



REVIEW OF INNOVATION AND COMPETITIVENESS

A JOURNAL
OF ECONOMIC
AND SOCIAL
RESEARCH

3

VOLUME

ISSUE 3

2017



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The Journal is published quarterly.

Annual subscription: 200 HRK.

Journal is published with the help of Ministry of science and education.

Design

Koncept, Pula

Print

Grafika Režanci, Režanci

Copies

150

ISSN 1849-9015

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THEORETICAL PROPOSAL FOR EXPANSION OF ROE WITH NEW SUB-RATIOS

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Article info

Paper category: Original Scientific Paper

Received: 4.5.2017.

Accepted: 8.9.2017.

JEL classification: M21, M31, M40

ABSTRACT

ROE is the ratio of profitability which can be separated into three ratios in Du Pont model. The question is - can it be even more comprehensive with more than three Du Pont ratios; that is can it also include liquidity, market share, break-even point, plan vs. actual, structure of assets and liabilities, structure of fixed costs, etc.? If these can be included in calculation, the financial, management accounting and strategic analysis could be more integrated into one more rounded system. Financial ratio analysis would also integrate into one ratio the usually different areas of analysis, like structure of assets, structure of liabilities, liquidity, turnover, financial leverage, etc. Strategic management and management accounting ratios, developed in the literature and used in business practice, are represented. The article in front of you presents a theoretical proposal through deduction method of how mentioned measures can potentially be included in ROE, resulting in potential benefits in planning and controlling. Integrated different areas of financial ratio analysis, management accounting and strategic analysis each represented with its ratios in profitability measure ratio, provides potentially better view of conditions, profit multipliers and risk the profitability is achieved by. Integration inside profitability measure gives a special qualitative advantage, having in mind that achieved profit is the main goal for owners of the company's equity.

Keywords:

ROE; Market share; Assets; Liabilities; Breakeven point

1. INTRODUCTION

"A primary advantage of ratios is that they can be used to compare the risk and return relationships..." (White, Sondhi, Fried, 2003: 111). If the return on equity and a number of risks involved could be presented in one ratio, the ratio analysis would be improved.

The calculation of ROE ratio is well-known subject in the management accounting manuals. Even more, it is a general knowledge connected with economics student's basic education. It is partial ratio in sense that it can be used only as a profitability measure. However, Du Pont model makes it possible for ROE ratio to be broken into net profit margin, turnover ratio of assets and financial leverage.

Undisputable, all three included measures in ROE are highly useful. Each would show relevant details of the company's profitability. Still, scientific mind could raise a question - is there something more in it? Can the calculation be extended in order to interconnect the liquidity, break-even point, market share at which the profit was generated or even business's key expenses? All these values are anyway interconnected in achieving profitability.

With the aim of including the new variables into ROE calculation, the literature review is firstly presented. It is followed by proposal of a method for including new relevant management variables into the system. Afterwards are presented challenges the management faces and for each challenge one new variable is included into ROE calculation. This is followed by proposed new way to calculate ROE with these new variables included. The end of the article presents potential advantages and challenges the new system of ROE calculation faces.

2. LITERATURE REVIEW

One general statement can be easily claimed - management accounting and ratio analysis go together. Analysis of the past is certainly in the ratio analysis focus. However, it is also the starting point for defining how management expects that relations of main positions in the financial statements should look like in the future.

Any management accounting manual is stating different areas of ratio analysis. These can be separated into activity analysis, liquidity analysis, profitability analysis, long-term debt and solvency analysis (White, Sondhi, Fried, 2003: 111, 120-139). The split can be on liquidity ratios, asset management ratios, debt management ratios, profitability ratios, with addition of market value ratios like price to earnings, book value per share or market to book ratio (Brigham, Houston, 1998: 86-87). The ratios can also be grouped into ratios of structure, ratios of profitability and ratios of management - like turnover ratios (Ranković, 1995: 134-146). The list could go further with stating different classifications. The main point is that these ratios are classified into specific areas, which still remain without an attempt to be integrated into

one ratio number. That is, there is no theoretical explanation how these different areas of analysis can be integrated as a part of one ratio number. Since the profit is the ultimate financial goal of any business, it would be probably the most beneficial if different areas of ratio analysis could be integrated inside one of profitability ratios.

Ratio analysis has been used for different purposes, besides the analysis of financial statements. It is used for understanding at macro level for broad industry classes to find a correspondence between the accounting numbers and basic industry attributes, instead on the level of individual firm (Gupta, Huefner, 1972: 77, 79). Altman tried to combine several measures of ratio analysis into Z-score in the past. The aim was to forecast the future of analyzed company, more precisely - the possibility of failure (Žarkić - Joksimović, 2008: 189-190). His idea was used for predicting small business failure as well. One of the findings was that ratio analysis can make relevant prediction in this case, but that three consecutive financial statements should be used for the prediction in the case of small business. In the case of Altman Z-score, only one year financial statement could be used for this prediction (Edmister, 1972: 1491). The efficiencies of the industries or individual companies in the industries, even the national industry efficiency was measured with ratio analysis as bases. It was used extensively in the banking industry, for understanding performances of main airlines in Taiwan, for 38 global airlines, for evaluating the performance of Greek ports or Chinese ports. The last analysis provides a rounded judgement on port efficiency by consideration of multiple financial ratios and simultaneously using an innovative adopted version of Data Envelopment Analysis in order to combine them into single measure of efficiency. (Humberto Ablandeo - Rosas et al., 2010: 349-351). Ratio analysis is even used as bases in an attempt for measuring the Quality of Employees (Anantadjaya, 2011: 55-67).

Ratio analysis is widely used for managing the business as well. The budgets are usually made taking into consideration planned relation between different parts of financial assets or revenues and expenses. Management transforms the strategic and operational planes into values registered in projected financial statements during the budgeting. Ratio analysis can be used after completion of planned statements for projected "blood picture" of the company. In this manner, it also enters the area of strategic and operational management. Strategic management is implicitly connected with ratio analysis, especially the financial strategy as a part of overall company's strategy. R. Grant states the potential sources of cost advantage inside the defined strategic solution like economies of scale or capacity utilization (Grant, 1992: 153). Having in mind that important and planned strategic decisions are connected with economies of scale or capacity usage, but also with liquidity, structure of assets, structure of liabilities, it would be interesting to have all these strategic decisions integrated into ratio number connected with profitability as ultimate goal. Strategic management accounting was developed with the purpose of providing strategic information for management. It can be segregated into three different area of analysis - products, customers and competition (Ward, 1993: 59-166). Market share as performance indicator can

be relevant here, since it is connected with all previously mentioned – products, customers and competitors. Empirical studies show significantly positive relationship between market share and performance (Lee, 2013: 480). Having this in mind, ratio analysis can be improved for management decisions if market share can be included more directly into ratio analysis. R. Wilson had already introduced market share into management accounting for competitors (Wilson, 1999: 60-65). Connection of market share and ratio analysis, especially connection with achieved profitability, could bring important information to strategic management. Rating agencies declare market share as important information, but its formal and direct inclusion into financial ratio system is not common. Direct inclusion of market share in financial ratio analysis is still open area of research. Strategic management accounting was partly created with the purpose of solving these issues. Still, there is an opinion that strategic management accounting is a long way to go for researching of established field, which would connect strategy, accounting and marketing (Juras, 2014: 82)

Based on findings in literature, it seems that ROE calculation as defined in Du Pont model can be further developed. If other areas of financial analysis, except the net profit margin, turnover of assets and financial leverage, can be included (like structure of assets, liabilities, etc.) as well as strategic management relevant measures (like breakeven, actual against planned, etc.), the ratio analysis can bring higher quality information. Especially, if all these areas can be directly connected with profitability. The extension of Du Pont model in this direction was not found in the literature. However, the breaking of ratios in similar manner as in Du Pont model could be found for measuring the performances of marketing (Wilson, 1999: 100-101) or for EVA calculation (Pohlen, Coleman, 2005: 48).

The subject of the paper is to establish theoretical solution for bringing other relevant ratios into the ROE calculation. The paper is an attempt to reach a more comprehensive measure of profitability with ratios, which make firmer connection to other areas of ratio analysis, strategic management information and external strategic marketing results.

3. THE METHOD FOR INCLUSION OF NEW SUB-RATIOS IN ROE

The method of ratio analysis is well established and widely used in the daily practice. If you want to understand a business, the ratio analysis will show its "blood picture". It will be possible to get you familiar with the strong and weak sides of an organization. However, the deeper analysis will possibly be needed to find out the causes of current weaknesses and strengths.

In the wide range of ratio numbers, ROE - return on the equity is one of more important. It will show the net profit generated per one monetary unit invested in company's equity.

It can be further divided into three separate ratios as advised by Du Pont model. The first one is net profit margin as the ratio between the net profit and sales. It shows the earning power achieved by enterprise per monetary unit of sales. The second ratio is asset turnover, calculated by dividing the sales and assets. It shows how many times sales were higher than total assets or, to put it differently, how many times in average total asset was used in one year. Finally, the last ratio is calculated by dividing the assets with equity. It shows the financial leverage used by the company. As any leverage, it will be useful when the things are good, but can have destructive result when the things are on the downside.

The original ratio and Du Pont calculation of the ratio are presented as follows (Brigham, Houston, 1998: 86-87):

$$\text{ROE} = \text{net profit/equity} \quad (1)$$

$$\text{ROE} = (\text{net profit/sales}) \times (\text{sales/assets}) \times (\text{assets/equity}) \quad (2)$$

Du Pont model is calculated based on three ratios and the simple mathematical rule. If any two ratios are multiplied, the denominator and the numerator of two following fractions inside ROE can cancel each other due to their values being the same.

This rule is implemented almost without saying. But, it can be a potential road to improved ratio. This mathematical fact can be used in order to include the new ratio numbers into the ROE calculation and will be the method for further development of ROE.

The new theoretical proposal for calculation of ROE is based on theoretically firmly established and empirically proved concepts of break-even point, market share, structure of expenses, financial leverage, structure of assets and expenses. Based on these concepts, it is possible to use deduction and construct proposal for new theoretical solution which can be implemented in ROE calculation.

4. POTENTIAL CHALLENGES AND BREAKTHROUGHTS IN ROE CALCULATION

It could be claimed that some elements could be defined as relevant due to the fact that their inclusion in ROE would lead to the higher quality of ratio analysis and ultimately to the higher quality information to management. If chosen interdependences between achieved market share, liquidity, structure of assets, structure of liabilities, level of fixed assets, level of planned sales from one side and profitability from other, could be presented in one ratio like ROE - the financial analysis would have a kind of `ultimate` ratio indicator.

The first challenge in further development of ROE can be connected with the need for the inclusion of strategic external variables into the management accounting and ratio analysis. K. Simmonds has stated that the final result of the company is based on the position established on the market relative to its competitors (Wilson,

2001: 3). K. Ward claimed that management accounting was closely included in almost all aspects of production and engineering, but that is less involved in marketing (Ward, 1993: 83). The accountants usually work with expenses, what is in the sharp contrast with marketer's interest in the competitive position. One possible way of measuring this position is relative market share achieved in the market. Relative market share is defined as a company's market share compared with leading competitor (Wilson, 1999: 61). Market share can be, certainly, considered as relevant strategic information as well. The profit is, at the end, the final result created due to achieved market share. The development of strategic management accounting was based on managements' need to include external variables into the management accounting, including ones like market share. This is due to the fact that calculations connected with just product and technology are not relevant for managers who operate in the modern world. This can lead to conclusion that direct inclusion of market share in absolute or relative terms into ratio analysis can be beneficial for the management.

PIMS program (Profit Impact on Market Strategies) has been done by Harvard for decades. It analyses the result of marketing strategies on financial result of the company. It is empirically proved that market share is one of the most influencing variables on profit (Milisavljević, Todorović, 1995: 342). Profit and market share are connected. If the market share is not gained on the level that makes the production profitable, it can be concluded that profitability will be negative. There is an optimum level of the market share, after which further pursuing the higher market share will decrease the profit. After some level, the marketing expense for achieving the higher market share will be under the impact of the decreasing returns law (Wilson, Gilligan, 2005: 700). All stated is the reason why the market share should be included into ROE.

The second challenge is inclusion of key expenses in the calculation. What can be considered as key expense? In every industry some expense has high share in structure of revenues or expenses. Due to this, it highly determines the overall profitability. Alternative way of defining key expense, as defined option in this paper, is that this expense does not have high share in expenses, but high impact on the overall sale and company's success. In other words, these expenses are connected with key success factors (Johnson, Scholes, Whittington, 2005: 96). For the purpose of this article, the expenses connected with activities for fulfilling the main or all of these factors can also be considered as key expense. Key activities or processes can be found in literature with its strategic cost management connection as well. They are connected with competitive advantage (Shank, Govindarajan, 1993: 70-72). and fulfilment of key success factors. The example of the key expense can be advertising. It has strong impact on generation of sales in many industries and is a key success factor in many industries. The advertising expenses, which also have high share in the structure of expenses in modern times, will usually strongly influence the price of final product

through psychological differentiation. It will influence achieved market share. The advertising or some other differentiation expense can have strong influence on sales – as the key expense. This is the reason why ratio of achieved profitability should include market share as well as key expense in its calculation. To emphasise, marketing (precisely advertising). will be used in this article as an example of the key expense.

Efficiency of the key expense in generating market share can be considered as important for overall profitability and should potentially be included in ROE.

The key expenses could be fixed in nature. Research and development activities expense for creation of new products is an example. It helps to generate the market share, but it is fixed expense. Investment in efficient production machinery will generate high fixed expense. These are key expenses in many industries.

The third challenge is to include the break-even point in ROE calculation, as the strategic management information. The level of achieved profit is, usually, closely connected to achieved breakeven. It could be claimed that one of the weakest points of ratio analysis is not calculating the breakeven point of the enterprise. The analyst could try to split the expenses from Profit and Loss Statement into fixed and variable parts to make the calculation. Currently, there is only financial leverage included into the formula for ROE. However, operational leverage is also important.

The fourth challenge is indirectly connected with break-even point. Is the planned safety margin reached with the planned level of sales or not? Contribution can be close to fixed expenses` level, leading to company being easily unprofitable in the following years. This would also mean that company should decrease the level of fixed expense in the future, if possible.

The fifth challenge is the structure of costs. It influences the profit level and risk connected with analyzed company. The fixed expenses are important for the level of achieved profit. The chosen location, equipment, etc., have strong influence on the level of fixed expense. Allocated resources create capacity for activities which are done on operational level inside the company or its individual departments, like depreciation, salaries, etc. Fixed expenses to volume level are result of this created capacity (Kaplan, Anderson, 2007: 8). The most usual example is the level of created capacity for production. Are fixed expenses high when compared with the level of achieved contribution from year to year? How much does the key expense contribute to the fixed expenses?

If the key expense is variable, what is the structure of cost when comparing key variable expense with total variable expenses? What is the relation of variable and fixed costs?

The sixth challenge is tracking the planned against realized sales. Achieving the planned values can be important information for any analyst. It will show the quality of management planning as well as the quality of implementation. These are important dimensions which should be included into the ROE calculation as information, if possible. Comparing the plan against actual is one of the basic controlling techniques.

The seventh challenge is definition of asset structure inside ROE. What is the share of the current asset in total asset? The profit is achieved with that share and this structure is traditionally considered as important part of the ratio analysis. If it can be included in calculation, ROE will become more the overall ratio number.

The eight challenge is definition of the liabilities structure. What is the share of the current liabilities in the total liabilities? The profit is, also, achieved with that share - which is traditionally considered as important part of ratio analysis. If it can be included in calculation, ROE will become closer to the status of overall ratio number.

The ninth challenge is tracking the level of current asset/current liabilities as horizontal balance in the balance sheet. The profit is, also, achieved under conditions of this liquidity balance. If the liquidity can be included in ROE, the link between profitability and liquidity can be better showed in the ratio analysis.

All previously mentioned challenges are connected with the profit generation. They are usual challenges management have while trying to run the business profitably. Due to this, it can be beneficial if the profitability ratio can be defined in the manner which makes it possible for previous challenges to be solved inside ROE.

5. THE PROPOSAL FOR MODIFIED ROE FORMULA

In an attempt to modify the ROE formula with the aim of meeting previous challenges, the following proposal for its calculation is presented in the form of two equations:

$$\text{ROE} = (\text{net profit/market share}) \times (\text{market share/key expense - advertising as example}) \times (\text{key expense - advertising as example /fixed expenses}) \times (\text{fixed expenses/contribution}) \times (\text{contribution/contribution per planned sales}) \times (\text{contribution per planned sales/planned sales}) \times (\text{planned sales/sales}) \times (\text{sales/assets}) \times (\text{assets/current assets}) \times (\text{current assets/current liabilities}) \times (\text{current liabilities/assets}) \times (\text{assets/equity}) \quad (3)$$

$$\text{ROE} = (\text{net profit/market share}) \times (\text{market share/key expense - advertising as example}) \times (\text{key expense - advertising as example /variable expenses}) \times (\text{variable expenses/fixed expenses}) \times (\text{fixed expenses/contribution}) \times (\text{contribution/contribution per planned sales}) \times (\text{contribution per planned sales/planned sales}) \times (\text{planned sales/sales}) \times (\text{sales/assets}) \times (\text{assets/current assets}) \times (\text{current assets/current liabilities}) \times (\text{current liabilities/assets}) \times (\text{assets/equity}) \quad (3a)$$

Previous large formulas can look complex. Due to this, it is important to explain the various parts of the ratio one per one.

Net profit/market share - this can look like a strange measure. Combining the market share and profit analysis can look like comparing apples and peaches. How-

ever, PIMS showed how much these are interconnected. R. Wilson has used both measures with the aim of defining competitive accounting techniques (Wilson, Giligan, 2005: 570-572). This part of ROE proposal makes it possible to compare the companies in the industry in the terms of profit achieved from gained market share. It would show the level of net profit in monetary unit achieved per 1% of market share or relative market share, depending which performance indicator is used.

Market share/key expense (advertising) - follows the logic of key capabilities and key success factors from strategic management. Behind these capabilities and factors are strategic processes and strategic activities. Expense connected with these activities and processes is the key expense measure for gaining the market share. Advertising is used here as the leading example. Efficiency of these expenses is important in many industries. When it is possible to see how much of market share is gained per amount given for advertising (as the example of key expense), this can be later compared with the competition as well as with the company's past. Instead of advertising, the total marketing expenses can be used. This ratio is expressed in the terms of market share per thousands or millions of dollars, Euros, etc. In other industries, this can be another differentiation expense like public relations or the cheap raw material, low labour expense - if the competitive advantage is based on the low expenses. In some industries R&D expense can be relevant, etc. This ratio shows percentage of achieved market share created per monetary unit of the key expense.

The first two ratios are showing the market and profit result gained from it with inclusion of the key expense. This could be considered as net profit and connected market result part of ROE.

Key expense (advertising)/fixed expenses - Shows the importance of key expense in the total fixed expenses of the company. Advertising is, usually, discretionary and fixed expense. Once the management has decided to advertise, it will be fixed expense by its nature. From one year to another it will not vary with the volume. The ratio shows the share of key expense in fixed expenses, or how many monetary units of key expense exists per one monetary unit of fixed expenses.

Increase of the fixed expenses is common due to automation, due to increase in distribution capacity, etc. All these can be the key expense in some industries. The variable expenses of labour, direct raw material will be rarely the most important in the cost structure of the modern enterprise. Even in those cases, the importance of the fixed expenses will be high due to its influence on operational leverage. If the key expense is variable, than it will be strategically relevant to see what is its level compared with the total variable expenses. In this manner, the more relevant structure of expenses will be showed - since expenses are showed per strategic importance and variation to volume, simultaneously. If the key expense is variable in nature, the ratio of variable to total fixed expenses will show the expenses structure from the different dimension.

