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The purpose of this research was to collect descriptive data about Drupal projects and explore the relationships between various factors and perceived project success. Literature was examined to explore a variety of perspectives on project success. From this literature, a survey was developed. This survey was administered to a sample of Drupal project stakeholders. It collected information about Drupal expertise and experience level, asked respondents to consider their most recent Drupal project and answer questions about it, and asked respondents to rate characteristics of projects in terms of their association with project success and failure. The survey also collected qualitative data about stakeholder perceptions of project success. Results and implications of the research are discussed and suggestions for future research are presented.

Headings:

Computer Software - Drupal

Computer Software - Evaluation

Administration - Project Management

Surveys - Internet surveys

STAKEHOLDER PERCEPTIONS OF DRUPAL PROJECT SUCCESS

by
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Approved by

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Introduction

Drupal is a free, open-source content management system. It is used to publish, organize, and manage content on the Web. Drupal powers a wide variety of Internet sites, from small weblogs to e-commerce sites to major news outlets. Between July 2007 and June 2008, Drupal was downloaded over 1.4 million times (Buytaert, 2008). Many Drupal-based sites are designed and implemented by developers interacting with project managers, clients, and other project stakeholders. These interactions share characteristics with other IT projects. While a large amount of research exists concerning success measures for other types of IT projects, there is a lack of such information about Drupal-specific projects.

Drupal has a stock installation, Drupal core, which provides basic functionality. This functionality can be extended through the use of contributed modules. While anyone can contribute code to Drupal core, all changes must be reviewed by a Drupal core developer. On the other hand, anyone can create a Drupal module. A module might interact with an external Web system, fight comment spam, allow for the management of multiple subsites, or keep track of a user's interaction with a site. Drupal comes with several default themes, which can be used to customize the appearance of a site. Drupal implementers can also create custom themes and download custom themes created by others.

A Drupal developer might be hired for a simple default installation and configuration, to design a custom theme, to make modifications to existing modules, or to create new modules. Project scope can range from very narrow to very broad. Project teams might consist of a single developer or many developers, project managers, graphic designers, and others. Though Drupal is extremely customizable, all Drupal projects make use of Drupal core. Drupal.org's "Best practices" page (2009) encourages developers to plan their projects ahead, create sites that are easy to upgrade, back up sites, and test code. Developers are encouraged to contribute their work back to the Drupal community. Drupal.org's "Hiring a Drupal site developer" page (2009) encourages developers and stakeholders to define in detail the scope, requirements, and budget of a project.

The pages mentioned above provide general best practices for Drupal projects. The Drupal community could benefit greatly from empirical research into what makes a successful Drupal project and why. It is not clear what project success means to various Drupal project stakeholders and what causes Drupal projects to succeed or fail. It may be that project success perceptions differ based on certain qualities of project stakeholders. It may also be that there are common factors which contribute to project success or failure. Investigating how Drupal project stakeholders define success has the potential to improve the Drupal community's understanding of how Drupal is used and perceived. Investigating the factors that contribute to project success and failure has the potential to improve the Drupal community's understanding of the barriers to Drupal project success, potentially leading to the improvement of Drupal documentation, code, and usability.

This study poses two research questions: 1) How do stakeholders in Drupal projects define success? 2) What factors do stakeholders believe contribute to the success or failure of Drupal projects? The first question seeks an understanding of how Drupal project stakeholders' perceptions of project success vary along a variety of factors. These factors include cultural, organizational, or industrial. Perceptions may also vary by project type, scope, size, and cost. The second question seeks an understanding of why Drupal projects succeed or fail. It seems likely that perceptions of what makes projects succeed or fail will also vary by stakeholder and project. By isolating the perceived factors that contribute to Drupal project success or failure, it is hoped that developers, project managers, other stakeholders, and other members of the Drupal community will be better informed informed about how to maximize a Drupal project's chance of success. It is hoped that this understanding will lead to more successful Drupal projects.

Literature Review

This literature review explores a variety of perspectives from which project success has been investigated and considered. Such inquiries have focused on how developer communication affects project success, how project success measures vary for specialized types of products, and how factors like a project’s industry and development culture affect perceptions of project success. In many cases, common measures exist for evaluating and defining the success of a project. The perspectives detailed below range from the theoretical to the quantitative, but only one offers a Drupal-specific inquiry into project success.

In considering the following articles, it is important to mention a distinction pointed out by Morisio, Egorova, and Torchiano (2007). In their article, which will be examined later, they stated, "very often we can find a confusion between two quite different concepts: what we mean for a successful project or product (we will call this a success indicator) and what causes a project to be successful (we will call these success or failure factors). Both indicators and success factors are, in the end, measures, and should be defined and validated accordingly" (Morisio, Egorova, & Torchiano, 2007, p. 301). Some of the articles below deal with indicators, some with success factors, some with both, and some do not clearly differentiate between the two concepts. It is important to note that this distinction does not specify how a successful project is defined. This concept will be explored later in this literature review.

Beaver, Cui, St. Charles, and Potok (2004) attempted to create a predictive model of success in Free/Libré/Open Source (FLOSS) software development. The research explored existing literature to develop indicators of project success, leveraged these indicators against SourceForge project development data, and attempted to create an agent-based model of project development capable of predicting project success.

By examining existing literature, the researchers found that success in software development can be measured in different ways, such as software quality, efficiency, and the effectiveness of the team. The researchers focused on social indicators, such as "the ability of the distributed group to maintain or grow in membership, to effectively organize and coordinate source code contributions across multiple developers, and to produce software products that are useful in the user community" (Beaver, Cui, St. Charles, & Potok, 2009, p. 2).

The researchers collected data about 67 FLOSS projects in the SourceForge Research Data Archive. SourceForge is an online development tool for FLOSS projects. From their literature review, the researchers isolated five measures of FLOSS success available in the data. These were group maturity, indicated by development status; group membership, indicated by the number of developers; number of events, indicated by the number of software releases; group utility, indicated by the number of downloads; and group popularity, indicated by the SourceForge group ranking.

The simulation created by the researchers simulated project development in terms of the behavior of project agents and developer agents. The model's predictive data was validated against actual project data in terms of accuracy of fit and predictive validity. The researchers found that the model was not highly accurate but was able to "predict for group-level behaviors such as group membership changes, group efficiency and popularity, and the occurrence of group-level events or actions" (Beaver et al., 2009, p. 7).

There are major differences in the type of software development studied by Beaver et al. and Drupal development. Drupal projects use a preexisting FLOSS tool to meet client requirements, rather than creating new products from scratch. Drupal projects may lead to code contributions to the Drupal project, but that activity is not a focus of this research. Drupal project structure may also tend to differ from FLOSS project structure in terms of developer interaction and project approach.

Beaver et al.'s research highlights that success in software projects can be measured in a wide variety of ways. The complexity of these measures was considered when developing an instrument to measure Drupal project success. That social data such

as message board posts and bug fixes was able to lead to predictions of software project success was also of great interest. These indicators are divergent from traditional indicators of project success. This article led to the consideration of developer communication as a possible indicator of a Drupal project's success.

Wixom and Watson (2001) explored project success factors for a specific type of project.They looked at data warehousing projects, a specific subset of IT projects. They identified research which suggested that 1/3 to 2/3 of all data warehousing projects fail. The authors made the point that data warehousing projects are infrastructure projects. Infrastructure projects are defined as "a set of shared, tangible IT resources that provide a foundation to enable present and future business applications" (Wixom & Watson, 2001, p. 18). Wixom and Watson argued that IT infrastructure projects may have different success indicators than other IT projects and pointed out that very little research has been done on this type of project. This lack of research justifies this investigation of Drupal project success. Because of Drupal's robustness, it is possible for it to be deployed in a variety of roles, including infrastructure projects.

Wixom and Watson (2001) surveyed 126 attendees of a data warehousing conference. The survey asked two open-ended questions about success factors and obstacles to success in data warehousing projects. The results of this survey, along with the results of 10 expert interviews, were used to create a research model. This model identified 7 implementation factors which contributed to 3 levels of project implementation success. These levels of project implementation success contributed to 2 areas of system success, which led to a system's perceived net benefits.

Wixom and Watson (2001) obtained usable results from 111 companies in various industries. The data indicated that perceived net benefits were associated with data quality and system quality. It also indicated that organizational, project, and technical implementation success had no effect on data quality. Organizational implementation success did effect system quality and management and resources contributed to organizational implementation success.

Berntsson-Svensson and Aurum (2006) examined what makes successful software projects and products. Their research began by referencing research indicating that, despite increasing success rates, software projects still fail. Berntsson-Svensson and Aurum examined previous research on measures of software project success and found that these measures vary widely based on one's definition of success.

