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## (SAJMR)

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### Contents



**Chh. Shahu Institute of Business Education and Research (SIBER)**
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# SOUTH ASIAN JOURNAL OF MANAGEMENT RESEARCH
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## Editorial Note

*Giving birth to a journal is a painful journey. It starts with a specific vision followed by lots of ambiguity at the implementation level that gives way to clarity. Finally we have arrived at it. The first issue of the first volume is now ready.*

*I wish to emphasize on the vision with which we have started the journal. This vision is closely linked with the academic background of SIBER; the Institute that brings out this journal. SIBER is a unique Institute of its kind in the entire Indian Subcontinent imparting Post Graduate Professional Education in the field of Business Management, Social Work Administration, Environmental Studies and Computer Application. Management thoughts and managerial research are the common factors that link these otherwise diverse fields. Having completed three decades, the Institute now desires to cater the international community, by creating a platform for sharing the outputs of managerial research in these as well as other areas of human activities.*

*We perceive that the socio-economic and political environments in South Asian Countries are more or less similar that we will be able to share the same media for this purpose.*

*Scarcity of good articles was the main hurdle experienced in bringing out the first edition of the journal. Copycat culture is frequently reflected in the research articles. Usually the reputed researchers will be reluctant to spare research for an upcoming journal.*

*Research requires imagination and creativity. Most research lack rigorous methodological constraints. The aim of our journal is to provide a quality article to the readers and to create a platform for the academicians to publish their articles.*

*It is our editorial policy to review every paper by two experts. We followed this method religiously and continue to follow in the future too. The accepted papers have gone through dual reviews.*

*This issue contains four papers. The first paper is of a joint article of Dr. Francisco Diniz and Teresa Sequeira on 'A Social and Economic Development Index NUTS Ranking in Portugal'. In this paper the authors have calculated Social and Economic Development Index (SEDI). By using multivariate statistical analysis, the authors have studied demography, education, employment, entrepreneurial structure, health and housing conditions etc. in Portugal and made a comparisons between different regions.*

*The second paper is from Dr. Nandakumar Mekhoth, Faculty, Department of Management Studies, Goa University, Goa and Nattuvathuckal Barnabas from Goa Institute of Management, Goa. The paper is related to Development of a scale, a Scale to Measure Organization Autonomy. By using psychometric techniques, the authors have developed scale in an appropriate manner and its reliability has been established through factor analysis.*

*The next paper is from Dr. R.L. Hyderabad and M.N. Bhajantri from Department of Commerce, Karnataka University, Dharwad. They have discussed Share Buy Back Procedure in detail. The authors have discussed Open Market Repurchases (OMRs) and Fixed Price Tender Offers (FPTs), which are common and popular methods of accomplishing share buyback decisions. They have concluded that OMRs yield greater returns in first buybacks and FPTs in subsequent buyback.*

*The last paper is related to job satisfaction among the nursing professionals by Dr. Madhu T.P. Nair and Dr. Shobha A. Menon, Cosmopolitan's Valia College of Commerce, Mumbai. This paper is related to health sector.*

*The first issue of the journal has review of two books. The book on 'Service Marketing' authored by Valarie a Zeithaml, Dwayne D Gremler, Mary Jo Bitner and Ajay Pandit has been reviewed by Dr. N.M. Makandar, Department of Commerce, Anjuman Arts, Science and Commerce College, Dharwad. The second book is related to New Mantras in Corporate Corridors: From Ancient Roots to Global Routes, authored by Subhash Sharma has been reviewed by Dr. Pratima Verma, Indian Business Academy, Bangalore.*

*We welcome research papers from the field of Computer Science, Environmental Studies, Social Work, Administration, etc.*

*I am grateful to all the authors, reviewers and editorial members of the journal for their contribution and support in bringing out the first volume of the journal successfully.*

***Dr. Babu Thomas***

*Editor, SAJMR*

*SIBER, Kolhapur*

# A Social and Economic Development Index NUTS Ranking in Portugal

**Francisco Diniz* and Teresa Sequeira**
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**Abstract**

Once we accept the principle that development is a process which leads to changes in people's living conditions, regional development economists will always find it a challenge to try to define new ways of measuring the development level. The aim of this study is to calculate and to compare a Social and Economic Development Index (SEDI), regarding each *concelho* (NUTS IV) in Portugal. The SEDI is based on a set of variables regarding demography, education, employment, entrepreneurial structure, health, and housing conditions present in each *concelho*. From there it will move forward to seeking for homogeneity patterns between the various *concelhos*, with recourse to the clusters multivariate statistic method. Results point to there being clusters of *concelhos* highly differentiated, which suggests the need for a special care in setting up the spatial boundaries prior to its application to regional development policies and public management measures.

**Keywords:** Social and Economic Development Index; Cluster Analysis; Public Management

## 1. Introduction

The aim of this study is, first of all, to present a new way of ranking Portuguese territorial units on the mainland, at the level of the *concelhos*, while making some considerations as to the position they occupy in what concerns social and economic development indicators. These will include variables other than those strictly related to economics. At a later stage, this study will be dealing with homogeneity relationships that might eventually exist among the different *concelhos* departing from a multivariate statistical model - the clusters obtained in the course of a process of several stages which begin with a hierarchical method followed by a non-hierarchical one (K-means). Section 3 provides the methodological structure used in this study in order to facilitate the understanding of all the steps followed to achieve the aforementioned tasks.

Section 4, in turn, presents an analysis of the results obtained as well as a description of the social and economic development level of all the different *concelhos* contemplated in this study, while ranking them and pointing out the variables or sets of variables which establish a connection between their development level and all the aspects which might account for it. These aspects are also dealt with in greater detail in section 5 as an attempt to obtaining the clusters.

This study ends with some final remarks and considerations regarding its own shortcomings at the same time that it sets some guidelines for future research.

## 2. Socio-economic development

It is true that the concept of development implies a notion of futurity; it is also true that there can be no future without a clear knowledge of the past. From the beginning, any development process is associated with the idea of observing a certain situation, which will be the starting point of that process. When subject to a deeper analysis, that idea will become the object of implementing a growth model closely linked with how it turns and changes into a quantitatively as well as qualitatively higher stage.

Although the actual *per capita* GDP is one of the indicators more frequently used to measure and compare economic growth/development processes, going on in different spatial areas, it has raised some severe criticism among researchers who have been

because *per capita* GDP is but one of the many aspects of regional development. In its exclusive application this indicator ends up neglecting social aspects (such as access to education, health care and other living conditions) on the one hand, and other equally important variables that can be used to measure the economic performance of a given territory (Baster, 1972).

Since 1990, the UNDP has been studying the recent history of human development evolution (especially after 1960) to the extent that it is primarily a process leading to each individual being able to widen the possibilities he or she is being given through accomplishing three major things: a long life, a good health, and knowledge that will grant him or her access to all the necessary requirements for a suitable living standard.

The concept of human development, however, does not exhaust itself in achieving these goals; it involves other equally important dimensions even if they are not easy to achieve which have to do with political, economic, and social freedom, but also creativeness, productiveness, and respect for basic human rights. As such, it points to two main features which always go hand in hand: namely the enhancing of individual abilities and the way people put them to use, whether for productive or recreational or even political, cultural, and social purposes. The lack of balance between these two aspects concerning human development can lead to serious frustration. (Seers, 1972).

Therefore, gender issues were introduced in 1995. Since then, attention has been given to how differences of opportunity between genders could alter the ranking of countries *vis-à-vis* their development level. Likewise, the degree of participation of women in societies' political and economic life has been taken into account. Ever since 1997 special attention has been given to human poverty and the countries' situation has been measured on the assumption that poverty statute changes depending on how high the development level is or whether it is still at an early stage. Finally, in 1999 the technological achievement index was calculated for the purpose of defining leading countries, potential leaders and dynamic followers of new technologies. (UNDP, 2007).

All these approaches focused on a country as a territorial unit and despite including several reflect a wide range of valences when the territorial analysis reaches a more restrict level. The value added of this study lies, on the one hand, on a territorial analysis of a more local nature and, on the other hand, on a wider range of variables (demographic, educational, health care, economic/entrepreneurial, environmental, and quality of life) making room for a better hierarchization of territorial units as far as their social and economic development level is concerned.

## 3. Methodology

The present study proposes a methodology, which follows closely the one adopted by the UNDP in the Annual Report on Human Development in order to quantify social and economic development at a local level. It contemplates the integration of different dimensions (demographic, economic, social, and environmental) so that it can provide an integrated conceptual view on development.

The *status quo* model was the one chosen to systematize indicators. In fact, although it is usually assumed that development is best represented when different forms of indicators (pressure, *status quo* and answer), as well as the relationships between them, are analysed only the former was taken into consideration, since the analysis in question concerns the status quo of development dynamics within the territory composed of the 278 *concelhos* in Mainland Portugal.

