Case Study

PayMaster, Inc.[1]

Overview

A group of three computer programmers who are frustrated with the cumbersome practice of writing and mailing checks to cover routine expenses, or having to arrange for automatic payment with individual vendors, have devised a concept for an Internet site to simplify bill paying. A subscriber to the site would be able to create an account that allows the service provider to execute payments electronically in amounts and on dates selected by the subscriber. The site would create a profile of the subscriber that is easy for the subscriber to manage. Each time the subscriber logged on, he or she would be able to access a menu or established payees, and simply scroll through the menu. The profile would be easy to update, by adding and deleting payees. In addition, the user could manually select periodic prompting (such as "monthly"), or allow the site to learn the payment frequency passively. If either were selected, the site would warn the subscriber if it appeared that a payment had been overlooked. The software could generate a monthly transaction record, so subscribers who wished to could make a single monthly entry to a checking account balance. The software also is intended to be capable of other kinds of analysis.

The group members have organized themselves, at least temporarily, as a partnership, with each sharing equally in the venture. They believe the service, which they are calling "PayMaster," has significant advantages over existing systems, which can be used to generate payment checks, maintain accounting records, and handle a limited range of electronic transactions. Whereas most existing software seems to be designed for users who are budget-minded, and concerned with maintaining elaborate records of transactions, the service envisioned by the group is designed to save subscribers time and money.

Preliminary Product Development

Though all of the partners are eager to move ahead with the project, they disagree about several aspects of the proposed venture. First, they are unsure of how aggressively to pursue the concept. They can retain their existing positions and pursue the venture by devoting evening and weekend hours, or they can resign their positions and work full time on the venture. All three are employed in software development for an Internet consulting firm. Annual salaries of the three average around $120 thousand.

The choice will affect how quickly they can have a product ready for testing. If they commit to the venture full-time, they believe a product can be ready for testing in about 12 months. If they work only part-time on the venture, development is expected to

[1] The company name and specific nature of the venture are disguised to preserve confidentiality.

take approximately 18 months. The partners believe that if they resign their positions to work on the venture, finding a new position at comparable salary would require about six months of searching.

Product Testing and Revision

The testing phase is also a point of contention. The partners can test PayMaster on a small list of friends and acquaintances, or they can license the software to a major company, that can conduct tests on a larger scale. Under the first arrangement, the partners would expect to revise the software themselves. Under the second, revisions would be the responsibility of the licensee. Testing and revision is expected to require about nine months of effort by a licensee or full-time effort by the partners. If the partners continue to devote only part-time effort to the venture, then about 15 months would be needed. Under the licensing arrangement, more comprehensive testing could enable the licensee to develop a somewhat better product than the partners are likely to develop on their own, with more limited testing. The licensee might also be able to do a better job of positioning and pricing the service. Offsetting these advantages of licensing, the partners are concerned that prospective licensees might be skeptical about the market potential of the service, or might undervalue the initial contribution of the partners.

While the better choice is certain to become clearer over time, some decisions need to be made now. As an aid to decision making, the partners have developed some scenarios that they believe reasonably reflect the uncertainties about valuation. In particular, they believe that, if they resign to pursue the venture and if the service goes into the testing stage, there is about a 40 percent chance that a licensee will value their preliminary development efforts at about $7 million. The probability of an offer in the $4 million range is about 30 percent, and the probability of an offer of around $1.5 million is also about 30 percent.

Their expectations are somewhat different if they decide to pursue the project on a part-time basis. In this case, if the venture goes into the testing stage, the probability of an offer of about $6 million is about 20 percent, the probability of an offer of about $4 million is about 40 percent, and the probability of an offer around $1.5 million is about 40 percent. In part, the lower estimates are due to the longer time that would be needed for development. However, the partners also believe their decision not to resign to pursue the venture full-time would reflect negatively on valuation by outside investors.

Distribution and Marketing of the Service

If the service is not licensed after preliminary development is complete, the three partners would undertake testing and revising the service, to prepare it for commercial distribution. Distribution could be by direct marketing, such as via Internet advertising, or the partners could license distribution to a major company. Licensing, again, has some distinct advantages. An existing large firm could probably reach the market more quickly and effectively than could the partners. If licensing is selected the licensee would bear the costs of marketing and distributing the service. If not, the partners estimate that they would need the present valued equivalent of about $4 million to do an effective job of distribution and marketing.

Again, they have attempted to represent their uncertainties about the future in terms of scenarios. At this stage, they believe there is a 20 percent chance that a potential licensee would value their cumulative effort at a present value of $8 million, a 30 percent chance of a value of about $5 million, and a 50 percent chance of a value of about $1 million. Their current assessment of the present value of the venture, if they were to undertake distribution on their own is $6.5 million. Doing so would require the partners to commit full time to the venture, and the $6.5 million value is net of the value of their own time commitments during the distribution phase. From this, the cost of distribution and marketing would need to be deducted.

Other Concerns

Overlaying everything, there is a significant risk of outright failure. It is possible that the concept cannot get through the legal impediments that have protected conventional banking practices and generated a steady stream of first class postage revenues. If the legal impediments cannot be overcome, the partners can abandon the venture. The partners expect to be able to resolve the legal issues, one way or the other, during the period while the product is under development. Testing cannot begin until the issues are resolved. If the venture is abandoned and was being pursued full-time, the partners are free to seek new employment. Otherwise, there is no cash flow associated with abandonment. The partners disagree about the likelihood of abandonment, but believe the probability is between 20 and 50 percent, and is the same with part-time as with full-time efforts to develop the product.

The Decision

The partners are concerned with the immediate decision of whether to resign their current positions to pursue the venture, or to pursue it on a part-time basis. In principle, the partners could begin to develop the product on a part-time basis, and decide to leave current employment if and when it became clear that more time should be devoted to the venture. However, it is apparent to the parties that the highest-valued resignation strategy would be to resign immediately, and begin focusing on the venture full time. If they decide not to resign now, they believe resignation would only be warranted when the product begins to be distributed. If distribution is licensed to a third party, resignation of existing positions would not be necessary.

Identifying the real options

Based on the above description of the venture, identify the important real options that exist. Be as comprehensive as possible in describing the nature of the option (call or put), the underlying asset, when the exercise decision must be made, the cost of exercising the option, and how the exercise decision should be made.

Describing the information structure and probabilities

Information structure concerns the information the decision-makers will have at the time when each option decision must be made. Decisions to exercise or not exercise options are made in light of the information that is available at the time. Based on the list of options developed previously, what kinds of new information could be available that would affect the decisions?

Building the decision tree

Based on your description of the venture, and the decisions facing the partners, construct a decision tree that represents the choices they will need to make, and that reflects the choices Nature (or a licensee) will make.

Specifying the conditional payoffs and probabilities

For specifying the conditional payoffs and their probabilities, you may wish to resort to thinking in terms of scenarios.

Evaluating the opportunity

Evaluate the decision of whether to pursue the venture full- or part-time. How does the decision depend on the likelihood of abandonment? Are there qualitative factors that are not reflected in the decision tree, but should be taken into consideration?