

COMPETITIVENESS OF HUNGARIAN SMALL AND MEDIUM ENTERPRISES ALONG THEIR LIFECYCLE

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Abstract:

The lifecycle model of Adizes is a widely used model for determining the different development – or evolution – stages of enterprises. The different lifecycle stages may be differentiated even in the smallest companies, and the observations and experiences given by the model may be used in analyses before making plans and even it can be a practical tool for managers in the decision-making process. Our paper focuses on the Hungarian SMEs and the specifications of the original Adizes model in the Hungarian circumstances. In our research we examined that whether the managers of enterprises have different attitudes and behaviour in different lifecycle stages (i.e. in different level of development), what are the most important motivations and driving forces for their decisions in the specific stages. According to our assumptions, the lifecycle stages of the enterprises may also affect their financial performance. For answering our questions we conducted an overall survey among Hungarian SMEs. The base of the primary research was based on the data of an on-line survey conducted in 2012. The survey was fulfilled by hundreds of top managers. The data were processed and analysed by different statistical methods using SPSS programme. Firstly the financial performance of the enterprises was analysed according to the results of their balance sheet, by which we determined four main categories depending on their business success. Our results proved that the profitability of the enterprises is strongly influenced by their lifecycle stage and the growing process is also determined by the age of the enterprise.

Keywords: SMEs, lifecycle stages, profitability, competitiveness

1. INTRODUCTION AND LITERATURE REVIEW

Lifecycle models describe the different stages of corporate life. Enterprises are grown and developed according to a natural lifecycle. All organizations have a lifecycle and they undergo predictable and repetitive behaviour patterns as they grow and develop. At each new stage of development, an organization is facing different challenges. How well or how poorly can the management answer these challenges that will establish their future, the success or failure of the organization?

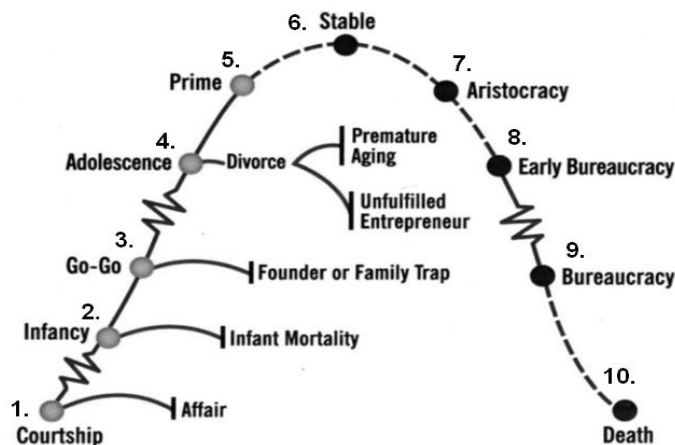
Lifecycle models show the life stages of the enterprises and organizations as a sequence of different stages, which are absolutely based on each other. These models not only determine the general features of the different stages, but also summarize the different operational and managing problems of each stage. Lifecycle models are a widely used tool or method that may help the enterprises to handle the transition periods more easily are also taken into consideration by them.

There are different types of development models in the international literature. The model of Timmons includes five stages: the Pre-start up (or incubation stage), the Start up and survival, Early growth period, Maturity stage and Stability (or harvest stage). This model does not deal with the declining stage or the death of the enterprises. (Timmons, 1990).

Greiner (1998) has determined five distinguishable phases in which a growing organization moves: Creativity, Direction, Delegation, Coordination, and Collaboration. In each phase there is an effect of the previous phase and the cause for the next phase. According to Greiner's opinion the future of an organization may be less determined by outside forces than it is by the organization's history. In Greiner's model, corporate lifecycle is depending on the age and the size of companies.

The model of Adizes (1992) introduces the different stages of the lifecycle compared to the human life stages, but the stages of development are shown independently from the size and the age of the organization (see Picture 1.). The model's most important feature is that it gives the most serious problems and threats, which may endanger the enterprise of the given stage.