The researchers posed three research questions: "What is the effect of certain factors on the success or failure of projects across various industries?" "How do various industries define project success and are there any differences across industries?" and "How do various industries define product success and are there any differences across industries?" (Berntsson-Svensson & Aurum, 2006, p. 146). The differentiation between project success and product success comes from Baccarini's (1999) research, which argues that project success comes from a combination of project management success and project product success. To answer these questions, the researchers created a questionnaire of 33 mostly closed-ended questions. The questionnaire collected demographic information, information about the subjects' last completed software project, and asked subjects to rank eight product success factors for all projects in which respondents were involved. In this section, respondents could also add their own factor to

the ranking. The questionnaire was used to sample 27 subjects involved in software development in 15 companies in financial services, consulting, and telecommunications. These were distributed randomly and through the researchers's contacts at companies and supplemented by interviews.

Berntsson-Svensson and Aurum (2006) found that demographic information and perceptions about which factors influenced the success and failure of projects varied across industries. There were some common elements amongst the three industries: all three industries had approximately 75% success rate for their software projects. Subjects from all three industry types indicated that "complete and accurate requirements from project start" and "having enough time for requirements elicitation" were important factors in project success (Berntsson-Svensson & Aurum, 2006, p. 150). This perception seems supported by the research, as no failed project started with complete requirements (Berntsson-Svensson & Aurum, 2006). Subjects from financial services and consulting perceived having a good project schedule to be a success factor. The study found that adding new personnel to a late project increased its risk of failure and the experience level of the project manager was found to have no effect on project success. In terms

of product success, subjects from all three industries considered a satisfied customer the most important measure of product success. Financial services respondents, whose projects were 75% in-house (vs. 10% and 22% for the other two industries) also listed "a satisfied organization/top management as an important factor for product success" (Berntsson-Svensson & Aurum, 2006, p. 151).

Berntsson-Svensson and Aurum's (2006) research suggests that a wide variety of measures exist for defining project success. The research found that such measures can

diverge along industry lines. The article's conclusion hypothesized that success measures might diverge depending on the type of project. Both of these points resonate within this research.

Pereira, Cerpa, Verner, Rivas, and Procaccino (2008) found that software project stakeholders' perceptions of software project success indicators can vary across cultural boundaries. This research is justified by this finding, as it gives another axis along which stakeholder perceptions of Drupal project success might vary. Pereira et al. (2008) identified several other sources which seemed to confirm this assertion and explored previous research to identify success indicators. From this review, they developed a survey designed to gauge stakeholders' perception of project success. The goal of this research was to aid in developing "software project success/risk analysis models that can aid project managers in identifying, analyzing and controlling potential risks during software development" (Pereira, Cerpa, Verner, Rivas, & Procaccino, 2008, p. 898).

The survey collected respondents' demographic information and examined how project management factors, project estimation factors, the development team's relationship with the customer/user, requirements engineering, the respondent's career progress, the development team's interactions and management, and communicative factors affected project success perceptions. This survey was distributed via email to software development organizations throughout Chile. 201 professionals responded. The results of this survey were compared with a similar study of software development professionals in the US.

Pereira et al. (2008) found that US development professionals seemed to be product-focused. They gave top rankings to easy to use products that met requirements.

The researchers also suggested that US teams may "have more constraining peer control than the respondents in the Chilean group" as they ranked freedom within the development process higher than the Chileans (Pereira et al., 2008, p. 905). Chilean development professionals, on the other hand, seemed to be more process-focused. They gave top rankings to keeping on schedule and good project estimation. Chileans also seemed to prefer a less stressful working situation than US counterparts and considered job satisfaction more important than project success. That this study found software development professionals' perceptions of project success differed across cultural boundaries is interesting in the context of the research detailed below.

Linberg (1999) studied developer perceptions of project failure. Of interest in this review is his first research question, "How do software developers define software development project success or failure?" (Linberg, 1999). Linberg examined existing literature and found that software project success is often defined as meeting budget, deliverables, business objectives, and meeting or exceeding expectations. From his review, he identified the following factors as increasing the likelihood of project success: "effective leadership, conducive organizational climate, technologically realistic requirements, realistic schedule and effort estimates, sufficient software personnel and other necessary resources, and a diverse and synergistic team" (Linberg, 1999). Linberg's review of the literature found that unrealistic estimates of project schedules, efforts, or technological requirements can contribute to disenfranchisement of developers and thus project failure. The literature suggested that effective management was necessary to motivate and organize developers within a project.

Linberg (1999) performed a case study of a project that seemed to lack all of the above success indicators. The project was the development of an instrument for use in medical procedures. The project consisted of hardware, software, and firmware components. The project's estimates were revised four times over the course of its lifecycle and in the end, its cost and size exceeded all estimates. The project's cost exceeded the approved budget by 419%, software size was 130% of estimations, and firmware size was 800% of estimations. All of the project's initial cost and size estimates were created by managers with no software development experience. When the project's developers were interviewed, they stated that they often had to go behind management's back to get the resources needed to complete the project.

Surprisingly, 5 of the project's 8 developers interviewed said it was the most successful project on which they'd ever worked! The remaining 3 said it was the 2nd most successful. The reasons the developers give for ranking this project so highly included: because it produced a working product, was technically challenging, and the team was small and high-performing. When asked about the least successful project on which they'd worked, the developers cited factors such as poor management, poor marketing research, long hours worked, staff being added to a project midway through its development, and a poor understanding of customer requirements as contributing to project failure.

These developers were highly motivated, had high job satisfaction, and worked reasonable hours. When asked why the project was late, they listed factors such as unrealistic schedule expectations, lack of resources, and a poor understanding of the project's firmware requirements as contributing factors. The project studied seemed

doomed to fail by common success indicators, yet all of a particular type of stakeholder viewed it as a success. This finding justifies the need for further inquiry into how project stakeholders define success. It would have been interesting to measure management's perceptions of the studied project's success. A broader comparison of stakeholders' perceptions of project success is a goal of this research.

The previous literature examined has demonstrated that IT project success is a difficult concept to define. Morisio, Egorova, and Torchiano (2007) argued that measuring success is also difficult. The authors made the point that "software development is not a hard science, but it is a human, brain intensive activity" and should therefore "be regarded more as a soft science, such as sociology, economics, and partially medicine" (Morisio et al., 2007, p. 300). Despite the involvement of computers in software development, the software itself being a rigid object always producing the same results for a given input, and software engineers often being trained in hard sciences, "the process to develop a program is not a hard process, it is a design activity mostly based on human activity" (Morisio et al., 2007, p. 300).

Morisio et al.'s (2007) research exists within the framework of ESE or Experimental Software Engineering. This view holds that once metrics or models are proposed they should be validated using empirical studies, then used by other researchers or practitioners once favorable evidence has been established. In their study, the researchers assembled a list of factors from previous literature. They created a questionnaire using these factors, asking each participant to gauge the presence of these factors in one successful and one failed project. Results were collected from 14 companies about 38 projects.

Morisio et al. (2007) found that defining requirements at the beginning of a project, performing good project planning, customer involvement, and correct identification of risks were associated with project success. People added to a project after its initiation led to failure. Interestingly, being on time or on budget was not found to be a contributing factor to success or failure. This result is consistent with developers' perceptions in Linberg's research. These results are similar to other studies mentioned and suggests that there is some common ground in perceptions of project success factors.

It has been suggested that there are success measures that do not necessarily involve project stakeholders' perceptions at all. Thong and Yap (1996) explored user satisfaction as a measure of information systems effectiveness. They noted that user satisfaction is often ignored as a measure of system success. They noted that research attempting to use user satisfaction as a success measure is often criticized because of "questionable operationalizations of the user satisfaction construct," "poor theoretical understanding of the user satisfaction construct," and "misapplication of user satisfaction instruments" (Thong & Yap, 1996, p. 601). It is interesting to note the general absence of user satisfaction as a success factor in the previously-explored research.

Thong and Yap (1996) noted that there are no universally agreed-upon definitions of IS systems success or models to measure effectiveness. Previously-used measures include "cost-benefit analysis, system usage estimation, user satisfaction, incremental performance in decision-making effectiveness, utility analysis, analytic hierarchy approach, and information attribute examination" (Thong & Yap, 1996, p. 602). Thong and Yap (1996) suggested that this disagreement may be intrinsic to information systems;

the variables associated with their effectiveness will vary with the organization in which the system exists.