To achieve this, the formula (3a) is shaped for the use when the key expense is variable and as modification of formula (3) considering the case with the key expense being fixed per volume. This new formula shows the share of the key expense, as a variable expense, in the total variable expenses. This ratio is then followed in (3a) with variable to fixed expenses ratio, which shows the expense structure of the company per division of expenses on variable and fixed. More precisely, the ratio would show how many monetary units of total variable expenses exist per one monetary unit of total fixed expense.

Fixed expenses/contribution - as ratio is similar to the formula for the break-even point. Contribution is the difference between sales and variable expenses. With properly defined fixed and variable expenses, it is possible to have this value in ratio. The value below 1 would show that achieved contribution is higher than the fixed expenses and that company operates over its operational leverage. For example, its value of 0.5 would mean that fixed expenses are just 50% of achieved contribution. The value over one would show that break-even point has not been reached yet and how many times it is necessary to increase the current contribution in order to reach the operational leverage.

Breakeven is usually shaped as relation of fixed expenses to contribution margin per unit or to contribution margin ratio (Atkinson, Kaplan, Matsumura, Young, 2007: 40-41). The usual aim is to calculate breakeven in number of product units or the breakeven sales level for products of the company. Here, this is not the target. Above ratio calculates absolute level of contribution only for the entire company or strategic business units (not for individual products, customers, brands, etc.), and makes possible to directly compare the contribution and total fixed expenses as a break-even measure. The previous two or three ratios are connected with key expense share, variable to fixed expense structure and break-even.

Contribution/contribution per planned sales - is usually connected with the planned sales level over the break-even point. This ratio will show the level of achieved contribution in monetary units compared with one monetary unit of planned contribution.

Contribution per planned sales/planned sales - is the strategic planning ratio. It operates with the two important planning values. If later planned contribution and sales are compared with the achieved, the potential issues can be defined as well as further areas of exploration for an analyst. It shows the monetary units of planned contribution per one monetary unit of planned sales.

Planned sales/sales - is a classic plan/achievement ratio. It is also one of the most basic in controlling. This ratio would show if the sales were higher or lower than management originally planned. It shows the percentage of planned sales in achieved sales. If the value of this ratio would be 0.5, this would mean that planned sales are 50% of achieved sales. In other words, it will show that achieved sale is twice the planned level.

The previous three ratios are plan to achievement ratios in the structure of the proposed ROE calculation.

Sales/assets - is well established turnover ratio already present in Du Pont's model. This ratio would show the turnover of total assets.

Assets/current assets - shows the structure of assets in the less usual manner. More orthodox manner would be to show the share of current assets into the assets. This ratio would actually show how much the non-current assets are over the value of current assets. Value of 2 for this ratio would mean that total asset is twice as high as current assets or that non-current assets are the same as current assets. Ratio of 3 would mean that non-current assets are twice as high as current assets. This could be considered as important strategic structural ratio since any business calculates with the level of current and non-current assets to achieve as high profit as possible.

This ratio shows the structure of assets.

Current assets/current liabilities - is well known liquidity ratio. Although the liquidity is more operational term, it can show if there are long-term prerequisites for maintaining the liquidity.

This ratio shows the liquidity.

Current liabilities/assets - is the classical structure of liabilities ratio. It would show how much the current liabilities are having share in total assets. In this manner, it would also implicitly give the share of the long-term assets in total liabilities.

This ratio shows the structure of liabilities.

Assets/equity - is also the classical ratio, which shows financial leverage. However, this ratio is under pressure of theoretical dilemma about validity of the Trade-off or the Pecking order theory. There are different papers which investigate the validity of these theories. Some authors state that one theory is prevailing (Pirtea, Nicolescu, Botoc, 2014: 60). However, there are claims that each theory has its weight considering specific context. Group of authors who investigated small and medium-sized enterprises-SMEs located in the interior region of Portugal conclude that Trade-off and Pecking order theory are not mutually exclusive, since most profitable and oldest SMEs resort less to debt while SMEs with greater size resort more to debt (Serrasqueiro, Caetano, 2015: 1, 7). Similarly some other papers develop a simple model of debt choice which includes situations in which the Trade-off theory is operative as well as situations in which it is not operative with determining factors (Abel, 2015: 33). Further, some authors conclude that the Pecking order is an excellent first-order description of corporate financing behaviour for mature companies. However, they express doubt that it would do so well for a sample of growing companies investing heavily in intangible assets (Shyam-Sunder, Myers, 1999: 242). Having these findings in mind, one could even claim that these two opposing theories are actually complementary. Opposite theories can be simply relevant for different conditions of different companies. Whichever the theory is relevant for specific enterprise and its conditions, its financing would be connected with a management choice of assets

being financed by the equity or debt. Having this in mind, this ratio will be important for the management as a condition under which the profitability is achieved.

Having all previously written, one can state the formula (3) and (3a) with emphasising the each ratio connection with specific area of analyses as follows:

$$\begin{array}{c}
 \begin{array}{c} \text{marketing part} \end{array} \quad \begin{array}{c} \text{structure of expense and} \\ \text{break-even} \end{array} \quad \begin{array}{c} \text{plan to achievement} \end{array} \\
 \text{ROE} = \frac{\text{net profit}}{\text{market share}} \times \frac{\text{market share}}{\text{advertising expense}} \times \frac{\text{advertising expense}}{\text{fixed expense}} \times \frac{\text{fixed expense}}{\text{contribution}} \times \frac{\text{contribution}}{\text{contribution per planned sales}} \times \frac{\text{contribution per planned sales}}{\text{planned sales}} \times \frac{\text{planned sales}}{\text{sales}} \times 100
 \end{array}$$

$$\begin{array}{c}
 \text{turnover} \quad \text{structure of assets} \quad \text{liquidity} \quad \text{structure of liabilities} \quad \text{financial leverage} \\
 \text{ROE} = \frac{\text{sales}}{\text{assets}} \times \frac{\text{assets}}{\text{current assets}} \times \frac{\text{current assets}}{\text{current liabilities}} \times \frac{\text{current liabilities}}{\text{assets}} \times \frac{\text{assets}}{\text{equity}} \times 100 \quad (4)
 \end{array}$$

To be more precise, the formula (3a) would contain one more structure of expense ratio, which would present relation of the variable to fix expenses.

6. CONCLUSIONS, LIMITATIONS AND SUGGESSTIONS FOR FURTHER RESEARCH

The new proposed theoretical expansion of ROE with new sub-ratios is based on relevant findings in literature from the area of marketing, strategic management, management accounting and finance. From the area of strategic management, the PIMS program findings are used considering the connection between profit and market share as well as the key success factors and expenses connected with them. Marketing is represented with market share as a performance measure. Management accounting and finance are included with structure of expenses or assets/liabilities, with inclusion of liquidity or leverages as well as with expenses connected with achieving competitive advantage.

Proposed theoretical solution for calculating the ROE ratio will potentially show implications for change of different company`s policies to management, since it shows results of the various policies connected with economy of scale, liquidity, structure of assets, marketing result, strategic cost structure. If ROE is calculated as presented, the new information and interdependences connected with the profit (break-even, structure of expenses, efficiency of management through plan/achievement...) can be potentially better presented and interconnected in the ratio analysis. Individual ratios that now become the part of ROE in proposed type of calculation, are strategic and management ratios as well. It would potentially bring the calculation to the level that presents strategic management information and would potentially indicate the need for changes in some of the company`s policies. The in-

formation about marketing efficiency measured by advertising expense to achieved market share, effectiveness of marketing through achieved net profit per market share, build up of fixed expenses, break-even, margin of safety, planned to achieved, horizontal and vertical balance sheet structure, financial leverage are all included as performance indicators, which indicate the validity of different company's policies.

There are five potential basic theoretical benefits when ROE is calculated as presented.

Firstly, the ratio analysis was separated into different parts - profitability, efficiency, liquidity, structural ratios, etc. For some areas of the ratio analysis the connection is established and they can now be directly traced inside one profitability ratio.

Secondly, strategic management decisions can be revealed inside ratio analysis. Key expenses, like advertising or marketing expenses, are revealed with its influence on the level of fixed or variable expenses. Planned vs. actual analysis is included in showing the achievement of plans in analyzed company.

Thirdly, marketing achievement has entered the ratio analysis.

Fourthly, it can potentially be a good tool for forensic accounting, (Mitrić, Stanković, Lakićević, 2012). due to the fact that reasons for failure can potentially be better understood in profitability context.

Fifth, some multiplication effects can be more exposed inside ROE ratio system - what potentially improves corporate governance. Usually ROE system shows how one partial ratio result is multiplied with other partial ratios, all leading to the overall profitability. After exposure of new ratios in ROE, newly established interdependencies of this type inside profitability can be potentially better monitored with its individual multiplication effect on achieved profitability. This means that it is now possible to mathematically project how will *ceteris paribus* change in net profit generated per market share, achieved contribution to planned contribution or change in key expense efficiency, as multiplication type of ratios, influence the profitability level.

The last leads to additional potential practical benefit of the new ROE system. Management can track how change in one policy or variable, newly established inside the new system, will influence the future profitability in the relatively simple manner.

Other ratios, like liquidity, break even or structure of expenses, structure of assets, mostly presents the conditions or risks under which the profitability is achieved. Increase in this type of ratios will not mean increase in profitability per se - because this connection is not logical. That is, multiplication effect is not logical for some ratios in the extended ROE system. These ratios have illustrative purpose. However, these ratios in proposed system are necessary and represent risks connected with profitability or conditions under which the profitability is achieved. This time they are presented to the management inside single ratio system.

The largest potential advantage for management of the new ROE calculation

system is that it in a relatively simple manner shows twelve variables connected with profitability instead of just three. This makes a more rounded picture how the profitability is achieved to management, with controlling being able to better understand additional interconnections inside profitability and conditions under which it is achieved. Further, clearer picture of potential improvements in partial ratios can be explored for its feasibility - either on multiplication side or on risk/conditions side, in order to direct potential improvements in company governance.

Limitations of the proposed method for ROE calculation are connected with generally static nature of the ratio analysis and usual need for any new theoretical concept to be empirically tested in the future through future research/consulting projects.

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BALANCE OF SUPPLY AND DEMAND OF THE CEREAL AND INFLUENCING FACTORS IN CHINA: FROM THE PERSPECTIVE OF THE COST

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Article info

Paper category: Original scientific paper

Received: 10. 4. 2017.

Accepted: 20. 9. 2017.

JEL classification: Q01, Q18, Q21

ABSTRACT

The balanced supply and demand of the cereal is essential for achieving economic sustainable development in China. The wheat and products, the rice (including the milled equivalent), and the maize and products are three main cereals in China, the three cereals but the rice (including the milled equivalent) in China were generally seriously comparatively insufficient before 1997, and then became fully sufficient. The co-integrative test demonstrated that there existed long-term equilibrium between balance of supply and demand and influencing factors, and the correcting coefficient was about 2.2 percent. As for balance degree of supply and demand, increase of machinery cost, daily-average labor price and indirect cost would improve it, increase of fertilizer expenditure and labor-input quantity would deteriorate it at short-term. The Granger causality test implied that balance of supply and demand owned interactive effect with laborer-input quantity, but not with the other cost. The highlight of this article was evaluating hypothesis of "Who will feed China" and influencing factors from perspective of the cost, achieving that the above hypothesis was not a real problem in China.

KEYWORDS:

Supply-demand balance; Cereal; Food safety; Co-integrative analysis

1. THE QUESTION PROPOSED

Since Brown (1995) published the book named "Who will feed China", declared that China's cereal shortage would induce global cereal crises, which made China's food problem be global focus. In fact, Yeh (1989) brought the problem of China Mainland's grain crises, but did not arise much attention until Brown's announcement. At the same time, Bruins and Bu (2006) attached importance of increase of the grain reserves to achieve China's food security, which explored the significance of maintaining balance of the food's supply and demand. With quantity of population being over 1.36 billion in 2015, extensive production mode of agriculture, acceleration of the farmland disappeared for reason of implementation of rapid urbanization and industrialization and the red line of the cultivated land's quick destroy by current developing mode and development background, made the problem of cereal production be important composition of the China-threat theory. In fact, governments in China had implemented corresponding countermeasures actively to promote efficiency of agricultural production especially that of the cereal, so as to avoid the problem of national safety induced by large quantity importing of the cereal. Therefore, the problem of grain safety is that of balance of supply and demand of the cereal to some extent.

The grain and the cereal were the same to some extent. At present, China's food security had raised global attention (Liu, Pieniak, Verbeke, 2014; Holtkamp, Liu, McGuire, 2014; Liu 2014; Wei, Zhang, Shi *et. al.*, 2015; Chen, Nie, 2016), and the consumer was anxious for food grain safety in China (Zhu, Jackson, Wang, 2016). Fan, Lal, Cao, *et.al.*, (2013) considered that strategy combining engineering-based measures with biological-approaches of inherent soil productivity improvement could improve production of the cereal in China, which might induce agricultural miracle in China (Bramall, 2008). Wang, Wu, Zhao, *et. al.*, (2011) analyzed the problem of grain quality safety in China, and brought some countermeasures to solve it.

There were many factors influencing cereal safety in China, and many scholars made relevant studies on this. Fang (1994) considered that price fluctuation made China's grain production be in state of crises. Fan, Stewart, Payne, *et.al.*, (2005) considered that increasing water-holding capacity was helpful to achieve grain yield decline and sustainable productivity. Pan, Smith, Pan, *et. al.*, (2009) regarded the role of soil organic matter as an important factor for achieving efficient productivity and yield stability of the cereal. Wang, Zhang, Cai, *et. al.*, (2009) considered that improvement of agricultural infrastructure, greater use of science and technology, increased fiscal input, protection of relevant resources, adaptation of climatic change, support for the farmers' livelihood, improvements in grassland agriculture, and controls on population growth were important factors for achieving promotion of the cereal's production. Xiong, Conway, Lin, *et.al.*, (2009) con-

sidered that the climate change, the water availability and the socio-economic scenario were main factors influencing cereal production. Zhang and Huang (2012) found that inter-annual variations in precipitation and solar radiation were drivers for cereal yield (including the rice, the wheat and the maize). Wang, Wu, Zhao. *et.al.*, (2014) thought that virtual water flow related to the grain resulted in negative impact on relevant development and induced to serious threat to food security. In addition, some researchers made relevant explanation on China's grain safety from many perspectives, such as global economy (Zhou, Xin, 2006), optimization (Shea, 2010), cultivated land (Zhang, 2013), economic ecologization (Li, Zhang, 2016), macro economy (Xu, Lu, Wang, 2016).

From the above research, it can be seen that many studies cared about the cereal's safety and its influencing factors in China, but scare studies caring about the cost influencing on balance of supply and demand of the cereal were brought, and this was the cut point of this article. In fact, the problem of the cereal's safety mainly caused by comparative large quantity of importing, so there was necessary to promote relevant domestic production, and this was much relevance to corresponding costs, which implied that various costs would influence the cereal's safety significantly, and this was essential for achieving balance of supply and demand of the cereal under condition of production being comparatively insufficient in China. This article analyzed degree of balance of supply and demand of the cereal in China, then made analysis on cost factors influencing degree of balance of supply and demand by taking co-integrative model, with highlight being evaluating hypothesis of "Who will feed China", and influencing factors from perspective of the cost.

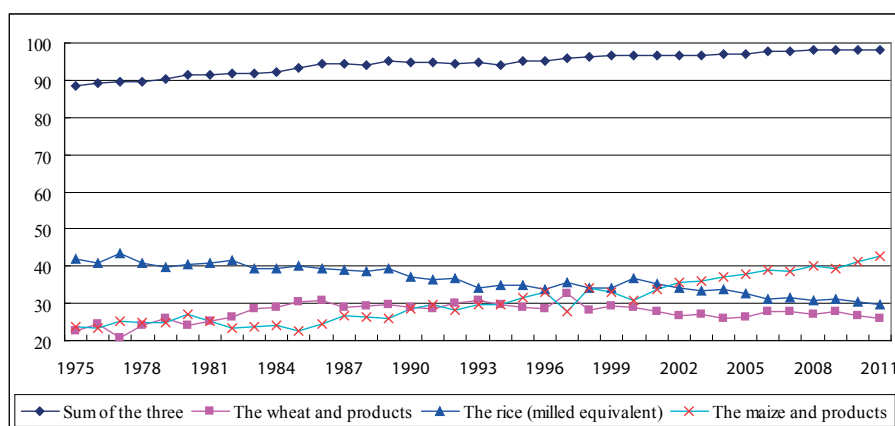
2. BALANCE OF SUPPLY AND DEMAND OF THE CEREAL

Here, the cereal is used to represent the grain, for reason of FAOs' relevant regulation. According to FAOs, domestic utilization could be divided into food, food manufacturing (abbreviated as "food manu"), feed, seed, waste and other uses, and it can be learned that food occupied majority of domestic utilization, which was 62.40%, 63.23%, 60.49%, 55.62% and 46.12% in 1975, 1981, 1991, 2001 and 2011 respectively, indicating being food being very important for China's cereal consumption. The fact of the cereal being food mainly demonstrated that the hypothesis of "Who will feed China" was a fact to some extent. Meanwhile, balance of supply and demand was another problem, indicating self-supply level of one nation being more important, and this was what we cared about.

The cereal included many categories, and there was not necessary to make analysis on each category. In fact, three main cereals were the wheat and products, the rice (including the milled equivalent), the maize and products in China, e.g. sum of the above three occupied for the domestic utilization was about or over 90

percent of the cereal. Here, China only referred to Mainland, and did not include Hong Kong, Taiwan and Macao. Therefore, we only cared about the above three categories as to the following analysis, and did not care about other categories of the cereal, e.g. the bean was not to be considered. At the same time, sum of ratios of the above three achieved steadily increasing trend from 1975 to 2011, and that had reached over 90 percent since 1979. Seen from the three categories, ratio of the quantity of the rice (including the milled equivalent) occupying the domestic utilization of the cereal was about 40 percent in 1975-1989, then appeared significant decreasing trend, and then reduced to be within 30 percent. Ratio of the quantity of the wheat and products occupying the domestic utilization of the cereal was about 20-30 percent generally, demonstrated the trend of increasing firstly, then comparative stability, and then slight decreasing, which got 20 percent in 1977 and achieved maximum value in 1997. The changing trend of ratio of the quantity of the maize and products occupying the domestic utilization of the cereal was the opposite to that of the rice (including the milled equivalent), which implied increasing trend generally. E.g. that was over 30 percent since 1993 (except that in 1997), and was over 40 percent since 2009.