Picture 1: The original lifecycle model of Adizes



Source: http://adizes.com/corporate_lifecycle.html

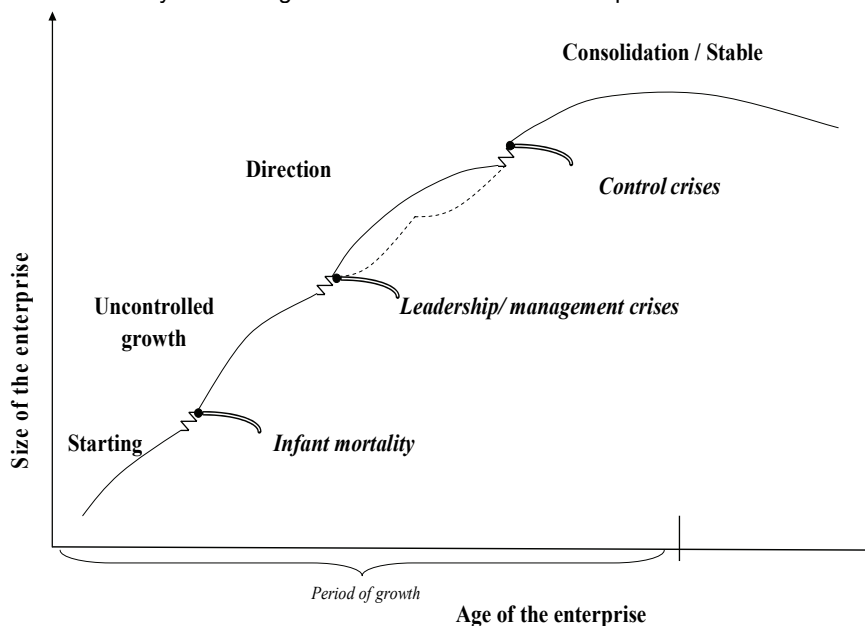
According to Adizes, the development of enterprises is influenced by the manageability and controllability of the organization, and by its flexibility and its ability for renewal. According to his model, the manageability of the enterprises is growing gradually along the lifecycle, and it decreases suddenly at the end of the lifecycle, while flexibility is decreasing gradually. The Adizes model emphasizes that company leaders shall be able to recognize the difference between the conventional problems of a given lifecycle phase of the organisation and those unconventional and harmful problems which may lead to a crises or the total fall of the company. According to Adizes, conventional problems may be solved by the internal resources of the organization if these problems may be foreseen, while the solution of unconventional problems or dysfunctions need an external help in every cases. The special character of the model of Adizes is that it also refers to the possible death of the enterprises.

The economic and political environment may influence the features of the development stages of enterprises; a special example for this phenomenon could be observed in Central European Countries after the political and economic transition process of the 1990s.

The Hungarian researcher, Salamonné Huszty (2006) combined the concepts of Adizes and Greiner, based on a research that was conducted among 50 Hungarian SMEs, which were established between 1989 and 1994. In this research which was the special features of the Hungarian enterprises were explored. The examined SMEs were all the “children of the transition” – that means they were founded in the period of the political and economic changes of the 1990s – therefore their circumstances could be considered as nearly similar. The results of this survey described well the development stages of this group of enterprises. Salamonné in the cited study highlighted the correlations between the main features of different sized companies at different development phases. She concluded that only few organizations could reach the stage of dynamic growth during this period, therefore she suggested combining two stages of growth, namely “Adolescence” and “Prime”. By this change, the model could better reflect the local features of the Hungarian economy and the special conditions of the economic transition period.

These observations were drawn into further research and were published in another paper (Salamonné et al., 2008). According to the improved model, the developmental pattern of Hungarian SMEs can be visualized by a rising line with different breaks. This model is typical of Hungarian SMEs and we can find many differences when compared to the enterprises in western market economies. The authors recommended four lifecycle stages under the Hungarian economic circumstances, where the 1st stage is “Starting”, the 2nd is “Uncontrolled growth”, 3rd is “Direction” (growth within formalized framework) and the last phase is “Consolidation”, where cooperation plays an important role. (See Picture 2.)

Picture 2: Lifecycle of Hungarian Small and Medium Enterprises



Source: Own construction based on Salamonné et al. (2008).