Thong and Yap (1996) also noted that, despite the difficulties associated with its operationalization and measurement and it often being overlooked, some consider user satisfaction to be the most important criterion in measuring IS success and failure. Thong and Yap (1996) detailed in depth some of the problems with measuring user satisfaction such as differing theories of attitude and user behavior. Thong and Yap's (1996) work represents a detailed examination of the concept of user satisfaction. It is included in this review to point out the possibility of user satisfaction as an external measure of systems effectiveness and success. It will be interesting to see if Drupal project stakeholders perceive user satisfaction as a defining factor of project success.

Edberg (1997) also explored measuring system success. Her research was designed to empower IS managers in evaluating their production systems. Edberg proposed that IS managers need comprehensive measurement programs to understand the reasons for project success or failure. Edberg asserted that such measurement programs often do not exist in organizations: "Although executives would not ask a credit manager to improve operations without first determining the current and potentially optimum accounts-receivable turnover ratios, they frequently ask IS managers to improve operations without any idea about important current and projected data and ratios" (Edberg, 1997).

Edberg (1997) introduced a measurement program framework that focuses on goals, rather than metrics. Once a system's goals are defined, Edberg (1997) asserted that managers should produce questions that apply to these goals. Once these questions are

produced, then metrics can be created to measure them. For instance, a goal might be to increase defect containment. A question coming from this goal might be, "What is the currently known effectiveness of the defect detection process before release?" (Edberg, 1997). From this question, defect containment effectiveness could be measured by dividing the number of prerelease defects by the number of total defects (pre- and post-release).

Edberg (1997) divided performance measurement into four categories: Project: understanding and measuring "the characteristics of a specific development or maintenance project by focusing on the attributes that make each project unique;" Product: "the growth and progression of a development and maintenance product;" Process: "highlights the desire to modify the process used to develop and maintain information systems so that procedures reflect the best practices discovered in industry and within a given organization;" and Performance: "encompasses measurements that track both the traditional technical measures of performance as well as metrics that indicate the success of the system as defined by an organization's strategies and policies" (Edberg, 1997). It should be noted that "Performance" metrics require defining system success. Edberg's article also gave advice for IT managers in terms of metric selection and measurement program management.

Edberg's (1997) article is included in this review because it demonstrates a tangible need for project success measures in an organizational setting. It is hoped that this study will help satisfy that need by providing Drupal project stakeholders with valuable information about project success factors and indicators.

Julia Kulla-Mader (2009) performed an informal survey into Drupal project success factors. It is the only inquiry into Drupal project success found as part of this research. Kulla-Mader's (2009) findings were presented as a slideshow at a Drupal convention. Kulla-Mader's (2009) research collected information about Drupal experience level, stakeholder definitions of success, and success factors related to a specific project. Kulla-Mader's (2009) research was limited by a small sample size, a self-selected sample, and a lack of historical Drupal success data. Kulla-Mader (2009) found that early definition of project requirements, ongoing review of project progress, small project size, and high module performance were correlated with Drupal project success. Kulla-Mader's research forms the foundation for the instrument and research employed in this study.

The preceding literature explored perceptions, definitions, and effects of success across a wide variety of project types. Beaver, Cui, St. Charles, and Potok's (2004) research suggested that social factors can be indicators of project success. Wixom and Watson's (2001) research indicated that many traditional measures of success had no effect on the data quality in specialized data warehousing projects. Berntsson-Svensson and Aurum (2006) found that perceptions of success varied across industries. As suggested by Wixom and Watson's (2001) findings, Berntsson-Svensson and Aurum (2006) posited that different types of projects might have different success measures. Pereira, Cerpa, Verner, Rivas, and Procaccino (2008) found that perceptions of success can vary along cultural lines. Linberg (1999) performed a literature review, identifying common measures of success. Linberg (1999) then performed a case study on a project that seemed to defy all of these, yet was still considered successful by its stakeholders.

Morisio, Egorova, and Torchiano (2007) made the case for software development as a soft science, rooted in the activity of designing. Morisio et al. (2007) also performed an empirical investigation into stakeholder perceptions of project success. Their findings were consistent with those of Linberg's literature review. Thong and Yap (1996) explored user satisfaction as a measure of the effectiveness of information systems. Edberg (1997) also explored the idea of measuring system measurement, dividing system measurement into four categories. Kulla-Mader's (2009) is the only Drupal-specific project success research that the author encountered. It forms a basis for the research detailed below.

Method

This study sought to answer the research questions via primarily-quantitative, small-scale, cross-sectional survey. This survey was administered to a sample of the Drupal development community. The survey probed how different Drupal project stakeholders define project success and identified factors that contribute to Drupal project success and failure.

The survey sought to find correlations between project success and other variables. The concept of project success is approached in two ways. The survey probed how its definition varies according to stakeholder and project type. The survey also explored the relationship between project success and a variety of implementation factors.

A draft questionnaire was created based on the instruments employed by Morisio et al. (2007), Berntsson-Svensson and Aurum (2006), and Kulla-Mader (2009). This draft

instrument was administered to a group of pilot testers. The questionnaire was modified based on this feedback and the final instrument was created.

The questionnaire consisted of four sections. Section 1 of the questionnaire dealt with a respondent's Drupal experience level. Questions in this section of the questionnaire collected information about a respondent's technical skills and the duration of their usage of Drupal. Section 2 of the questionnaire asked respondents to consider the most recent Drupal project in which they were involved and answer questions about it. These questions assessed the Drupal-specific tasks associated with the project; its size, cost, scope, industry, and other similar information; the stakeholder's role in the project; and the project's level of abandonment.

Section 3 of the questionnaire also asked respondents to answer questions about the most recent Drupal project in which they were involved. The first of these asked respondents to gauge the project's success. Subsequent questions asked about success factors identified by Kulla-Mader (2009) and Morisio et al. (2007) and included in their instruments. These factors included project type; stakeholder involvement; the presence, involvement, and experience level of a project manager; the definition of project requirements, schedule, and budget; identification of risks; stakeholder involvement; and the performance of Drupal modules. This section of the questionnaire administered skip logic to avoid irrelevant questions.

Section 4 was made up of two questions. These questions asked respondents to rate a series of factors in terms of their importance in defining a successful Drupal project and their association with failed projects. The order of these factors was randomized to avoid bias. The question format was similar to that used by Berntsson-Svensson and

Aurum (2006). Section 4 of the questionnaire also allowed respondents to enumerate any additional factors they associated with Drupal project success or failure. This section of the questionnaire directly assessed stakeholder definitions of project success and failure. The full text of the questionnaire is included in Appendix A.

The sample for this study was recruited via Twitter, emails to Drupal and PHP usergroups, and a post on drupal.org. Sampling was based on convenience. Recruitment was carried out only by the researcher; however, recipients of recruitment messages were encouraged to redistribute them. The questionnaire was administered via the online survey system SurveyGizmo and took approximately 10 minutes to complete. Responses were collected from February 9, 2010 to February 27, 2010. There were no inducements to participation. Participants' informed consent was attained before administering the survey. Prior to starting the study, it was approved by the UNC IRB #10-0227.

Once the survey closed, data were exported into SPSS for analysis. No personal identifiers were included in this export. Some responses had to be recoded due to problems with the automated export. Ordinal data were analyzed for bivariate correlations using Pearson's correlation coefficient. Binary data were analyzed using a Chi-Square test. This analysis compared a stakeholder's perception of project success with their responses to questions about various success indicators. A two-tailed test for significance was employed. For all questions collecting quantitative data that received responses, descriptive statistics were calculated and included.

Results

In total, 26 usable responses were collected. When asked to indicate their experiences performing particularly project-related tasks, most respondents indicated they had experience with content administrators, managing website content and performing basic administrative tasks (Table 1). Respondents also self-identified as Drupal backend administrators, capable of performing more advanced administrative tasks within Drupal's administrative interface; as basic users; and as more advanced roles like code and theme developers. Nine respondents indicated they work for a web development company (Table 2). Most respondents had been working with Drupal between 2 and 3 years (Figure 1).

Table 1. Drupal Experience Level

Please rank your Drupal experience level. Select as many apply.

