BREAKEVEN DETERMINATION IN ENTREPRENEURIAL DECISION

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Abstract:

Entrepreneurship has remote origins and is powered by entrepreneur's action in response to meeting the needs and aspirations that they have. Putting into practice the ambitions of entrepreneurs is done by demonstrating personal skills in taking advantage of opportunities and / or ideas in business. To launch and maintain market businesses, entrepreneurs need not only the flair and ideas, but also a strong entrepreneurial education. On the one hand, it enables them to understand changes in the competitive environment, on the other hand, to find solutions to support the business. The faster and more robust decisions of entrepreneurs are, the greater will be their chances of success in the business arena. Moreover, in the era of information technology, entrepreneurial decision is inconceivable without recourse to calculations from the use of mathematical models or without the use of various simulation techniques. By developing this material is intended to show that the mathematical model of breakeven is a useful and efficient tool in the entrepreneur decision to start a business.

Key words: entrepreneur, mathematical model, management tools, breakeven, entrepreneurial decision

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INTRODUCTION

In all countries, at present, due to the role of the market economy, "undertakings" or "entrepreneurship" generically called "business" (Mironov, 2013), indicates "the beginning stable economy" (Luca 2013) and are considered both "backbone" (Dinu, 2002), and "regulatory factor" (Istocescu, 2008) of it. As the "initiators of change" (Iacob, 2014) and as the support the achievement of the main goals of society, they are more and more "supported" (Dinu, 2002) by governments. There are also "source collaboration or partnerships" (Bugaian, 2010).

As representatives of affirmation private initiative, entrepreneurs, always "looking for opportunities" (Shane, Venkataraman, 2000) and "competitive advantage" (Barringer, 1998), are "creative people, innovative" (Iacob and Mironescu, 2013) that acquire ideas, knowledge, opinions, "setting the stage" (Nastase, 2004) for new products and markets. To properly conduct the business they initiates, the entrepreneurs need managerial knowledge that provides a broad perspective on the components and mechanisms, on "relationship with the environment" (Pete & all, 2010; Casson 1982). This knowledge can help to shape and decide how to carry out the strategies that they propose. It also allows them to make a clearer idea of certain events by comparing the results of calculations of alternatives, the use of models, techniques and tools of management. Thus, they are able to decide quickly being correctly informed. To remove the subjectivity of the act of decision, entrepreneurs can obtain explicit and rigorous information on "causal relationship" between the factors that influence the entrepreneurial decisions using forecast descriptive mathematical models (Pekar and Smadici, 1995).

MATERIALS AND METHODS

1. BUSINESS AND ENTREPRENEUR IN A BRIEF OVERVIEW

In an increasing number of economies, business and entrepreneur are considered "vital force" (Audretsch, 2003; Mittelstadt and Cerri, 2008), especially in recent years when

entrepreneurship became "the most active element" (Hauge, 2010) of economic and social development.

Aiming to define entrepreneurship, Herbert and Link (1989) found that in the literature the authors share ideas grouped by "traditions" (trends) of the three major schools and their representatives: German (Thuenen and Schumpeter), American (Knight and Schultz), Austrian (von Mises, Kirzner și Shackle). Audretsch (2003) believes that the greatest impact in contemporary literature it has current Schumpeterian entrepreneurship, according to which the entrepreneur and his business task is to "reform or revolutionize the pattern of production by exploiting an invention".

The "creative" perspective of entrepreneurship is given by the "management of opportunities" (Sahlman and Stevenson, 1991), and the "innovations made by people" (Nicolescu, 2007; Nicolescu and Nicolescu, 2008) in "motivation" (Kalkan, Kaygusuz 2009) to identify "profitable economic potential" (Mittelstädt și Cerri, 2008). Widely accepted by scholars, this approach of "for profit" (Iacob and Mironescu, 2013; Mironov, 2013) refers to "the content of entrepreneurial activity" (Cunningham and Lischeron, 1991) and the notion of "business" viewed as a "competitive activities" (Sasu, 2001), or a "contractual relationship" (Gavrila and Lefter, 2002), or as "occupation" Certan (2005), or "occupation" (Smith, 2010) of individuals to produce and sell an "organized effort" (Iacob, 2014), "alone or in a group context" (Audretsch, 2003). Thus the concept of entrepreneurship appears to be multidimensional, shrouded in complexity, so that they activities more fixes forms of organization, and because the changes they produce are relative.