Salamonné also introduced a “profitability model based on the entrepreneur’s attitudes“ (Salamonné, 2000, pp. 185-186.). According to this model, a company which growth slows down – or with Adizes’ words, when the Bureaucracy stage appears – may solve this problem by vertical expansion or product differentiation. The real solution is the reanimation of the former, more dynamic lifecycle phases. In case of small enterprises, the entrepreneur’s spirit should be strengthened for this recovering for confirming or regaining the former position in the market competition.

Another Hungarian author, Rabi (2008) has conducted a survey among 22 successfully operated Hungarian SMEs, in which self-assessment questionnaires and in-depth interviews were used. According to Rabi, the development process of Hungarian SMEs may be well illustrated by the lifecycle model of Adizes.

The results of his survey showed that the peak of the lifecycle in small enterprises with 6-20 employees is close to the “Go-go” stage, while larger SMEs, with 20-150 employees, can develop further, and the decline may be observed after “Prime” stage. This trend is in compliance with the assumptions, because in smaller enterprises the managers have relatively too much power, which may lead to the lack of autonomy of the organization which may be a barrier of the further development. In larger SMEs the crisis in the “Prime” stage is caused by the control problems, when the organization is not prepared for the new challenges.

The evolution and the crisis may appear within each stage. When the managers can handle the situation, and they can manage the crisis, then the organization is able to step into the next lifecycle stage, but, on the contrary, without the needed changes the organization sooner or later will be terminated. The development of enterprises is most importantly determined by their managers' attitudes for change; the lack of the ability for change will bring the death of the enterprise.

According to the observations of Bakonyi (2012) who followed the lifecycle of enterprises which were newly established in 2005, only 40,5% of the observed enterprises were still operated in 2010. Bakonyi, in a former work (Bakonyi, 2011) has given the following definition for new enterprises: enterprises may be considered as new, when it was operated in the given year, and was not operated in the previous two years. His results prove that development processes can easily turn out into the reverse direction, and may cause the decline on the organization.

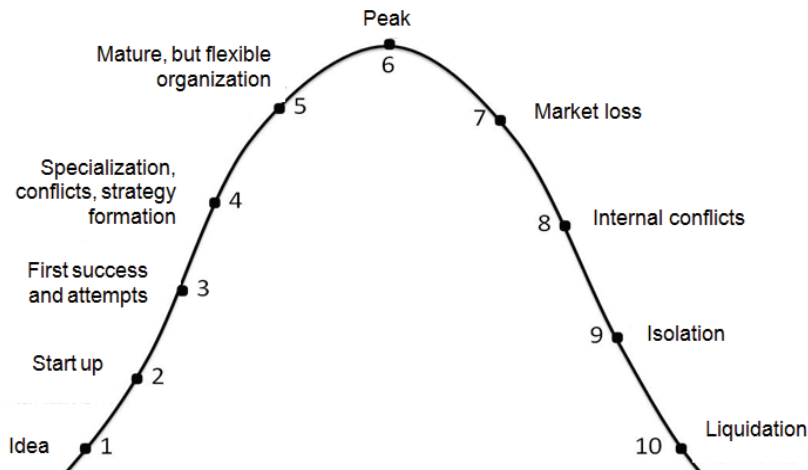
Illés, Dunay and Tatár (2012) explored the different signs of evolution and revolution processes in the different lifecycle stages. They suggested to analyse the state of health of the enterprise and to identify the possible symptoms in the form of a “corporate medical record”. This method, where the features of both the former and present lifecycle stages of the organization are summarized, may be a very useful tool for company leaders, as the evolution and revolution features of the different stages could be well recognized by it. While evolution processes may help the company to remain in the given stage or to step into the next developmental stage, the revolutionary processes (or crises) may bring turbulent changes with negative impacts. The management of the revolutionary stages will principally determine the further development process of the company.

2. ADAPTATION OF ADIZES' LIFECYCLE MODEL IN OUR SURVEY

Based on the findings of different authors, we used the Adizes lifecycle model in our survey. In our opinion, this model may be considered as most detailed, because it gives the possible problems and refers to their solutions as well. In our present research we used the full lifecycle model instead of the special Hungarian model, because the Hungarian enterprises could enter to the next changes as time has passed.

