

A New Old Concept for Bussines Progress: Physical Capital Maintenance

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Abstract—This study aims at promoting the physical capital maintenance concept, as a solution for the development of economic entities, by demonstrating the reliability of this concept in obtaining performance at the level of economic entity due to the technological upgrade. Physical capital maintenance is a relatively new concept in the accounting theory and practice. Very fast, convenient and handy indeed, we associate production capacity with technology, devices, networks, with the staff and its knowledge, and it seems that we are not far away from the truth. Physical capital maintenance requires the recognition of the profit only if the entity was able to maintain its current activity level which is measured by production capacity. This article aims to highlight the results that the practical application of the concept of physical capital maintenance strictly related to the technological aspect has in the organizational behavior changing. In this sense, the empirical research will demonstrate the changes in the current forms of business management through the use of the physical capital maintenance concept.

Index Terms— physical capital maintenance, technological upgrade, change management, change in organizational behavior

1 INTRODUCTION

Technological advance has marked and will mark the historical evolution of the world's societies and peoples. It was, it is and it will be a factor of development for the human activities, a factor of individual and institutional emancipation, a factor of change on the fly of the ideas to do business and to think economically. It is the domain which has produced and produces the greatest paradigm shifts in business and economic thinking, the domain for whose relaxation energies and egos are compressed in research and development departments.

The world we live in is conditioned and animated by the peoples cultures and histories that are united on civilization aspect. Talking about more cultures and just one civilization, we can say, without the fear of being wrong, that we are witnessing a major cultural dispute, attempts to promote its own culture through everything that one nation or another has best and most valuable. On this background, we are lately seeing a fierce competition for dominance of technological development, the only capable to assure access, strong presence and to increase all markets for economic entity.

The present work brings into discussion the concept of physical capital maintenance which could be a viable alternative to provide the funding necessary to ensure continuity of the economic entity activity (implicit for investment policy – technological update).

2 PRIOR WORK

The permanent technological update, at the level of economic entities, is possible by approaching and implementing at their level the concept of physical capital maintenance. Physical capital maintenance is a relatively new concept in accounting theory and practice, not through its origins (the 30s of last century), but through the lack of problematic in the literature, situation that has led to the absence of an algorithm to enable the application of the concept in the economical entities practice. Extensive discussions on the physical capital maintenance were in the mid '70s when the U.S. standardization body wanted to improve the conceptual framework [1]. Due to the combined efforts of the international body for issuing International Financial Reporting Standards Board (IASB) on the harmonization of international accounting, physical capital maintenance concept was introduced in 1989 in the IASB's concept as an accounting alternative to financial capital maintenance, but from 1989 until the present there are no scientific papers to explain the consequence of maintaining the physical capital on the performance of the economic entity [2].

Physical capital maintenance requires recognition of the profit only if the production capacity of the entity at the end of the period is higher than the production capacity at the beginning of the period, after excluding any capital contributions or distributions from or to shareholders. The productive capacity is primary provided, at least at present, by the technology of the economic entity. And to recognize the profit (the rationale of any economic entity) it is necessary to increase the productive capacity. In our opinion this thing is possible through innovation, Beach [3] published the results of a study to reflect the

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results of the measurement technique of physical capital in the U.S. rail industry. The study was based on official data from journals, statistical institutes and different associations in the period 1920-1929. For the valuation of physical capital it was used as measurement unit the number of years of using tangible assets of American railways. The productive capacity involves technology, and the technology, translated into specific terms of accounting (as management science) means tangible assets.

Break [4] believes that physical capital maintenance should be performed only by maintaining the physical characteristics of tangible assets held by the entity to carry out productive work, without trying the monetary evaluation of the physical capital that should be maintained. According to this concept, any change in the existing tangible assets leads to a real positive or negative result. When an entity acquires or produces a new tangible asset, it is added to the real profit. But changes on monetary assets, that do not affect tangible assets used in the productive activity of the entity, do not affect the physical capital.

Gynther [5] associates physical capital with the production capacity of an entity which assumes that all assets used in production must be evaluated individually at their current cost, and where no current cost can be determined, then specific price indices must be used.