Figure 1.: Ratios of the quantity of three main cereals occupying domestic utilization of the cereal in 1975-2011



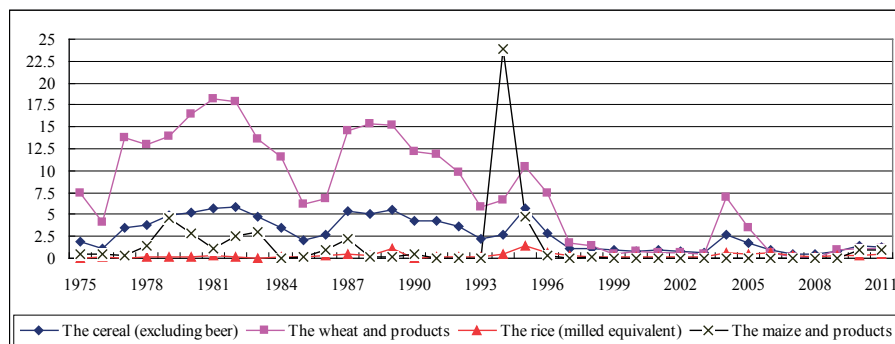
Source: Author's

As to China, the problem of balance of supply and demand of the cereal was inadequate supply (or, production) of the cereal to some extent. Therefore, importing might be a very important method to meet requirement of domestic utilization. The less importing was, the better degree of balance of supply and demand of the cereal would be. In this paper, took ratio of import quantity of one category of the cereal occupying its domestic utilization as index measuring degree of balance of supply and demand, and brought out the following judging criterion: if the

ratio was over 10 percent, it was considered that balance of supply and demand was serious insufficient; if the ratio was over 5 percent and less than 10 percent, it was considered that balance of supply and demand was comparative insufficient; if the ratio was over 2.5 percent and less than 5 percent, it was considered that balance of supply and demand was basically sufficient; if the ratio was less than 2.5 percent, it was considered that balance of supply and demand was fully sufficient. The reason of the above criterion was that central government in China usually took ratio of import quantity of cereal occupying its domestic utilization being 5 percent as the basically measuring index, and that ratio being over 10 percent would induce adjustment of national macro policies to regulate domestic production of the cereal. Something should point out that the above judgment was based on status quo in China, and it might be unsuitable for degree of balance of supply and demand of the cereal in other nations. Put relevant data into the calculating method, degrees of balance of supply and demand of the cereal were achieved, and Figure 2. demonstrated it.

Seen from degree of balance of supply and demand of the cereal (excluding beer), it can be learned that was over 2.5 percent generally before 1997, and this was the period of Brown's bringing out judgment of the cereal's self-sufficient safety in China. Later, China accelerated support of production of the cereal, and made the average ratio be within 2.5 percent, which implied to be stage of full sufficient. But, as per different categories of the cereal, there existed much obvious difference. E.g. degree of balance of supply and demand of the rice (including the milled equivalent) was almost zero in 1975-2011, which implied China's demand of the rice (including the milled equivalent) was basically supported by domestic production. Degree of balance of supply and demand of the maize and products was basically within 5 percent, and appeared certain fluctuation before 2005, then that was in stage of fully sufficient after that period. Meanwhile, degree of balance of supply and demand of the maize and products was over 20 percent in 1994, which was an obvious disturb value, and this might be the reason of Mainland's implementing deepening open and reform policy in 1992 and its influence on the maize owning certain time lag effect. Degree of balance of supply and demand of the wheat and products was comparatively larger than those of the other two categories, e.g. the ratio in 1977-1984, 1987-1992 and 1995 was about or over 10 percent respectively, that in 1975-1997 was over 5 percent respectively (except that in 1976), and that in 2004 was an obvious disturb value, then that was less than 2.5 percent after 2004 respectively. Therefore, it can be considered that the wheat and products' degree of balance of supply and demand owned transformation from stage of serious insufficient to stage of fully sufficient.

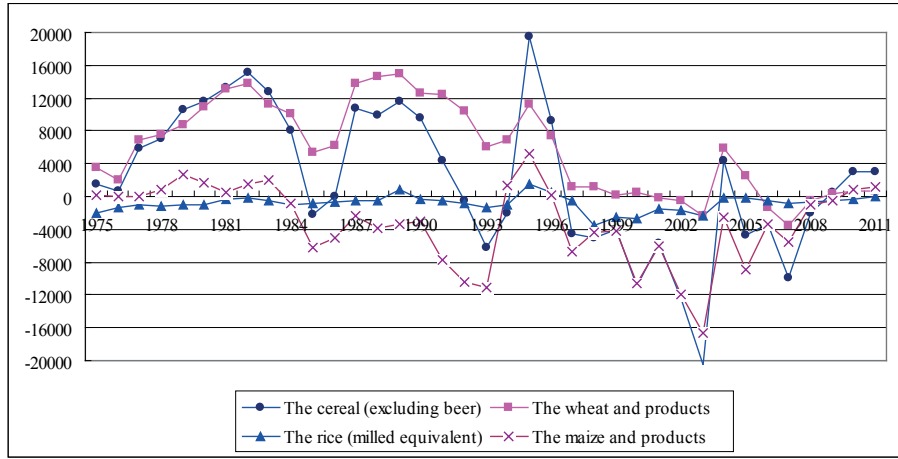
Figure 2.: Self-sufficient ratios of main categories in 1975-2011



Source: Author's

Now, we turned to make analysis on the degree of balance of supply and demand from aspect of net import, and the detailed result was demonstrated in Figure 3. with unit being million metric tons. Seen from the cereal (excluding beer), it can be learned that net import was positive generally in 1975-1996, and that achieved about 20 million metric tons in 1995, while this was the time of Brown's bringing out relevant judgment. After that, net import quantity appeared decreasing trend significantly, and owned negative trend generally in 1997-2009 (except that in 2004), and that achieved -20 million metric tons in 2003, then appeared increasing trend after 2010. Seen from the wheat and products, the changing trend of net import was similar to that of the cereal (excluding beer), but its change was comparative smoother generally. Seen from the rice (including the milled equivalent), it can be learned that quantity of import was basically equal to quantity of export, and the quantity of import was slightly larger than the quantity of export, only net import in 1989, 1995 and 2003 was significant larger than zero respectively, but the gap was within 4 million metric tons generally, which indicated that maintained state of comparative equilibrium to some extent. Seen from the maize and products, there was net import in 1975-1983, 1994-1996, and net export in 1984-1993, 1997-2008 respectively, with characteristic of quantity of net export exceeding 16 million metric tons in 2003 and slightly net import after 2009. Comparison with the above, it can be learned that net import of the cereal (excluding beer) or the wheat and products vibrated much, while that of the rice (including the milled equivalent) and the maize and products changed slightly, but net import of the cereal (excluding beer) in 1995 and 2003 and the maize and products in 2003 changed much respectively, and this might be reason of acceleration of China's open economy in 1992 and time lag effect of entering WTO in 2001.

Figure 3.: Net imports of main categories in 1975-2011



Source: Author's

From the above analysis, we could learn that balance of supply and demand of the cereal in China improved gradually, and the hypothesis being "Who will feed China" was not a real problem for China and the whole world, for reason of China could feed itself comparatively well. In other words, the rapid economic development and large quantity of population in China might not be a threat to stability of the world, on the contrary, which would induce driving force for the world, for reason of China's high economic growth rate being an important engine for economic recovery for many countries.

3. EMPIRICAL ANALYSIS ON INFLUENCING FACTORS

The balance of the cereal's supply and demand in China was influenced by many factors, such as the cost, the earning, the domestic environment, the international environment. As the above mentioned, we made relevant analysis from angle of the cost, for reason of the cost being most important aspect for China's achieving balance of supply and demand of the cereal. As time went on, the cost of the labor in China increased rapidly, and this might influence balance of supply and demand of the cereal sharply. China's price had changed much, which would affect the quantity of the physical cost, and this might influence balance of supply and demand of the cereal significantly. Therefore, the detection was made from aspects of the laborer's input and the physical cost to analyze influencing factors.

The laborer's input took variables of the quantity of labor input and the daily average labor price, with unit being each per mu and Yuan respectively, which were used to tell the quantity of labor and the level of labor wage's influence on balance of supply and demand of the cereal. The other costs input included aspects of the direct cost and

the indirect cost. The direct cost can be detected from angles of the fertilizer expenditure and the machinery cost with unit being Yuan per mu respectively, with feature of influence of the fertilizer and agricultural modern degree respectively. The indirect cost included many items, such as the holder's assets discount, the purchase and repair expenditure of the small agricultural equipment, the management and other indirect cost, the sales expenditure, and combined the above items being one factor for reason of comparatively enormous statistical change of this kind of agricultural cost during 1975-2011 in China, with unit being Yuan. In addition, the index of cereal's supply and demand's balance was measured by percent of the quantity of import occupying the quantity of domestic utilization. For achieving more effective result, the above indexes were pooled data of the mentioned three main cereals. E.g. the index of balance degree of the cereal's supply and demand was got by the three main cereals' pooled quantity of import and pooled quantity of domestic utilization respectively. Here, mu is the official unit for measuring the land's acreage and majority of official statistics yearbook take it, with the equation of one mu being 6.07 acres. Therefore, for reason of being coincided with official statistical method in China, we took mu as unit of the land's acreage to make consequent analysis. Except the data got from www.fao.org, the other was available from www.npcs.gov.cn and Compilation of Chinese Agricultural Product Cost and Benefit in 2006 and 2012. In fact, we only could get relevant compiled data of the above three main cereals from official website of www.npcs.gov.cn.

The co-integrative analysis was implemented to detect influencing factors and their impacting directions on China's cereal's supply and demand's balance. It was necessary to make unit root test before making co-integrative analysis. Only variables with the same order of integration could be used to discuss whether there existed co-integrative relationship or not, and it would be no co-integrative relationship if there was not the same order of integration. The empirical analysis usually carried unit root test to judge the stability and the order of integration of the time series index, and test methods mainly included DF Test, ADF Test, PP Test, KPSS Test and NP Test. Here, GXB, HFF, JXF, JFF, LDL, LDW represent balance degree of the cereal's supply and demand, the fertilizer expenditure, the machinery cost, the indirect cost, the quantity of labor input, the daily average labor price respectively. For convenience of reducing influence of the time trend, logarithmic form of the above indexes was taking as variables used for the following analysis.

3.1. Unit Root Test

ADF test and Mackinnon critical value were used to make relevant judgment (see Table 1.). The result implied that each variable could not refuse unit root hypotheses under state of level, while refused unit root hypotheses under state of first-order difference, which indicated that the six variables were $I(1)$ sequences and could be used to make co-integrative analysis.

Table 1.: Unit root test

Index	Test form	ADF test value	0.05 critical value	Unit root or not
InGXB	(C, N, 1)	-1.7409	-2.9384	Yes
Δ InGXB	(C, T, 1)	-4.6711	-2.9511	No
InHFF	(C, T, 1)	-2.2770	-3.5443	Yes
Δ InHFF	(C, T, 1)	-6.2185	-3.5443	No
InJXF	(C, T, 1)	-2.8291	-3.5403	Yes
Δ InJXF	(C, T, 1)	-7.0403	-3.5443	No
InJJF	(C, T, 1)	-1.6707	-3.5403	Yes
Δ InJJF	(C, T, 1)	-6.5592	-2.9484	No
InLDL	(C, T, 1)	-1.5117	-3.5403	Yes
Δ InLDL	(C, T, 1)	-6.7291	-3.5443	No
InLDW	(C, T, 1)	-2.3165	-3.5403	Yes
Δ InLDW	(C, T, 1)	-4.8461	-3.5443	No

Source: Author's

Note: C, T, K in test form (C, T, K) represented intercept, time trend and the lag period, N referred to no C or T.

3.2. Co-integrative Test

Common methods of making co-integrative test were Engle-Granger's Two Stage method (abbreviated as EG) and Johnson-Juselius' loglikelihood method (abbreviated as JJ). EG was only useful to make co-integrative relationship between two variables, while JJ could make analysis on many variables, therefore, JJ was chose to make co-integrative test. In addition, the optimal lag order of each variable should be detected before implementing co-integrative test. Here, AIC and SC as the judging criterion, and it could be learned that 2 was the optimal order. Later, Eigen value and Max-Eigen statistic were used to assure the number of co-integrative vectors.

Table 2.: JJ co-integrative test

Eigen value	Max-Eigen Statistic	0.05 Critical Value	Prob.	H ₀	H ₁
0.9006	78.48	43.42	0.0000	$r=0$	$r=1$
0.8571	66.17	37.16	0.0000	$r \leq 1$	$r=2$
0.6425	34.99	30.82	0.0146	$r \leq 2$	$r=3$
0.4763	21.99	24.25	0.0968	$r \leq 3$	$r=4$
0.3333	13.79	17.15	0.1446	$r \leq 4$	$r=5$
0.0014	0.05	3.84	0.8246	$r \leq 6$	$r=6$

Source: Author's

Under 5 percent significant level, the above variables existed three co-integrative equations for consideration of result of JJ co-integrative test. But, there was only

one equation demonstrating internal relationship between GXB and the other five variables, therefore, it could be considered that there owned long-term equilibrium relationship between balance degree of supply and demand of the cereal and the above five. Here came to the co-integrative equation:

$$\ln GXB = 1.1779 + 14.6172 \ln HFF - 10.4869 \ln JXF - 4.7453 \ln JJF + 11.3045 \ln LDL - 2.3698 \ln LDW \quad (1)$$

Loglikelihood=206.5743

As to the above equation, all five variables passed t test, and it could be considered that the above five cut into co-integrative relationship significantly, which implied that the above five were very important to maintain stability of the system. From the above co-integrative equation, we could learn that JXF , JJF and LDW was positive to achieve cereal's supply and demand's balance, with the coefficient being -10.4869, -4.7453 and -2.3698 respectively, which implied acceleration of introducing advanced agricultural equipment, increase of indirect expenditure and increase of agricultural laborer's salary were beneficial to improve supply and demand's balance. The coefficient of JXF achieved the highest positive value showed that extensive developing mode for cereal production should be replaced by the intensive mode, such as using more advanced mechanical equipment. The agricultural laborer's salary for the cereal increased, which would attract more talented laborer with much knowledge and skill to deal with production of the cereal, and this was beneficial for China's smoothing phenomenon of short of supply, which would induce balance of supply and demand of the cereal. As the above defined, the indirect cost implied advanced capital to encourage production of the cereal, therefore, increase of this type of cost would accelerate production of the cereal, and this was coincided with the above econometric result.

Meanwhile, HFF and LDL had negative impact on cereal's supply and demand's balance, and the coefficient reached over 10 respectively. The influence of LDL was negative might be the reason of China's cereal production with excess laborers inducing negative marginal productive utility, therefore, China should drive more laborers out of production of the cereal. The influence of LDL being negative and the influence of LDW being positive were not in conflict, which demonstrated that too much laborer in extensive production of the cereal was not necessary, and at the same time, higher wage would drive more talented laborer to modify extensive production into intensive production. Even though the influence of HFF reached enormous, but as time went on, the use of fertilizer would comparatively drop rapidly for reason of other advanced equipment (such as, the machinery equipment) being used more, and this would induce the influence to be less in the future.

3.3. Vector Error Correction Model

According to Granger's opinion, variables with co-integrative relationship could set the vector error correction model (Granger, 1987). The above six variables

were obedient to $I(1)$ sequences and co-integrative relationship was confirmed, therefore, further analysis could be made on short-term dynamic relationship by implementing the vector error correction model. Let the residual sequence of the above co-integrative equation being ecm_t , the following vector error correction model was set.

$$\begin{aligned} \Delta \ln GXB_t = & c + c_1 ecm_{t-1} + c_{2i} \sum_i^k \Delta \ln GXB_{t-i} + c_{3i} \sum_i^k \Delta \ln JXF_{t-i} + c_{4i} \sum_i^k \Delta \ln JFF_{t-i} \\ & + c_{5i} \sum_i^k \Delta \ln JFF_{t-i} + c_{6i} \sum_i^k \Delta \ln LDL_{t-i} + c_{7i} \sum_i^k \Delta \ln LDW_{t-i} + \varepsilon_t \end{aligned} \quad (2)$$

Here, ecm_{t-1} referred to first-order lag residual of the co-integrative equation.

As to econometric result, the second order was the optimal order, hence, it could be learned that i was 2. Put corresponding data into the vector error correction model, the following estimation was achieved.

$$\begin{aligned} \Delta \ln GXB_t = & 0.0794 - 0.0220 ecm_{t-1} - 0.2630 \Delta \ln GXB_{t-1} - 0.0558 \Delta \ln GXB_{t-2} \\ & + 0.6019 \Delta \ln HFF_{t-1} + 0.1071 \Delta \ln HFF_{t-2} - 0.8976 \Delta \ln JXF_{t-1} + 0.5467 \Delta \ln JXF_{t-2} \\ & + 1.3072 \Delta \ln JFF_{t-1} + 0.6261 \Delta \ln JFF_{t-2} - 0.4349 \Delta \ln LDL_{t-1} + 0.8120 \Delta \ln LDL_{t-2} \\ & - 2.5354 \Delta \ln LDW_{t-1} - 2.1498 \Delta \ln LDW_{t-2} \end{aligned} \quad (3)$$

According to the above estimating equation, the coefficient of error correction was 2.2%, which implied that correcting deviation between balance degree of the cereal's supply and demand and the long-term value or the equilibrium value was about 2.2 percent each year. GXB with First-order lag and second-order lag would improve balance degree of supply and demand respectively, so did those of LDW. At the same time, HFF with first-order lag and second-order lag would deteriorate balance degree of supply and demand respectively, so did those of JFF. Meanwhile, JXF with first-order lag and LDL with first-order lag was positive to improve balance degree of supply and demand respectively, while those of JXF with second-order lag and LDL with second-order lag was the opposite respectively. Either influence of LDW with first-order lag or that of LDW with second-order lag exceeded 2, which was significantly larger than the other, and demonstrated that increase of agricultural laborer's salary was most useful method to improve balance degree of the cereal's supply and demand. Comparison with the co-integrative equation and the error correction estimation, it could be achieved that HFF would deteriorate and LDW would improve supply and demand's balance, either at short-term or at long-term; JFF would improve supply and demand's balance at short-term, but that was on the contrary at long-term; JXF would improve balance situation at short-term while LDL would deteriorate that at short-term, and the above two variables achieved vague impact at long-term.

3.4. Granger Causality Test

For the same reason of making the vector error correction model, Granger causality test was made for detecting the relationship between GXB and the other five variables. After choosing suitable lag length and being under 10 percent significant level, we could know that HFF, JXF, JFF, LDL and LDW were direct causal reasons of GXB, GXB was direct causal reason of LDL, GXB was not direct causal reason of HFF, JXF, JFF and LDW, which demonstrated that there did not own interactive effect between cereal's supply and demand's balance and the cost factors (including labor cost), but maintain interactive effect between the cereal's supply and demand's balance and input of quantity of the laborer.

Table 3.: Pairwise granger causality test

Null Hypothesis	F	P
HFF does not Granger Cause GXB	5.469	0.009
JXF does not Granger Cause GXB	5.465	0.009
JFF does not Granger Cause GXB	4.737	0.016
LDL does not Granger Cause GXB	3.574	0.040
LDW does not Granger Cause GXB	6.047	0.006
GXB does not Granger Cause HFF	0.403	0.672
GXB does not Granger Cause JXF	1.728	0.195
GXB does not Granger Cause JFF	0.999	0.380
GXB does not Granger Cause LDL	3.004	0.065
GXB does not Granger Cause LDW	1.910	0.166

Source: Author's

4. CONCLUSIONS

The wheat and products, the rice (including the milled equivalent), the maize and products being three main cereals in China, this article analyzed degree of balance of supply and demand of the cereal and carried co-integrative analysis to detect relevant influencing factors by taking data in 1975-2011. The above three categories occupied about 90 percent of the cereal, and there existed obvious difference on degree of balance of supply and demand as per the three, which demonstrated that self-sufficient ratio of the rice (including the milled equivalent) being the highest, then that of the maize and products and the cereal (excluding beer), and the wheat and products being the least in general. At the same time, China's cereal was in state of serious insufficient or comparative insufficient in general except the rice (including the milled equivalent) before 1997, and then was in state of fully sufficient (except that in 2005), which indicated that hypothesis being "Who will feed China" was not a real problem. On the contrary, China could achieve comparative balanced supply and demand of the cereal.