In our survey we made some corrections of the original model; we substituted the original names of the stages into more descriptive, more practical titles, which can summarize the most important features and information about the enterprise. The sequence number of the lifecycle stages may be used as a scale as well, which made easier the data processing. The lifecycle model used in our survey is shown by Picture 3.

Picture 3: The adaptation of Adizes' lifecycle model in the questionnaire used in our survey



Source: own compilation based on Adizes (1992, p. 115).

In our research we wished to explore whether the managers of the enterprises have different behaviour and attitudes in the different stages of the lifecycle, or not. The original lifecycle stages of the Adizes model were characterized according to this assumption.

In the “Courtship” stage there only the idea that exists, some concepts and visions about the future enterprise. When somebody takes the risk, and starts the business, then the company will be born. If nobody will take the risk and the idea will not be followed by realization, then the company will not start. In our survey, for understanding the essence of this stage more easily, we have given the name “Idea”.

The stage “Infancy” may be characterized by the increase of production and sales without any strategy. In this stage, the entrepreneurial spirit plays the most important role. Infant organizations need the constant need of food – i.e. operating capital – and the permanent care of the founders. The most significant problem is the loss of liquidity or if the founders lose their commitment. In our survey, we called this stage as “Start up”.

The “Go-go” stage is a very dynamic stage when the organization successfully has passed the initial problems. The organization – as the child who has just learned to walk – moves quickly and interested in everything, planning is not the most important concept. The previous and present success has been generated by the risk-taking founder, and the risk easily may turn into failure. A larger organization needs a different type of leader, who can delegate tasks to the colleagues, so as to be successful even without his/her presence. We called this stage as “First success and attempts”.

“Adolescence” is a stage full of confrontations; it is the organization’s teenager age, a very emotional time, where the enterprise must find a life apart from that the founders have provided. If the company can follow this way successfully, and will not fall into the trap of conflicts and distrust, then the organization may establish a well-regulated system. According to our terminology, this is the period of “Specialization, conflicts and strategy formation”. The growing of the size of the enterprise will not mean entering into the next stage; it is depending on the regulatory system of the organization. While in the initial stage the idea and the new product was the most significant objective of the enterprise, in this stage the emphasis shifts towards the more precise operation process and successful sales.

“Prime” stage is the optimal position on the lifecycle, where the organization finally achieves a balance between control and flexibility, and it has all the advantages of adolescence and prime stages. The control works well, the creativity is adaptable and very dynamic. According to our assumption, it is the stage of “Mature, but flexible organization”. This stage is the optimum point of the lifecycle, and the management must proactively work to promote activities that retard aging and sustain the vitality of this stage. Continuous innovation is needed in this period.

“Stable” phase means that the vitality of the organization is at its maximum, it is strong, but it is starting to lose its flexibility and innovativeness. For the renewal new ideas, dynamic and very strong entrepreneurial spirit would be needed, and with lack of this spirit the enterprise will be too comfortable will start to decline. In our questionnaire, we referred to this period as “Peak”, which has both positive and negative meaning.

“Aristocracy” is in the declining part of the lifecycle curve. The aging process is not resulted by the ageing process or the decreasing of the size, but rather by losing the flexibility of operation and the lack of ability for renewal. Nevertheless, the organization may grow in size in this period, but the operations are managed routinely. The number of buyers starts to decrease, which will lead to revenue and profit losses. We called this stage as “Market loss”.

In “Early bureaucracy” the signs of bureaucracy occur, with huge administrative burden and internal conflicts. The people do not trust in each other and the risk avoiding attitude spreads. The name of this period was called “Internal conflicts”.

In Bureaucracy” stage the emphasis is on administration, the company becomes introverted, inflexible and unmanageable, therefore we called this stage “Isolated”.

“Death” is the end of the corporate lifecycle, the enterprise is not able to exist, it is liquidated, therefore we used the name “Liquidation”.

3. MATERIAL AND METHODS

According to our assumption, the age of the enterprise (i.e. the position on the lifecycle curve) strongly determines the corporate efficiency. For the verification of this hypothesis, we conducted a survey.

