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Technology start-up firms as a portfolio of projects: The case of DIMA 3D

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Abstract

Start-up firms are novel companies, looking for a validated business model. In this paper, we argue that start-ups can be managed more effectively and efficiently as a portfolio of projects, instead of using the classical functional organization. As new firms, start-ups must define and implement new products and services, develop new markets, stablish logistic chains, etc. As the business model is not completely validated, these firms need to implement "minimum viable solutions" (prototypes) to be tested in real markets without making huge expenses. We show that a project portfolio management approach allows start-up firms to develop quick and low cost solutions.

We analyze the case study of DIMA 3D, a real Spanish start-up in the 3D printing sector. The firm has grown quickly during its two years of life, thanks to a pure project portfolio approach. The portfolio include projects related to new product and market development, product improvement, R&D, etc. By means of project portfolio management, the firm has gained flexibility and has developed organizational competences to give quick responses to the feedback received from the market. Human resources are engaged in several projects at the same time: One person can be the project manager in some projects and a team member in others. People are fully pointed to project deliverables.

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Keywords: Firm start up; innovation; project portfolio management; project based organization.

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1. Introduction

Start-up firms are new companies that are still looking for a validated business model (Blank & Dorf, 2012). A new company is not necessarily a start-up, that is, start-up does not mean "young", but uncertainty about the business model and about the success of the new products and services offered in the market.

According to the lean start-up philosophy by Ries (2011), in order to succeed with (usually) limited funds, start-up firms should be able to develop low cost "minimum viable products (MVP)" (or services). The MVP will allow firms to receive feedback from real markets and adapt the business model to real data.

Furthermore, when developing MVP´s and business models, start-up firms have to define and implement new products and new services, develop new markets, stablish logistic chains, look for financial resources, etc.

In this paper, we suggest that a project-based organization can help start-ups when looking for a validated business model, because firms can be more efficient as the people are focused on deliverables, cost and time. Each family of products and services can be managed as a program of projects and each cycle of prototyping-market introduction-market feedback can be managed as a project within the portfolio. We show that the portfolio approach and the project culture foster innovation within the company.

The links between innovation and project management have not been addressed wide enough in the literature. Keegan and Turner (2002) underlay that project management is usually focused on project control, and project control can stifle innovation, and therefore, new product development. Elonen and Artto (2003) and Cooper et al. (1998) highlight some of the problems when managing innovation and development projects in multi-project environments. Some of the most common problems are lack of commitment, unclear roles and responsibilities, inadequate information management and bad project oriented culture.

In this paper we suggest that those problems can be overcome, so that a project portfolio approach can foster innovation. We show the case of DIMA 3D, a start-up firm in the 3D printing industry. It is a success story, as the company has grown and increased its turnover in only two years. The firm is organized as a portfolio of projects in a fully project based organization. Previous project management background of the shareholders and the people working in the company has been a key to success.

The rest of the paper is organized as follows: First we describe some issues about the company and about the current innovative products and services they have introduced into de market. Then, we show how the firm is organized as a project based organization and we describe the portfolio of programs and projects. We finish with the main conclusions of the paper.

2. The company and the portfolio of products

2.1. The 3D Printing Industry

3D printing is an "additive manufacturing" technology. There-dimensional objects are built from a 3D computer model by means of the addition of successive layers of material (for further explanations, see, for instance, http://en.wikipedia.org/wiki/3D_printing). The process is managed by a computer software that translates 3D information into a sequence of extruder movements. First 3D printers were developed in the 80's by Charles Hull, co-founder of 3D Systems Corporation. Since then, the technologies have improved significantly: printing speed, quality of printed items, variety of materials, etc. First printers targeted industry applications; during the last years, domestic printers have burst into the market.

The 3D printing sector is an emerging industry, a ground-breaking manufacturing technology that will change how designing, manufacturing and retailing will be done around the word (McKinsey & Company, 2013). The Wohlers report (Wohlers, 2014) estimates that 3D printing is now a three billion dollar industry and it is expected to reach $12.8 billion by 2018 and $21 billion by 2020. The economic implications are so strong because specific products can be designed and printed beyond the traditional mass production systems, affecting traditional logistics and supply chain paradigms (Ramirez & Lopez-Paredes, 2015). A PwC report (PwC, 2015), based on firm surveys, shows that, in U.S., 66.7 % of manufacturing firms are adopting 3D printing in some way (experimenting, prototyping or producing final products); and more than 27 % of manufacturers plan to adopt the technology in less than 3 years.