3 RESEARCH METHODOLOGY

The paper is based on a positivist research to demonstrate the changes in the current forms of business management through the use of the physical capital maintenance concept (its substantiation on production capacity, discussed here under technological aspect). In our approach to validate the formulated hypothesis, the development of the economic entity will be reflected by the turnover. We will try therefore to establish a relationship between changes in the value of fixed assets and changes in turnover. We believe that there are more objective and representative the considerations related to the involution of the two concepts in question, the reduction of fixed assets, leading to the reduction of turnover. It is a reality of the current economic environment, in which the selling of assets deprives the entity of the technological factor that is so necessary to the development of economic entities. The study will be based on empirical research in order to validate the following hypothesis:

Hypothesis: There is a relationship between the physical capital maintenance and the development of economic entities.

We want to highlight the fact that the decrease of the fixed assets, at the level of an entity, leads to the decrease of the turnover, and consequently to the dependency between the decrease of physical capital and the entity de-capitalization. This confirms the relationship between physical capital maintenance and development of economic entities.

The testing of hypothesis was done using one of the

most popular econometrics tools simple regression. The regression analysis shows whether there are relationships or not between the categories in question and how strong they are.

4 RESULTS AND DISCUSSIONS

4.1. The Quantitative Analysis

Wanting to capture the realities of the Romanian economic environment, we conducted the study on economic entities in Romania below the limit given by the weak diversification of the financial information provided by their annual reports (not having information about the type, nature, number, technical characteristics, etc.). To obtain the data with which we worked on the study, we accessed the Bucharest Stock Exchange (BSE) website. The valuation of physical capital was based on the value of fixed assets and on turnover. The data were taken from the financial information of economic entities published on the website. A number of 26 economic entities listed on the BSE which have a decrease in fixed assets and turnover have been under study for testing the correlation between decrease of fixed assets and decrease of turnover (Appendix 1).

4.2. Hypothesis Testing

The regression function presented in Figure 1 shows that in the case of a change with a 1% of the negative variation of the fixed assets, the negative variation of the turnover changes by 6.58%.

Regression function:

$$Y = 59721457 + 6,58X \quad (\text{Formula 1})$$

Regression Statistics				
Multiple R	0,5067			
R Square	0,2568			
Adjusted R Square	0,2258			
Standard Error	2E+08			
Observations	26			
ANOVA		Regression	Residual	Total
df		1	24	25
SS		3,22E+17	9,32E+17	1,25E+18
MS		3,22E+17	3,88E+16	
F		8,2909		
Significance F		0,00825		
		Intercept	X Variable 1	
Coefficients		59721457	6,58853	
Standard Error		4,4E+07	2,28816	
t Stat		-1,34454	2,879406	
P-value		0,191346	0,00825	

Fig.1 Summary output for simple regression between negative variation of the fixed assets and negative varia-

tion of the turnover

Since Multiple R has a positive value close to 0.5, this shows that between negative variation of fixed assets and negative variation of the turnover is a direct correlation of medium intensity. R Square shows us that 25,68% of the negative variation of the turnover is explained by the negative variation of the non-current assets. Since Significance F has a low value, below the threshold limit of 0.05, and F is a high value, we can accept the simple regression model presented in Formula 1.

4.3. The Qualitative Analysis

Physical capital maintenance concept requires an entity to recognize profit only if it maintained the production capacity and just for the share that surpasses the physical capital originally invested. This study showed that there is a connection between the physical capital maintenance and the development of an economic entity, which entitles us to say that, by physical capital maintenance at the level of economic entities, the performance of these entities will be much higher and the risk of bankruptcy because of fictitious dividends distribution will be as non-existent. It is obvious that it is easily avoided the confusion that can occur by raising the role of physical capital maintenance concept to preserve the substance of technology, equipments in production, being noted the aspect of maintaining their power to participate in achieving performance. This comes from today's economic reality that offers the chance only to those who operate with equipment, technology and new concepts.

We managed to demonstrate that there is a strong link between the level of fixed assets and the performance of the economic entity, which gives us a chance to fight for change in the way of doing business, to be effective and efficiency on a growing and selective international market. The confirmation of the working hypothesis supports our attempt to demonstrate that there is a connection between physical capital maintenance and the development of economic entities. By this, we consider necessary the adjustment of decisions, of organizational and decisional climate to the new concept of physical capital maintenance and through this to continuous technological change and not to disinvestment. We consider it a strong enough argument for reconsidering the physical capital maintenance concept, having as actionable premises the socio-economic realities in which the entity operates.

Lately we are witnessing the divestment (sale of fixed assets) with the purpose to fill the gaps caused by a bad management. But we forget that they are short-term results and that failing to replace the sold ones with other technologies, more efficient, can bankrupt any business. Managers need a reliable tool for a new way of doing business, a tool that does not lead to disinvestment, and even more, that allow a continuous technological change and thus the development of the economic entity.