Bearing in mind both the aforementioned methodology and the data available for each *concelho*, the present SEDI is the result of 15 indicators representative of different development approaches (Table 1). Thus, as regards demography, four indicators were taken into consideration, which focus not only on the vitality but also on the human resources evolution dynamics taking place in each territory in terms of population growth - both natural and migrant - and fertility rates. At the education level we expect to measure the population's qualifications with recourse to illiteracy rates while determining what percentage of the population has a university degree. From there, we move to other issues regarding employment, economy and the entrepreneurial sector departing from the seven

indicators which can give an important contribution to a better knowledge of the population's living conditions in terms of both work and income. At this stage, we try to outline not only the territory's entrepreneurial structure profile but also the profile of a whole set of basic issues for the survival of the populations and the preservation of their sense of belonging and social cohesion. Finally, health and housing reinforce the social component presented by this index, seeking not only to assess the existing facilities and their corresponding accessibilities which, to a certain extent, show the social impact of local, economic and, demographic constraints.

**Table 1**
**SEDI components**

| Level | Indicator | | Description |
|---|---|---|---|
| DEMOGRAPHY | I1 | Demographic Growth | Residing population variation – % between 1991 and 2001 |
| | I2 | Natural Demographic Growth | Natural growth rate – ‰ in 2002 |
| | I3 | Migrant Demographic Growth | Residing population according to migrations per residence *concelho* (in 99/12/31), per usual residence *concelho* in 2001/3/12 – Internal Migration Balance |
| | I4 | Fecundity rate | Number of births per 1.000 fecund -age women (15-49 years of age) – 2002 |
| EDUCATION | I5 | Illiteracy | Illiteracy rate in % – 2001 |
| | I6 | Higher Education | Population over 1 8 years of age with an university degree - % in 2001 |
| EMPLOYMENT | I7 | Total Employment | Total employment rate – % in 2001 |
| | I8 | Total Unemployment | Total unemployment rate – % in 2001 |
| | I9 | Employment in non - primary sector | Population employed in the non - primary sector– % in 2001 |
| | I10 | Employees and Pensioners | Employed population per pensioner – 2001 |
| ECONOMY | I11 | Per head GNP | Per head GNP – 2001 |
| | I12 | Purchasing Power | Purchasing Power Index – 2004 |
| ENTREPRENEURIAL SECTOR | I13 | Entrepreneurial Structure | Entrepreneur ial Index per *Concelho* – 2002 |
| HEALTH | I14 | Health | Health Index per *Concelho* – 2002 |
| HOUSING | I15 | Housing Conditions | Housing Conditions Index per *Concelho* – 2001 |

Source: Own calculations

Besides the indicator housing conditions also contemplates the environmental aspect since three features of this variable are included in the compound indicator so that social and economic aspects likely to influence resources' and the territories' environmental quality can be measured such as water and residues.

Another methodological aspect described concerns the way data was treated. In this case we chose the benchmarking type analysis using reference values as the most and the least favourable situation, (*Ls* and *Li*, respectively). Thus, each indicator value calculated for each *concelho* undergoes a transformation according to the most or the least favourable value for the whole set of *concelhos* analysed. The result is a variation interval between zero and one. The reading of the values obtained gives room to understanding the relative position of each *concelho* compared to the one with the most favourable results, besides pointing to their inter- and intraterritorial cohesion levels.

The next step in our methodology was aggregating all the indexes. The same weighting was given to each of the 15 indicators seeking, albeit subjectively, that the final index would reflect the authors' perception as to each indicator's relative weight on development. Thus, the value of each indicator is first transformed as follows:

$$(I_{11,2,...278;}\ I_{21,2...278;}\ I_{31,2...278;.....},\ I_{151,2...,278}) = \frac{(X - Li)}{(Ls - Li)}$$

where,

$(I_{i;\ i=1,2,...,278})$ = the *concelho*'s indicator index

X = the *concelho*'s indicator

Li = the indicator's least favourable value

Ls = the indicator's most favourable value

Then the different indicators transformed are aggregated as follows:

$SEDI = (_{i=1,\ldots,15} \sum^{15} I_i/15)$

In order to be able to obtain clusters, namely hierarchical clusters, on a first approach we used both agglomerating and dividing techniques. According to these methods, the individuals- in this particular case the *concelhos* - are considered from the beginning as a cluster and later grouped according to their proximity or, on the contrary, allotted to a cluster and then divided into sub-groups depending on how distant they are from each other (Maroco, 2003).

Several cluster connection methods have been tested using SPSS software in order to check whether they could produce similar results as suggested by Pestana and Gajeiro (2003) and Maroco (*op. cit.*). We were able to observe that the aggregation results obtained were very similar to those produced when using both Complete and Average Linkage (Within groups) methods. After using non-hierarchical K-means method, we were able to establish that the results thus obtained very much resembled Complete Linkage's and so we decided to choose it in order to compare these two types of methods.

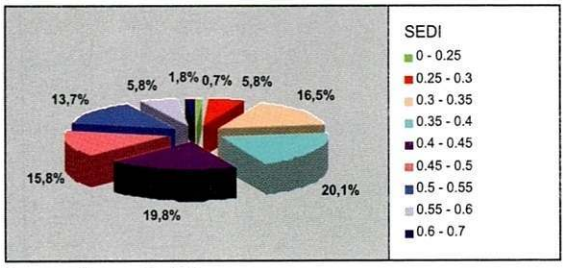
## 4. Results and Discussion

Having described the methodology used to treat data concerning the variables chosen to deal with the various levels approached it was possible to calculate a social and economic development index the SEDI for each of the 278 *concelhos* in Mainland Portugal. Based on this index and on the values obtained for each *concelho*, we will first look at the hierarchical position of the *concelhos* explaining their development level by their place in the ranking in relation to the 15 indicators which compose the final index.

The SEDI presents a value oscillating between a little under ¼ and a maximum of approximately 2/3. The variation coefficient value is not significant since the standard deviation is about 20% of the mean value. The *concelho* of Vinhais shows the lowest index value (0.2364), which means it is only 24% short of having the worst results of all the indicators. Lisbon in turn occupies the top place in the ranking reaching a threshold of 0.6609, which, nevertheless, places this *concelho* 34 point short of reaching an optimal position. The SEDI concentration is at 40 points, moving less away from the worst position than from the most favourable one. (Annexe I, Table I.1)

The two *concelhos* with a SEDI below 0.25 (about 1%) - Vinhais and Mértola , are both located in the hinterland and on the border with Spain. The 16 *concelhos* with a SEDI between 0.25 and 0.3, have in common the fact that they all lie several kilometres inland. And when the index goes up to 0.35, of the 46 *concelhos* in that interval (approximately 17% of the total under analysis), only Odemira lies on the coast, more precisely in Alentejo (Fig. 1).

Fig. 1. Per cent Distribution of the Concelhos according to SEDI levels




Source: Own calculations

With the greatest number of *concelhos* (56 of the 278 under analysis), the development level between 0.35 and 0.4 includes only Alcácer do Sal, Grândola, Aljezur and Castro Marim, all of them in the south, namely on the coastal strip of Alentejo and Algarve. The remaining 52 *concelhos*, as we have already seen, are located further inland.

Once the analysis of the first half of the interval between SEDI maximum and minimum values has been completed it is important to point out again the most important feature observed so far and that is the fact that all the spaces lie away from the coast.

As we move over 0.05 up on the SEDI ranking, the *concelhos* on the coast start to show a slightly better performance. It is the case of Caminha in the north, Tavira and Vila do Bispo in the Algarve, and Santiago do Cacém in Alentejo. It should also be pointed out that the majority of the costal *concelhos* in this interval are located in the centre of the country (Lourinhã, Peniche, Óbidos, Nazaré, Pombal, Cantanhede, Mira and, Murtosa). The remaining 43 *concelhos* are all located in the interior of the country, which remains the major space of this development level.

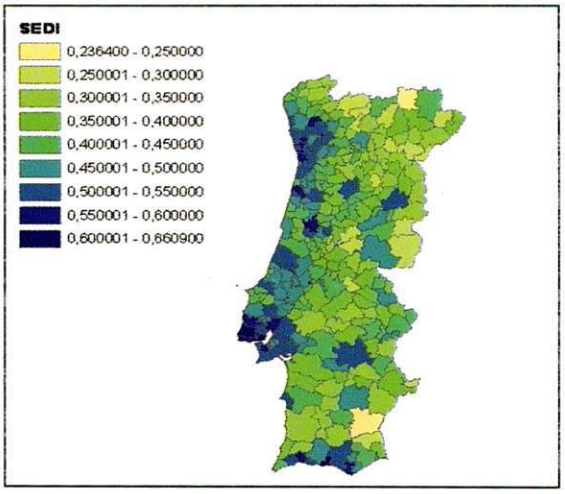
With a SEDI between 0.45 and 0.5, the coastal strip still has more *concelhos* north of the river Tagus than, for instances, the Algarve where only Olhão, Silves and Vila Real de Santo António have reached that score. Although the distribution in this development level is very similar in percentage terms to the distribution observed in the previous level, as far as coastal *concelhos* are concerned (about 20%), the great difference lies in the location of inland *concelhos* since their performance as regards this development level, is beginning to be closer to the former's.