**Multiple responses accepted, results do not sum to 100%*

Item	Count	Percent %
Drupal user/Content Administrator	19	73.08%
Drupal Backend Administrator	18	69.23%
Drupal user	18	69.23%
Drupal Theme Developer	15	57.69%
Drupal Backend Integrator	14	53.85%
Drupal Code Developer	10	38.46%
Other	3	11.55%
Not a Drupal user	1	3.85%

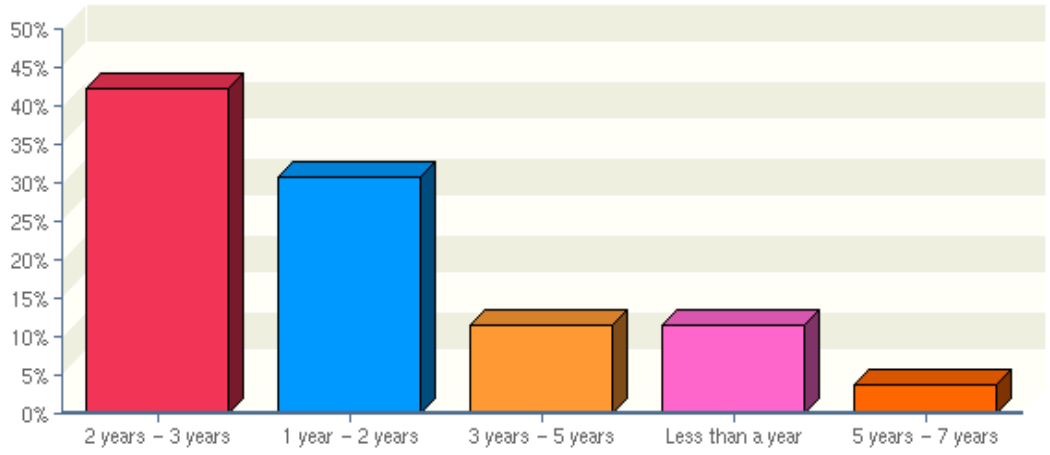
Table 2: Frequencies for Web Development Company Involvement

Do you work for a Web Development Company?

Item	Count	Percent %
No	17	65.38%
Yes	9	34.62%

Figure 1: Drupal Experience Graph

How many years have you worked with Drupal?



Project Information

Section 2 of the survey asked respondents to consider the most recent Drupal project in which they were involved. Most projects consisted of setting up a new Drupal installation, modifying existing modules, creating a new theme, and using existing modules to integrate with 3rd party APIs (Table 3). Most projects were either over 1500 nodes or between 101 and 500 nodes in size (Figure 2). Most projects took between 3 and 6 months to complete, with between 1 and 3 months being the second most common response (Figure 3).

Table 3: Project Tasks Frequencies

**Multiple responses accepted, results do not sum to 100%*

Item	Count	Percent %
Setting up a new Drupal installation	19	79.17%
Modifying existing modules	15	62.50%
Creating a new theme	14	58.33%
Using existing modules to integrate with 3rd party APIs (Constant Contact, Google, etc.)	14	58.33%
Developing new modules to meet specific project needs	12	50.00%
Modifying an existing theme	12	50.00%
Writing new modules to integrate with 3rd party APIs (Constant Contact, Google, etc.)	9	37.50%
Migrating from a custom-coded site	8	33.33%
Upgrading from a previously-installed version of Drupal	8	33.33%
Implementing an E-Commerce Solution	6	25.00%
Migrating from another CMS (Wordpress, Joomla, etc.)	5	20.83%
Implementing a CRM solution (Salesforce, CiviCRM, SugarCRM, etc.)	2	8.33%

Figure 2: Project Site Size Graph

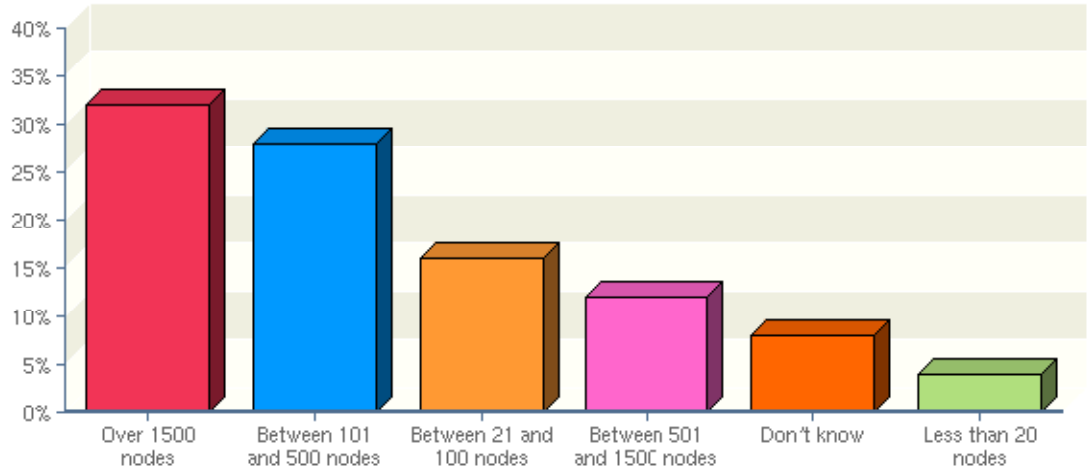
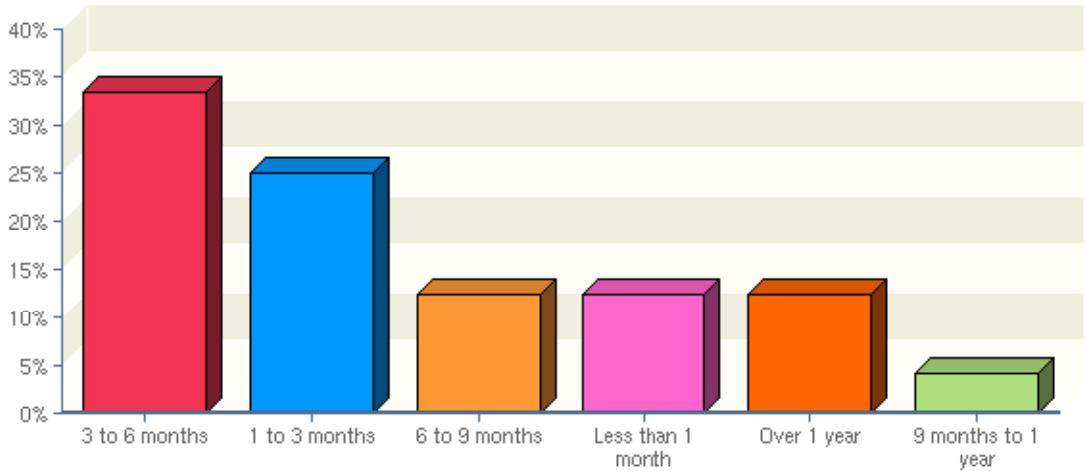


Figure 3: Project Length Graph

How long did the project take to complete?



The most common response for project cost was split between $10,001 to $20,000 and $5,001 to $10,000 (Table 4). The average number of project stakeholders was 5.57. The number of project stakeholders ranged from 1 to 20, with a mean of 5.57 and a standard deviation of 4.501. Twenty-one projects used Drupal 6, the most current stable version of Drupal core (Figure 4). Most projects experienced no abandonment, however, 30.77% experienced some reduction in scope (Table 5). Project industries varied widely, but are not reported here to avoid the risk of deductive disclosure. Respondents' role in the projects was primarily that of Drupal developer, with 17 respondents self-identifying as such (Figure 5).

Table 4: Project Cost Frequencies

Item	Count	Percent %
Between $10,001 and $20,000	5	22.73%
Between $5,001 and $10,000	5	22.73%
Over $100,000	4	18.18%
Between $20,001 and $30,000	3	13.64%
Between $30,001 and $50,000	2	9.09%
Between $50,001 and $100,000	2	9.09%
Between $1,000 and $5,000	1	4.55%
Under $1,000	1	4.55%