"Assuming the investment risks" Wedge (2008), entrepreneur, owner of capital, "motivated by making a profit" (Kalkan, Kaygusuz 2009), is the main character of the business. In so far as it directly involves the management of its business he accepts the challenge of being manager. Through a commitment of this kind he is solely responsible for the allocation of resources, and the results he obtain from the business. The success of such an approach is dependent on the nature of combining management knowledge with personal skills and especially the "will of personal development" (Rusu și Million, 2009). The accumulation of knowledge, relationships and long-term bonds provides creative and visionary capacity building allowing the mistakes avoidance. However, the use of methods, tools and techniques makes possible the increase of the management efficiency.

2. THE MATHEMATICAL MODEL FOR DETERMINING THE BREAKEVEN

Through this model it can be determine the evolution of a business when costs are covered and the activity becomes profitable. As a quantitative method of "diagnostic risk of production" (Tcaci and Tcaci, 2012), it is used in economic decision making. For example, in practice, this model can be calculated using the level of production for the profit is zero; the structure of a modernization program; the impact of increased sales, etc. The results are all the more precise the more accurately terms of the pattern are set out, respectively fixed and variable costs. Breakeven determination (BEP) is shown graphically in Figure 1 and is done through mathematical formula

$$Q=FC/(P-VC)$$

where   Q is the production for the profit is zero,

         FC represents fixed costs,

         VC represents variable costs
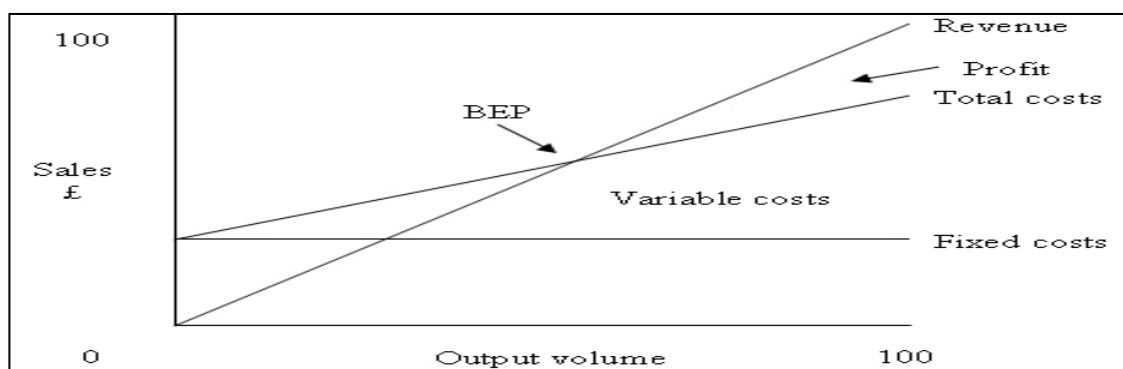
         CA is the volume of sales

Figure nr. 1 Break even point

The critical point (BEP) so determined enables the entrepreneur to calculate the margin of safety (MS), ie, the difference between breakeven and turnover. Depending on its size, it can be known with mathematical precision the situation of a company: instability, when the CA is up 10% over BEP (MS <10%); stability when CA is 10% under 20% over BEP (MS> 20%); comfortable when it exceeds by more than 20% BEP (MS> 20%).