That is even more striking when we move 5 points up in the SEDI; then the coastal concelhos and the ones located in adjoining areas achieve the best performance for the first time. Yet it is possible to find in the same development threshold such *concelhos* as Viseu, Guarda and Évora, where there is a strong urban concentration despite their being far away from the coast. If to this axis we add other inland cities with slightly lower SEDI, we may conclude that these territories play an important role in polycentric development defined as a regional development policy by the EU (European Commission, 1999).

Finally, the country's two main urban centres can be found in SEDI's two last levels. With an index between 0.55 and 0.6 we have those *concelhos* which include the cities of Aveiro, Braga, Coimbra, Faro, and Porto, as well as other territorial units belonging to Lisbon and O'Porto metropolitan areas, such as Odivelas, Seixal, and Vila Franca de Xira, (belonging to the former) and Maia, and Vila Nova de Gaia (belonging to the latter). At the SEDI top level we find the concelhos in Lisbon metropolitan area and Albufeira, in the Algarve, which is an exception (Map1).

In order to complete our first analysis of how the concelhos position themselves regarding SEDI we will look in detail at the 15 indicators which served as the basis of our compound index. As mentioned before, these have to do with variables grouped according to several levels: Demography; Education; Employment;

Map 1. SEDI for the concelhos of Mainland Portugal




Source: Own calculations

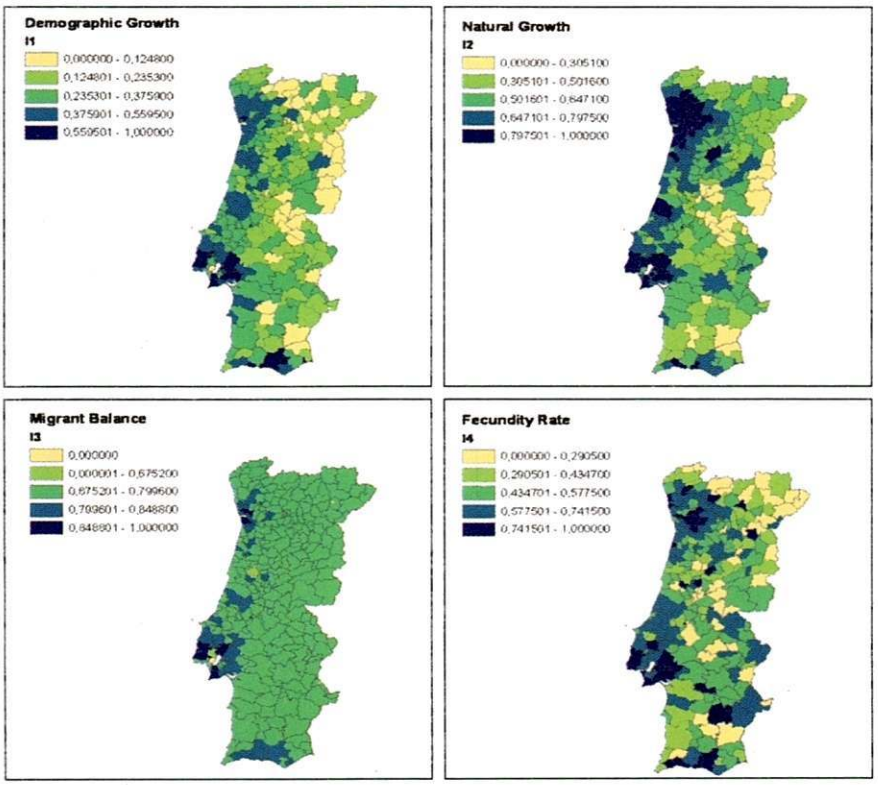
Economy; Entrepreneurial Sector; Health; Housing.

Starting with demography, it seems that a little over half of the concelhos in Mainland Portugal register a negative demographic growth, especially in the hinterland territorial units near or on the boarder. In turn, the areas with a higher population growth are located on the coast, namely in Lisbon and O'Porto metropolitan areas and in some concelhos of the Algarve. As if contradicting the idea that inland areas are becoming depopulated, the concelhos of Vila Real, Viseu, and Guarda register positive demographic growth rates, which reinforce the aforementioned polycentrism.

Natural growth is a phenomenon more likely to occur in the north than in the south for a number of reasons but mainly due to the positive contribution of that half of the country lying to the north and closer to the coast. Similarly to what happens with demographic growth, generally speaking, in the inland regions near the boarder natural growth rates are relatively lower.

The migrant balance indicates that the two big metropolitan areas, with the exception of their respective main cities, Lisbon and O'Porto, do indeed attract more people. Likewise, the Algarve as well as some concelhos on the coast in central Portugal register some very positive values as concerns this issue (Map 2).

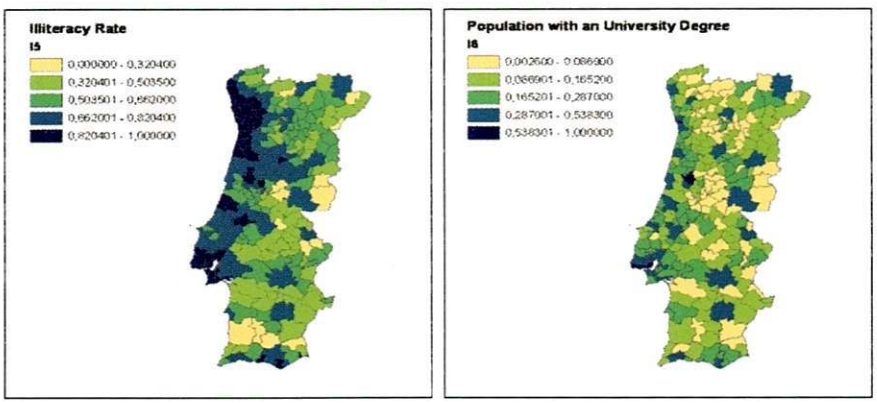
Map 2. Demography




Source: Own Calculations

In what concerns education and based on the two indicators chosen Illiteracy and Higher Education it may be said that the former has a more even distribution all over the country, although there are still some serious problems in the south, namely in Baixo Alentejo. On the other hand, the biggest contribution to SEDI in terms of the Population with an University Degree Indicator definitely comes from those concelhos where there are universities and polytechnic schools (Map 3).

Map 3. Education

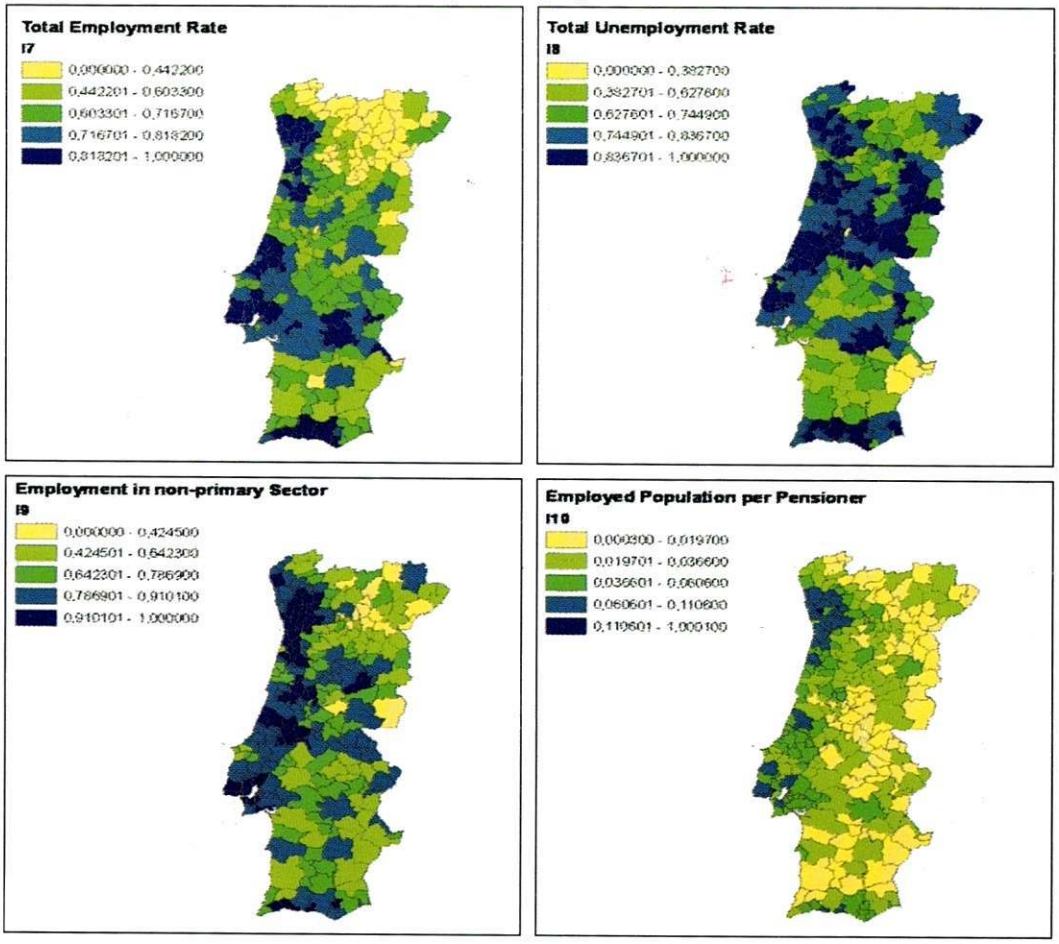



Source: Own Calculations

Total employment rate gives a positive contribution to SEDI in most of the coastal strip areas, with the exception of some concelhos to the north, like Mira, Figueira da Foz, Cantanhede, Murtosa, and Pombal in the central region and some in the Algarve and Alentejo coastal strip. Central Alentejo also shows very positive values. The unemployment

particularly high in Alentejo, a predicament confirmed by the weight the number of pensioners has in the whole of the hinterland from the north to the south and in the whole of the Alentejo (Map 4).