The fertilizer expenditure, the machinery cost, the indirect cost, the quantity of labor input and the daily average labor price being independent variables and the cereal's supply and demand's balance being dependent variable, co-integrative model was set to analyze influencing factors. The result showed that the above variables were $I(1)$ sequences and there existed long-term co-integrative relationship between the cereal's supply and demand's balance and the five variables. The vector error correction model demonstrated that correcting coefficient was about 2.2 percent each year, increase of the fertilizer expenditure would deteriorate and increase of the daily average labor price would improve supply and demand's balance, increase of the indirect cost would improve supply and demand's balance at short-term but not at long-term, increase of the machinery cost would improve while increase of the quantity of labor input would deteriorate balance situation at short-term but the above two achieved vague impact at long-term. The Granger causality test showed that the above five variables were direct causes of the cereal's supply and demand's balance, but the cereal's supply and demand's balance was not direct cause for the five variables generally respectively.

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TIME MANAGEMENT AMONG MANAGERS IN THE POLLOG REGION

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Article info

Paper category: Preliminary paper

Received: 21.2.2017.

Accepted: 20.9.2017.

JEL classification: D23, J22, P25

ABSTRACT

Time, the only non-replaceable resource is quite difficult to manage, although as it has been studied over and over again time management can be of crucial importance for a contemporary business organization. Individuals and managers in particular, must learn how to make the best out of their time and use time management as a tool in gaining and maintaining a competitive advantage. Although, researchers from throughout the world have managed to identify and develop hundreds if not even thousands of different time management approaches and techniques, it can be easily argued that such techniques are unknown when it comes to business in the Republic of Macedonia in general and the Pollog region in particular. But, the lack of a scientific approach does not necessarily mean a lack of dedication to a better usage of time by employees and managers alike. The paper strives to present the results of a rather extensive field research on time management implemented by the authors in over fifty business entities in the region.

Keywords:

Time; Time management techniques; Pollog region

1. INTRODUCTION

Nowadays, in a period of intensified technological development, for people around the world, it has become more than obvious that perhaps the most valuable resource they have is time. In fact time might be perceived by some to be the only resource that provides sense to human life, a key resource in framing the existence of men as socially aware beings. But, the complexity in analyzing time and time management becomes even greater having in mind that time is not purely and simply a resource, but rather an element framing and interconnecting mankind past, present and future.

Time is a unique resource. It cannot be bought, nor borrowed, nor rented, stolen nor can it be replaced or substituted by anything else. Aside from this, time is the only resource equally distributed to everyone and everywhere. We all have the same 168 hours a week at our disposal. The way how we use these hours makes the difference between success and failure in business and even life in general.

Different fields provide various explanations of the concept of time, but they are debatable and skeptical. Much time work has been done in philosophy, classical and modern physics, biological sciences, and some in anthropology and sociology disciplines. Mathematics and classical physical science think that time has an abstract dimension. A Newtonian assumes that time is absolute, true, and mathematical, flows uniformly, and is abstract and external to events. However, Einstein's famous relativity theory describes that a slowing of time for clocks with a constant velocity is related to a referent observer (Wu, 2010).

But we do *know* what time is. We experience it. We measure it. As it is invisible and indefinable we use metaphors to grasp some of its aspects. Time is money - yes, it is a limited and valuable resource, but it is actually more precious and cannot be stored in the bank. Time is our lives as measured out in years, months, days, hours, minutes and seconds. What could be more important to you than using this free gift of time effectively, generously and wisely (Adair&Allen, 2003)?

Time management refers to using techniques that enable you to get more done in less time and with better results, be more relaxed, and have more time to enjoy your work and your life. New managers in particular often struggle with the increased workload, the endless paperwork, the incessant meetings, and the constant interruptions that come with a management job. Learning to manage their time effectively is one of the greatest challenges that new managers face (Daft, 2016).

Time management is about making best use of time. You can't expand the number of hours available; you can simply use them more effectively. Inevitably there comes a point when even the best time manager can't get through what has to be done. Think of it as 'saturation point'. The problem is that you can feel as if you've reached saturation point' when in fact what's needed is better time management. It's very easy to miss underlying causes and habits which make you feel stressed and run out of time (Leech, 2007).

Time management is not optional. It is something that everyone who wants to work effectively must consider, whether formally or informally. In fact, virtually everyone practices time management to some degree; the only question is how well they do it and how it affects what they do. Yet, time management is not easy - as you may have noticed! Nor, even for those who work at it, is it something that anyone gets 100 per cent right (Forsyth, 2007).

Managers who have mastered time management stand out a mile for being able to achieve more in every day than most other managers achieve in a week. And the most effective also get to spend their evenings and weekends with their family and friends, rather than being stuck in the office trying to clear the backlog of work (Jay, 2002).

Schermerhorn (2013) provides several personal time management tips:

- Do say "No" to requests that divert you from what you really should be doing.
- Don't get bogged down in details that you can address later
- or leave for others.
- Do have a system for screening telephone calls, e-mails, and requests for meetings.
- Don't let drop-in visitors or instant messages use too much of your time.
- Do prioritize what you will work on in terms of importance and urgency.
- Don't become calendar-bound by letting others control your schedule.
- Do follow priorities and work on the most important and urgent tasks first.

Time management is absolutely critical. Plan ahead using goal setting and to-do lists. Control—or even better, eliminate—interruptions and distractions. When you have work appointments (online, phone, Skype, etc.), keep them; and make sure you're prepared by having the materials you will need for the conversation. Respect the schedules and time requirements of your colleagues. Finally, build in the kind of accountability you'd have in a traditional work arrangement. Recruit your manager or a colleague to be your accountability partner. Let them know what you intend to accomplish that day (or week) and check in daily (or weekly) to discuss what you've accomplished (Robbins&Coulter, 2016).

Effective managers usually have good time management skills. Time management skills refer to the manager's ability to prioritize work, to work efficiently, and to delegate work appropriately (Griffin, 2016).

2. DESCRIPTION OF SAMPLE

The template sample includes 52 managers controlling 320 employees from the very same 52 companies from the Pollog region. The following table includes basic data regarding the companies that were part of the survey.

Table 1.: Companies included in the survey

Description	n	%
Type of business activity		
Trade	36	69.2
Production	7	13.5
Services	4	7.7
Agriculture	1	1.9
Construction	4	7.7
Type of ownership		
Sole ownership	42	80.8
Partnership	4	7.7
Limited liability company	6	11.5

Source: Authors'

As can be notices, the vast majority of companies that were a part of the survey are sole ownership business that deals with trade. Such composition of the sample is in accordance with the general structure of business in this region.

The following table contains data regarding the demographic structure of responding managers.

Table 2.: Demographic structure of managers

Description	n	%
Sex		
Male	42	80.7
Female	10	19.3
Age		
18-25	14	26.9
26-35	13	25
36-45	14	26.9
46-65	11	21.2
Education		
Only primary school	2	3.84
Only secondary education	23	44.23
Higher education	20	38.46
Bachelors degree	5	9.61
Master's degree	2	3.84
Work experience		
Less than a year	3	5.76
1-2 years	7	13.46
2-4 years	7	13.46
4-10 years	16	30.76
10-20 years	10	19.23

Description	n	%
Over 20 years	9	17.3
CEO	28	53.84
Middle level manager	13	23.1
Low level manager	11	21.1

Source: Authors'

As can be noted from the data presented in the table above, over $\frac{3}{4}$ of respondents are men, almost half of the managers have never gotten a degree over high school, but the fact that $\frac{1}{3}$ of them have accumulated over a ten year experience being a manager is prove enough that they are doing something well when it comes to managing their daily operations. It should also be pointed out that over half of respondents are CEO's of their respective businesses.

3. DATA ANALYSIS

The data analysis shows that companies in the Pollog region are aware of the importance of time management in determining the chances for their market success but some of them are more successful in the implementation of time management techniques.

Table 3.: Time management activities in the Pollog region

	Always	Sometimes	Never
I prepare a daily to do list	24	21	7
I plan the day ahead	39	9	4
I have a schedule of to do activities	36	13	3
I have a daily list of personal objectives	13	21	18
I spend time planning daily	12	24	16
I have clear goals for the upcoming week	34	16	2
I set priorities and oblige to them	46	5	1
I do thing because I can't refuse people	22	25	5
I spend more time on preparation than on doing	30	17	5
I believe my time management skills can be improved	32	15	5
I use my time constructively	34	17	1
I am engaged in not for profit activities	25	22	5
I usually keep a clean desk	45	5	2
I set objectives for a three month period	42	6	4
I work night as well	28	11	13
I am aware of time management techniques	37	15	0

Source: Authors'

The following can be noted from the above mentioned data:

- A vast majority of managers prepare a daily to do list. In fact only 13.46% of respondents never prepare a daily to do list of activities.
- Around $\frac{3}{4}$ of respondents have declared that they always plan the day ahead and only 7.69% of respondents never plan the day ahead.
- Only 5% of respondents do not have a schedule of to do activities.
- Only a quarter of responding managers permanently prepare a daily list of personal objectives and around 40% sometimes prepare a daily list of personal objectives
- Only 23% of respondents permanently spend time planning daily while 46.15% sometimes allocate time for daily planning.
- Over 65% of respondents have clear goals for the upcoming week and only 3% of respondents do not have clear goals for the upcoming week.
- Over 88% of responding managers have declared that they permanently set priorities and oblige to them while only 2% of responding managers have declared that they never set priorities in their job.
- 42% of responding managers have declared that they permanently find themselves doing things simply because they cannot say no to people while an additional 48% have declared that they sometimes find themselves doing things simply because they cannot say no to people.
- Only 10% of responding managers have declared that they spend more time on preparation than on doing.
- Only 10% of responding managers have declared that there is not additional space for improving their time management.
- Only 1.92% of responding managers have declared that they do not use their time constructively.
- Only 3.84% of respondents have declared that they do not keep a clean desk.
- Over $\frac{4}{5}$ of responding managers have declared that they have clear quarterly plans.

4. CONCLUSIONS

The study shows that managers in the Pollog region emphasize the importance of time management and in most cases they have established functional approaches to utilizing their time in accordance with the general business climate in the mentioned region. The establishment of daily, weekly and monthly goals appears to be one of the strong sides of these managers in terms of their time management skills, but their over confidence that they use their time in an effective way might prove to be one of the greatest obstacles in further developing their time management skills. Aside from this, the very collectivist nature of the local culture is one of the main time stealers that these managers are being faced with.

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A NEXT GENERATION OF INNOVATION MODELS? AN INTEGRATION OF THE INNOVATION PROCESS MODEL BIG PICTURE © TOWARDS THE DIFFERENT GENERATIONS OF MODELS

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Article info

Paper category: Review Paper

Received: 10.5.2017.

Accepted: 8.9.2017.

JEL classification: O3

ABSTRACT

The competition on every market grows harder and harder every year. Innovation is seen by most companies as the only way to survive. For finding good innovations, innovation processes are needed to implement within the firm. This paper deals with the generations of those models. The first part of the paper lists the different generations described in the literature. In the second part the BIG Picture © model created by Dipl.-Ing. Dr. Lercher is introduced and compared to the criteria found in the described models. Therefore the aim of this paper is to give the reader an overview of the existing models and an understanding of the classified model. The estimated results were a classification in the current generation. However, the model shows additional criteria which have not been set by any of the review authors. The point, if this model is still a sixth generation model or already a seventh generation model, was left open for discussion in this paper. Methodology includes an analysis of the described generations of the most frequently cited authors and an evaluation of the new model.

Keywords:

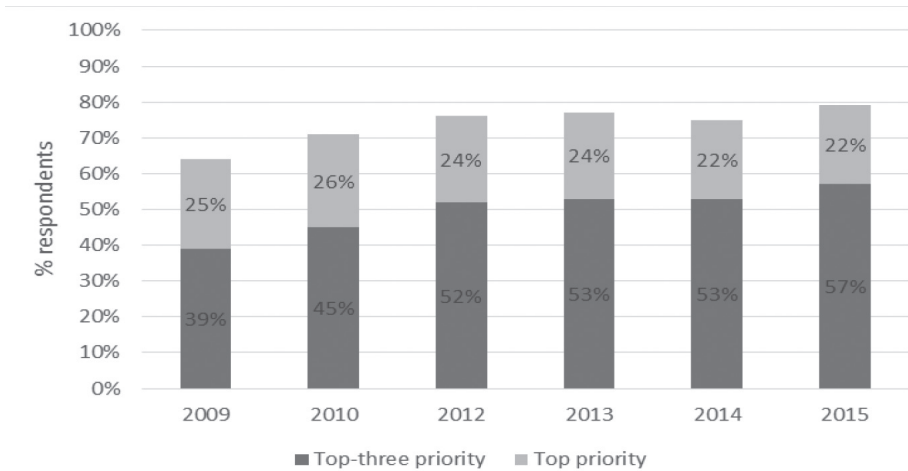
Innovation models; Innovative milieu; Idea generation; BIG Picture; Closed innovation; Open innovation

1. INTRODUCTION

Cooper wrote 2005 in his book *Product Leadership: "It's war: Innovate or Die"*. Every year innovation becomes not only more vital for the success but also determines a company's very existing. The ability to innovate is one of the core competence needed for an organization to compete in the ever increasing challenging and highly changing environment (Cooper, 2005).

The Boston Consulting Group's annual global report shows this awareness from firms very clearly. For the year of 2015, 79% of the respondent's ranked innovation as either the top priority or a top three priority (see Table 1.). Since 2009, the importance in a company's agenda for innovation has raised by 15% (Ringel, M., Taylor, A., & Zablit, H., 2015).

Table 1.: Importance of innovation in company's agenda



Source: Author's representation based on Ringel, M., Taylor, A., & Zablit, H. (2015)

For those who are not already part of the top innovation companies the question often remains unanswered, how to be innovative?

2. BACKGROUND

Over the last two decades, the literature has described different generations of innovation models. Most of them refer to Rothwell (1994) classification, but there are also other authors who are describing a smaller different classification and titling, as shown in Table 2. Despite the fact that Rothwell (1994) is the oldest, it is still seen as the standard classification, which explains that the other concepts are based on his idea.

Table 2.: Innovation generation models

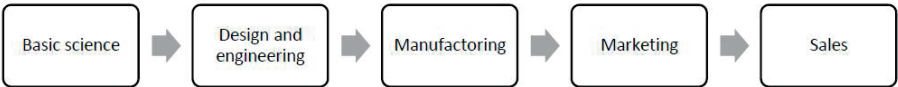
GENERATION	ROTHWELL (1994)	MARINOVA AND PHILLMORE (2003)	BERKHOUT; DUIN; ORTT (2006)	BOCHM; FREDERICK (2010)
1 st	Technology push	The black box models	Technology push	Technology push
2 nd	Market pull	Linear models	Market pull	Demand pull
3 rd	Coupling model	Interactive model	Combination of technology push and market pull	Portfolio management
4 th	Integrated model	Systems model	Cyclic innovation model	Integrated management
5 th	Parallel and integrated model	Evolutionary model	-	Systems integration
6 th	-	Innovative Milieux	-	Integration in network

Source: Author's table based on selected authors

2.1. First generation

From the 1950s to the middle of the 1960s, rapid industrial expansion and new technology opportunities lead to the belief that more research and development results in successful products (Rothwell, 1994). Figure 1. shows the process for innovation in the first generation.

Figure 1.: First generation innovation model

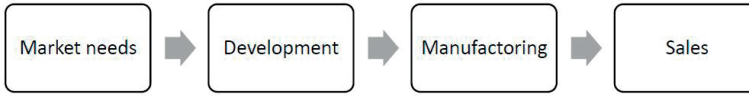


Source: Author's figure based on Rothwell (1994)

2.2. Second generation

In the second-generation, middle of 1960s to early 1970s, the companies within the US had a lot of competition, the employment rate was static and the productivity was increasing. In that time products were developed due to the demand of the market with existing technologies. The market as source of ideas is opposed to the first generation (Rothwell, 1994) and is shown in Figure 2.

Figure 2.: Second generation innovation model

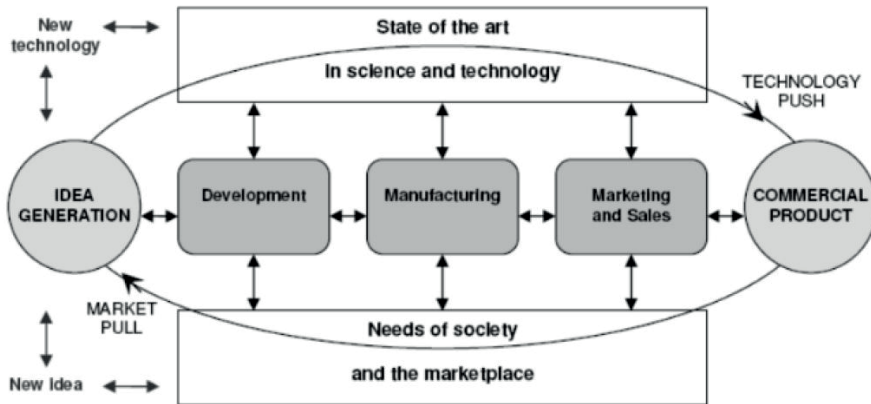


Source: Author's figure based on Rothwell (1994)

2.3. Third generation

Boehm and Frederick (2010) call the third generation the portfolio management. The others name it coupling model, interactive model or the combination of push and pull (see Table 2.). Despite the wording all of them describe a model which recognize the influence of technological resources and market needs. As in the models before the process is linear with additional interaction and feedback loops (see Figure 3.).

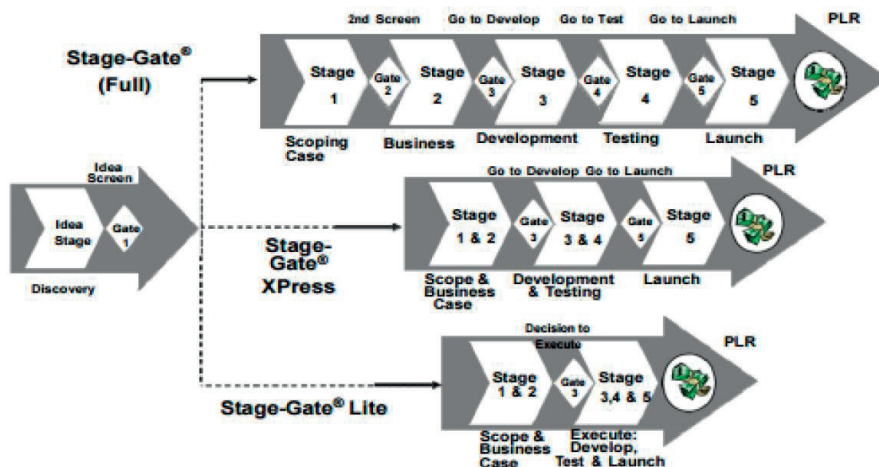
Figure 3.: Third generation model



Source: Galanakis (2006)

The Stage-Gate-Process after Cooper (1986) is probably one of the well-known models within the area of innovation management. The model describes a linear process, where each stage is checked on the, in advance set, criteria. If an idea cannot pass a gate, it is sorted out. A newer version of this process (see Figure 4.) splits after the first gate in three different lines, depending on complexity and the risk of the idea (Cooper, 2008).

Figure 4.: Next Generation Stage-Gate-Process by Cooper



Source: Cooper (2008)

2.4. Fourth generation

In the early 1980s, the awareness for strategic planning and forming alliances with other companies grew in the USA. Due to the shortening of the product life-cycles, time based strategies with integration, parallel development were necessary (Rothwell, 1994). Japanese automobile manufacturers were able to reduce the process of developing new cars from 4-5 years to under 3 years with the implementation of Simultaneous Engineering (Boehm and Frederick, 2010).