Using the "product information Quantitative Analysis for Management (QM)" (Suciu and Luban 1994), Break-Even Analysis module, determining the critical point is extremely simple and handy to managers in the decision process.

RESULTS AND DISCUSSION

The determination of the breakeven point was made using the above mentioned software for making the decision to start the production activities of "Fornetti" at SC Vlavis Tour SRL by providing the working point with one, two or three baking ovens products. Based on the prices demanded by suppliers following costs were estimated for each variant:

Table 1. The costs of introducing ovens

	Fixed costs (€ / day)	**Variable costs** (€ / day)
One oven	22	3,00
Two ovens	26	3,30
Three ovens	30	3,60

Through pricing policy of the franchisor in order to ensure the attractiveness of products, it was established a sales price of € 4.49 / kg, relying on the sale of 30 kg / day. Running the software, led to the solutions presented in Table 2

Table 2. Solutions of the critical point

Unit selling price=4,49 €/ kg					
One oven		**Two ovens**		**Three ovens**	
Break even quantity (kg)	Break even euro (€)	Break even quantity (kg)	Break even euro (€)	Break even quantity (kg)	Break even euro (€)
14,77	60,27	21,85	98,10	33,71	151,35

A summary analysis of the solutions obtained allows to take into account the best first two options. The "One oven" option is undoubtedly the best both in terms of number of kg to be sold to overcome the critical point and in terms of the amount to be invested.

Estimating the profits that may result in three option was synthesized in Table 3.

Table 3. Value estimated profit

Expected sales units =30kg/day								(-euro-)
One oven			Two ovens			Three ovens		
Total Revenue	Total Cost	Profit	Total Rrvenue	Total Cost	Profit	Total Rrvenue	Total Cost	Profit
134,70	112	22,7	134,70	125	9,70	134,70	138	-3,3

As shown in Table 2 and Table 3, the "three ovens" option calls covering an amount of € 151.35 and requires an effort 3,71kg selling, more than expected, leading ultimately to a loss of 3,3 €. This option is not convenient.

"One oven" and "Two ovens" options already passed breakeven, being situated on stable and comfortable safety margin. Selling a reasonable number of kilograms of product, the company can achieve an acceptable profit. A careful tracking of costs and a sustained campaign to sell can greatly improve the profit. Of the two results, as amount of profit investment decision should be in favor of "One oven" option.

By simulating a reduction in variable costs by only 0.30 € to "Two ovens", the production effort becomes relatively small, however the profit almost doubles. This may tip the scales in the decision to invest for this version, especially since the wear of furnace is less and the productivity is greatly improved.

CONCLUSIONS

For deep mobilization of material, human, financial and information, the presence of entrepreneurs and their business is important in every economy in the world. Animated by the desire for profit and capitalize on opportunities and circumstances, entrepreneurs, through investments they make, it assumes various risks. Some of these can be prevented and eliminated, some can be mitigated, provided proper decision making, economic grounded on mathematical computations. Therefore, in addition to skills gained in long years of experience, entrepreneurs need management knowledge to maintain and develop their businesses. Continuous training and openness to acquire new knowledge can feed the potential. Moreover, the competitive environment of increasingly dynamic and compelling will only be generous with the entrepreneurs who know exactly what they want for their businesses.

In such conditions, business performance depends on the adaptability of entrepreneurs, the understanding and application management methods and techniques for decision making, becoming more concrete and mathematized, but also quite friendly to use.

The breakeven point model can be a very useful tool in entrepreneurial decision, whether it is desired to find the minimum covering of production costs, whether it is determined the structure of a modernization program, or to calculate the impact of higher sales.

The results of using the model are the same, whether it chooses to "hand" (by attaching values in the formula), or computer option (by completing values in a computer or smartphone application). Difference is obviously the speed with which information reaches the decider for it to be able to form an image and then choose. From the presented case study it was found that the solutions offered by using the method of determining the breakeven point can have a high degree of relevance and can fully meet the needs of the entrepreneur.

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