Figure 4: Drupal Versions Graph

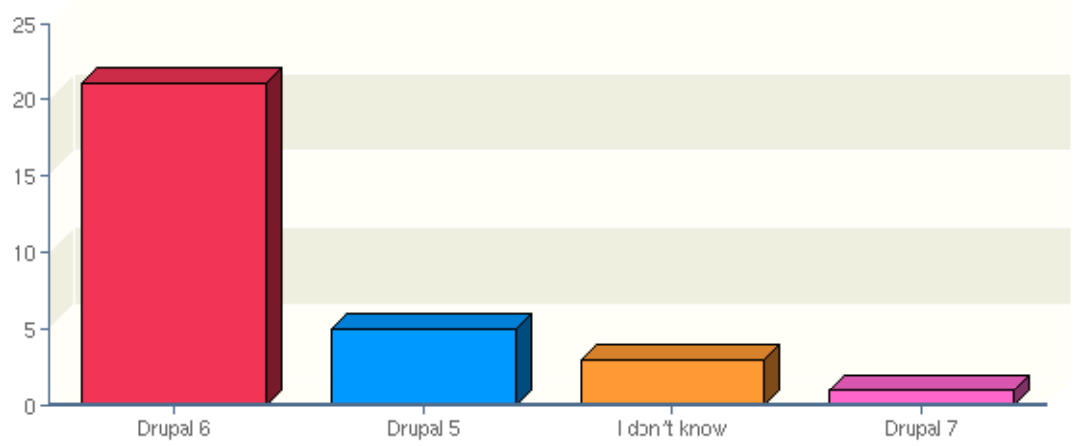
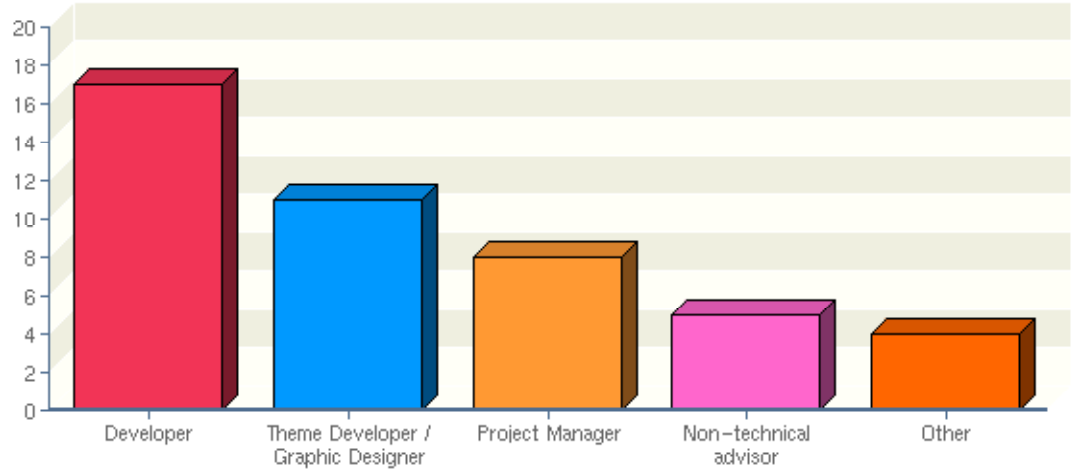


Table 5: Project Abandonment Frequencies

Was all or part of the project abandoned?

Item	Count	Percent %
No abandonment: The project ended fully meeting the specifications assigned in the beginning.	17	65.38%
Partial abandonment: There was a reduction in overall scope but no major changes to the original specification.	8	30.77%
Substantial abandonment: A major truncation or simplification of the project occurred and the final product was radically different from the original specification.	1	3.85%

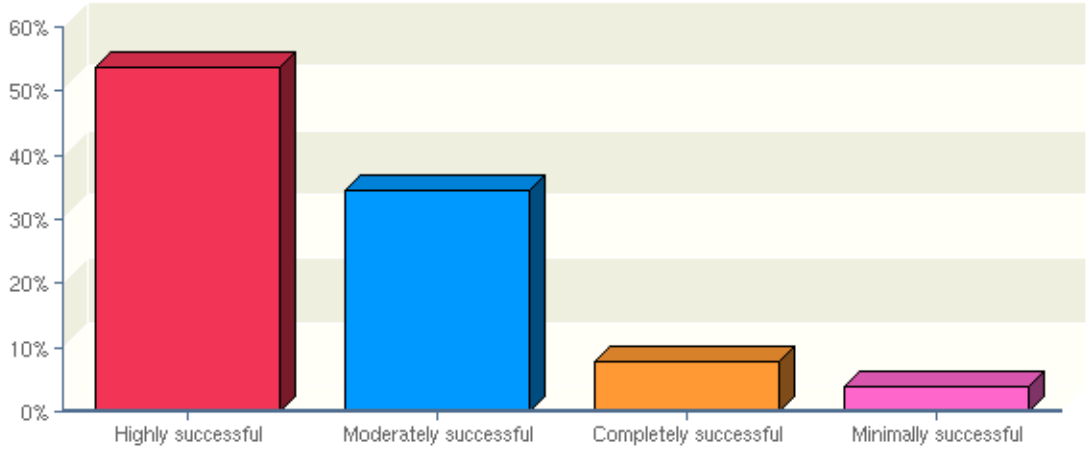
Figure 5: Stakeholder Roles Graph



Success Factors

Section 3 of the survey asked respondents to consider the most recent Drupal project in which they were involved. The first question asked respondents to gauge the success of the project identified in the previous section. Most survey respondents considered the most recent project in which they were involved to be "highly successful" (Figure 6). The other questions in this section focused on identifying the presence of various factors found in the literature to be possibly associated with stakeholder perceptions of project success.

Figure 6: Project Success Graph



Fifteen projects were developed in-house, ten were developed for a customer, and one was outsourced. For the ten projects developed for a customer, respondents rated the involvement of the customer's level of involvement in the project. In Linberg's (1997) interviews, some stakeholders identified an uninvolved customer as possibly contributing to project failure. Consequently, this scale was included in the survey to gauge the involvement of customers in respondents' Drupal projects. The mean reported value for customer involvement was 4.9 on a 6-point Likert-like scale, with 6 labeled "closely involved" and 1 labeled "uninvolved." Responses ranged from 4 to 6 on the scale, with a standard deviation of .738.

Section 3 of the survey asked a series of questions about the presence, experience level, and activities of the project manager. None of the survey's respondents answered these questions, so their results are not included here. It is not clear why these questions when unanswered, no respondents indicated whether or not their most recent Drupal project had a project manager. Questions about the activities of a project manager only

appeared in the survey if a respondent indicated that their most recent Drupal project had a project manager. Twenty respondents (76.9%) indicated that their projects had defined project requirements. Five projects did not have defined requirements and one respondent was unsure if project requirements were defined. For most projects, this definition took place before the project's start (Table 6). The question asking about when project requirements were defined allowed respondents to enter their own responses. Four respondents (20%) indicated that requirements were defined both before project start and during project development (Table 6). Twelve respondents (60%) thought that enough time was devoted to defining requirements, but a large minority of eight respondents (40%) did not think that enough time was devoted to defining project requirements. Similarly, ten respondents (50%) thought that requirements were adequately defined, but eight respondents (40%) did not and two (10%) were unsure.

Table 6: When Project Requirements Defined Frequencies

Item	Count	Percent %
Before project start	10	50.00%
During the project	6	30.00%
Before and during	2	10.00%
before set groundwork, adjusted during as client learned	1	5.00%
both before and during	1	5.00%

**Italics indicate user-provided response*

Section 3 of the survey asked respondents whether project plans were created in their most recent Drupal projects. In thirteen projects (50%), a project plan was created (Table 7). Perceptions about the quality of these thirteen project's plans were mixed: on a 6-point Likert-like scale with 6 labeled as "High Quality" and 1 labeled as "Low Quality," responses ranged from 1 to 5, with a standard deviation of 1.261. The mean response was 3.38.

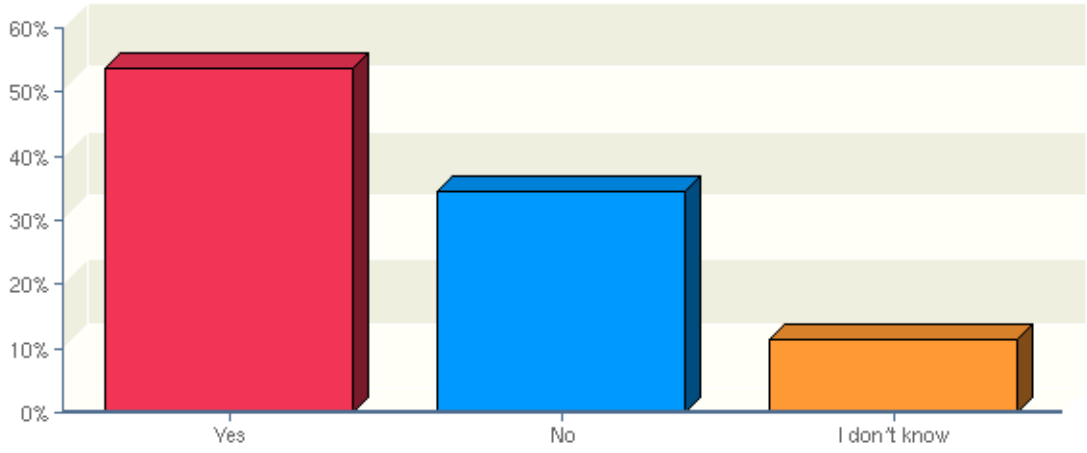
Table 7: Creation of Project Plan Frequencies

Item	Count	Percent %
Yes	13	50.00%
No	10	38.46%
I don't know	3	11.54%

Fourteen projects (53.85%) had a budget, nine projects (34.62%) did not and three respondents (11.54%) were not sure (Figure 7). Of the fourteen projects with budgets, seven (50%) were completed within budget, five (35.71%) were not, and two respondents (14.29%) were not sure.