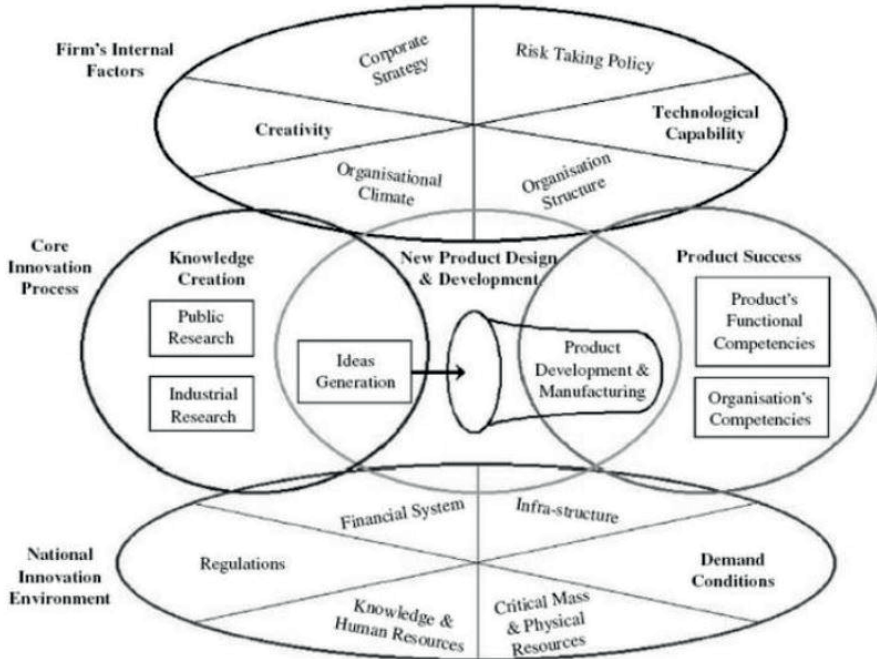
2.5. Fifth generation

From the middle of 1990s, the importance for companies are fast innovations. Firms continue to expand their strategic network and are focused on better integrated products and manufacturing strategies, increasing flexibility and adaptability (Rothwell, 1994).

Marinova and Phillimore (2003) describe the fifth generation as an evolutionary model where innovation can be compared to mutations in the field of biology. Their concept is inspired by the evolution theory after Darwin and like in the theory only the fittest, in this case, the innovation survives.

An example for this generation is given in Figure 5. Galanakis (2006) identifies three main processes in his model laying in the center and representing the company itself: the knowledge creation, the new product development and the product success. These three processes are influenced by the internal and external factors.

Figure 5.: The Creative Factory System Innovation Model



Source: Galanakis (2006)

Even with the influence of the external environment, the fifth generation models are mainly closed networks of innovation. This means the innovations are created and developed within the boundaries of the company (Galanakis, 2006).

2.6. Sixth generation

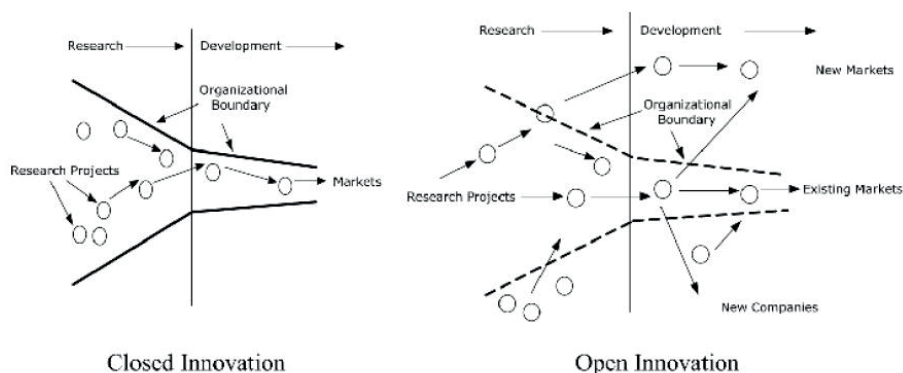
The sixth generation requires interaction networks and innovation systems (Boehm and Frederick, 2010). Marinova and Philimore (2003) are consistent with the Integration in network model in these two points. However, the "Innovative Milieux" has as central element the innovative milieu, which is described as combination of knowledge and specific competencies. Additionally, the territorial organization as well as the technical and economic process are key elements. They especially point out that the network is not always formalized in cooperative agreements or contracts. On the contrary, it features the ease of contact and trust between partners and social, cultural and natural conditions (Marinova and Phillimore, 2003).

The described sixth generation models aren't focused on internal ideas or close networks anymore but focus on opening up to the whole market. With this new as-

pects, ideas can also be generated externally by customer, states or other companies. Figure 6. shows the difference between a closed and an open innovation.

Henry E. Chesbrough wrote in "The Era of Open Innovation" that sooner or later all industries will change from close to open innovation. On the one hand this gives companies the chance to push internal ideas outside, e.g.: start us with own personal for ideas that are not fitting the company's strategy. On the other hand they can pull ideas from the outside inside to commercialize them (Chesbrough, 2003).

Figure 6.: Comparison of closed and open innovation



Source: Binci, D., & Cerruti, C. (2014)

Focusing on the evolution of the generations, it can be assumed that the next generation will include models which combine the company over all departments with their customers and the geographic conditions, like e.g. government or environment.

2.7. Criteria found for generations

The previous section presented the different generation and a few explicit examples. Except for the first two generations, all of them are evolutions of the previous generation. Based on this, I postulate that for new innovation models it is enough to verify if they fulfill all criteria for the 6th generation or if they are still fifth generation models. There is the possibility that a model surpasses the sixth generation criteria, in that case it needs to be discussed if the additionally found criteria are added to the ones of the sixth or if it is necessary to define a seventh generation.

A synthesis of the innovation process models described earlier suggests the following criteria for the sixth generation:

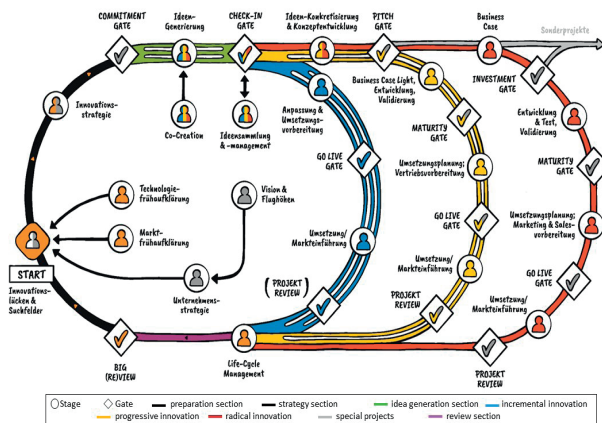
- (1) The process includes the following steps:
 - (a) Idea generation
 - (b) Concept development and evaluation

- (c) Development
- (d) Implementation
- (2) The innovation is triggered by a technology push, market pull or a combination of those
- (3) Interdisciplinary approach
- (4) Organizational and systems integration (including external networking)
- (5) Flatter and more flexible organizational structures, including devolved decision making
- (6) Feedback loops
- (7) Not only focused on product innovation but also service, process, etc.
- (8) Implementing life circle view for products.

2.8. BIG PICTURE © - The Grazer innovation model

The BIG Picture © model is invented by Dipl.-Ing. Dr. Lercher (2017), as mentioned above. At first glance, it has one big difference to the models described before. Whereas all other models describe a process from A to B, the BIG Picture © describes a process from A to B to A (see Figure 7.). It is an integrated view on innovation processes. The model shows similarities to the Stage-Gate-Process after Cooper. In this model stages are shown as circles and gates as rhombuses. Every gate in the model gives the firm the opportunity to abort the ongoing process. Some paths have more than one line in the model to symbolize the possibility to have more than one ongoing process at the same time.

Figure 7.: BIG Picture © model



Source: adapted from "BIG Picture © - Das Grazer Innovationsmodell" by Lercher (2017)

What is also sticking out is the color code. Table 3 gives an overview on the different paths with their German name, English translation and the color code for the model. The development section is divided into three paths with the color blue, yellow and red. The reason for this is that there are different levels of innovation, from small innovation for the daily business (incremental) to projects with a higher risk and investment but probably no new outcome for the market (progressive) and high risk projects with as possibility to change a lot within the company and also to bring changes on the existing market (radical). An exit line is the gray path for special projects. This path is for disruptive innovations, which will bring a massive change to the market, often even creating a new market.

Table 3.: Segments of the BIG Picture ©

Name in German	Translation	Color code	Sektion
Vorbereitungsphase	preparation section	black	evaluation of the internal and external environment
Strategiephase	strategy section	black	setting strategy
Ideenphase	idea generation section	green	creation and first evaluation of ideas
Umsetzungs- & Projektphase	development section	blue	for incremental innovations
		yellow	for progressive innovations
		red	for radical innovations
Sonderprojekte	special projects	gray	for disruptive innovations
Erfolgskontrollphase	efficiency review section	purple	controlling, lessons learned and life circle evaluation

Source: Author's representation based on Lercher (2017)

Additionally, Lercher (2017) points out that his model has the following features:

- the innovation strategy is embedded in the model
- with the company's vision and level of view
- own section for finding innovation fields and gaps
- including the necessary source of information
- the four levels of innovation are included
- model is very well structured, especially due to the stages and gates
- own section for efficiency review.

3. RESULTS

The criteria defined earlier are now confronted with the BIG Picture © model. Table 4. shows the criteria, if it is fulfilled.

Table 4.: Final results

	Defined criteria	BIG Picture©
1	process includes idea generation, concept development and evaluation, development, implementation	✓
2	the innovation is triggered by a technology push, market pull or a combination of those	✓
3	Interdisciplinary approach	✓
4	Organizational and systems integration (including external networking)	✓
5	Flatter and more flexible organizational structures, including devolved decision making	✓
6	Feedback loops	✓
7	Not only focused on product innovation but also service, process...	✓
8	Implementing life circle view for products	✓

Source: Author's representation

As seen in Table 4. all set criteria are fulfilled. What is necessary at this point is to give a more detail explanation of how they are fulfilled.

The model not only includes this process steps but highlights, as can be seen in the Figure 7. The green line is solely for the step idea creation and the end of the green line includes a gate for evaluation of the idea. Depending on the kind of innovation the development and implementation process is split between the blue, yellow and red line.

To start the BIG Picture © process prior information is required. The user has to have the company strategy and the vision in mind. However, it is also necessary to constantly observe the market and potential new technologies.

The interdisciplinary approach and the organizational & systems integration are both points to prevent the suffering from a tunnel vision. By including people (internal or external) in the creation process who are not specialized in that topic a different view of the problem can be created, leading to a wider set of possible solutions.

For the BIG Picture © model to function correctly it is demanded that while implementing the process every stage and gate needs a defined person, time- and financial frame. While the gates are allocated to specific decision makers, the stages are more open and flexible. For instance a stage like the innovation strategy can be assigned to different departments or employees.

The BIG Picture © includes the feedback loop after every step in the process, shown as the gates. This ensures that the process can be stopped or corrected at all times, preventing a failure at the end of the process.

The model itself doesn't distinguish between the types of innovation. It only gives an overview of how an ideal process should look like. The types of innovation triggered in the stages are depending on the used methods (e.g.: TRIZ for technical solutions).

The model includes a stage for life-circle management. On the one hand to evaluate the done projects and on the other to check in combination with market- and technology research for future innovations.

Further on, there are points found in the model which have not been defined yet:

First of all, the very open description of the model. Innovation process models are often custom designed for specific branches. Which in turn leads to unsuitable usage or at least a lot of work to change the model for a fitting use.

Second, the combination of the strategic and the operative innovation part. Models in the past often only focus on the operative part. However, constantly recurring successful innovations can only be achieved if the company includes the management as strategic and the employees as operative part.

Third, the already mentioned part of not describing a process which runs one-time and then is finished but describing it as never-ending circle.

4. DISCUSSION AND CONCLUSION

There are a couple of points still open for discussion before the conclusion.

First, a lot of literature has been reviewed for this paper, but there is still the possibility that relevant papers have been overseen. The reason for this argumentation is the sheer amount of papers available regarding the topic innovation process models. For instance, the topic innovation strategy is often categorized or labeled as management and can be hard to find and match towards innovation.

Second, there can be a lot more authors been found dealing with the written topic. As author of this paper, I had to choose a few of them. Dealing with all of them wasn't also not the aim of the paper. It was to find the most recognized theories and find the criteria described by them.

Third point is the additionally, described points found in the BIG Picture © model which could not be harmonized with the set criteria. Related to the first discussion point, it is possible that another author already defined those for the sixth generation and has not been reviewed by this paper.

Relating to the conclusion of this paper, it has been clearly showed that the BIG Picture © model is a sixth-generation innovation process model by the set criteria. However, there have been found additionally points which were not correlating with the generation description of the reviewed authors. A reason for this could be, it has

already been stated before. Another reason could be that they are actually really new for innovation process models. If that is the case, there is a further investigation necessary to clarify if the points need to be added to the sixth-generation criteria or if the BIG Picture © model can be seen as first model of seventh generation.

Acknowledgements

At this point, I want to express my thanks and appreciation to Dipl.-Ing. Dr. Lercher, who not only responded to my mails with questions within minutes but also allowed me to use his work the BIG Picture © for this paper. Especially because his book on his model hasn't been published by the time this paper was written.

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AN ANALYSIS OF HUMAN CAPITAL DEVELOPMENT AND PRODUCTIVITY GROWTH - CASE STUDY, NIGERIA

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Article info

Paper category: Review paper

Received: 23.5.2017

Accepted: 20.9.2017.

JEL classification: O4, O15

ABSTRACT

In order to address the direction of causality between human capital and productivity growth in Nigeria, the study first investigated the pattern of productivity growth in Nigeria between 1970 and 2010. Following the endogenous growth model, which argued that technical progress, through an effective labor force, could lead to long-run growth which can be determined from within an economy; but it actually depends on the efficiency with which resources available to such an economy are utilized. This is against the exogenous growth model which emphasized that long-run growth can be attained by some unexplained technological progress, which is exogenous to any economy. Based on this controversy in literature, this study empirically determined the productivity growth in Nigeria, as well as the causal relation between human capital development and productivity growth in Nigeria using the Engle-Granger causality test. The results revealed that productivity growth has been very low and unstable in Nigeria as it oscillated between -1.5% and 0.6%. In addition, the nexus between human capital and productivity growth was examined. The findings revealed that while productivity growth caused human capital development, human capital development did not cause productivity growth.

Keywords:

Human Capital; Growth; Productivity; Causality; Education

1. INTRODUCTION

The growth literature is definitive on the centrality of the productivity improvement to the fostering of growth and development, (Meier, 1970). Aside the stock of physical capital, human capital, knowledge and technical know-how, has been identified as one of the components that can contribute positively to productivity growth, (Romer, 1996). Human capital which has been identified as the aggregate economic view of human beings acting within economies, encompasses traits such as knowledge, talents, skills, abilities, experience, health, intelligence, training, judgment, and wisdom (Mincer 1993; Becker, 1994). Therefore, given these attributes, human capital can be advanced through improvements in the productivity growths. This could be strengthened through the development and adoption of new methods and especially indigenous methods or approaches to productive and economic activities. Although, several theories have connected human capital development to issues such as health, education, economic development, productivity growth, and innovation; however, empirics have also stressed the need for education and quality investment in human capital for productivity enhancement (Mohammad and Jalil, 2011). Thus, this explains the continuous agitations and justification for government subsidies for health, education and job skills training.

Solow (1956) was the first to formalize the study of productivity growth within the context of an aggregate production function model. In an empirical analysis applied to the U.S. economy for the period 1909-1949, he discovered that gross output per man-hour doubled over the study period, within which 87.5% increase was attributable to technical change. Thus making a case for an improvement in technological patterns influencing human capital development; that an improvement in technical know-how, leads to increases in average output. Similarly, Soon and Soon (1997) examined the sensitivity of productivity growth to changes in the assumed service life of fixed service in Singapore for the period 1975-1995. It was discovered that productivity growth, was relatively weak in the late 1970s and the early 1980s. However, this weak trend was observed to have rebounded due to improvements in the educational attainment of the labor force as well as the impact of skill upgrading.

On a different note, it has been revealed that it is not in all cases the presence of human capital can fast track productivity growth; this may be due to external shocks from funding, new trends, processes and approaches in production and service delivery. Hence there may be the need to develop human capacity to respond to the dynamics of our world. Estevao and Severo (2010) investigated how changes in industries' funding costs affect productivity growth. It was revealed that increases in the counterpart funding had a statistically significant and economically meaningful negative impact on productivity growth. This finding could not be explained by either increasing returns to scale or factor hoarding. This is because the results generated were not sensitive to controlling for industry size despite that the calculations ac-

counted for changes in factor utilization. But based on a stylized theoretical model, the estimates generated suggested that financial shocks distort the re-allocation of factors, such as human resources, materials or machines, across firms even within an industry, thereby, reducing productivity growth, especially in the short-run. Furthermore, the decline in productivity growth could be largely attributed to negative impact of funding costs on output. This implied that when new processes are introduced into production systems, it is required that college training, on-the-job training respond to these changes as human capital are a major factor input towards productivity growth. Thus, the impact of funding geared towards human capital development should be examined if there will be a positive response to any shock that occur due to changes in current trends.

Several studies have examined the nexus between different variables and productivity growth in Nigeria, (Chete and Adenikinju, 2002; Olaoye, 1985; Adesina, 2011); but the relation between human capital development and productivity growth is still open in Nigeria. For an economy to develop its productive capacity there is the need to strengthen the human capital content. Prior, if the human capital base of an economy is well developed, it is expected to have significant implication for overall growth of such country. In the light of the foregoing, the question that comes to mind is what is the human capital base of Nigeria like? Besides, if the challenge of world dynamics is constant, to what extent has the government of Nigeria responded to this challenge, especially in terms of funding human development? In addition, in the light of global technological advancement, to what extent has productivity growth fared in Nigeria? And finally it may be important to know if any causal relation exist between the human capital base and productivity patterns in Nigeria

For macro and domestic factors to thrive sustainably, the variation in the level of education embodied in the labor force is required for productivity growth. As a matter of import, this technological know-how and performance is one of the primary reasons for the observed differences in productivity among countries, (Solow, 1956). For Sub-Saharan countries particularly, it was observed that the relevant bottlenecks preventing the development and adoption of new technology is the lack of human capital necessary to implement the new technology in a productive fashion, (Miller and Upadhyay, 2000); hence this study.

The study took a two-fold turn, because, if the causal relation between human capital and productivity growth is to be established, then the existing productivity growth trend must be established. Following this, the direction of causality between human capital is examined. In the light of this, the study is further divided as follows: section two examines some previous empirical studies on the relationship between human capital and productivity growth; section three examines the extent of government response to funding education in Nigeria, which is a germane factor for human capital development; sequel to this, section four and five gives the hypothesis and methodology of the study. While section six and seven presents the results of esti-

mation, discussion of results and contribution to knowledge; and section eight concludes the study.

2. LITERATURE REVIEW

This section examines the various studies that have examined the nexus between human capital and productivity growth. Some studies revealed that the presence of newer technologies have facilitated effective labor output, while some have discovered that, scaling capabilities through learning, innovation and knowledge acquisition have improved human effort towards productivity growth.