The research was based on the primary data of an on-line survey sent in September, 2012. The survey was fulfilled by 241 top managers. This means that answers represented subjective opinions.

Full representativeness could not be an objective of this research, but it should be noted that the responses resembled a similar picture to the Central Statistical Office statistics on size distribution of domestic enterprises.

Statistical analysis was performed with SPSS for Windows Programme package. After coding the questionnaires and recording the answers labels were given. Descriptive statistics was used in the initial steps, to present the frequencies of the answers to the respective questions.

Associative links between qualitative variables were examined by crosstabs; the statistical significance of links was tested by chi-square (χ^2) test. The null hypothesis was that the variables were independent; the null hypothesis was refused if the empirical significance values were not larger than 5%. Refusal of the null hypothesis meant the statistical justification of an associative link.

Strength of correlation between two ordinal variables was tested by the Gamma association test, which is a symmetric measure of association between two ordinal variables that ranges between -1 and 1. Values close to an absolute value of 1 indicate a strong relationship between the two variables. Values close to zero indicate little or no relationship. Negative sign shows a relationship of opposite direction, a higher value of one variable indicates a probably lower value for the other variable.

If two nominal or mixed (nominal and ordinal) variables were tested for correlation, then the Cramer's V was applied. Cramer's V is a measure of association based on chi-square, its value can range between 0 and 1, a value closer to 1 indicates stronger relationship.

From multivariate statistical tests, we applied cluster analysis to group observed units and variables. For grouping variables we used hierarchical clustering, as agglomeration methods we used the nearest neighbour and Ward's variance method. The first methods is perfect to indicate extreme cases, the Ward method maximises in-cluster similarity. Dendograms were used to display the results, and the resulting graph allowed identifying and denominating the groups.

For grouping observed units, the K-means clustering was used.

In the formulation of the groups, we considered the deviation of the group average as the basis for classification. For this one-way analysis of variance (ANOVA) was used. We tested the differences

between the group averages by the empirical significance values (p values). Differences are statistically significant if the p values are not larger than 5%.

We used post hoc tests to identify groups with significantly deviating averages. Analysis of variation was tested with the Levene-method to identify the proper post hoc test. If the variances were identical between groups then the Turkey and Scheffe test was used, otherwise the Games-Howell test was applied.

The number of answers to be evaluated were different by questions, therefore not the total sample size but the number of possible answers was considered as 100% (as projection basis).

4. RESULTS

In the examination of the efficiency of enterprises in our sample, we analysed the data of the balance sheets and assessed the number of employees, the revenue and the balance sheet total data, as the most important indicators of growth. Furthermore, from the available data we calculated selected efficiency (asset efficiency) and profitability indicators (ROA, i.e. Return on Assets and ROS, i.e. Return on Sales). We summarized the used indicators and their calculation methods in Table 1..

Table 1: Calculation methods of the used efficiency and profitability indicators

Asset efficiency (Asset turnover)	$AE = \frac{\text{Revenue}}{\text{Total assets}}$
Return on Assets	$ROA - I = \frac{\text{Net income}}{\text{Total assets}}$ $ROA - II = \frac{\text{Earnings before taxes}}{\text{Total assets}}$
Return on sales	$ROS - I = \frac{\text{Net income}}{\text{Revenue}}$ $ROS - II = \frac{\text{Earnings before taxes}}{\text{Revenue}}$

Source: own construction.

The classification of enterprises by efficiency can be done in multiple ways. Our objective was to classify the enterprises in such way by which it is possible to diminish the absolute size differences and consider growth and profitability indicators simultaneously. The solution which we found was identifying the principal components of annual growth (number of workforce, revenue, balance sheet total) and the annual asset efficiency (AE) and selected profitability indicators (ROA, ROS). The average growth of the principal components was calculated with the Ordinary Least Squares (OLS) method, which gives estimation by minimising deviation sums of squares. This method evens out deviations of alternate directions and gives a larger weight to larger deviations by counting the square.

