

Motivation and Creativity in Controlled Platforms: An Analysis Based on Facebook and iPhone Application Developers

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ABSTRACT

In this paper, we describe how intrinsic motivation, extrinsic motivation, and willingness to take risk influence the activity of developers of Facebook and iPhone applications. Based on the distinction between professional developers and volunteers, we use a questionnaire to investigate the influence of different motivation structures on output measured in lines of code.

Categories and Subject Descriptors

J.4 [Computer applications]: Social and behavioral science – Psychology

General Terms

Management, Measurement, Theory.

Keywords

Platforms, Two-sided markets, Application development, Intrinsic motivation

1. INTRODUCTION

Platform business models are an increasingly popular way to transform technological innovations into economic value [10].

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Here, a platform is defined as an infrastructure which allows two distinct markets to interact with each other [2]. For example, Sony Playstation is a platform, as it combines the market for end users and the market for game developers. Recently emerged forms of platform business models do not even demand a monetary compensation for the platform itself, such as online auction platforms as the benefit from network effects preponderates.

Facebook, probably the most famous example for a platform business model, allows free developers as well as software firms to develop their own applications for the platform. Instead of keeping the platform closed, Facebook leaves possible revenues to external parties, thus gaining a rapid diffusion of the platform as well as increased traffic, which is important for staying attractive as an advertising channel [3]. Conversely, in case of Apple, the user of an application has to pay for the platform, which can be an iPad or iPhone, in advance

From an economic point of view, these business models are based on the mechanisms of two-sided network effects where it is possible to give something away for free in order to benefit from a complementary good or service. However, for platform providers, it is crucial to know when to open the platform and how to motivate external parties to develop adequate applications. Whereas the first question predominantly encompasses economic aspects [7] with regard to free external developers, the latter question touches behavioral aspects, which are so far neglected by business model researchers.

2. MODEL

Recent management research found out that the decision of individuals to allocate their time and effort to an open source

software project is driven by intrinsic and extrinsic motivations alike [1][4][5]. However, even though these studies are very detailed and therefore may act as valuable sources for obtaining knowledge on how to control a platform along with tied external parties, platforms like Facebook differ from open source projects. Whereas in the case of open source projects no one “owns” the product and intellectual property protection mechanisms are difficult to apply, a platform dedicated to a platform business model usually is owned by one entity. As this ownership status may have an effect on a developer’s motivation structure, it is important for a platform provider to know what this motivation structure looks like in order to stimulate external contributions to the focal platform.

To contribute to the discussion on how to get external entities to allocate their resources and applications to a platform, we asked Facebook as well as iPhone application developers about their motivation, the time they spend for developing, and their output in lines of code. Professional developers were further asked about how their organizational culture supports creativity, as the possibility to be creative may affect a developer’s output [6][8][9]. Creativity, an important prerequisite for innovations [2], is dependent on the willingness to take risks, which we suppose to be smaller for firm-paid developers, as they might lose their jobs as a consequence of risk taking. Figure 1 shows the research model.

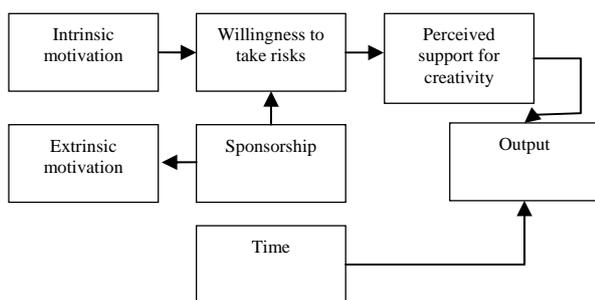


Figure 1. Research model

3. METHOD AND FINDINGS

A questionnaire, which consisted of 34 questions based on a 7-point-likert scale, was posted on a number of developer mailing lists. Table 1 gives an example of construct composition for “willingness to take risks”.

We received 86 valid answers and were able to calculate our measures. As expected, developers paid for doing their job by a firm spend more time on a project than their voluntary counterparts (32.78 hours for paid vs. 20.69 hours for non-paid in average). Intrinsic motivation (Cronbach’s alpha 0.696) was measured with six items adapted from [5], Extrinsic motivation (Cronbach’s alpha 0.744) with six items adapted from [4] and Perceived support for creativity (Cronbach’s alpha 0.978) with four items. All values for Cronbach’s alpha are 0.7 (rounded) or higher, indicating that the internal consistency of our measures is appropriate.

Table 2. Example: Conceptualization of “Willingness to take risks”

Willingness to take risks
In order to enhance the quality of features, I risk a possible delay in the release cycle
When I think of a good way to improve the way I accomplish my work, I will risk my job
When I think of a good way to improve the way I accomplish my work, I will risk potential failure to try it out.

We performed regression analysis using ordinary least square (OLS) regression and found, for example, that intrinsic motivation influences willingness to take risks, while being paid by a firm reduces willingness to take risks.

Therefore, our results, although exploratory in nature, indicate that developers paid by a firm seem to avoid taking risks in order to find innovative solutions or project ideas. However, as a platform’s growth is dependent on the development of new and creative applications, a platform provider should force contributions from unpaid developers.

4. ACKNOWLEDGMENTS

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5. REFERENCES

- [1] Bitzer, J. and Geishecker, I. 2010. Who contributes voluntarily to OSS? An investigation among German IT employees. *Research Policy*, 39, 165-172.
- [2] Boudreau, K. 2010. Open platform strategies and innovation: Granting access vs. devolving control. *Management Science*, 56, 10, 1849-1872.
- [3] Chesbrough, H. 2006. *Open Business Models*. Harvard Business School Press, Cambridge, MA.
- [4] Deci, E. L. 1971. Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology*, 18, 105-115.
- [5] Deci, E. L. and Ryan, R. M. 1987. The support of autonomy and the control of behavior. *Journal of Personality and Social Psychology*, 53, 1024-1037.
- [6] Dewett, T. 2007. Linking intrinsic motivation, risk taking, and employee creativity in an R&D environment. *R&D Management*, 37, 197-208.
- [7] Eisenmann, T. R., Parker, G. and Van Alstyne, M. (2008). *Opening Platforms: How, When and Why?* Harvard Business School, Working Paper 09-030
- [8] George, J. M. and Zhou, J. 2001. When Job Dissatisfactions Leads to Creativity: Encouraging the Expression of Voice. *Academy of Management Journal*, 44, 682-696.
- [9] Oldham, G. R. and Cummings, A. 1996. Employee Creativity: Personal and Contextual Factors at Work. *Academy of Management Journal*, 39, 607-634.
- [10] Teece, D.J. 2010. Business models, business strategy, and innovation. *Long Range Planning*, 43, 2/3, 172-194.