Figure 7: Budget Creation Graph

Did the project have a budget?



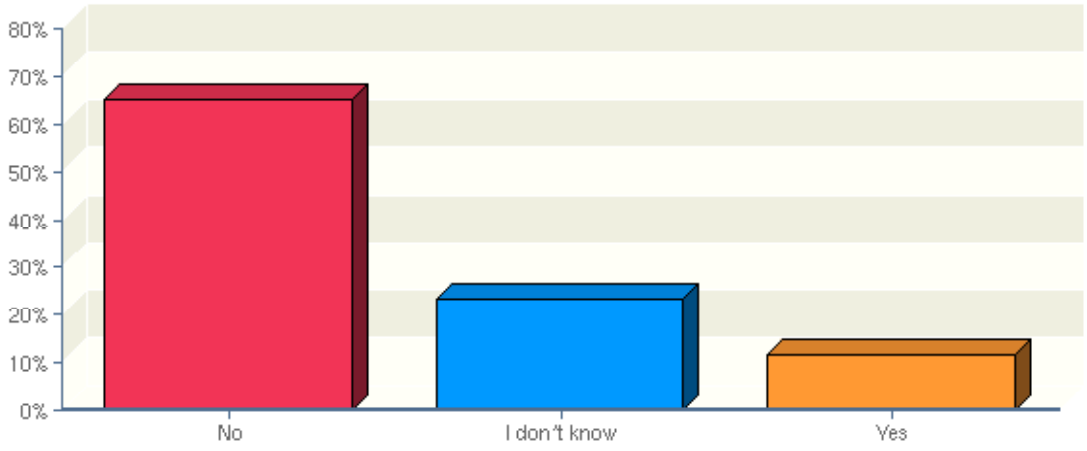
Fourteen (56%) reporting projects had a development schedule, eight (32%) did not, and three respondents weren't sure (12%). Of the fourteen projects with development schedules, eight (57.14%) adhered to this schedule while six (42.86%) did not. In twelve projects (46.2%), staff were added to the project after its start. Fourteen projects (53.85%) did not experience this addition of staff.

Most projects did not define risks at their outset, with only eight respondents (30.77%) indicating that risks were defined at the beginning of their projects. Fourteen respondents (53.85%) indicated that their projects did not define requirements at their beginnings and four respondents (15.38%) indicated that they did not know if project requirements were defined at the beginning of the project. In twenty projects (80%), stakeholders met regularly to discuss the project. Three respondents (12%) indicated that stakeholders did not meet regularly to discuss the project and two respondents (8.00%) indicated that they did not know if stakeholders met regularly.

Few projects contributed modules back to the Drupal project, with just three respondents (11.54%) indicating that their projects contributed modules back to Drupal.org (Figure 8).

Figure 8: Contributing Modules Graph

Did the project contribute modules back to Drupal.org?



The survey asked to rate how Drupal and the modules used in their projects performed. The average response was a 4.31 on a 6-point Likert-like scale with 1 labeled

"Very Poorly" and 6 labeled "Very Well" (Table 8). Responses ranged from 3 to 6 on this scale, with a standard deviation of .884.

Table 8: Module Performance Frequencies

How well did Drupal and the modules used in the project perform?

Item	Count	Percent %
5	12	46.15%
4	7	26.92%
3	6	23.08%
6	1	3.85%

Project Success Definitions

Part 4 of the questionnaire asked respondents to rate 6 different factors in terms of their association with Drupal project success and 5 factors in terms of their association with Drupal project failure. This rating took the form of a 5-point Likert-like scale with 1 labeled "Very Unimportant," 2 labeled "Unimportant," 3 labeled "Neutral," 4 labeled "Somewhat Important," and 5 labeled "Very Important." The highest rated factors were, "Working product" and "satisfied customer," followed by "Minimal bugs" and "Project team satisfaction." The lowest rated success factors were "Project management satisfaction" and "Technically challenging project." The success factors rankings experienced a fairly low standard deviation, especially the higher-ranked factors. This seems to indicate relative agreement amongst respondents about the project success indicators. See Table 9 for more information about respondents' ratings of project success factors.

Table 9: Descriptive Statistics for Project Success Factors, where 1=very unimportant and 5=very important

Option	Mean	Std. Deviation
Working product	4.96	.196
Satisfied customer	4.81	.402
Minimal bugs	4.42	.857
Project team satisfaction	4.12	.993
Project management satisfaction	3.58	.902
Technically challenging project	3.00	1.02

There was not as clear agreement amongst respondents in rating the project failure factors. Means were lower and standard deviations higher for these ratings than in its counterpart. It may be that respondents were in less agreement on what defines a failed project than on what defines a successful one. It may also be that the instrument created confusion amongst respondents. This rating took the form of a 5-point Likert-like scale with 1 labeled "No Association," 2 labeled "Low Association," 3 labeled "Neutral," 4 labeled "Moderate Association," and 5 labeled "High Association."

The factor rated as most closely associated with project failure was "Exceeding project budget." This factor was followed by "Exceeding project schedule," and "Exceeding project budget." Both of these factors had similar means, as did "Poor project

management" and "Poor definition of project requirements." See Table 10 for more information about respondents' ratings of factors associated with project failure.

Table 10: Descriptive Statistics for Project Failure Factors, where 1=no association and 5=high association

Option	Mean	Std. Deviation
Exceeding project budget	3.15	1.317
Exceeding project schedule	2.85	1.317
Lack of resources	2.77	1.423
Poor project management	2.69	1.517
Poor definition of project requirements	2.65	1.231

In section 4 of the survey, respondents could provide their own factors associated with project success or failure. For project success, these included, "flexibility on the part of the designer for changes which were made by the project team during creation," "completion on time and within budget," and "Ability to upgrade modules and core. Make backups and restore." For project failure, these included, "Technical bugs, like uninstalling a module that deletes everything because of a bug and having to recoup the work," "Poor client oversight of developer coupled with poor/no project management internal to developer," "Projects fail when expectations are not set correctly," "Poor

development plan," "Poor requirements and lack of input and feedback from the project stakeholders," "Lack of knowledge of company procedures by some team members," and "ill defined completion point or changing target, insufficient time, wrong framework selected (sometimes Drupal isn't the correct framework to use)."

Relationships Among Variables

In addition to calculating and reporting descriptive statistics, data were analyzed to explore potential relationships between perceived project success and various factors. This analysis focused on information collected in sections 2 and 3 of the survey. In terms of project information, there were a few significant relationships, which are reported here. No other significant relationships were found.

There was a significant relationship between project abandonment and perceived project success. The *r-value* for this relationship was -*.461, p=.018,* and *N=26*. Projects experiencing higher levels of abandonment also experienced lower levels of perceived project success. This finding seems to indicate that reductions in a project's intended scope are associated with project failure. The performance of Drupal and the modules used was also significantly correlated with perceived project success (*r=.444, p=.023, N=26*).

There was a significant relationship between a project being completed within budget and stakeholder perceptions of project success. For this relationship, the Chi-Square value was 8.473 (*p=.014* and *N=12)*. See Table 11 for crosstabulation between these variables.

Table 11: Crosstabulation for Completion within Budget and Perceived Success

		How successful do you think this project was?			
		Minimally successful	Minimally successful	Minimally successful	Total
Was the project completed within budget ?	Yes	1	0	6	7
	No	0	4	1	5
Total		1	4	7	12

There was a significant relationship between the regularity with which stakeholders meet to discuss a project and stakeholder perceptions of its success (*N=25, Chi-Square=13.467, p=.036*). See Table 12 for crosstabulation between these variables.

Table 12: Regular Stakeholder Meetings and Perceived Success

		Did stakeholders meet regularly to discuss the project?			
		Yes	No	I dont know	Total
How successful do you think this project was?	Minimally successful	0	0	1	1
	Moderately successful	6	1	1	8
	Highly successful	12	2	0	14
	Completely successful	2	0	0	2
Total		20	3	2	25

Discussion

Despite its small scale, the research presented here has yielded some interesting results. It was interesting to note that 58.33% of respondents' projects consisted of using existing modules to integrate with 3rd party APIs. This finding may indicate that Drupal is

often used to integrate with 3rd party applications. Future research might explore the prevalence of and Drupal's effectiveness at integrating with 3rd party APIs.