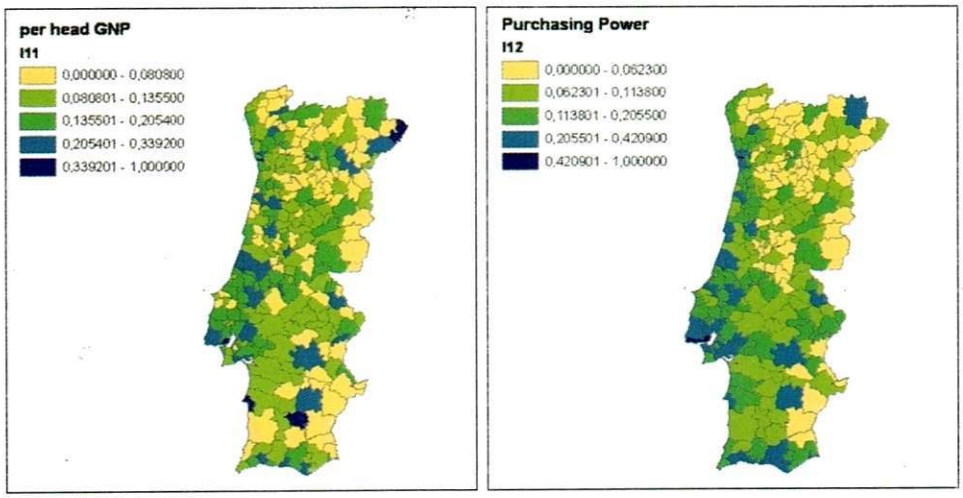
Map 4. Employment




Source: Own Calculations

A look at the per head GNP indicator explains how the economy is concentrated in Lisbon and O'Porto metropolitan areas. There are, however, a few exceptions. Miranda do Douro, and Castro Verde, in the interior of the country, are among the concelhos with the best performance concerning this indicator. Responsible for this excellent performance are, no doubt, the dams and the production of electrical power in the former and the mining industry in the latter. It is also worth mentioning the fact that petrochemical industry is based on the concelho of Sines, in the Alentejo coastal strip, which makes this indicator so interesting and contributes in a very positive way to its respective SEDI. Once again, almost the whole of the hinterland, especially the regions near the boarder, reach low levels regarding this indicator. Likewise, the Purchasing Power is stronger in the above mentioned metropolitan areas as well as in the Algarve. As a consequence of the tertiarization of their economies and the presence there of some universities, Bragança, Portalegre, Évora, and Beja in the hinterland present quite interesting living standards (Map 5).

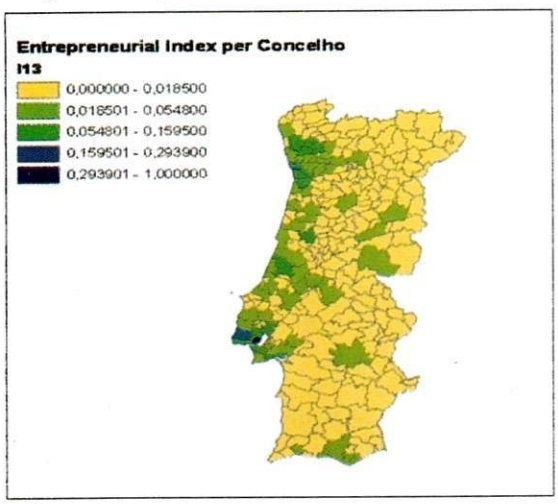
Map 5. Economy




Source: Own Calculations

The entrepreneurial index per concelho, which includes four indicators: a) Business firms based on the region; b) Partnerships based on the region; c) Personnel working in partnerships based on the region; and, d) turnover of partnerships based on the region, again points to a stronger concentration of economic activity in O'Porto and Lisbon metropolitan areas. These two areas along with Leiria region, the Algarve coastal strip, and some urban centres in the interior of the country emphasize the rest of the country's lack of entrepreneurship (Map 6).

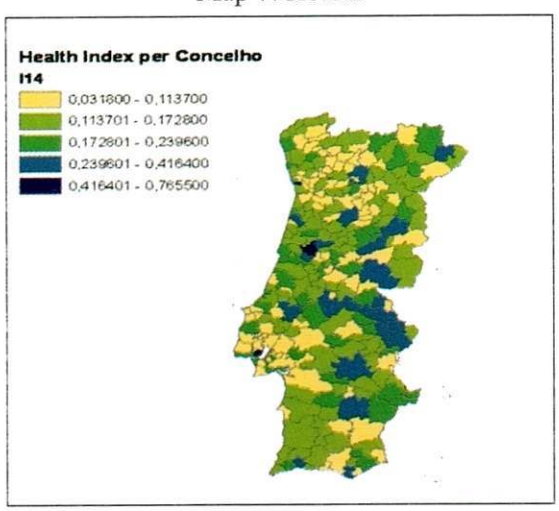
Map 6. Entrepreneurial Sector




Source: Own Calculations

When we look at the health indicator we come upon some very interesting conclusions. The concelhos in O'Porto and Lisbon metropolitan areas located around these two cities present several weaknesses and this is a situation, which also occurs in the Algarve and in the vicinity of Coimbra. The regions along the boarder, with the exception of Vimioso in the north, Castelo Branco in the centre, and the boarder concelhos of Alto Alentejo in the south, have considerable needs when it comes to infrastructures, equipments and human capital (Map 7).

Map 7. Health

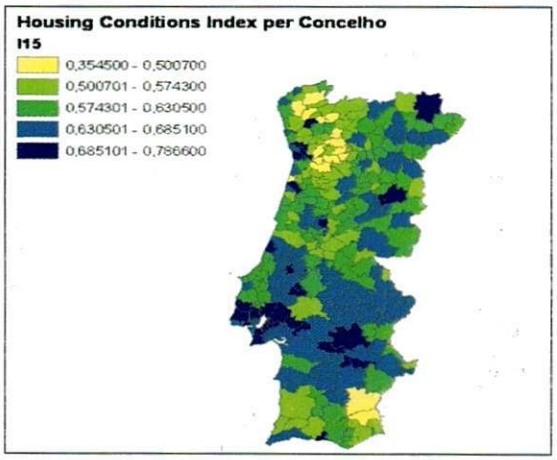



Source: Own Calculations

Finally, the analysis of the housing conditions shows that the concelhos situated in the interior north and not very far from the coast have more weaknesses than the ones further inland, with the exception of Mértola, and Alcoutim, in Baixo Alentejo, and Algarve, respectively. The latter actually face great

difficulties as regards housing conditions. Although living conditions are much better in both metropolitan areas, it is already possible to enjoy some good conditions in terms of comfort in several concelhos of the interior of the country (Map 8).

Map 8. Housing




Source: Own Calculations

## 5. Cluster analysis

In order to be able to analyse the SEDI'S several components we tried to group the concelhos into clusters, which as described by López (2005: 441) is a multivariate statistic method whose main object is "... revelar concentraciones en los datos para su agrupamiento eficiente en clusters (oconglomerados) según su homogeneidad".

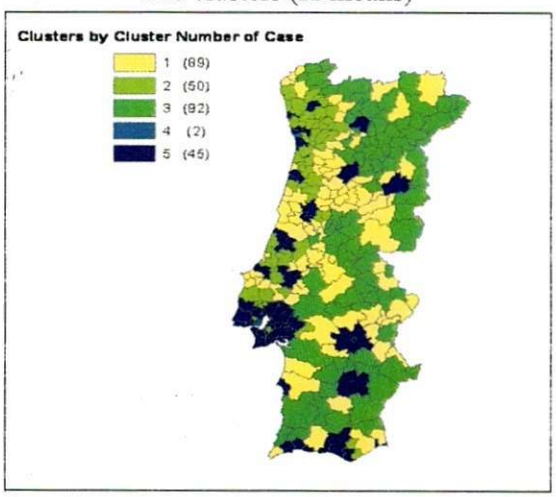
As it was already mentioned in section 2, our first intention was to obtain hierarchical clusters. Based on our findings we concluded that aggregation results were very similar whether we used the Complete or the Average Linkage (Within groups) method.

