combinations of the two are more likely to succeed? Can success be predicted and controlled?

This work sets the stage for future study of the nature of variation of observed outcomes, as well as the sources of success and causes of failure. Potential directions of further research include:

- Benchmarking studies of variation in outcomes across different service providers, project types, and types of design outsourcing (i.e. black box outsourcing vs. design consulting)
- Statistical or case-based causal analysis linking project outcomes to client, consultant, and project characteristics
- Development of additional outcome measures to address the consultant’s satisfaction with the project outcome
- Quantification of the differences in perspectives towards success exhibited by consultant and client personnel

Perhaps most importantly, need exists to relate tactical definitions of outsourcing success to strategic definitions. After all, a highly honed execution of a poorly considered strategy will only hasten a firm’s decline.

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REFERENCES