It was also interesting to note that, while 17 stakeholders indicated acting in a development role in their most recent project, only 10 self-identified as having Drupal code development skills. It may that because of budgetary or staffing constraints, Drupal project stakeholders must perform tasks that exceed their skill set. Future research could explore how Drupal project stakeholders are required to perform unfamiliar tasks in the course of Drupal project development and if this phenomena has a relationship with perceived project success.

It was surprising that only 50% of projects had development plans and that perceptions about the quality of these plans were mixed. Perhaps future research could explore how often Drupal project plans are created and what factors motivate the creation (or ignorance) of these plans. Similarly, only 30.77% of respondents indicated that their projects identified risks before project start. Further research is needed to find if Drupal projects at large are neglecting risk identification at project start and, if so, why.

Most respondents considered their most recent Drupal project to be "Highly successful." This response cannot be considered representative of Drupal projects at large, but may be interesting for future research. Drupal has established itself as an extremely popular content management system. It may be that Drupal projects experience a higher success rate than projects using competing systems like Wordpress or Joomla. This avenue of inquiry may prove an interesting one for future research. It would be useful to have some representative data about the overall success rate of Drupal projects. Collecting this information, however, may prove difficult. Perhaps the Drupal project

could consider implementing an assessment program to gauge the success of Drupal implementations.

That project abandonment is correlated with perceived project success is not surprising. This finding seems related to the finding that "Working product" was rated as most associated with project success. When a project's scope is reduced and requirements are abandoned, it seems logical that it could be considered a failure. In future work, it might be interesting to explore how a broadening of scope is related to project failure. The finding of this research suggests that when a project does less than was specified, it is more likely to fail. It would be interesting for future research to explore what happens when a project goes beyond its original specification.

Drupal projects are united by their use of a single system to form the base of their functionality. This feature sets them apart from other types of projects in which custom systems are built for the needs of the client or parent organization. While there was no significant relationship between the version of Drupal used in a project and its perceived success, there was a significant relationship between the performance of Drupal and the modules used in a project and perceived project success. Browsing the issue queues on Drupal.org for various contributed modules, one can find reported issues ranging in severity from minor user interface problems to database corruption and site crashes. Encountering these issues has the potential to severely hinder the development of a Drupal project, as supported by this finding. A content analysis of these posts might show that certain issues are common across Drupal modules and inhibit successful development.

Morisio et al. (2007) found that being on time or budget was not associated with project success. Though this research did not find a significant relationship between adhering to a schedule, there was a significant relationship between a project being completed within budget and its perceived level of success. While this finding cannot be considered representative of Drupal projects in general, its contrast with Morisio et al. (2007) is interesting. It may be that there are commonalities to Drupal projects that render completing a project within budget a requirement for project success. For instance, it may be that if Drupal projects are often web design/implementation projects for a customer, then not exceeding a project's budget is more critical than for projects that are completed in-house. Perhaps future research can consider this possibility.

Many of the success factors identified in the literature review had no significant relationship with perceived project success. The lack of such relationships in the sample may not be meaningful given the previously-explored weaknesses of the research. However, it may be that contributing factors to project success are more nuanced and paradoxical than conventionally thought. Linberg's (1999) case study demonstrated that projects can defy conventional success measures and still be considered successful. It may be that there are aspects of Drupal projects or IT/IS projects in general that defy conventional success measures. Perhaps future research can explore project success in a manner which abandons conventional success measures.

Contrasting with the possibility of unorthodox consideration of project success are the results of the section 4 of the questionnaire. Respondents rated conventional project success factors highest of all listed factors, rating "working product," "satisfied customer," and "minimal bugs" above, "project team satisfaction," "project management

satisfaction," and "technically challenging project." These results may indicate that Drupal projects are unlike the project studied by Linberg (1999) and are bound to more conventional project success measures. As stated earlier, it may be that Drupal projects are often web design/implementation projects for a customer, consequently customer satisfaction and a working product with few bugs are critical for the success of such projects. Confirming such a hypothesis would more extensive Drupal usage data than is currently available.

Respondents' ratings of factors associated with project failure were less definitive. Responses in this section experienced lower means and higher standard deviations than its counterpart. Most of the factors were rated very closely. As mentioned earlier, one respondent expressed confusion about this portion of the instrument. It seems likely that the weaknesses of the instrument were at least partially responsible for the ambiguity of these results. This question also allowed respondents to enter their own factors associated with project failure. A variety of information was entered into this question, which is reported in the results section of this document. Perhaps future researchers can use this information to explore alternative factors for Drupal project success and failure. Many of the respondents associated problems with the client/developer relationship with project failure. These problems might include poor communication between client and developer, lack of trust, and a lack of oversight. Respondents also listed a lack of knowledge of organizational procedures, a poor development plan, and using Drupal in a project for which it is ill-suited as factors associated with project failure. Perhaps future research can explore in more detail how the relationship between the client or "owner" of a project and its developers relates to project success.

It is interesting to note that, in section 4 of the survey, the factor rated as most closely associated with project failure was, "Exceeding project budget." This finding may be associated with the significant relationship in the sample between a project's being completed on budget and its perceived success. It may be that unique aspects of Drupal projects cause their success to depend on completion within budget. This relationship could be explored by future research in a variety of ways. It would be interesting to perform case studies on projects with a variety of budget types and project outcomes or to collect quantitative data about project size, budget, cost estimation, etc. Perhaps these data could be compared with the results of interviews with stakeholders from these projects. Whatever method is used, one of this study's strongest suggestions for future research is the exploration of this relationship.

The research detailed here suffers from many weaknesses. First, the study's sample was extremely small. The PI originally hoped for at least 100 responses to the survey. In the end, collecting 26 usable responses proved a difficult undertaking. Partially because the sample size was so small, it is not expected that the findings of this research can be generalized to be applied to the Drupal development community. Instead, it is hoped that the findings of this research can inform and provide guidance to future inquiries into Drupal project success.

The sampling method for this study was purposeful and dictated by convenience. Local developers and personal contacts of the PI were solicited to take the survey. This sampling method likely suffered from several biases, including self-selection, as is indicated by the large portion of developers in the sample. It is also likely that the instrument employed introduced bias into the results. Though the instrument was based

on instruments used by other researchers and was subjected to pilot testing, the PI received some negative feedback concerning the design of the questionnaire after it had been published. In section 4 of the survey, at two respondents used the area in which other factors associated with project failure and success could be written to express confusion with respect to the question. In response to a forum post advertising the survey, criticisms were made of the wording of some questions and the use of node count as a measure of site size. Because of the abbreviated nature of the study's timetable, it was not possible to revisit the instrument and incorporate this feedback. These potential biases are also reasons that this study's results cannot be considered representative.

Conclusion

The research presented here represents an initial exploration of stakeholder perceptions of Drupal project success. Through an examination of existing literature, it is hoped that the wide variety of approaches to project success has been presented. The issue of project success and stakeholder perceptions of it has been approached in many ways, from theoretical explorations to quantitative inquiries. What is lacking from the body of literature on project success are Drupal-specific inquiries.

As Drupal grows and is used by more and more intricate, expensive, and visible projects, it becomes critical to have an understanding of what factors contribute to Drupal project success and how Drupal project stakeholders conceptualize Drupal project success. Along with the work of Kulla-Mader (2009), the research presented here establishes a starting point for future explorations into Drupal project success. While its

findings cannot be considered representative, the research detailed here seeks to provide guidelines for more definitive research into Drupal project success.

This research found significant relationships between several aspects of Drupal projects and the perceived success of those projects. These factors include the performance of Drupal and modules used, project abandonment, and completion within budget. The research also collected information about which factor stakeholders most closely associated with Drupal project success and failure. Amongst these, "working product," "satisfied customer," and "minimal bugs" were most closely associated with Drupal project success. Ratings for project failure seemed much less definitive, perhaps because of flaws in the research instrument or ambiguity of perceptions about contributing factors to project failure.

Future research into Drupal project success could take the form of any combination of interviews, focus groups, qualitative or quantitative surveys, examination of usage data, or case studies. Given the general absence of research into Drupal project success, each of these methods could provide valuable information to Drupal project stakeholders, developers, and other members of the Drupal community. In particular, it would be useful to have information about what aspects of Drupal projects are unique compared with IS/IT projects in general and how these unique aspects contribute to perceptions of Drupal project success.