Since the non-hierarchical K-means method implies establishing a number of clusters right from the onset, we decided to make a previous analysis using Complete Linkage to establish that number. The criteria applied were the distance between clusters and the R-square. The distance criterion showed that we could retain 5 to 10 clusters for it is when the slope of the straight line uniting the distance between two clusters is bigger. When to this analysis we added the R-square criterion we observed that the 5 cluster solution retains 75,9 % of the total variability. In terms of getting a minimum number of clusters, the 5 cluster solution seems to us the eligible one since, from the beginning, it retains a significant percentage of the total variability.

In table II.1 of the annexe we produce the results obtained through non-hierarchical K-means method. K-means will serve as the basis of our analysis for, in general, non-hierarchical methods provide a more accurate classification of the subjects. Map 9 and Table 2 show the clusters obtained through this method, namely their geographical distribution and the variable descriptive statistics.

The variance analysis presented in annexe II.5 allowed us to identify those variables leading to a division per cluster as well as their relative

Map 9 – The *concelhos* grouped into clusters (K-means)




Source: Own Calculations

importance..This way it was possible to establish that I12 (Purchasing Power ) is the variable which contributes most to cluster division followed by I3 (Migrant Demographic Growth), and I13 (Entrepreneurial Structure), I5 (Illiteracy), I1 (Demographic Growth), I2 (Natural Demographic Growth), I6 (Higher Education) and I9 (Employment in the Non-primary Sector), and also by I7 (Total Employment), I4 (Fecundity Rate), I14 (Health), and I11 (per head GNP); and finally by I15 (Housing Conditions), I8 (Total Unemployment), and I10 (Employees and Pensioners).

1) Assuming that if a variable discriminates much among clusters, its variability (given by the *Cluster Mean Square*) will be high among clusters and low within its own cluster (obtained through the *Error Mean Square*). Thus, variables with a higher *Cluster Mean Square* and lower *Error Mean Square* are the ones which better define the clusters for they have a higher F value (Maroco, 2003).

## Table 2
## Summary of variable descriptive statistics per cluster

| Variable | Cluster | N | Mean | Std. Deviation | Std. Error | 95% Conf.Int. f. Mean | | Minimum | Maximum |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Lower B. | Upper B. | | |
| **I1** | 1 | 89 | 0,257 | 0,071 | 0,008 | 0,242 | 0,272 | 0,077 | 0,484 |
| **I2** | 1 | 89 | 0,590 | 0,082 | 0,009 | 0,573 | 0,607 | 0,372 | 0,779 |
| **I3** | 1 | 89 | 0,790 | 0,006 | 0,001 | 0,789 | 0,791 | 0,773 | 0,806 |
| **I4** | 1 | 89 | 0,511 | 0,146 | 0,015 | 0,481 | 0,542 | 0,240 | 1,000 |
| **I5** | 1 | 89 | 0,657 | 0,111 | 0,012 | 0,634 | 0,681 | 0,401 | 0,880 |
| **I6** | 1 | 89 | 0,151 | 0,073 | 0,008 | 0,136 | 0,166 | 0,019 | 0,418 |
| **I7** | 1 | 89 | 0,662 | 0,112 | 0,012 | 0,638 | 0,686 | 0,325 | 0,888 |
| **I8** | 1 | 89 | 0,782 | 0,092 | 0,010 | 0,763 | 0,802 | 0,520 | 0,959 |
| **I9** | 1 | 89 | 0,786 | 0,101 | 0,011 | 0,765 | 0,807 | 0,550 | 0,964 |
| **I10** | 1 | 89 | 0,028 | 0,008 | 0,001 | 0,027 | 0,030 | 0,010 | 0,059 |
| **I11** | 1 | 89 | 0,118 | 0,081 | 0,009 | 0,101 | 0,135 | 0,000 | 0,746 |
| **I12** | 1 | 89 | 0,109 | 0,048 | 0,005 | 0,099 | 0,119 | 0,000 | 0,242 |
| **I13** | 1 | 89 | 0,009 | 0,007 | 0,001 | 0,008 | 0,011 | 0,001 | 0,039 |
| **I14** | 1 | 89 | 0,159 | 0,058 | 0,006 | 0,147 | 0,171 | 0,072 | 0,376 |
| **I15** | 1 | 89 | 0,605 | 0,068 | 0,007 | 0,590 | 0,619 | 0,354 | 0,742 |
| **I1** | 2 | 50 | 0,431 | 0,082 | 0,012 | 0,408 | 0,454 | 0,316 | 0,752 |
| **I2** | 2 | 50 | 0,813 | 0,105 | 0,015 | 0,783 | 0,843 | 0,558 | 1,000 |
| **I3** | 2 | 50 | 0,801 | 0,018 | 0,003 | 0,796 | 0,806 | 0,766 | 0,864 |
| **I4** | 2 | 50 | 0,657 | 0,120 | 0,017 | 0,623 | 0,691 | 0,395 | 0,892 |
| **I5** | 2 | 50 | 0,821 | 0,070 | 0,010 | 0,802 | 0,841 | 0,673 | 0,951 |
| **I6** | 2 | 50 | 0,166 | 0,070 | 0,010 | 0,146 | 0,186 | 0,045 | 0,346 |
| **I7** | 2 | 50 | 0,805 | 0,106 | 0,015 | 0,775 | 0,835 | 0,564 | 1,000 |
| **I8** | 2 | 50 | 0,853 | 0,078 | 0,011 | 0,831 | 0,875 | 0,582 | 1,000 |
| **I9** | 2 | 50 | 0,915 | 0,058 | 0,008 | 0,899 | 0,932 | 0,750 | 0,999 |
| **I10** | 2 | 50 | 0,100 | 0,187 | 0,026 | 0,046 | 0,153 | 0,025 | 1,000 |
| **I11** | 2 | 50 | 0,135 | 0,048 | 0,007 | 0,121 | 0,148 | 0,050 | 0,237 |
| **I12** | 2 | 50 | 0,124 | 0,047 | 0,007 | 0,110 | 0,137 | 0,041 | 0,287 |
| **I13** | 2 | 50 | 0,029 | 0,023 | 0,003 | 0,022 | 0,035 | 0,004 | 0,094 |
| **I14** | 2 | 50 | 0,113 | 0,039 | 0,006 | 0,101 | 0,124 | 0,058 | 0,239 |
| **I15** | 2 | 50 | 0,595 | 0,068 | 0,010 | 0,576 | 0,615 | 0,474 | 0,719 |
| **I1** | 3 | 92 | 0,134 | 0,068 | 0,007 | 0,120 | 0,148 | 0,000 | 0,354 |
| **I2** | 3 | 92 | 0,421 | 0,150 | 0,016 | 0,390 | 0,452 | 0,000 | 0,720 |
| **I3** | 3 | 92 | 0,788 | 0,002 | 0,000 | 0,788 | 0,789 | 0,782 | 0,794 |
| **I4** | 3 | 92 | 0,387 | 0,177 | 0,018 | 0,350 | 0,424 | 0,000 | 0,801 |
| **I5** | 3 | 92 | 0,452 | 0,133 | 0,014 | 0,425 | 0,480 | 0,000 | 0,669 |
| **I6** | 3 | 92 | 0,083 | 0,038 | 0,004 | 0,075 | 0,091 | 0,003 | 0,199 |
| **I7** | 3 | 92 | 0,488 | 0,157 | 0,016 | 0,455 | 0,521 | 0,000 | 0,770 |
| **I8** | 3 | 92 | 0,687 | 0,158 | 0,016 | 0,654 | 0,719 | 0,000 | 0,959 |
| **I9** | 3 | 92 | 0,577 | 0,165 | 0,017 | 0,543 | 0,612 | 0,000 | 0,952 |
| **I10** | 3 | 92 | 0,014 | 0,007 | 0,001 | 0,013 | 0,016 | 0,000 | 0,031 |
| **I11** | 3 | 92 | 0,089 | 0,069 | 0,007 | 0,074 | 0,103 | 0,008 | 0,503 |
| **I12** | 3 | 92 | 0,058 | 0,027 | 0,003 | 0,052 | 0,063 | 0,001 | 0,147 |
| **I13** | 3 | 92 | 0,003 | 0,002 | 0,000 | 0,002 | 0,003 | 0,000 | 0,013 |
| **I14** | 3 | 92 | 0,139 | 0,059 | 0,006 | 0,127 | 0,151 | 0,032 | 0,416 |
| **I15** | 3 | 92 | 0,594 | 0,057 | 0,006 | 0,583 | 0,606 | 0,433 | 0,704 |
| **I1** | 4 | 2 | 0,074 | 0,019 | 0,014 | -0,099 | 0,247 | 0,060 | 0,088 |
| **I2** | 4 | 2 | 0,624 | 0,033 | 0,024 | 0,324 | 0,923 | 0,600 | 0,647 |
| **I3** | 4 | 2 | 0,207 | 0,292 | 0,207 | -2,418 | 2,832 | 0,000 | 0,413 |
| **I4** | 4 | 2 | 0,600 | 0,156 | 0,110 | -0,800 | 2,000 | 0,490 | 0,710 |
| **I5** | 4 | 2 | 0,940 | 0,030 | 0,021 | 0,672 | 1,209 | 0,919 | 0,961 |
| **I6** | 4 | 2 | 0,848 | 0,103 | 0,073 | -0,073 | 1,770 | 0,776 | 0,921 |
| **I7** | 4 | 2 | 0,761 | 0,100 | 0,071 | -0,135 | 1,658 | 0,691 | 0,832 |
| **I8** | 4 | 2 | 0,679 | 0,101 | 0,071 | -0,229 | 1,586 | 0,607 | 0,750 |
| **I9** | 4 | 2 | 0,997 | 0,002 | 0,001 | 0,983 | 1,012 | 0,996 | 0,999 |
| **I10** | 4 | 2 | 0,030 | 0,007 | 0,005 | -0,029 | 0,089 | 0,025 | 0,034 |
| **I11** | 4 | 2 | 0,654 | 0,204 | 0,145 | -1,184 | 2,491 | 0,509 | 0,798 |
| **I12** | 4 | 2 | 0,832 | 0,238 | 0,168 | -1,306 | 2,969 | 0,664 | 1,000 |
| **I13** | 4 | 2 | 0,647 | 0,499 | 0,353 | -3,839 | 5,133 | 0,294 | 1,000 |
| **I14** | 4 | 2 | 0,677 | 0,035 | 0,025 | 0,361 | 0,994 | 0,652 | 0,702 |
| **I15** | 4 | 2 | 0,654 | 0,007 | 0,005 | 0,594 | 0,713 | 0,649 | 0,658 |
| **I1** | 5 | 45 | 0,498 | 0,167 | 0,025 | 0,448 | 0,548 | 0,161 | 1,000 |
| **I2** | 5 | 45 | 0,814 | 0,087 | 0,013 | 0,788 | 0,840 | 0,629 | 0,983 |
| **I3** | 5 | 45 | 0,806 | 0,062 | 0,009 | 0,787 | 0,825 | 0,654 | 1,000 |
| **I4** | 5 | 45 | 0,722 | 0,134 | 0,020 | 0,682 | 0,762 | 0,414 | 0,997 |
| **I5** | 5 | 45 | 0,864 | 0,087 | 0,013 | 0,838 | 0,890 | 0,676 | 1,000 |
| **I6** | 5 | 45 | 0,389 | 0,158 | 0,024 | 0,341 | 0,437 | 0,187 | 1,000 |
| **I7** | 5 | 45 | 0,817 | 0,085 | 0,013 | 0,791 | 0,842 | 0,575 | 0,990 |
| **I8** | 5 | 45 | 0,771 | 0,073 | 0,011 | 0,749 | 0,793 | 0,607 | 0,939 |
| **I9** | 5 | 45 | 0,935 | 0,057 | 0,008 | 0,918 | 0,953 | 0,812 | 1,000 |
| **I10** | 5 | 45 | 0,059 | 0,017 | 0,003 | 0,054 | 0,065 | 0,028 | 0,106 |
| **I11** | 5 | 45 | 0,223 | 0,141 | 0,021 | 0,181 | 0,265 | 0,105 | 1,000 |
| **I12** | 5 | 45 | 0,273 | 0,091 | 0,014 | 0,246 | 0,300 | 0,145 | 0,589 |
| **I13** | 5 | 45 | 0,055 | 0,048 | 0,007 | 0,041 | 0,070 | 0,006 | 0,215 |
| **I14** | 5 | 45 | 0,200 | 0,118 | 0,018 | 0,164 | 0,235 | 0,078 | 0,765 |
| **I15** | 5 | 45 | 0,684 | 0,044 | 0,007 | 0,670 | 0,697 | 0,599 | 0,787 |