5. CONCLUSIONS AND SUGGESTIONS

The physical capital maintenance is a business management tool very useful to the senior management of the economic entity. It represents a paradigm change (a possible renouncement of financial capital maintenance), a solution to the current economic environment in which the inflation periods alternate more often than ever. It is the concept which does not allow the payment of unjustified dividends because it takes into account the real profit. We have a new managerial tool for business management. The paper highlights the quality of this new form of business management, its reliability in achieving performance of the economic entity, as well as the advantage offered by ensuring the capabilities required by continuous technological change.

Our study provides a useful basis for discussion, of further in-depths and developments, necessary for a complete perspective of the determinants of this concept. A first assessment can be made in connection with the provision of production capacity, at least in terms of technology, using the concept in question. It is widely accepted that the huge advances in living standards, caused by global economies, is largely due to the technological progress. Now, there are produced technologies that haven't even been imagined by the generations of the 1800s. The physical capital maintenance concept creates the idea, produces change, and ensures the framework for continuous technological change.

The cornerstone of economic growth is the technological progress. The standard of living is much higher now in most nations of the world than a hundred years ago. The reason is related to the fact that productivity, at the level of the economic entities, increased significantly and the cause of this progress is seen by the domain specialists as being technological changes that took place.

ACKNOWLEDGMENT

This work was supported by CNCSIS-UEFISCSU project number PN II-RU TE 326/2010 "The development and implementation at the level of economic entities from Romania of an evaluation model based on physical capital maintenance concept."

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APPENDIX 1: The negative variation of the fixed assets and the negative variation of the turnover

No.	Entities' name	Non current assets for the year 2009	Non current assets for the year 2008	Negative variation of the non current assets (X - independent variable)	Turnover for the year 2009	Turnover for the year 2008	Negative variation of the turnover (Y - dependent variable)
1	ALRO S.A.	1.529.251	1.613.272	-84.021	1.410.482	1.968.016	-557.534
2	ARMATURA S.A.	18.780	19.978	-1.198	20.277	29.960	-9.683
3	AZOMURES S.A.	223.274	234.021	-10.747	743.310	1.144.100	-400.790
4	BOROMIR PROD SA	93.390	94.103	-713	133.669	162.445	-28.776
5	COMCM SA CONSTANTA	274.255	279.386	-5.131	38.568	64.422	-25.854
6	COMELF S.A.	30.455	32.054	-1.599	71.057	125.959	-54.902
7	COMP S. A.	354.929	356.485	-1.556	253.632	310.818	-57.186
8	CONTOR GROUP S.A. Arad	58.190	59.173	-983	43.873	44.533	-660
9	DAFORA SA	325.506	336.952	-11.446	185.652	269.018	-83.366
10	GRUPUL INDUSTRIAL	7.790	10.267	-2.477	9.524	12.570	-3.046
11	IMPACT DEVELOPER	87.624	125.657	-38.033	54.233	151.688	-97.455
12	MECANICA CEHLAU	25.832	31.898	-6.066	17.394	31.703	-14.309
13	MECHEL TARGOVISTE	234.344	255.019	-20.675	529.628	1.107.164	-577.536
14	MEFIN S.A.	15.464	21.990	-6.526	22.945	27.405	-4.460
15	MJ MAILLIS ROMANIA	24.025	31.192	-7.167	29.501	66.228	-36.727
16	OIL TERMINAL S.A.	170.699	173.650	-2.951	127.484	134.573	-7.089
17	OLTCHIM S.A. RM.	1.098.810	1.106.990	-8.180	1.077.519	1.946.943	-869.424
18	PRODPLAST S.A.	10.057	11.149	-1.092	46.001	66.133	-20.132
19	ROMCARBON SA BUZAU	181.598	183.243	-1.645	76.880	93.812	-16.932
20	SANTIERUL NAVAL	56.533	68.863	-12.330	99.895	125.967	-26.072
21	SC TRANSILVANIA	133.994	137.556	-3.562	28.866	58.940	-30.074
22	SINTEZA S.A.	160.722	162.198	-1.476	12.227	12.287	-60
23	SOCEP S.A.	62.601	64.470	-1.869	45.842	58.818	-12.976
24	T.M.K. - ARTROM S.A.	423.412	437.148	-13.736	441.697	678.876	-237.179
25	UAMT S.A.	35.418	38.043	-2.625	36.026	46.116	-10.090
26	VES SA	19.935	20.937	-1.002	41.312	51.002	-9.690