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How to Implement Models of Supply Chain in Crowd funding Technological Projects

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Abstract: In recent years, technological projects developed using crowdfunding have increased significantly. This present paper studies how these projects deal with the supply chain, due to the specific requirements of the components, special nature of the companies supporting the project and how they deliver to the final customer.. The supply chain management contributes to the success of these projects, especially considering the high impact new technologies have. Hence, crowdfunding's supply chain is analyzed and factors of success are identified, together with a comprehensive detail of new areas to research in this novel topic.

Keywords: *Crowfunding; Supply chain management, Technology, Entrepreneurship.*

Introduction

In the last 4 decades, the global economy has made revolutionary changes in the rules of the market and the performance of the organizations. The technology has contributed largely to this, in a way that has created new ways of communication between business and their stakeholders. These include not only investors but also customers, suppliers, employees, and other individuals or groups of people who will have an impact in the success of the firm. The dynamic environment has transformed the way to do business. Organizations have focused on giving better solutions to customers, by bringing new products or services.

Also, the present financial and later economic crisis has affected business in some aspects, out of which the most important is obtaining sources of finance to be able to fund innovative marketable products and services. New financial alternatives have emerged due to the difficulty to get support from classic sources of finance, such as bank loans or government subsidies. Among these, collective forms of entrepreneurial finance are proliferating thanks to the innovation and technological advances. In addition, some of those evolved into a source of finance without a specific link between the investors and the company's equity or liability, creating new financing models (Barabas, 2012).

In this paper we will study crowdfunding as a finance model that request to individuals to support projects by providing from small to large amounts of funding. In return, "investors", who are called "backers" in this context, obtain different items in accordance to the funding they provided, without necessarily becoming stakeholders.

Supply Chain Management (SCM) analysis and comparison will enable to identify which are the key elements to consider in this aspect in order to ensure the success of these projects, thus analyzing specifically Crowdfunding's SC (Syazwan, et al., 2014). In the last 4 decades, the SCM has contributed to create value to the final consumer, being the classical improving and helping to create competitive advantages to the industries that have applied it. However, there is not yet an analysis that provides insights on this matter for products or services created through crowdfunding models. This will be our contribution.

The present study presents a general literature review considering SCM and a comprehensive view of the Crowdfunding theoretical framework, which is quite novel. Secondly, classic SCM models are described, and taking this as a starting point, through the evaluation of 5.000 crowdfunding projects in the Kickstarter platform, a new model is created specifically for SCM in this environment. Afterwards, factors of success are identified for the top crowdfunding projects and linkages between crowdfunding SC models and those factors are established. Lastly, conclusions are derived and future lines of research are identified.

Literature Review

Supply Chain (SC) can be defined as a network between organizations that are involved in the process to deliver and produce value to the products or services from the supplier to the consumer (Christopher, 1999). Also in this network, with at least three entities, are involved upstream and downstream flows of products, services, finances and information from the supplier to the final customer (Mentzer et al., 2011).

Because of the importance that this element has in the overall production and the completion of a final offer of goods and services, it is of high relevance to have an accurate organization of its own members and the contribution each of them has. Supply chain management (SCM) thus arose as an approach that focuses in the full supply process. It includes gathering raw materials, transporting them, and processing them into finished goods. This may take several steps, as organizations, in order to become more cost effective, are becoming more and more specialized.

As a result the number of organizations involved increases, and creates different challenges to solve, as the full business process affects a whole chain of different companies. Hence, SCM can be defined as the administration of upstream and downstream relationships with suppliers and customers adding value to the customer and the source (Christopher, 1999).

In a typical SCM, the marketing department will communicate with different distributors and retailers to determine and the customer demand and obtain inputs to produce its own outputs. Process integration thus will be used to share information with all the organizations taking part in the SC. Therefore, collaboration between buyers and suppliers, sharing relevant data and developing communication systems is key in achieving an efficient SC.

General and specific information must flow from the consumer end throughout all the supply chain and reach the ultimate supplier in the other end to transform data into sources of competitive advantage. SC configurations vary according to the sector or industry in which it is implemented. However, all economic productive entities need collaboration with its suppliers and consumers, to reach the final customer with a valuable product (Spekman et al.,1998).

In recent years, means of communication and technological advancements have greatly

influenced the dynamics of SC collaboration and in turn, SCM. It has been possible to have more accurate customer data, higher information diffusion and identifying final consumer's needs faster than ever before. But one element that has significantly modified SCM is the configuration of new business models that do not rely on traditional supplier-manufacturer-customer relationships. One of those, is novel funding opportunities that are shifting the production and offer of goods and services.