When we cross-reference this information with the one in Table 2 consisting of a summary of variable descriptive statistics per cluster, mean statistic tests and the map previously produced, the following may be observed:

Cluster 4, composed of the cities of Lisbon and O'Porto dominates regarding such indicators as Purchasing Power (I12), Entrepreneurial Structure Dynamism, (I13), Population with an University Degree (I6), Health Indicators (I14), and Per Head GNP (I11), immediately followed by cluster 5 - which includes, among others, the most important urban nuclei - in relation to the same indicators. Cluster 4 also has the lowest migrant demographic growth (I3), and cluster 5 the highest demographic growth (I1).

Cluster 3 is representative of great majority of the inland *concelhos* and it is different from the rest for its low level of employment and high illiteracy rate which reflect themselves on I7 and I5; it also has the lowest level of both population with an university degree (I6) and of purchasing power (I12).

Cluster 2, including a set of *concelhos* near the coast stands out, among other reasons, for its positive behaviour in such aspects as unemployment and demographic growth with a repercussion on I8 and I1, a relative entrepreneurial dynamism (I13), only overcome by clusters 4 and 5, and for a rather favourable employed population per pensioner ratio (I10).

Finally, cluster 1, including 89 *concelhos* spreading throughout the territory, with a relative concentration in the centre occupies an intermediate position in relation to most of the indicators.

The intrinsic homogeneities of each cluster as well as the inter-cluster differences found are the result of not only the social and economic specificities already existing in each cluster but also of regional development policies implemented in Portugal after the country has joined the European Union. These policies increased the importance of coastal towns against rural areas and the hinterland, which may be observed in the dichotomies between clusters 4 and 5 *versus* 1 and 3.

2) Since we wanted to perform mean multiple comparisons we did *a posteriori* tests to find out which of the mean pairs were different using Tukey's and Bonferroni's Post-Hoc tests.

## 6. Final remarks and policy/managerial implications

The use of cluster techniques to analyse the several indicators which compose the SEDI in each *concelho* only stressed the notion that the *concelhos* on the coast and the ones in the interior of the country, separated by an intermediate central zone, have different characteristics and that the same situation occurs when we look at the group of *concelhos* which include the main towns and the *concelhos* around them and the one formed by the two big cities, Lisbon and O'Porto.

The simple exercise of overlapping the NUT III regions map and the map of the *concelhos* produced would clearly show the great asymmetries in terms of development within each NUT III. These asymmetries would be even bigger if we were to overlap the NUT III regions map with the map of territory regarding NUT II. We believe these considerations to be particularly important for the definition of new development instruments and policies insofar as the ones existing are traditionally conceived and targeted to a much too wide territorial aggregation level to be able to cope with each territorial unit's weaknesses and specificities and, therefore, compromising its efficiency and effectiveness.

These results also suggest some public management measures regarding such aspects as landuse and organization and public budgeting, which are essential in terms of development if a larger territorial cohesion is to be attained. We refer naturally to such measures likely to increase the literacy level, to fight the depopulation of the hinterland as well as increasing entrepreneurial attractiveness, namely by investing in schools, in the continuous training of teaching agents and in other communication infra-structures. This may be achieved with recourse to tax incentives that may help high skilled human resources settle all over the country and attract private investment in a diversified entrepreneurial tissue.

In short, centralized management of regional development policies has been one of the main obstacles to a more equal distribution of resources that might lead to equal opportunities in territorial development. It is important to point out that this study was carried out through calculating indicators that referred to the total area of Mainland Portugal. Recalculating these values based on a smaller territorial unit like NUT II and NUT III will certainly be a useful topic to pursue in further research.