Limskul (1988) compared productivity growth among the Newly Industrializing Economies (NIEs), where he discovered that productivity growth in the primary sector, with skills and technical know-how available, was quite low in Thailand compared to Japan; while productivity growth in the service sector was high in the Republic of China and the Republic of Korea. Besides, the growth of capital contributed more to the growth of GDP, which was quite similar to that in Japan. The efficiency of labor, which is advanced human skill, contributed more in the case of Republic of China and Republic of Korea. In a similar study, Tinakorn and Sussankarn (1994) also compared the results of the analysis with those in the other Asian countries. Multiple regression analysis was used to determine factors determining productivity growth. It was observed that if a country is to develop its labor force and improve its stock of knowledge, production for subsistence must be discouraged. In addition, capital accumulation which will enhance efficiency should be a ready complement to human development. This is because labor cannot work in isolation, besides after knowledge acquisition; there must be good forum to dissipate what has been learnt, thus promoting total growth.

Park (2010) in a study analyzed the changes in productivity growth in 12 Asian economies—the People's Republic of China; Hong Kong, China; India; Indonesia; the Republic of Korea; Malaysia; Pakistan; the Philippines; Singapore; Taipei, China; Thailand; and Vietnam—for the period 1970–2007. Special emphasis is placed on variables such as human capital, and research and development capital, in defining the productivity dynamics. The results showed the evidence of growing contribution of productivity in the post-2000 period. In the empirical model, estimate of productivity growth was augmented with human capital and R&D. It was revealed that catch-up effect by labor force, life expectancy effect, human capital, and R&D were adopted as the baseline projection equations for TFP growth. In fact, within the Asian economies, the major source of productivity growth was found to be the catch-up effects by the labor force in the early 1980s, especially because the role of human capital in influencing TFP growth was seen to be gradually rising. Similarly, Idris (2007) analyzed the productivity growth in Malaysia during 1971–2004. Empirical result suggests that productivity growth of the Malaysian economy for the entire study period

has not been encouraging due to negative contribution from technical efficiency. Although, it was discovered that the economy was able to cause shifts in their production frontier due to indigenous innovation; but, the economy needs an enhancement of their productivity-based catching up capability, specifically, the effective use of human capital in the labor market, increase in the number of skilled workers to operate a more sophisticated technology, and the adoption of new technology.

Danquah et al. (2011) examined productivity growth and its determinants in 67 countries (OECD and Non-OECD). Employing the non-parametric Data Envelopment Analysis (DEA) technique to compute the Malmquist productivity-based index for these countries, over the period 1960–2000, it was discovered that the most robust productivity growth determinants are unobserved heterogeneity determinants common to OECD and non-OECD countries. For the OECD countries, a major factor that caused productivity growth was the efficiency with which labor force contributed; while in Non-OECD countries, the only additional variable that correlated with TFP growth is population density, thus re-affirming the role of human skill and labor force development in advancing productivity growth.

In another study, Ahmed and Bukhari (2007) showed that policies affect productivity through human endowments of employed labor force, providing better infrastructure and other facilitation to incorporate technology in the production process. Using the Pakistan economy from 1973 to 2006, human capital improvement accounts for a significant contribution in agriculture thereby, fostering the growth of productivity. While in Sub-Saharan Africa region, Akinlo (2006) explored the effect of macroeconomic factors on productivity growth in Nigeria, in 34 Sub-Saharan African Countries for the period 1980–2002. It was revealed that human capital; amongst other variables have significant positive effect productivity growth.

Therefore, in as much as human capital development has been seen as focal to changing the tide of productivity growth in some countries, such as the Asian tigers, it is relevant to examine where Nigeria is and where it need to improve on, if it is going to go beyond the least developed economies.

3. EDUCATION FUNDING AND HUMAN CAPITAL DEVELOPMENT IN NIGERIA

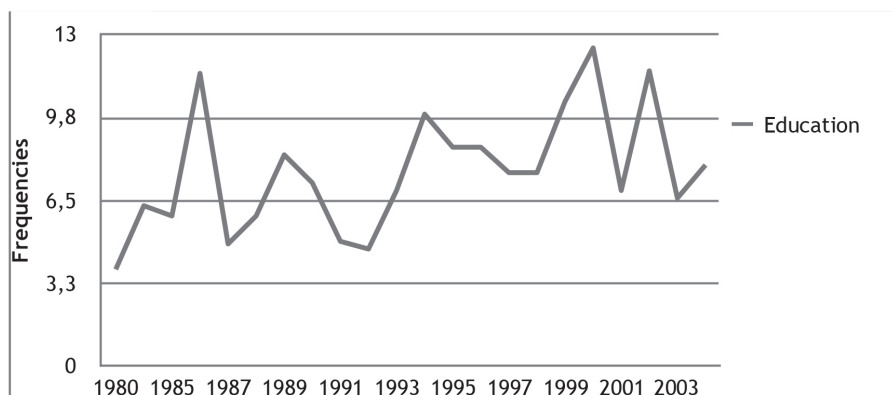
In most countries of the world, government as representatives of the society set economic goals which usually include economic growth, human capital development, equality in income distribution, low unemployment, high productivity growth, low inflation, high per capita income, favorable terms of trade and balance of payments. Usually, these goals may be incompatible with one another in terms of trade-offs and struggle for resource allocations. But, they are usually seen as critical factors to ensuring development in any economy in the world. In order to attain these goals,

there may be the need for a balanced budgetary allocation to address all the sub-sectors of the economy.

From the previous section, it has been discovered that if an economy is to develop its human capital base, there must be the support of capital resources to complement human capital development. These capital resources could include Federal funding through increased budgetary allocation to the educational sector, infrastructural development, enactment of policies, provision of subsidies, grants, scholarships, as well as an enabling environment that support learning. Amongst all these variables for human capital development via the educational sector, the major issue of concern is government effort, through policy development and funding patterns, geared towards improving educational system.

The Nigerian government has adopted several programmes and policies from 1970 to 2009 to address the issue of productivity growth. With particular emphasis on human capital development in education, the government in Nigeria in the mid-1970s launched the Universal Primary Education (UPE) where education at the primary level was free; but due to certain inadequate needs assessment, in terms of increased turn out of school pupils, manpower and infrastructure, the programme gradually died a natural death. UPE, has since been replaced with the Universal Basic Education (UBE) programme, (Gusau, 2008). The government although has special arrangements for the UBE programme through budgetary allocations to education and private collaborations, it is observed that education funding has not gone beyond 14% of the total budget. From figure 1, the funding of education in relation to the total budget allocation for education was 3.8%, by 1990, the allocation for education had gone up to 7.2%, while in the year 2000, the funding of education was 12.5%, and in recent times the allocation is about 11% of the total budget, (Budget report, 2014).

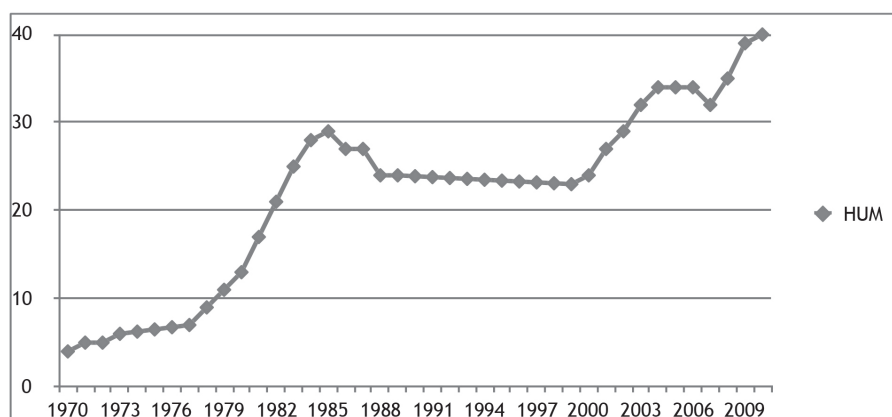
Figure 1.: Trend of Education Funding in Nigeria (1980-2005)



Source: Major Financial and social indicators, Central Bank of Nigeria (2005)

In view of these policies, there is no doubt that from 1970 till the present time, the Nigerian economy has been experiencing relative economic growth as depicted by the growth rate of GDP, (World Development Indicators, 2013). In fact, taking over from South Africa, in 2014, statistics revealed that Nigeria has the largest economy, yet in terms of development¹, Nigeria is still categorized amongst the least developed economies of the world, (Todaro and Smith, 2011; UNIDO, 2003). From Figure 2., a cursory look at the human development, in the light of secondary school enrollment, showed that from 1970-till date, human capital has been growing in Nigeria. The puzzle then is, if human capital has been growing steadily through funding and enrollment rate, why has it not translated to development in Nigeria?

Figure 2.: Human Capital Development in Nigeria, 1970-2010



Source: World Development Indicators (2011)

Previous studies have noted some reasons for the deviations. For instance, Dauda (2010) noted that the ultimate goal of economic development which underscored the need to improve the well-being of people might just have been undermined; or unresponsive to global pace and requirements for development.

Over the years, recognizing the need to develop the stock of knowledge available to an individual successive Nigerian government had embarked on various programmes and projects which led to the establishment of educational institutions throughout the country. However, in the late 1970s and early 1980s, Federal government spending grew substantially resulting in fiscal crisis, inflation, and heavy borrowings. Subsequently, through the austerity measures adopted in 1982 and Structural Adjustment Programme, (SAP) introduced in 1986, the country attempted to bring down fiscal deficits as part of its stabilization and adjustment programmes, often by reducing public spending on across-the-board basis, (Anyawu, et al., 1997). These reductions resulted in unprecedented economic and social costs as human resources development was neglected with adverse long-term devel-

¹ <http://www.africaranking.com/largest-economies-in-africa/>

opment consequences on technical contents and know-how (Oyinlola and Adam, 2003). It therefore becomes abundantly imperative to examine the effects of these via:

- (1) The productivity growth effect in Nigeria, and
- (2) How government efforts have caused human capital to contribute to productivity growth in Nigeria.

4. HYPOTHESIS

Since the two variables of interest are human capital (*Hum*) and productivity growth (*tfp*), the hypothesis test for causal relation will be stated as:

H₀: There is no causal relationship between human capital and productivity growth

H₁: There is a causal relationship between human capital and productivity growth

5. METHODOLOGY

The study employed a quantitative method of analysis for the study. It covered the period between 1970m and 2010. The study period selected actually covers the period before and after reforms in Nigeria; thereby given an opportunity for the assessment of productivity and human capital in Nigeria, pre and post reforms.

5.1. Model Formulation

A test for causality, between two variables, is basically to establish if one variable leads the other variable and/or vice-versa. In order to do this, the causality test could be adopted; which assumes that the information relevant to the prediction of the respective variables, and is contained solely in the time series data on these variables. The test involves estimating the regression of the form:

$$tfp_t = \sum_{i=1}^n \alpha_i Hum_{t-i} + \sum_{j=1}^n \beta_j tfp_{t-j} + u_{it} \quad (1)$$

$$Hum_t = \sum_{i=1}^n \theta_i tfp_{t-i} + \sum_{j=1}^m \delta_j Hum_{t-j} + u_{2t} \quad (2)$$

Where it is assumed that the disturbances u_{it} and u_{2t} are uncorrelated.

Equation (1) postulates that current value of tfp_t is related to past values of itself, as well as of Hum , and equation (2) postulates a similar behavior for Hum_t .

From the equations specified above, four cases of causality can be distinguished:

- Unidirectional causality from Hum to tfp is indicated if the estimated coefficients on the lagged Hum in equation (1) are statistically different from zero

as a group (i.e., $\sum \alpha_i \neq 0$) and the set of estimated coefficient on the lagged *tfp* in equation (2) is not statistically different from zero (i.e., $\sum \delta_j = 0$)

- Conversely, unidirectional causality from *tfp* to *Hum* exists if the set of lagged *M* coefficients in equation (1) is not statistically different from zero in both regressions (i.e., $\sum \alpha_i = 0$) and the set of the lagged *tfp* coefficients in equation (2) is statistically different from zero (i.e., $\sum \delta_j \neq 0$).
- Feedback, bilateral causality, is suggested when the sets of *Hum* and *tfp* coefficients are statistically different from zero in both regressions.
- Finally, independence is suggested when the sets of *Hum* and *tfp* coefficients are not statistically significant in both the regressions.

Generally, since the future cannot predict the past, if variable *Hum* causes variable *tfp*, then changes in *Hum* should *precede* changes in *tfp*. Therefore, in a regression of *tfp* on other variables (including its own past values) if we include past or lagged values of *hum* and it significantly improves the prediction of *tfp*, then we can say that *Hum* causes *tfp*. A similar definition occurs if *tfp* granger causes *Hum* (Gujarati, 2009).

5.2. Variable Measurement/ Sources

5.2.1. Productivity Growth

This will be measured using the Total Factor Productivity, (*tfp*). Total-factor productivity (*tfp*) growth is a variable that accounts for effects of total output not caused by inputs (Hornstein and Krusell, 1996). If all inputs are accounted for, then, *tfp* growth can be taken as a measure of an economy's long term technological changes or dynamism. *tfp* is often seen as the real driver of growth within an economy.

In an attempt to examine productivity growth in Nigeria, this study adopted the endogenous growth model as the is one of the neo-classical growth theories which adequately addresses issues on productivity growth, (Barro and Salai-Martin, 1995). Much of the recent literature distinguishes between exogenous and endogenous growth models (Barro and Salai-Martin, 1995). The important difference is that in the former the steady-state growth rate is determined exogenously, e.g., technical change while in the latter, the steady-state growth rate is determined endogenously, that is within an economy; but both models are interesting because they often leave a role for policies to be made. This determination of productivity growth was based on the neoclassical growth model as employed by Hercowitz, et al (1999) that focused on the level of productivity or the "Solow-residual". The basic building block of this study is the neoclassical production function of the representative firm in the business sector specified in equation (3) above which is assumed to be of the Cobb-Douglas capital augmented form:

$$Y_t = A_t K_t^\alpha L_t^{1-\alpha}, \quad 0 < \alpha < 1 \quad (3)$$

Where

Y_t = output in period t

K_t = capital stock at the beginning of period t

L_t = input of labor in hours

A_t = total factor productivity (tfp)

μ = error term.

By linearizing equation (3.8) above, we take the natural log of both sides, and it becomes:

$$\ln Y_t = \ln A_t + \alpha \ln K_t + (1 - \alpha) \ln L_t + \mu_t \quad (4)$$

tfp is affected by technical change of the neutral type, in the spirit of the neoclassical growth model. In equation (4) above, there are two unknowns, the growth rate of tfp which was indexed and the parameter α . Following the usual practice in this context, α is used as an estimate of the capital share, and obtain A as the residual.

But in order to generate the growth rate of tfp in a decomposed series, the error term μ can be ignored and then is made the subject, which implied;

$$\ln A_t = \ln Y_t - \alpha \ln K_t - (1 - \alpha) \ln L_t \quad (5)$$

In essence, if tfp is represented by the variable A , then we can re-write equation (5) by introducing the difference operator, which implies:

$$\Delta \ln A_t = \Delta \ln Y_t - \alpha \Delta \ln K_t - (1 - \alpha) \Delta \ln L_t \quad (6)$$

Equation (6) can be rewritten as:

$$\Delta \ln tfp_t = \Delta \ln Y_t - \alpha \Delta \ln K_t - (1 - \alpha) \Delta \ln L_t \quad (7)$$

5.2.2. Human Capital

The concept of human capital refers to the stock of health, knowledge, skills, attitudes, physical and managerial effort required to manipulate capital, technology, and land among other things, to produce goods and services for human consumption (UNECA, 1990). Several variables have been used in the literature to measure the impact of education. These include public expenditure on education as a percentage of GDP (Barro and Lee, 1994), and primary, secondary, and higher school attainment. But for the purpose of this study, as shown in Table 1., gross secondary enrollment ratio will be used. This is because an average secondary entrant or high school graduate is qualified to get a technical skill, learn an art, or earn a degree.

Table 1.: Presentation of Variable Measurement and Sources

Variables	Sources of variable	Measurement of Variables	Apriori Expectation
TFP Real GDP-IFS, 2010 Labor force- IFS,2010	Computed from		
Gross fixed capital formation- IFS, 2010	Growth Accounting method- see equation 3.10	Positive Growth	
Human Capital	World Development Indicator, 2010	Secondary School Enrolment Rate	Bi-Directional Causality with TFP

Source: Authors'

Estimation Technique

Objective 1: To measure productivity growth through TFP, the equation (5) will be applied. Total Factor Productivity is the ratio of total output to the collection of labor and capital as factors of production. The choice of this variable in measuring total productivity is made because it reflects the effects of technology on output production, since TFP is a change in output that does not depend on labor and capital (Mohammad and Jalil, 2011). Since the concept of productivity which can be used to measure performance can also be used to assess how well an economy has performed in terms of resource utilization.

Objective 2: In order to establish if any causal relationship exist between productivity growth (tfp) and human capital (Hum) in Nigeria, the Granger causality test will be adopted². Taking a clue from equation (1) and (2), the Granger approach will be achieved by using Engle-Granger method of estimating the causality (*adapted from Gujarati and Porter, 2009*).

6. ANALYSIS AND DISCUSSION OF RESULTS

6.1. Derivation of the Total Factor Productivity (TFP) in Nigeria

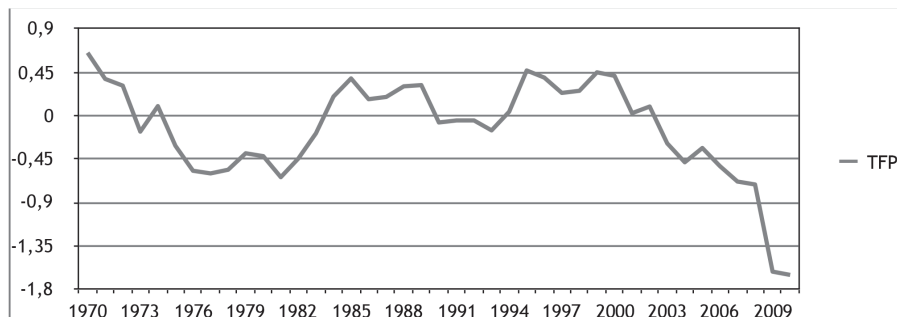
Basically, we used the simple growth-accounting exercise to estimate the growth rate of the TFP (the Solow residuals) assuming a constant labor share ratio of 0.6 while 0.4 is assumed as a constant capital share ratio. (Akinlo, 2003). The adoption of 0.6 is in view of the fact that in most developing economies, the production process is more of a labor intensive mechanism when compared to capital intensive methods of production. Thus, for the purpose of trend analysis, TFP growth was calculated using the specification in equation (5). The output (Y) of the economy rep-

² Multivariate Granger causality analysis is usually performed by fitting a vector autoregressive model (VAR) to the time series. However, in the case of a two-variable case d (displaystyle as stated within this study, the simple Granger causality test will be suitable for our analysis (Gujarati, 2009)

resented the growth rate of real GDP which was proxied with the RGDP; while the capital (K) represents the growth rate of capital which was proxied with a stock variable - gross fixed capital formation for the Nigerian economy. The variable labor (L) represents the growth rate of labor and was proxied with the data of the labor force of the Nigerian economy.