Crowdfunding

Crowdfunding is a relatively new form of financial source for entrepreneurs or companies seeking for funds to carry out their projects, obtaining such funding by drawing small contributions using internet platforms as intermediaries (Mollick 2013). It is thus an open call using internet sites to provide with financial resources to fund projects as donors, or exchange of some kind of rewards.

During last decade, thousands of new projects have reached this type of funding instead of the traditional capital investment as it provides entrepreneurs an alternative where they obtain financial resources needed to start their projects and not being in debt or losing control of their company's equity. This has been possible thanks to the widespread use Internet around the globe, which has helped to developed platforms to contact entrepreneurs requesting funds and backers (Brunton et al., 2015).

Projects funded by crowdfunding have a wide range of objectives, from artistic to more technological product development. In this case, we are focusing in analyzing crowdfunding projects which create specific goods incorporating technological developments and their singularities. For the purpose of this study, Crowdfunding financing models were classified according to what backers receive in exchange for providing funds. From the projects herein studied, the following alternatives are available across platforms and are previously evaluated and chosen by the entrepreneurs when creating the project:

- Reward based: Backers receive a tangible item or service.
- Equity based: Backers receive a stake in the company.
- Donation based: Usually used for charities.
- Lending based: Backers are repaid.

Equity and lending models are interesting ways to start a company, while donation based are mostly used for charities or other non-profit organizations, as well as initiatives. Lastly, reward based is commonly used for companies creating specific goods (physical objects), as the reward can be acquiring the product itself. It should be noted that these models can be combined in different ways, according to the reality and needs of each entrepreneur. For instance, some projects combine donations of low amounts (5 USD or 10 USD) where the reward is an online e-card saying "thank you", together with high amounts (eg. 100 USD) and in exchange the backer would obtain one of the first products to ever be sold (leading to a value-for-money offer plus exclusiveness). .

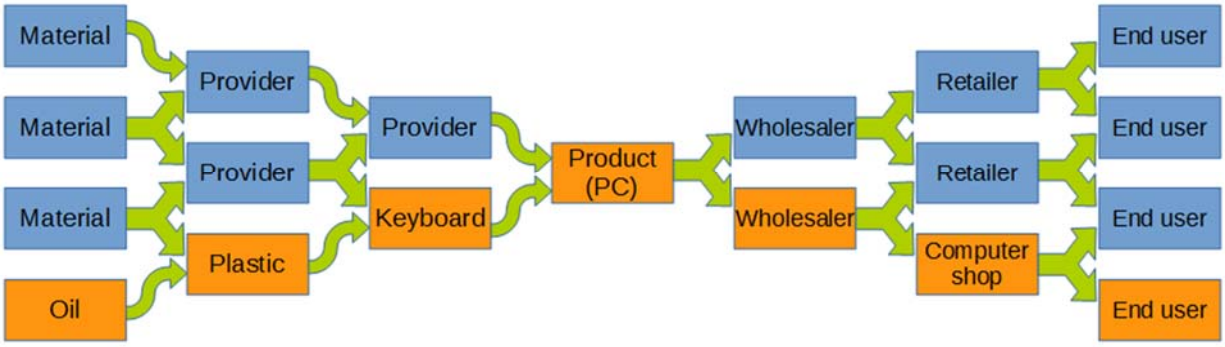
Reward based system is the most interesting case, as it can be applied to single products and it is the most popular model nowadays (Hermer, 2011). In this system the project tries to raise enough money in a limited time (depending on the campaign planning), and anyone who visits

the platform and views that specific project can see the remaining days, total amount to be obtained and how much of the goal has already been completed. If the campaign is successful, the project continues and the entrepreneur obtains the money he/she was able to obtain through the campaign. Some platforms allow the project payments to proceed if there is only a partial success, ensuring the entrepreneur at least a minimum funding, while in "all or nothing" campaigns, only provide funding if the goal is reached, otherwise refunding the money to each of the backers.

Differences between a standard supply chain and a crowdfunded project supply chain.

Products launched using crowdfunding may be in regular production after the funding campaign, however for the purpose of the present analysis the focus is on the initial crowdfunding process to obtain initial investment for the project. There are important differences this model and a standard supply chain model, which will be detailed in the following sections. Figure 1 shows a general traditional model of SC where the first collaborators providing raw materials are considered Tier 3 suppliers and it moves forward from production to two instances (wholesaler and specific retailer) before it is sold to the final consumer and end user.