Hierarchical clustering with the „nearest neighbour” method did not provide any proof for similarity of asset efficiency and other variables for the examined years. The principal component analysis confirmed that the communality of this variable did not reach the minimally necessary level (0,350) (Sajtos and Mitev, 2007, p. 268).

In the assessment, only those enterprises were included which were at least 5 years old. However, in some cases a missing interim value caused that no principal component was generated for the given enterprise. Finally, we classified the 194 enterprises having all the necessary data into four categories by the „Growth” and „Profitability” principal components (dimensions).

Those, which showed positive values for both variables were titled „Competitive”. The enterprises that only grew in size were titled „Showing growth”.

Companies that did not grow but their revenues have indicated profitability were called as „Profitable”. Finally, those enterprises, which showed decline in both indicators were classified as „Non-competitive”.

According to this, the number of enterprises in the four subcategories was the following: 45 „Competitive”, 46 „Showing growth”, 54 „Profitable” and 49 „Non-competitive”.

We used multiway variance analysis for assessing that the four subcategories can or cannot be distinguished significantly according to the two principal components (i.e. Growth and Profitability). The statistical analyses verified that there is a significant difference between the profitability indicators in the different groups ($F = 28,392$; $p < 0,001$; Wilks-lambda distribution = 0,475; partial $\epsilon^2 = 0,311$). The further analyses confirmed that in case of “Growth” indicator the results are not significant because of the significance level of Levene test ($p < 0,001$). The impact of “Profitability” is significant according to the statistical analysis ($F = 32,662$; $p < 0,001$; partial $\epsilon^2 = 0,340$). According to the “Profitability” component the categories may be distinguished significantly, while “Competitive” and “Profitable” subcategories showed the same high results ($p = 0,378$), the “Non-competitive” and “Showing growth” categories showed low values ($p = 0,804$) according to this indicator.

Based on the attributes of the enterprise according to their position in the lifecycle there was no significant difference between efficiency categories using crosstab analysis.

We applied multivariate logistical regression to check for the connection between enterprise attributes (headcount category, age, location, lifecycle position, porterian strategy) and efficiency categories but no significant correlation emerged ($p = 0,200$).

Using multivariate variance analysis to examine corporate attributes statistically significant difference could be seen in „Profitability”. Additional analyses showed that lifecycle position had significant distinguishing effect on „Profitability” ($p = 0,009$). Post hoc tests could not be conducted, because – at least in one of lifecycle stages – less than two cases could be found. Nevertheless, the effects of lifecycle variables on the profitability were significant, and it was confirmed by the statistical analyses.

Furthermore, the correlation between the “Growth” indicator and the age of the enterprise was verified by statistical analyses. According to its results, the connection is a weak negative correlation ($p = 0,002$; Spearman's $\rho = -0,226$), which means that the aging process of the enterprises will decrease their rate of growth. This underlines the natural process of adjustment to a saturation level. The initial accelerating growth is followed by saturation, which slows the growth down. The market can be saturated with the given product (Vernon, 1966) if the company cannot react for the changes of the market circumstances in a flexible way or it is not able to innovate. This can be followed by a decline (Adizes, 1992) even if the product may be kept as profitable for a while as a result of the mature and well used technology and the low input cost level.

5. CONCLUSION

In this paper, we collected the different lifecycle analyses according to the international and Hungarian literature. We used Adizes' lifecycle model for our research, which goal was to determine the present position of Hungarian enterprises in their lifecycle and to prove that the most important indicators of growth are in connection with the position of the enterprise in its own lifecycle.

Of course, it is very complex problem to recognize the particular lifecycle stage of an enterprise, as the differences between stages in most cases are not separated by sharp lines. Therefore, we adapted the Adizes model in our questionnaires and we characterized the different stages with more practical phrases and descriptions.

In the future, we consider following our researches by using the model of Greiner (1998), because this model concentrates on growth, and the different stages of his model are given according to the size and the age of the organization. A recent Hungarian research (Miskolczi, 2012) was conducted according to this model based on the data of Hungarian SMEs operated in trading and manufacturing industry. The results of the research, which was based on the survey of the top managers of the

examined enterprises, have proven that the Hungarian SMEs may be assessed according to the phases given by the model of Greiner.

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