## ANNEXE I

## Table I.1 Per cent distribution of the *Concelhos* according to SEDI levels

| SEDI | *Concelhos* | No | % |
|---|---|---|---|
| [0 – 0,25[ | Mértola; Vinhais. | 2 | 0,7 |
| [0,25 – 0,3[ | Aguiar da Beira; Alcoutim; Barrancos; Boticas; Carrazeda de Ansiães; Freixo de Espada à Cinta; Gavião; Idanha-a-Nova; Montalegre; Oleiros; Pampilhosa da Serra; Penamacor; Ribeira de Pena; Torre de Moncorvo; Valpaços; Vimioso. | 16 | 5,8 |
| [0,3 – 0,35[ | Alandroal; Alfândega da Fé; Alijó; Aljustrel; Almeida; Almodôvar; Arcos de Valdevez; Armamar; Avis; Castanheira de Pêra; Castro Daire; Coruche; Cuba; Ferreira do Alentejo; Figueira de Castelo Rodrigo; Fornos de Algodres; Fronteira; Melgaço; Mesão Frio; Mogadouro; Monção; Monchique; Mondim de Basto; Mora; Murça; Odemira; Ourique; Paredes de Coura; Pedrógão Grande; Penedono; Portel; Proença-a-Nova; Resende; Sabrosa; Sabugal; São João da Pesqueira; Sernancelhe; Serpa; Tabuaço; Tarouca; Terras de Bouro; Trancoso; Vila Flor; Vila Nova de Foz Côa; Vila Pouca de Aguiar; Vila Velha de Ródão. | 46 | 16,5 |
| [0,35 – 0,4[ | Alcácer do Sal; Aljezur; Alpiarça; Alter do Chão; Alvaiázere; Alvito; Arganil; Arraiolos; Arronches; Baião; Cadaval; Castro Marim; Celorico da Beira; Celorico de Basto; Chamusca; Cinfães; Crato; Ferreira do Zêzere; Figueiró dos Vinhos; Góis; Gouveia; Grândola; Mação; Macedo de Cavaleiros; Marvão; Meda; Miranda do Douro; Mirandela; Moimenta da Beira; Monforte; Montemor-o-Velho; Mortágua; Moura; Mourão; Nisa; Penalva do Castelo; Pinhel; Ponte da Barca; Ponte de Sor; Redondo; Salvaterra de Magos; Santa Comba Dão; Santa Marta de Penaguião; São Pedro do Sul; Sardoal; Sátão; Seia; Sertã; Soure; Sousel; Tondela; Vidigueira; Vieira do Minho; Vila de Rei; Vila Nova de Paiva; Vouzela. | 56 | 20,1 |
| [0,4 – 0,45[ | Abrantes; Almeirim; Amarante; Amares; Ansião; Arouca; Belmonte; Bombarral; Borba; Bragança; Cabeceiras de Basto; Caminha; Campo Maior; Cantanhede; Carregal do Sal; Castelo de Paiva; Castelo de Vide; Castro Verde; Chaves; Elvas; Estremoz; Fundão; Golegã; Lamego; Lourinhã; Mangualde; Manteigas; Mira; Montemor -o-Novo; Murtosa; Nazaré; Nelas; Óbidos; Oliveira de Frades; Oliveira do Hospital; Penacova; Penela; Peniche; Peso da Régua; Pombal; Ponte de Lima; Póvoa de Lanhoso; Reguengos de Monsaraz; Santiago do Cacém; Sever do Vouga; Tábua; Tavira; Tomar; Vale de Cambra; Valença; Vila do Bispo; Vila Nova da Barquinha; Vila Nova de Cerveira; Vila Nova de Poiares; Vila Verde. | 55 | 19,8 |
| [0,45 – 0,5[ | Albergaria-a-Velha; Alcanena; Alcobaça; Anadia; Arruda dos Vinhos; Azambuja; Barcelos; Barreiro; Beja; Cartaxo; Castelo Branco; Constância; Covilhã; Espinho; Estarreja; Fafe; Figueira da Foz; Marco de Canaveses; Mealhada; Miranda do Corvo; Moita; Montijo; Olhão; Oliveira de Azeméis; Oliveira do Bairro; Ourém; Penafiel; Portalegre; Porto de Mós; Rio Maior; Santarém; Santo Tirso; São Brás de Alportel; Silves; Sobral de Monte Agraço; Torres Novas; Torres Vedras; Vagos; Vendas Novas; Viana doAlentejo; Viana do Castelo; Vila Real; Vila Real de Santo António; Vila Viçosa. | 44 | 15,8 |
| [0,5 – 0,55[ | Águeda; Alcochete; Alenquer; Almada; Amadora; Batalha; Benavente; Caldas da Rainha; Condeixa-a-Nova; Esposende; Évora; Felgueiras; Gondomar; Guarda; Guimarães; Ílhavo; Lagoa; Lagos; Leiria; Loulé; Loures; Lousã; Lousada; Marinha Grande; Matosinhos; Ovar; Paços de Ferreira; Palmela; Paredes; Póvoa do Varzim; Santa Maria da Feira; Sesimbra; Setúbal; Sines; Valongo; Vila do Conde; Vila Nova de Famalicão; Viseu. | 38 | 13,7 |
| [0,55 – 0,6[ | Aveiro; Braga; Coimbra; Entroncamento; Faro; Mafra; Maia; Odivelas; Portimão; Porto; São João da Madeira; Seixal; Trofa; Vila Franca de Xira; Vila Nova de Gaia; Vizela. | 16 | 5,8 |
| [0,6 – 0,7] | Albufeira; Cascais; Lisboa; Oeiras; Sintra | 5 | 1,8 |
| **Total** | | **276** | **100** |

# ANNEXE II Cluster Analysis (K-means)

## II.1 - Cluster Membership

| N | Concelho | Cluster | N | Concelho | Cluster | N | Concelho | Cluster |
|---|---|---|---|---|---|---|---|---|
| 2 | Caminha | 1 | 122 | Ansião | 1 | 183 | Tomar | 1 |
| 7 | Ponte de Lima | 1 | 124 | Figueiró dos Vinhos | 1 | 184 | Torres Novas | 1 |
| 8 | Valença | 1 | 127 | Carregal do Sal | 1 | 185 | Vila Nova da Barquinha | 1 |
| 10 | Vila Nova de Cerveira | 1 | 129 | Mangualde | 1 | 207 | Grândola | 1 |
| 20 | Vieira do Minho | 1 | 130 | Mortágua | 1 | 208 | Santiago do Cacém | 1 |
| 35 | Cabeceiras de Basto | 1 | 131 | Nelas | 1 | 214 | Campo Maior | 1 |
| 36 | Celorico de Basto | 1 | 132 | Oliveira de Frades | 1 | 215 | Castelo de Vide | 1 |
| 38 | Baião | 1 | 134 | Santa Comba Dão | 1 | 217 | Elvas | 1 |
| 47 | Cinfães | 1 | 135 | São Pedro do Sul | 1 | 223 | Ponte de Sor | 1 |
| 49 | Arouca | 1 | 137 | Tondela | 1 | 224 | Portalegre | 1 |
| 53 | Vale de Cambra | 1 | 140 | Vouzela | 1 | 226 | Arraiolos | 1 |
| 61 | Peso da Régua | 1 | 148 | Seia | 1 | 227 | Borba | 1 |
| 66 | Lamego | 1 | 150 | Celorico da Beira | 1 | 228 | Estremoz | 1 |
| 74 | Bragança | 1 | 153 | Manteigas | 1 | 230 | Montemor-o-Novo | 1 |
| 77 | Mirandela | 1 | 155 | Pinhel | 1 | 231 | Mourão | 1 |
| 82 | Chaves | 1 | 158 | Castelo Branco | 1 | 233 | Redondo | 1 |
| 94 | Murtosa | 1 | 162 | Belmonte | 1 | 234 | Reguengos de Monsaraz | 1 |
| 97 | Sever do Vouga | 1 | 163 | Covilhã | 1 | 236 | Viana do Alentejo | 1 |
| 99 | Cantanhede | 1 | 164 | Fundão | 1 | 237 | Vila Viçosa | 1 |
| 102 | Figueira da Foz | 1 | 166 | Bombarral | 1 | 244 | Castro Verde | 1 |
| 103 | Mira | 1 | 168 | Nazaré | 1 | 252 | Azambuja | 1 |
| 104 | Montemor-o-Velho | 1 | 169 | Óbidos | 1 | 253 | Almeirim | 1 |
| 105 | Penacova | 1 | 170 | Peniche | 1 | 254 | Alpiarça | 1 |
| 106 | Soure | 1 | 173 | Cadaval | 1 | 259 | Golegã | 1 |
| 110 | Pombal | 1 | 174 | Lourinhã | 1 | 261 | Salvaterra de Magos | 1 |
| 112 | Arganil | 1 | 177 | Abrantes | 1 | 266 | Castro Marim | 1 |
| 116 | Oliveira do Hospital | 1 | 178 | Alcanena | 1 | 275 | Silves | 1 |
| 118 | Penela | 1 | 179 | Constância | 1 | 276 | Tavira | 1 |
| 119 | Tábua | 1 | 181 | Ferreira do Zêzere | 1 | 277 | Vila do Bispo | 1 |
| 120 | Vila Nova de Poiares | 1 | 182 | Sardoal | 1 | | Number of cases | 89 |

| N | Concelho | Cluster | N | Concelho | Cluster | N | Concelho | Cluster |
|---|---|---|---|---|---|---|---|---|
| 9 | Viana do Castelo | 2 | 40 | Lousada | 2 | 111 | Porto de Mós | 2 |
| 11 | Amares | 2 | 41 | Marco de Canaveses | 2 | 114 | Lousã | 2 |
| 12 | Barcelos | 2 | 42 | Paços de Ferreira | 2 | 115 | Miranda do Corvo | 2 |
| 14 | Esposende | 2 | 43 | Paredes | 2 | 165 | Alcobaça | 2 |
| 16 | Vila Verde | 2 | 44 | Penafiel | 2 | 171 | Alenquer | 2 |
| 17 | Fafe | 2 | 50 | Santa Maria da Feira | 2 | 172 | Arruda dos Vinhos | 2 |
| 18 | Guimarães | 2 | 51 | Oliveira de Azeméis | 2 | 175 | Sobral de Monte Agraço | 2 |
| 19 | Póvoa de Lanhoso | 2 | 87 | Águeda | 2 | 176 | Torres Vedras | 2 |
| 21 | Vila Nova de Famalicão | 2 | 88 | Albergaria-a-Velha | 2 | 186 | Ourém | 2 |
| 22 | Vizela | 2 | 89 | Anadia | 2 | 194 | Odivelas | 2 |
| 23 | Santo Tirso | 2 | 91 | Estarreja | 2 | 199 | Moita | 2 |
| 24 | Trofa | 2 | 93 | Mealhada | 2 | 235 | Vendas Novas | 2 |
| 26 | Gondomar | 2 | 95 | Oliveira do Bairro | 2 | 256 | Cartaxo | 2 |
| 32 | Vila do Conde | 2 | 96 | Ovar | 2 | 260 | Rio Maior | 2 |
| 34 | Castelo de Paiva | 2 | 98 | Vagos | 2 | 272 | Olhão | 2 |
| 37 | Amarante | 2 | 107 | Batalha | 2 | 274 | São Brás de Alportel | 2 |
| 39 | Felgueiras | 2 | 109 | Marinha Grande | 2 | | Number of cases | 50 |