The growth rate of TFP generated revealed the following pattern:

Figure 3.: The Pattern of Productivity growth (TFP) in Nigeria, 1970-2010



Source: Author's computation

The implication of growth pattern in Figure 3. above revealed that the productivity growth in Nigeria has been unstable as it oscillated between 0.6% in 1970 to -0.4% in 1980 and declined further to -0.06% in 1990s and further to -0.4% in year 2000. This pattern is consistent with some of the earlier studies on TFP (Louis and Adenikinju, 2002; Olaoye, 1985 and Adesina, 2011). It is worthy of note that despite the declining pattern observed in the growth rate of TFP, there were some periods TFP attempted to take a major leap from the observed declining and unstable trend which had some major implications for the pattern of productivity in Nigeria. For instance, in 1970, TFP was about 0.6%, while in mid-1980s, TFP was about 0.31% and in the mid-1990s, TFP was about 0.5%. This pattern is similar to the result generated by Alwyn (1995), when he studied the TFP growth in Asia to be 0%, and the manufacturing sector growth was 1%, while the overall TFP growth rate in China and Hong Kong was 2.3%. The same was reported for the Singapore economy where TFP growth was low due to inadequate skills to meet current challenges; but a rebound was recorded between the mid-1990s and early 2000, which was greatly attributed to human capital development, and capital accumulation.

Before the year 2000, Nigeria although was referred to as a traditional economy, this was because a look at the GDP revealed that the agricultural sector was contributing more to GDP than any other sector such as the manufacturing sector. For instance, as at 1970, agriculture contributed 48.8% and by 1980, it stood at 25%; while in 1990, it contributed about 30% to total GDP, and by year 2000, agriculture contributed 32% to total GDP; this is against the pattern of the manufacturing industry which grew slowly

over the years ; for instance, in 1970, the manufacturing sector contributed about 4.8% to GDP while in 1981, the manufacturing industry contributed about 8% to GDP, while in 1990, it contributed about 8% to GDP, and by year 2000, it was about 6% of the total GDP (CBN Statistical Bulletin, 2002). The slowdown in the rate of contributions of the agricultural sector and manufacturing sector between 1970 and 1980 could have been as a result of the de-industrialization experienced in the Nigerian economy during the period. The de-industrialization could be attributed to the revenue generated from natural resource sales such as oil earnings, which in turn caused little incentive for institution-building and failed to implement growth enhancing reforms. Higher corruption, more rent-seeking activity, greater civil conflict, and erosion of social capital are some of the outcomes associated with the Nigerian deindustrialization experience. This is as which led to the adoption of the SAP in 1986. The Structural Adjustment Programme (SAP) of 1986, which had as one of its objective, boosting production through industrialization could have accounted for the revival of productive capacity in Nigeria in the mid-1980s.

Furthermore, it is not impossible for the observed pattern of major sectors in the economy to explain the declining drive of TFP within the Nigerian economy given that the agricultural sector employs more of the labor force than any other sector. Generally, it was observed that between 1981 and 1990, the contributions of the agricultural sector to GDP grew by just 5%, while between 1990 and year 2000, the difference in the contribution of the agricultural sector to overall output increase by just 2% (Ayodele and Falokun, 2003). This is because despite the fact that the agricultural sector takes a larger chunk of the total goods and services produced within the economy, the productive capacity may still be very low as evident in the kind of rudimentary techniques used for farming. The manufacturing sector is even more worrisome as its contribution to GDP revealed a declining trend over the years. This may be due to the fact that the manufacturing sector makes productive techniques that are not in consonance with best practices. Besides, it may be that there are low skilled personnel to drive creativity, innovation and invention; thus, resulting in low productivity. In addition, the manufacturing sector is seen to produce more of light household's consumables and less of capital goods, thereby accounting for low productivity.

6.2. Test of Causality between Human Capital and Productivity Growth

To provide empirical evidence on the fundamental question of whether human capital development causes productivity growth or whether productivity growth enhances human capital development, the granger causality test (GCT) is a tool for ascertaining this causal relationship. In Table 2., the GCT test carried out revealed that short-running-directional causality existed between TFP and human capital at 5% level of significance; but there was no relationship between human capital and TFP at 5% level of significance; therefore, the null hypothesis will be rejected in the first case, while the null hypothesis will be accepted in the second case.

Table 2.: Pairwise Granger Causality Tests

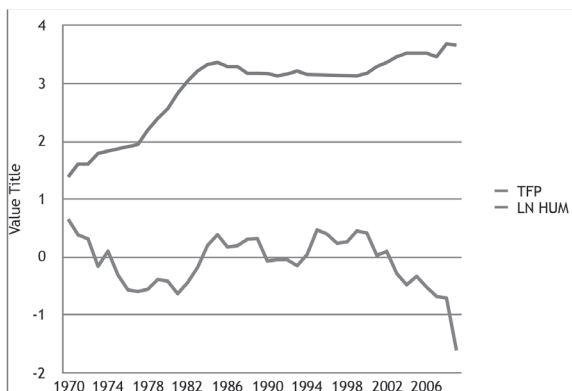
Sample: 1970 - 2010			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
TFP does not Granger Cause HUM	39	4.18770	0.0239
HUM does not Granger Cause TFP		0.76762	0.4722

Source: Authors'

The estimate from the Granger causality estimate revealed a unidirectional causality between human Capital and productivity growth in Nigeria. The unidirectional causality between TFP and human capital at 5% level of significance implies that TFP growth is seen to cause human capital development. But human capital development has not caused TFP growth. Therefore, we reject the null hypothesis at 5% for the second case. The uni- directional causality implied that productivity growth has facilitated the advancement of human stock of knowledge; but human capital has not caused productivity growth in Nigeria. It is interesting to know that productivity growth (which basically involves technological know-how and processes) has facilitated human activities. This is evident in teaching methods via the use of Information and Communication Technologies (ICT), as well as improvement in other sectors such as mechanized activities in farming, manufacturing, transportation, and communication has facilitated human development.

But, a look at the trend relationship between TFP and human capital will give an insight to the causality test in Table 2.

Figure 4.: Growth Rate of TFP and Human Capital

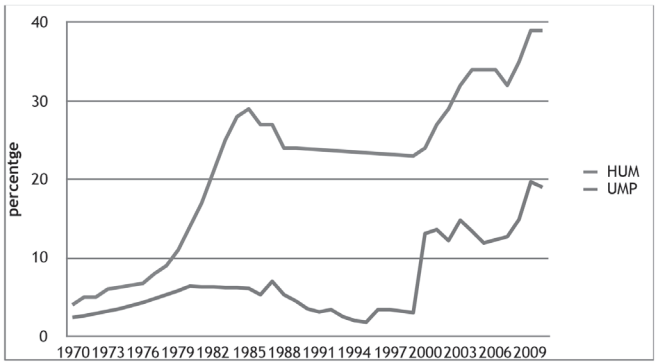


Source: TFP: Authors' computation

Human Capital: (Secondary school enrollment ratio), World Development Indicators, 2011

Figure 4. revealed that the trend relationship between human capital and TFP growth had human capital growing was faster and higher than productivity growth. Human capital which was initially low at 4 percent in 1970 while TFP was about 0.6%; by 1980, TFP stood at -0.4% while human capital grew at 13% in 1980; a fall in the level of human capital was experienced in the early 1990s to an average of 23 percent but TFP declined to -0.06%; but by mid 1990s it started growing steadily from 20 percent to about 35 percent by 2005 while TFP was also positive at an average of 0.4%. However, the TFP and human capital level can be seen to be growing steadily in the mid-1970s, but while the level of human capital grew over the years, TFP experienced a declining growth. From this trend, it can be deduced that initially, the productive level of the economy was higher than human capital, but by the late 1970s, human capital grew faster than TFP. This may be as a result of the fact that while the acquisition of skill by the populace grew over the years in terms of knowledge and technical know-how, the areas for dissipating these skills were not really evident. This is evident in the trend of unemployment situation in Nigeria; as it grew from 2.4% in 1970 to 6.3% in 1980 and then by year 2000 it was about 13% (International Financial Statistics, 2011). The fascinating trend between unemployment and human capital development is that a similar pattern is generated for both variables, thereby having severe implications for productivity growth. This explains why human capital has not caused productivity growth, because, the trend revealed a positive relationship between human capital and unemployment rate; that is *the higher the human capital developed, the higher the rate of unemployment*

Figure 5.: Relationship between Human Capital and Unemployment in Nigeria



Source: Unemployment Rate: International Financial Statistics, 2011
Human Capital: (Secondary school enrollment ratio), World Development Indicators, 2011

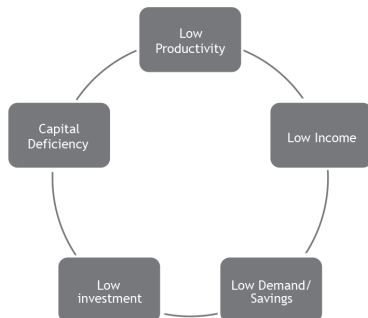
In effect, since productivity patterns reveal the level and efficiency of real activities within any economy, it therefore implied that the aim of the Nigerian government towards encouraging self-sufficiency, creating jobs and boosting overall productivity remains in doubt. Since, to a large extent, some of these goals cannot be

said to have been realized because there is still high unemployment, heavy reliance on trading and importation of food items and raw materials to augment local production (Ayodele and Falokun, 2003). In addition, there are scanty number of large scale commercial cultivators using modern techniques of farming and a large number of peasant farmers relying basically on traditional farming techniques. In essence, at the national level, low productivity growth reduces living standards because less real income decreases people's ability to purchase goods and services, enjoy leisure, improve housing and education and contribute to social and environmental programs.

7. CONTRIBUTION TO KNOWLEDGE

The study has been able to lend support to previous studies that productivity growth will promote human capital development. However, it also depicts that no matter how little advancement in technical know-how may be via productivity, human capital will usually benefit positively. However, the study revealed that for human capital to affect productivity, human capital development may need to be appropriately structured, annexed and channeled for productivity purposes, if not, general human capital development may just result in general economic impact instead of real, specific and directed productive impacts.

Figure 6.: The Vicious Circle of Poverty



Source: authors' adjustment from Jhingan, 2012

In economic thought, scholars such as Ragner Nurske have observed a vicious circle that could cause poverty and lower productivity growth, which is commonly referred to as the *vicious circles of poverty*- this is a circular constellation of forces acting and reacting upon one another in such a way as to keep a poor country in a state of poverty, (Jhingan, 2012). Figure 6., in its original conception, the vicious cycle of poverty in Figure 6. adduces that physical capital deficiency results in low productivity growth. However, since physical capital is itself is man-made, it could be reasoned that human capital development is a sine qua non to development and improvement in physical capital. A general explanation of productivity growth should therefore

include capital accumulation for investment purposes. However, this investment should include both human and physical capital by private firm owners and the government. For particular industries, on-the-job-training paves way for greater productivity, while general training leads to economy-wide skill acquisitions by workers for productivity. The import of investment in human capital is summed up in Alfred Marshall's submission that was noted by Becker (1994) "*the most valuable of all capital is that invested in human beings*"

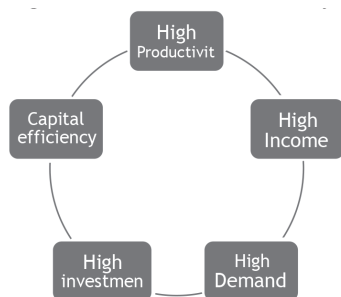
If the population constitutes people with low technical knowledge, low entrepreneurial drive, semi-skilled workers, unskilled laborers, or even illiterates, natural resources will remain mis-utilised or underutilized. Therefore, the next best interest should be what should be the way out to tackling some of these issues mitigating productivity growth and human capital development?

8. RECOMMENDATION AND CONCLUSION

In view of the results generated, it becomes pertinent to advance certain issues that could enhance productivity growth in Nigeria, given the dynamic human capacity endowment Nigeria possesses. Hence, these proposals are discussed in turns:

- (3) Harmonious Circle of Wealth: In economic thought, it is expected that if there is high income, as reflected in the national income of Nigeria, (CBN report, 2010), a relative even distribution of such income will lead to increased savings on the supply side of the market, as well high demand on the demand side of the market. This will encourage investors to invest more, which may be due to increased savings or increased demand, which in turn will lead to efficient use of capital, as well as accumulation, and an eventually high productivity results.

Figure 7.: The Virtuous Circle of Poverty



Source: authors' adjustment

With regard to the findings of this study, taking a clue from the economy of Singapore, Alwyn (1995) discovered that capital accumulation was the main source of growth in Singapore, while Soon and Soon (1997) discovered that

a total rebound in TFP in Singapore was due to human capital development, thus, validating the propositions of Ragner Nurkse. A consideration of these factors in the light of the realities which operates in Nigeria, can guide policy formulation and implementation; where human capital development that will adopt, acquire and diffuse foreign technologies will be relaxed as well as encourage the development of globally competitive indigenous technologies.

- (4) Process-based Training: A number of educators may disagree with the idea of practices as "process-based" because components of products (in writing) or components of lesson instruction (in the form of mini-lessons or follow-up class discussions) oftentimes occur. But the logic is like this: teaching practices should have a balance of relevant and nascent practical sessions with theories, especially in the Science and technology based discipline where students are expected to spend time by learning through doing; it also includes other non-science discipline which are relevant to human existence and sustenance. This is because leaning by doing can lead to problem solving, discovery of new ideas, designing a product, as well as leading to product-development which is not commonly part of math problem-solving lessons. A rigorous mind that is well developed through process teaching methods will be creative and innovative in his thinking and activities thus, having direct implications for productivity enhancements in any economy. While advocating for process based learning, it is important to ensure that the dynamics of time be taken into consideration, as it is commonly observed that change is a continuous process. Therefore, the methods of doing things two decades ago may be significantly different today; as a result, one must inculcate dynamic learning process in teaching methods. For instance, in recent times, the use of ICTs in teaching is become a nascent order, as a result, it is pertinent that such methods be inculcated in skill acquisition and teaching methods. In addition, the gap between industries and educational institutions should be bridged, such that industries can institutions have a feed-back mechanism of what is required of graduates to make them relevant and competitive, as well as what industries require to become more productive, given research outputs. Beyond the process-based training, the issue of technical education should not be side-tracked, or less reckoned with. This is because some talents may have the ability to understand theoretical contents and subsequently apply to practical issues, but in some other instances, there may be some who understand just the practical application of some technical details and are not willing to go through the theoretical details. Germane instances are the auto-mechanics in Nigeria, where most of these mechanics get certified through learning by doing, as a result they engage in trial and error practices which are capable of reducing productivity. Hence, there may be the need to scale-up existing abilities to meet with current challenges in different industries; in addition, technical education and informal learning process should be scaled-up to ensure

effective delivery. This could be achieved by bridging the gap between technical in the agricultural sector, which remains the largest employer of labor in Nigeria, it is equally encouraged that peasant practices be done away with, while mechanized and improved processes be adopted; this will boost output and enhance productivity growth.

- (5) **Entrepreneurship Education:** Employment is the life line of any economy. "Human development will definitely be grossly undermined and impaired without employment". How soon Nigeria sets to address the problems of mass. To tackle the challenge of unemployment in Nigeria depends on how speedily it is able to develop the millions of its labor force into a knowledgeable and skilled people needed for the required change (NEEDS document, 2004). The need for self-employment is a critical issue in recent times considering the fact that the search for job keeps increasing. The Entrepreneurship Development Programme, as an urgent mechanism to youth unemployment was specifically designed for the Nigerian youths, informing them about the world of business and opportunities to create their own businesses. The EDP provides youths with insights into entrepreneurship and enterprise; it aims to help them realistically consider the options of starting a small business or of self-employment. The reason why the EDP was set up was to create employment opportunities for self-employed youths as well as the other young people they employ. Besides, the programme was designed to bring alienated and marginalized youths back into the economic mainstream and giving them a sense of meaning and belonging as well as to help in addressing some of the socio-psychological problems and delinquency that arise from joblessness. In addition, to help youths develop new skills and experiences that can then be applied to other challenges in life; promote innovation and resilience in youths; promote the revitalization of the local communities by providing valuable goods and services; capitalize on the fact that young entrepreneurs may be particularly responsive to new economic opportunities and trends.
- (6) **Good Governance:** Good governance is believed to be able to contribute significantly to the development of human capital in Nigeria. For instance, the capacity of individuals and businesses to exploit the potential of the Nigerian economy will be enhanced where the scourge of corruption and bad governance are reduced to the barest minimum. Besides, policies that will promote a social charter, where contract between individuals and government will be enhanced should be ensured. Particularly, government will recognize the rights and responsibilities of individuals such as education, health, housing and security and make adequate budgetary allocations. This should be done in view of the rich endowment of natural and human resources present in Nigeria; because for decades, the Nigerian socioeconomic conditions have declined despite increasing revenue from crude oil (NEEDS, 2004). In essence boosting

productivity growth and empowering people calls for a human rights approach to development planning where policies designed and implemented places people at the center of development efforts. Aside this, the government should promote public-private partnership by developing programmes that will boost productivity patterns through ability to develop and manage new technologies, mount schemes that will discourage brain drain and discourage migration, as well as channeling corporate and social responsibilities to channels where productivity can be enhanced. It is noteworthy the entrepreneurs, investors and businessmen, though are attracted by the Nigerian market, some other issues that may discourage investment as well as impede productivity which must be addressed adequately include, corrupt practices, bribery, infrastructural decay, electricity, cultural rigidities, as well as security challenges.

- (7) Monitoring and Evaluation: For any economy to advance in all spheres, it is very important that whatever policies are being implemented, adequate monitoring process through relevant bodies are put in place. This is important feedback mechanism for evaluation process, as to where the economy was, where it is and where it intends to be. If set expectations are met, there will be a multiplier improvement in the economy, but if not, a proper documentation will help review policies as required. In essence, domestic factors, the variation in the level of education embodied in the labor force is one of the primary reasons for the observed differences in productivity among countries. For Sub-Saharan countries and particularly Nigeria, it has been observed that the relevant bottleneck preventing the adoption and development of new technology is the lack of human capital necessary to implement the new technology in a productive fashion; this therefore, may account for the human capital not causing productivity growth in Nigeria.

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THE CHALLENGES OF BUSINESS ETHICS: THE BASIC PRINCIPLES OF BUSINESS ETHICS – ETHICAL CODEX IN BUSINESS

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Article info

Paper category: Review Paper

Received: 20.6.2017.

Accepted: 20.9.2017.

JEL classification: M1, M2

ABSTRACT

Past several decades management has become a vital concern to society. If we look at pools, we notice that the public does not have good opinion about management ethics and business. For the management community to turn this situation around, significant efforts are required. It should be understood what management ethics means, why it is important and how it should be integrated into decision making. Principles of ethics from moral philosophy and management theory are available to inform interested managers. Further requires that managers understand, and be sensitive to, all the stakeholders of the organization and their stakes. If the moral management model is to be achieved, managers need to integrate ethical wisdom with their managerial wisdom and to take steps to create and sustain an ethical climate in their organizations. When all that will be done, the desirable goals of moral management will be achievable.

Keywords:

Business ethics; Responsibility; Management ethics.; Moral management; Organization's ethical climate

1. INTRODUCTION

It is the sign of a weak mind to be unable to bear wealth. (Seneca)

1.1. On the track of business ethics

Whoever appropriates more than the minimum that is really necessary for him is guilty of theft. (Mahatma Gandhi)

It is needless to stress that nowadays business ethics is of extreme importance. The economic crisis in the entire world, as well as in Slovenia, where it has been specifically extensive, makes us consider the relation between material possessions (wealth) and man. Who serves whom? Who is the means and who is the end? Unfortunately, the answer to these rhetorical questions offers itself, and based on the actual state of affairs, it says that man has become enslaved to material goods, when in fact the opposite should have happened. However, to avoid moralizing, the problem does not lie in a person's right to personal possession, which was clearly defined by John Locke (and many great thinkers before him). A problem arises when personal possessions take over man's freedom, his dignity, when man is overwhelmed by greed, gluttony, and arrogance, when he is confident of being the center of the world with his economic power.