As mentioned above, it may be that because Drupal projects are often outsourced, their success depends more on completion within budget than other types of IS/IT projects. Comprehensive usage data about how Drupal is implemented would help to determine what percentage of Drupal projects fit into the client/vendor model. Case

studies, interviews, and focus groups could be used to obtain client and vendor perspectives on what makes a successful Drupal project. It may also be that there are nuances of Drupal projects that defy conventional success measures. Extensive quantitative research could explore Drupal projects and determine what, if any, aspects complicate measuring Drupal project success.

The primary message of this research is that more research is necessary to attain an understanding of stakeholder perceptions of Drupal project success. The limitations of this research mean that at best it acts as a set of guidelines and questions for future inquiry, rather than being able to present any conclusive findings about Drupal project success and stakeholders' perceptions of it. Despite its limitations, it is hoped that this research can provide a valuable starting point for future research.

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Appendix A: Questionnaire

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Drupal Success Factors Survey
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Drupal Experience Level
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Part 1: Drupal Experience Level

1. Please rank your Drupal experience level. Select as many apply.

( ) Not a Drupal user: no experience with Drupal

( ) Drupal user: Can log in and post content

( ) Drupal user/Content Administrator: can create users, monitor content, manage users, moderate taxonomy, and fix formatting issues

( ) Drupal Backend Administrator: can create CCK types, simple Views, panels, set up taxonomy and other administrative tasks, can search documentation and access resources on Drupal.org

( ) Drupal Backend Integrator: can install Drupal following best practice, can configure a functioning site using contributed modules, can assess reliability and security issues of contributed modules and themes, understands Drupal community

( ) Drupal Theme Developer: can install themes, subthemes, make full use of Drupal theme engine, write enough PHP code to support theme logic, has sufficient knowledge of CSS and HTML principles

( ) Drupal Code Developer: can develop modules using Drupal API (can write basic code in all and advanced code in at least one of the following: PHP, JavaScript, SQL)

( ) Other:

2. Do you work for a web development company?

( ) Yes

( ) No

3. How many years have you worked with Drupal?

( ) Less than a year

( ) 1 year - 2 years

( ) 2 years - 3 years

( ) 3 years - 5 years

( ) 5 years - 7 years

( ) 8 or more years

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Project Information
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Part 2: Project Information

For the next two sections, please consider the most recent Drupal project in which you were involved and answer the following questions about it.

4. The project consisted of the following: (Check all that apply)
( ) Upgrading from a previously-installed version of Drupal
( ) Setting up a new Drupal installation
( ) Creating a new theme
( ) Modifying an existing theme
( ) Modifying existing modules
( ) Using existing modules to integrate with 3rd party APIs (Constant Contact, Google, etc.)
( ) Developing new modules to meet specific project needs
( ) Migrating from a custom-coded site
( ) Migrating from another CMS (Wordpress, Joomla, etc.)
( ) Writing new modules to integrate with 3rd party APIs (Constant Contact, Google, etc.)
( ) Implementing a CRM solution (Salesforce, CiviCRM, SugarCRM, etc.)
( ) Implementing an E-Commerce Solution

5. How large was the project's site?
( ) Less than 20 nodes
( ) Between 21 and 100 nodes
( ) Between 101 and 500 nodes
( ) Between 501 and 1500 nodes
( ) Over 1500 nodes
( ) I don't know

6. How long did the project take to complete?
( ) Less than 1 month
( ) 1 to 3 months
( ) 3 to 6 months
( ) 6 to 9 months
( ) 9 months to 1 year
( ) Over 1 year

7. How much did your site cost to develop? If the site was built internally, please estimate your cost.

( ) Under $1,000
( ) Between $1,000 and $5,000
( ) Between $5,001 and $10,000
( ) Between $10,001 and $20,000
( ) Between $20,001 and $30,000
( ) Between $30,001 and $50,000
( ) Between $50,001 and $100,000
( ) Over $100,000

8. How many stakeholders were involved in this project?

_____

9. What version of Drupal did the project use? If multiple versions were used, please select as many apply.

( ) Drupal 4 and below
( ) Drupal 5
( ) Drupal 6
( ) Drupal 7
( ) I don't know

10. Was all or part of the project abandoned?

( ) Total abandonment: The project ended without a final product
( ) Substantial abandonment: A major truncation or simplification of the project occurred and the final product was radically different from the original specification.
( ) Partial abandonment: There was a reduction in overall scope but no major changes to the original specification.
( ) No abandonment: The project ended fully meeting the specifications assigned in the beginning.

11. For what industry was the project developed?

_____

12. What was your role in the project? Select as many apply.

( ) Project Manager
( ) Developer
( ) Theme Developer / Graphic Designer
( ) Non-technical advisor
( ) Other (please specify)

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Success Factors
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Part 3: Success Factors

Please consider the most recent Drupal project in which you were involved and answer the following about it.

13. How successful do you think this project was?
- ( ) Completely successful
- ( ) Highly successful
- ( ) Moderately successful
- ( ) Minimally successful
- ( ) Unsuccessful

14. Project type:
- ( ) In-house
- ( ) Developed for a customer
- ( ) Outsourced

15. How closely was the customer involved in the project?
- ( ) Uninvolved
- ( )
- ( )
- ( )
- ( )
- ( ) Closely involved

16. Did the project have a project manager?
- ( ) Yes
- ( ) No

17. What was the project manager's experience level? If you were the project manager, please rate yourself.
- ( ) Very Inexperienced
- ( )
- ( )
- ( )

( )
( ) Very Experienced

18. How well did the project manager understand the project's requirements? If you were the project manager, please rate yourself.
( ) Poor understanding of project requirements
( )
( )
( )
( )
( ) Excellent understanding of project requirements

19. Was the project manager changed to another project manager during the project?
( ) Yes
( ) No
( ) I don't know

20. Did the project manager allow for extra hours to be worked?
( ) Yes
( ) No
( ) I don't know

21. Were extra hours paid?
( ) Yes
( ) No
( ) I don't know

22. To your knowledge, were project requirements defined?
( ) Yes
( ) No
( ) I don't know

23. When were project requirements defined?
( ) Before project start
( ) During the project
( ) Other
( ) I don't know

24. In your opinion, was enough time devoted to defining requirements?
( ) Yes
( ) No

25. In your opinion, were project requirement adequately defined?
    ( ) Yes
    ( ) No
    ( ) I don't know

26. Was a project plan created?
    ( ) Yes
    ( ) No
    ( ) I don't know

27. What was the quality of this plan?
    ( ) Low Quality
    ( )
    ( )
    ( )
    ( )
    ( ) High Quality

28. Did the project have a budget?
    ( ) Yes
    ( ) No
    ( ) I don't know

29. Was the project completed within budget?
    ( ) Yes
    ( ) No
    ( ) I don't know

30. Did the project have a development schedule?
    ( ) Yes
    ( ) No
    ( ) I don't know

31. If so, did the project adhere to this schedule?
    ( ) Yes
    ( ) No

32. Were staff added to the project after it was begun?
    ( ) Yes
    ( ) No
    ( ) I don't know

33. Were project risks defined at the beginning of the project?

( ) Yes
( ) No
( ) I don't know

34. Did stakeholders meet regularly to discuss the project?

( ) Yes
( ) No
( ) I don't know

35. Did the project contribute modules back to Drupal.org?

( ) Yes
( ) No
( ) I don't know

36. How well did Drupal and the modules used in the project perform?

( ) Very Poorly
( )
( )
( )
( )
( ) Very Well

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Defining Success
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Part 4: Defining Success

37. Rate the following factors in terms of importance for a successful Drupal project:

	Very Unimportant		Unimportant		Neutral Somewhat Important	Very Important
Satisfied customer	_____	_____	_____	_____	_____	
Working product		_____	_____	_____	_____	_____
Project team satisfaction		_____	_____	_____	_____	_____
Technically challenging project	_____	_____	_____	_____	_____	
Project management satisfaction	_____	_____	_____	_____	_____	
Minimal bugs	_____	_____	_____	_____	_____	

38. Please list any other important success factors.

_____
_____
_____
_____
_____

39. Rate the following factors in terms of how closely you associate them with Drupal project failure

	No Association	Low Association		Neutral	Moderate Association	High Association
Poor project management		_____	_____	_____	_____	_____
Lack of resources	_____	_____	_____	_____	_____	
Poor definition of project requirements	_____	_____	_____	_____	_____	
Exceeding project budget	_____	_____	_____	_____	_____	
Exceeding project schedule	_____	_____	_____	_____	_____	

40. Please list any other factors associated with project failure.

_____
_____
_____
_____
_____