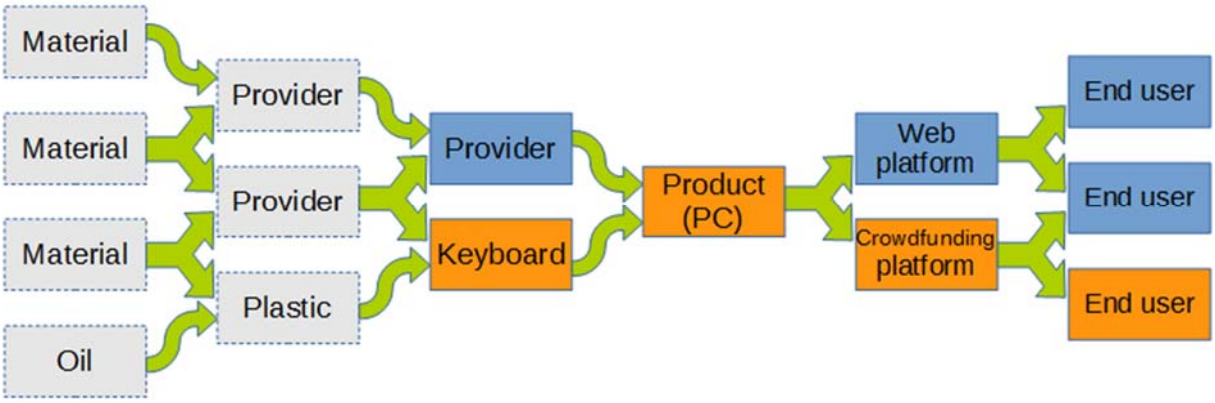
Figure 1: Traditional SC model



Source: Own elaboration

When comparing this traditional model with a product-based crowdfunding SC (CSC) model, the first difference is the lack of intermediation between the company producing and the end user. As the crowdfunding campaign needs to reach a certain goal, a minimum quantity of orders have to be fulfilled in a small amount of time, and only when they obtain the financing, they start production. This leads to two main benefits of this SC model. Firstly, the entrepreneur tests the market and obtains feedback from the prototype they show on their campaign. Secondly, they ensure they will have a minimum number of consumers prior to production.

Figure 2: Crowdfunding SC model



Source: Own elaboration

Based on the above mentioned, by knowing what will be the initial production (with 100% sales), the entrepreneur also can calculate the specific needs of raw materials and other elements he/she needs to elaborate the final products. This reduces the cost of stock and inventory, as well as creating more accurate measurements for production and enabling just-in-time.

However, it has been identified that one of the main problems is meeting deadlines. The reason why this is frequent is usually attributed to two different factors (Gerber et al., 2013). On the one hand, success that largely exceeds the original expectations creates an issue as the entrepreneur may not have the necessary resources and capacities to meet such a large demand. On the other hand, in some cases it was entrepreneurs who failed to have an accurate plan and schedule of activities to be carried out in order to meet the demand they initially calculated and set as a goal for their campaign.

Both problems can be explained with the CSC model described above. The excess in demand provokes a need for either a longer timeframe or better productive methods to increase productivity levels. However, in both scenarios the collaboration link with suppliers is key in order to obtain all the elements needed to produce fast and reach the deadline; and the entrepreneur relies on their suppliers having the same relationship with their suppliers, and so on. Hence down from tier 1 to tier 3 high collaboration and communication is needed to prevent a bottleneck in the manufacturing process.

Costs and success factors

Payment costs are distributed between the platform which operates the campaign and a company that encrypts the backers' data and transfers the amount paid to the entrepreneurs' account. Approximately 4% corresponds to the system incorporated to the website (e.g. Paypal or Visa) and an additional 4-5% to the crowdfunding platform. Partial success, on another note, will add an additional 4-5% for the crowdfunding platform, as seen on Table 1 so crowdfunding entrepreneurs will not ask for exceed in their funding. Shipping costs are difficult to quantify

as a percentage, as they would depend on weight, size and distance; backers could potentially be anywhere in the world and entrepreneurs shall define previously whether they will deliver anywhere or only to certain areas, notifying backers before making the payment.