Entangled in such slavish behavior, based on one's desires (with frequent absence of reason), man soon starts to lose his basic primal human honor (in the best meaning of the word), dignity, self-respect, thus humiliating himself and disabling relations with other humans. Human greed does not allow any space for trust, cooperation, mutual care for the common good, or solidarity; on the contrary, it increases doubt, mistrust, fear, envy and unhealthy competition, which, unfortunately, often ends only due to external circumstances, like present-day economic and financial crisis.

The discussion on basic ethical hummus (global ethos common to various beliefs and religions) at all levels of social and personal life is therefore more urgent and necessary than ever, if we want to preserve the basic dignity of human life, the fact that man respects himself, keeps his word, does not manipulate others nor allows being manipulated, keeps his personal freedom and self-confidence, self-respect and integrity. If man does not possess these qualities he is in no position to create genuine relations with other humans, based on trust and honesty, rising above his pragmatism, calculability (jealousy and envy), and his thirst for various manipulations. We must not forget that ethics does not begin somewhere out there, in some objectivist procedural rules, it begins in the depth of my heart. The subject is the criterion of an ethical act, its freedom, or, as Aristotle would call it, prudence, together with will and morality, so that I can do what is good and right, even though it is often

demanding and difficult. Submitting oneself to likeability and populism or pragmatic calculability is ephemeral, it takes away man's core and personality, and such person loses himself in his solitude of impersonality and self-humiliation.

Basic Ethical Hummus of Ethical Business to talk about how indispensable ethics is in various areas of life, but unfortunately, it lacks systematic and reasonable discussion on these questions, which could provide some guidance for the changes in mentality and basic human culture in the area of business. The change of mentality cannot occur overnight, but it is better to start late than never. There has been an abundance of professional literature on business ethics from various foreign publishers recently. By reading it, I have been encouraged to add my own contribution which should be understood neither as a set of rules to answer all these questions, nor as a dogmatic system to solve all problems. Far from it. My intention has been to encourage people to consider the need for ethical culture in all areas of life, including business.

A kind of 'global ethos' of honest and just behavior in all areas of life, including business, is a set of basic principles shared by various religions and beliefs. We could claim that the foundation of these principles can be found in basic philosophical and religious views, which have the following axioms in common:

- man can and should never become the means, he should always be the end - human dignity;
- do unto others as you would have them do unto you, and do not do unto others as you would not have them do unto you (the golden rule of reciprocity from the Bible)
- true beauty and joy of being become alive in our relations to other people (common good), and not in our solitude or pragmatic individualism.

At this point, these axioms can be more precisely analyzed in terms of the basic principles of ethical business conduct. These principles, of course, only represent several aspects which should provide some challenge for personal consideration, prudence, and self-questioning about one's own ethical conduct.

The following principles should be broad and adaptable enough to be used with any ethical decisions. The principles are based primarily on Kantian and deontological ethics (it is right to do the right thing).

- (1) *Justice*: double obligation: a) not to do the injustice b) to prevent and mend the injustice
- (2) *Do no harm*: endeavors not to do harm unto others, exceeding pragmatism and selfishness
- (3) *Loyalty*: keeping promises, keeping the given word, not only the formalism of the contract
- (4) *Credibility*: lies and manipulations do not last long, they create distrust. The greatness of man is demonstrated in acknowledging one's mistakes, either deliberate or not.

- (5) *Liability*: if I do harm to someone I need to mend it. It is extremely unjust and unethical when someone who has caused material damage to another person and thus pushed him to the edge of survival manipulates with legal procedures in order to save his own interests, and makes others look insignificant (the consequence of which are many tragic stories of individuals and families).
- (6) *Charity*: sense of solidarity and the common good. Or as put in the Talmud, a poor man does more good to the rich by accepting their almsgiving than vice versa.
- (7) *Personal growth*: the importance of self-initiative of the employees, personal pleasure; a company's success grows with the sense of responsibility of all employees towards the company. At the same time, an individual should feel accomplished in his job, he should nurture all dimensions of his life (culture, sports...)
- (8) *Gratitude*: being grateful, praising other people and their success. Envy and jealousy belong to the most destructive tendencies, and they destroy interpersonal relationships and man's creativity.
- (9) *Freedom*: striving for man's personal freedom and dignity. Freedom includes rights and responsibilities. Naturally, freedom is something completely different from ruthless self-will which is triggered by momentary impulse and pragmatic individualism.
- (10) *Respect*: respect towards others, self-respect, forgiving yourself first and then your colleagues if something was done wrong, relationships of trust and integrity, exceeding prejudice; man should never be a means, man presents the end.

1.2. How to make true ethical decisions?

These ten sound-minded principles summarize the obligations and present the starting point for making ethical decisions. The following standpoints, or rather stages in decision making, can help us make wise, fair and prudent decisions.

- (1) *Prioritizing*: the question which helps us prioritize is: what are my obligations in this case? For more help, we can add questions like: is it my obligation to be just, not to do any harm, to be loyal etc.? We simply follow the ten above-mentioned ethical principles. Once we answer these questions, it is much easier to decide which principles we should abide by.
- (2) *Acknowledging conflicts of responsibility*: the question to guide us in acknowledging conflicts is: which obligations contradict each other? We soon realize that it is of vital importance how we handle the contradicting obligations. Some ways of how to do good are just wrong (a good end does not justify any means)

and sometimes we need to postpone certain actions, reconsider and reassess them.

- (3) *Ethical judgement of obligation*: the leading question here is: what is the significance of the contradictory obligations? Sometimes we have to choose between options which are contradictory in themselves. The most dangerous factors in our decision-making are populism and current favorites.
- (4) *The choice of ethically feasible options*: we often have to choose between different options, each being difficult and demanding in itself. It is of vital importance that whenever we need to convey an unpleasant piece of news to someone that we do so in a respectful manner, without humiliation or judgement. It is important that the receiver of our message feels our benevolence and good intention.
- (5) *The choice of action*: if we considered obligations at the first four levels, it is now time to act, or rather make a decision. The worst thing at this point is to be indecisive, to avoid responsibility, and leave questions to be answered sometime in the future. A person who knows exactly what he wants, a person with a vision, usually has enough courage and strength to make decisions, even though it is difficult to please everyone. Quite the opposite, critical and contrary remarks should be understood as a sign that a person is going in the right direction. Indecisiveness and populism lead to the point when a person no longer encounters either opponents or supporters, he loses his identity and turns into a faceless person.

I sincerely hope these thoughts will stimulate some personal consideration in the field of business ethics, as well as on the level of personal relationships in our society. I am well aware of the fact that this is only one of the possible interpretations of ethics in the world of business. I would like us all to strive for ethical culture, make a step forward in our attitude and particularly in our way of life, when honesty, justice, the common good and solidarity in our mutual relations are considered. If we nurture self-respect, cherish ourselves, keep our word, in short, if we start changing ourselves, then the world around us will start to change as well. Present-day society in our country and around the world represents not only a challenge but an outcry to wake up from our nap of comfort and pleasure, to notice our fellow man who needs material help, or perhaps only wants to be heard in his painful loneliness, crying for human company and understanding, who wants to be accepted and needed in this world... So that he can do something good for his fellow men!

To conclude, let me use the words of a great German writer J. W. Goethe: '*Man's greatest wealth is the courage not to desire wealth.*'

2. OVERVIEW OF MANAGEMENT ETHICS

Management, or managerial, ethics as a broad subject matter deals with the situations managers face in their work lives that are imbued with ethical content. By ethical content, we are referring to issues, decisions or actions which contain matters of right versus wrong, fair versus unfair, or justice versus injustice. That is, these situations are ones with which there may be some disagreement about what is the correct - or ethical - course of action or decision.

When we speak of management ethics, we also need to distinguish between what we are observing managers do today and what they should be doing as ethical managers. The former is often termed descriptive ethics; that is, we would be describing what managers are actually doing in terms of their ethics or their actions and decisions with respect to their ethicality. By contrast, when we speak of what managers "ought" to be doing, or "should" be doing, this is typically referred to as normative ethics. In this chapter, we will be concerned both with descriptive and normative ethics; however, our foremost concern is with what managers should be doing to enhance their own ethics and the ethical climates in their organizations.

Management ethics may be seen as a component of corporate social responsibility (CSR). In the past fifty years, there has been an unrelenting call for businesses to be more socially responsible. That is, there has been a blossoming expectation that business not only be profitable and obey the law, but that it be ethical and a good corporate citizen as well. Thus, it may be asserted that the four social responsibilities of business are as follows: be profitable, obey the law, engage in ethical practices, and be philanthropic, or be a good corporate citizen (Carroll, 1979: 497-505). To be sure, these other responsibilities (profitability, legal obedience, and philanthropy) contain ethical content, but we think it is important to single out the ethical component as one part of what an organization does beyond the minimum. Though society expects business organizations to be profitable, as this is a precondition to their survival and prosperity, profitability may be perceived as "what the business does for itself," and obeying the law, being ethical and being a good corporate citizen may be perceived as "what the firm is doing for others (society or other stakeholders)." In this discussion, we sharpen our focus to the ethical component of CSR and dwell on what this means for managers in organizations today.

3. WHY SHOULD MANAGERS BE ETHICAL?

One might rightly ask "Why should managers be ethical?" Using the frame of reference mentioned above, the short answer would be that society *expects* managers to be ethical and that managers should be responsive to the expect-

tations of society and stakeholders if they wish to maintain their legitimacy as agents in society. From a moral philosophy perspective, managers should be ethical because it is the right thing to do. We should go beyond these simple, but appropriate, answers, however, and point out some other reasons why ethical behavior and practice is warranted. Some of the reasons often given as to why managers should be ethical include the following that are set forth by Rushworth Kidder (1997).

3.1. Ethical issues managers face

When does a manager face an ethical issue? According to Ferrell and Fraedrich (1991: 35), "an ethical issue is a problem, situation or opportunity requiring an individual or organization to choose among several actions that must be evaluated as right or wrong, ethical or unethical." Josephson helps us to understand an ethical issue when he states that conduct has a significant ethical dimension if it involves dishonesty, hypocrisy, disloyalty, unfairness, illegality, injurious acts, or unaccountability. These represent at least two ways of thinking about ethical issues managers face.

Managers today face many such ethical issues and these issues may be grouped according to different levels at which they occur. Managers experience ethical issues at the personal, organizational, trade/professional, societal and global levels (Carroll, 1996: 145-8).

Furthermore, ethical issues may be categorized in a number of different ways. Vitell and Festervand identify conflicts between companies' or managers' interests and personal ethics. In their study, these issues arise between managers and their conflicts with such stakeholder groups as customers, suppliers, employees, competitors, law and government, superiors, wholesalers, and retailers. In terms of specific issues, these same researchers see ethical conflicts arising in these situations: the giving of gifts and kickbacks, fairness and discrimination, price collusion and pricing practices, firings and layoffs, and honesty in communications and executing contracts with investors (Vitell and Festervand, 1987: 114).

According to a major report from The Conference Board, there is widespread agreement that the following constitute ethical issues for managers: employee conflicts of interest, inappropriate gifts, sexual harassment, unauthorized payments, affirmative action, employee privacy, and environmental issues (Berenbeim, 1987: 3). In this same report, CEOs reported specific topics which constituted ethical issues for them, which were categorized as follows:

- *Equity*: Executive salaries, comparable worth, product pricing
- *Rights*: Corporate due process, employee health screening, privacy, sexual harassment, affirmative action/equal employment opportunity

- *Honesty*: Employee conflicts of interest, security of employee records, inappropriate gifts, unauthorized payments to foreign officials, advertising content
- *Exercise of corporate power*: Political action committees, workplace/product safety, environmental issues, disinvestment, corporate contributions, closures/downsizings

Finally, Waters, Bird and Chant (1986: 375), provide us with insights into what managers consider to be ethical issues based on their research using open-ended interviews with managers in a variety of organizational positions. In response to the question "What ethical questions come up or have come up in the course of your work life?" the following ethical, or moral, issues were identified most frequently:

- With respect to *employees*: feedback about performance and standing; employment security; appropriate working conditions
- With respect to *peers* and *superiors*: truth-telling, loyalty and support
- With respect to *customers*: fair treatment, truth-telling, questionable practices, collusion
- With respect to *suppliers*: fair/impartial treatment, balanced relationship, unfair pressure tactics, truth-telling
- With respect to *other stakeholders*: respecting legal constraints, truth-telling in public relations, stockholder interests

3.2. Ethical decision making

We have alluded to the importance of ethical decision making, but it is useful to treat it briefly as a distinct topic. Decision making is at the heart of the management process.

If there is any act or process that is synonymous with management, it is decision making. Though there is a need for improved managerial performance in the private and public sectors, there is a special need for improved ethical decision making by managers. Petrick and Quinn (1997: 24-5) state five reasons for managers to improve their ethical decision making:

- (1) The costs of unethical workplace conduct
- (2) The lack of awareness of ethically questionable, managerial, role-related acts
- (3) The widespread erosion of integrity and exposure to ethical risk
- (4) The global corruption pressures that threaten managerial and organizational reputation
- (5) The benefits of increased profitability and intrinsically desirable organizational order.

In the academic literature, there is much written about ethical decision making, including the use of models of ethical decision making. Most business ethicists would advocate the use of ethical principles to guide organizational decision making. A principle of business ethics is a concept, guideline, or rule that, if applied when you are faced with an ethical dilemma, will assist you in making an ethical decision. There are many different principles of ethics, but an extensive coverage of them is outside the scope of this chapter. Suffice it to say here that such useful principles include the principles of justice, rights, utilitarianism and the golden rule (Buchholz and Rosenthal, 1998). The basic idea behind the principles approach is that managers may improve the quality of their ethical decision making if they factor into their proposed actions, decisions, behaviors and practices, a consideration of certain principles of ethics.

A very practical approach to ethical decision making has been suggested by Laura Nash (1981: 80) who argues that there are twelve questions managers should systematically ask in a quest to make an ethical decision:

- (1) Have you defined the problem accurately?
- (2) How would you define the problem, if you stood on the other side of the fence?
- (3) How did this situation occur in the first place?
- (4) To whom and what do you give your loyalties as a person, and as a member of the corporation?
- (5) What is your intention in making this decision?
- (6) How does this intention compare with the likely results?
- (7) Whom could your decision or action injure?
- (8) Can you engage the affected parties in a discussion of the problem, *before* you make your decision?
- (9) Are you confident that your position will be as valid over a long period of time as it seems now?
- (10) Could you disclose without qualms your decision or action to your boss, your CEO, the board of directors, your family, or society as a whole?
- (11) What is the symbolic potential of your action if understood? If misunderstood?
- (12) Under what conditions would you allow exceptions to your stand?

Another set of useful questions to aid ethical decision making has been offered by Blanchard and Peale (1988). They recommend that managers ask

these questions before making a decision, and they call these three questions the "ethics check."

- (1) *Is it legal?* Will I be violating either civil law or company policy?
- (2) *Is it balanced?* Is it fair to all concerned in the short term as well as the long term? Does it promote win-win relationships?
- (3) *How will it make me feel about myself?* Will it make me proud? Would I feel good if my decision was published in the newspaper? Would I feel good if my family knew about it?

Obviously, the "wrong" answers to the above questions should move the manager into reconsidering his or her decision.

4. SUMMARY AND CONCLUSIONS

Human dignity is the first principle. The Universal Declaration of Human Rights says in its first article: 'All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood.' These obvious rights are very often forgotten and should therefore be constantly reminded of. Human dignity is invaluable and should be well-respected. If we combine this principle with business ethics, we must be aware of the fact that the primary goal of each business corporation is man's well-being and not constant striving for profit. There is nothing wrong with profit in general, of course, as it is necessary for the realization of business opportunities, but we must also be aware that profit only represents the means for reaching a higher end, which is the fulfillment of human needs. Even though the structure of our society is hierarchical, every job is intended to fulfill human needs. We were given talents which we can use to improve our living conditions and thus lead a fuller and more creative life. Problems in our present-day structure occur when the objectivistic views and evaluation of work put man as the end aside, thus transforming humans into the means in service of economy and man's deadly desire for profit. Our work affects our human characteristics, which is why we must be cautious about acting rationally, so that our planning and decision-making do not hinder our development and self-realization, but rather help us progress. However, every decision we make has an impact on wider society, which is why we should always ask ourselves: Does my decision respect other people? Does it not humiliate them or transform them into the means of modern slavery?

The second principle is the principle of the common good. The common good is what enables trade and state, it is the result of our mutual relations, the broadness of heart and mind which helps us exceed bare survival, gain creativity and cooperation. Our society has a moral obligation towards its members to ensure conditions in

which each individual can develop his or her full potential. Only by developing one's full potential, an individual can contribute to the common good of the entire society. From the standpoint of business decisions, company managers have a moral obligation to consider the consequences of their actions in their decisions and foresee the impact of specific decisions upon their company and its shareholders, as well as upon the wider society and humankind in general.

The principle of fair and responsible management of goods and property. The primary goal of our lives should not be constant striving for material goods. We often forget that material goods are only the means in service of man, who should be accomplished in different areas and at different levels of his life, from physical and cultural to spiritual. Moderation is important, as well as man's proper attitude towards material goods and wealth, or as Oscar Wilde once put it: 'If property had simply pleasures, we could stand it; but its duties make it unbearable. In the *interest of the rich* we must *get rid of* it.' Even though material goods provide profit and money, which is important, they only represent the means to live a fuller life. In our lives, we should not be fixed upon gaining more and more things. We should not exploit our environment without any consideration whatsoever, as our actions can have disastrous consequences on the entire humanity today and in the future. It is our moral obligation to use natural resources responsibly and with consideration. We should avoid overexploitation of natural resources with moderation and reason, and we should cause as little environmental pollution as possible, which would consequently lead to fewer natural disasters.

The principle of subsidiarity includes an individual's attitude towards various state and international institutions. The task of these institutions is to support and protect the first three principles. However, they need to renounce those activities which would affect the autonomy of the individuals, families, or the entire nation. In a broader sense, the responsibility of an individual is to recognize the needs of his domestic environment and to act accordingly. International and state institutions should not interfere with the activities of the local communities, if these fulfill their duties and manage to solve their own problems. They have the right and obligation to interfere only when the autonomy of a particular society does not respect the basic human rights and presents a threat for other countries in different areas of cohabitation on our planet.

The option for the poor as the fourth principle means that it is our moral obligation to estimate the economic and social activities from the point of view of the most disadvantaged members of our society. From the point of view of business ethics, this would mean that it is the moral obligation of large corporations to work in favor of the most vulnerable members of society. They need to realize that their decisions have a strong impact on people, globally and not only locally. Some corporations view their employees only as a means, exploiting the fact that there are many people at a global level who are prepared to work for minimum salary. Thus, the corporations

humiliate their own employees and practically enslave people in poor countries, who do their jobs for considerably lower salaries. This is the violation of basic human rights and exploitation, the goal of which is the desire for bigger profit and manipulation of man, who is thus reduced to the instrument level.

The principle of solidarity is firm determination to work for the common good. It is demonstrated in recognizing other people's needs and striving for changes and long-term improvement. 'Wealth is evidently not the good we are seeking; for it is merely useful and for the sake of something else,' Aristotle wrote. Solidarity includes relations between those who give and those who receive. It is not pity, it is acknowledging that we build mutual relations and we are all responsible for the common good. Our decisions and choices should protect not only our interests but the interests of others as well. It is vital that our freedom or ruthless self-will does not threaten the freedom of our fellow man.

The desire to work well and with honesty and keep the given word

Business managers care for relations between various interest groups: owners, employees (including managers), customers, suppliers, investors, and the entire business environment.

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