Table 1: crowdfunding platforms requisites

	All or nothing?	Success fee	Fail fee	Time limit
Kickstarter	Yes	5%+(3-5%)	N	60 days
Indiegogo	No	4% (+3-5 %)	9%(+3-5%)	No
RocketHub	No	4 (+4)	8 (+4)	No

Compared to a conventional (wholesaler-retailer-shop) distribution model, where accumulated benefits can easily duplicate the final price (100%), Crowdfunding can be an interesting method to purchase technological products. It has been evidenced in the last few years that individuals who are tech-advocates prefer to buy a product through these platforms as they ensure to have the latest developments as well as unique ones, before anyone else does. This gives a unique competitive advantage for such a specific target market, enabling entrepreneurs to use it as a marketing tool for their campaigns.

Success when using crowdfunding to manufacture and distribute a technological product can most of the time be attributed to two factors. A realistic planning and a good funding campaign. The first includes a careful market study to know how good the sales of the product may be, building of a prototype that will allow the manufacturer to know if the project is viable, and what are the costs and supplies needed. The second includes advertising the crowdfunding campaign using adequate media (mainly social media) to reach enough potential customers. Social networking, initial backers and activity are the most relevant factors (An et al., 2014), as there is a direct relation between them and the probability of success.

Conclusion

Classical SCM models must be used in crowdfunding campaigns in order to be successful. A careful planning can take advantage of SCM in planning stages (Planning, distribution, logistics, customer service) and different elements (suppliers, customers, government, etc.).

Differences between SC and CSC must be considered in order to apply the SCM model. Firstly, tere are different time frames, as some planning must be done before obtaining any income or investment money, the actual funding is obtained in a relatively short period of time, and the planner must take into account that the funding campaign can actually fail (Mostly in all-or nothing campaigns).

Once the funding campaign is successful, having a fast/realistic production and delivery planning is crucial. Distribution (mainly shipping) is more straightforward compared to a wholesaler/retailer model. In addition, rates of success are heavily dependent on social

networking and active work during the campaign. Because of this, there are limits in knowing with a reasonable degree of accuracy the actual demand of the product. As the campaign can be a strong indicator of the demand, part of the manufacturing process needs to be modified during the funding campaign.

Manufacturing is what most successful projects find more difficult, as customers are backers and want their reward (product) in a reasonable time. But manufacture cannot start in many cases until there is funding for it, especially with technological products, as there is a need for a prototype. Planning can only reach so far, as many problems may become apparent only when the production has actually started. Because of this, additional costs need to be taken into account when calculating the budget of the whole operation.

Baring in mind the differences herein stated, SCM can be implemented in CSC, as it will allow the company or individual to have a realistic business plan that includes a crowdfunding campaign, a manufacturing and distribution plan, customer support and to make sure all is done in a satisfactory time interval. SCM can help with the planning and take into account where the bottlenecks can be found and how to take them into account so the customer is satisfied and the whole business is satisfactory for all the parts involved.

Bibliography

Barabas, R., (2012). Crowdfunding: Trends and Developments Impacting Entertainment Entrepreneurs. *NYSBA Entertainment, Arts and Sports Law Journal*, 23(2), pp.38–40.

Bruton, G. et al., (2015). New Financial Alternatives in Seeding Entrepreneurship: Microfinance, Crowdfunding, and Peer-to-Peer Innovations. *Entrepreneurship Theory and Practice*, 39(1), pp.9–26. Available at: http://doi.wiley.com/10.1111/etap.12143.

Christopher, M., (1999). *Logistics & supply chain management,* Ed Financial Times: Pitman Publishing London

Gerber, E.M. & Hui, J., (2013). Crowdfunding : Motivations and Deterrents for Participation. *ACM Transactions on Computer-Human Interaction*, 20(6), p.32.

Hemer, J., 2011. A snapshot on crowdfunding. *Working papers firms and region*, No R2/2011 econstor.

Mentzer, J.T. et al., (2001). JOURNAL OF BUSINESS LOGISTICS, Vol.22, No. 2, 2001 1. *Journal of Business*, 22(2), pp.1–25. Available at: http://www.nihul.biu.ac.il/_Uploads/dbsAttachedFiles/Image20100516092131-m1.pdf.

Spekman, R.E., Jr, J.W.K. & Myhr, N., (1998). An empirical investigation into supply chain management: A perspective on partnerships. *International Journal of Physical Distribution & Logistics Management*, 28(8), pp.630–650.

Syazwan, M. et al., (2014). Application of Critical Success Factors in Supply Chain Management. *Int. J Sup. Chain Mgt* , 3(1), pp.21–33.