| N | Concelho | Cluster | N | Concelho | Cluster | N | Concelho | Cluster |
|---|---|---|---|---|---|---|---|---|
| 1 | Arcos de Valdevez | 3 | 81 | Boticas | 3 | 206 | Alcácer do Sal | 3 |
| 3 | Melgaço | 3 | 83 | Montalegre | 3 | 210 | Mora | 3 |
| 4 | Monção | 3 | 84 | Murça | 3 | 211 | Alter do Chão | 3 |
| 5 | Paredes de Coura | 3 | 85 | Valpaços | 3 | 212 | Arronches | 3 |
| 6 | Ponte da Barca | 3 | 86 | Vila Pouca de Aguiar | 3 | 213 | Avis | 3 |
| 15 | Terras de Bouro | 3 | 113 | Góis | 3 | 216 | Crato | 3 |
| 45 | Mondim de Basto | 3 | 117 | Pampilhosa da Serra | 3 | 218 | Fronteira | 3 |
| 46 | Ribeira de Pena | 3 | 121 | Alvaiázere | 3 | 219 | Gavião | 3 |
| 48 | Resende | 3 | 123 | Castanheira de Pêra | 3 | 220 | Marvão | 3 |
| 54 | Carrazeda de Ansiães | 3 | 125 | Pedrógão Grande | 3 | 221 | Monforte | 3 |
| 55 | Freixo de Espada à Cinta | 3 | 126 | Aguiar da Beira | 3 | 222 | Nisa | 3 |
| 56 | Torre de Moncorvo | 3 | 128 | Castro Daire | 3 | 225 | Alandroal | 3 |
| 57 | Vila Flor | 3 | 133 | Penalva do Castelo | 3 | 232 | Portel | 3 |
| 58 | Vila Nova de Foz Côa | 3 | 136 | Sátão | 3 | 238 | Sousel | 3 |
| 59 | Alijó | 3 | 138 | Vila Nova de Paiva | 3 | 239 | Aljustrel | 3 |
| 60 | Mesão Frio | 3 | 141 | Oleiros | 3 | 240 | Almodôvar | 3 |
| 62 | Sabrosa | 3 | 142 | Proença-a-Nova | 3 | 241 | Alvito | 3 |
| 63 | Santa Marta de Penaguião | 3 | 143 | Sertã | 3 | 242 | Barrancos | 3 |
| 65 | Armamar | 3 | 144 | Vila de Rei | 3 | 245 | Cuba | 3 |
| 67 | Moimenta da Beira | 3 | 145 | Mação | 3 | 246 | Ferreira do Alentejo | 3 |
| 68 | Penedono | 3 | 146 | Fornos de Algodres | 3 | 247 | Mértola | 3 |
| 69 | São João da Pesqueira | 3 | 147 | Gouveia | 3 | 248 | Moura | 3 |
| 70 | Sernancelhe | 3 | 149 | Almeida | 3 | 249 | Ourique | 3 |
| 71 | Tabuaço | 3 | 151 | Figueira de Castelo Rodrigo | 3 | 250 | Serpa | 3 |
| 72 | Tarouca | 3 | 154 | Meda | 3 | 251 | Vidigueira | 3 |
| 73 | Alfândega da Fé | 3 | 156 | Sabugal | 3 | 257 | Chamusca | 3 |
| 75 | Macedo de Cavaleiros | 3 | 157 | Trancoso | 3 | 258 | Coruche | 3 |
| 76 | Miranda do Douro | 3 | 159 | Idanha-a-Nova | 3 | 264 | Alcoutim | 3 |
| 78 | Mogadouro | 3 | 160 | Penamacor | 3 | 265 | Aljezur | 3 |
| 79 | Vimioso | 3 | 161 | Vila Velha de Ródão | 3 | 271 | Monchique | 3 |
| 80 | Vinhais | 3 | 205 | Odemira | 3 | | Number of cases | 92 |

| N | Concelho | Cluster |
|---|---|---|
| 29 | Porto | 4 |
| 188 | Lisboa | 4 |
| | Number of cases | 2 |

| N | Concelho | Cluster | N | Concelho | Cluster | N | Concelho | Cluster |
|---|---|---|---|---|---|---|---|---|
| 13 | Braga | 5 | 152 | Guarda | 5 | 202 | Seixal | 5 |
| 25 | Espinho | 5 | 167 | Caldas da Rainha | 5 | 203 | Sesimbra | 5 |
| 27 | Maia | 5 | 180 | Entroncamento | 5 | 204 | Setúbal | 5 |
| 28 | Matosinhos | 5 | 187 | Cascais | 5 | 209 | Sines | 5 |
| 30 | Póvoa de Varzim | 5 | 189 | Loures | 5 | 229 | Évora | 5 |
| 31 | Valongo | 5 | 190 | Oeiras | 5 | 243 | Beja | 5 |
| 33 | Vila Nova de Gaia | 5 | 191 | Sintra | 5 | 255 | Benavente | 5 |
| 52 | São João da Madeira | 5 | 192 | Vila Franca de Xira | 5 | 262 | Santarém | 5 |
| 64 | Vila Real | 5 | 193 | Amadora | 5 | 263 | Albufeira | 5 |
| 90 | Aveiro | 5 | 195 | Mafra | 5 | 267 | Faro | 5 |
| 92 | Ílhavo | 5 | 196 | Alcochete | 5 | 268 | Lagoa | 5 |
| 100 | Coimbra | 5 | 197 | Almada | 5 | 269 | Lagos | 5 |
| 101 | Condeixa-a-Nova | 5 | 198 | Barreiro | 5 | 270 | Loulé | 5 |
| 108 | Leiria | 5 | 200 | Montijo | 5 | 273 | Portimão | 5 |
| 139 | Viseu | 5 | 201 | Palmela | 5 | 278 | Vila Real de Santo António | 5 |
| | | | | | | | Number of cases | 45 |

## II.2 Number of Cases in each Cluster

| | | |
|---|---|---|
| Cluster | 1 | 89 |
| | 2 | 50 |
| | 3 | 92 |
| | 4 | 2 |
| | 5 | 45 |
| Valid | | 278 |
| Missing | | 0 |

## II.3 Final Cluster Centers

| | Cluster | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| I1 | ,257 | ,431 | ,134 | ,074 | ,498 |
| I2 | ,590 | ,813 | ,421 | ,624 | ,814 |
| I3 | ,790 | ,801 | ,788 | ,207 | ,806 |
| I4 | ,511 | ,657 | ,387 | ,600 | ,722 |
| I5 | ,657 | ,821 | ,452 | ,940 | ,864 |
| I6 | ,151 | ,166 | ,083 | ,848 | ,389 |
| I7 | ,662 | ,805 | ,488 | ,761 | ,817 |
| I8 | ,782 | ,853 | ,687 | ,679 | ,771 |
| I9 | ,786 | ,915 | ,577 | ,997 | ,935 |
| I10 | ,028 | ,100 | ,014 | ,030 | ,059 |
| I11 | ,118 | ,135 | ,089 | ,654 | ,223 |
| I12 | ,109 | ,124 | ,058 | ,832 | ,273 |
| I13 | ,009 | ,029 | ,003 | ,647 | ,055 |
| I14 | ,159 | ,113 | ,139 | ,677 | ,200 |
| I15 | ,605 | ,595 | ,594 | ,654 | ,684 |

## II.4 Distances between Final Cluster Centers

| Cluster | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1 | | ,423 | ,439 | 1,582 | ,590 |
| 2 | ,423 | | ,846 | 1,587 | ,340 |
| 3 | ,439 | ,846 | | 1,769 | ,993 |
| 4 | 1,582 | 1,587 | 1,769 | | 1,378 |
| 5 | ,590 | ,340 | ,993 | 1,378 | |

## II.5 ANOVA

| | Cluster | | Error | | | |
|---|---|---|---|---|---|---|
| | Mean Square | df | Mean Square | df | F | Sig. |
| I1 | 1,338 | 4 | ,009 | 273 | 150,450 | ,000 |
| I2 | 1,816 | 4 | ,013 | 273 | 140,640 | ,000 |
| I3 | ,174 | 4 | ,001 | 273 | 173,175 | ,000 |
| I4 | 1,098 | 4 | ,023 | 273 | 48,115 | ,000 |
| I5 | 1,825 | 4 | ,012 | 273 | 152,984 | ,000 |
| I6 | ,949 | 4 | ,007 | 273 | 132,713 | ,000 |
| I7 | 1,223 | 4 | ,016 | 273 | 78,724 | ,000 |
| I8 | ,247 | 4 | ,013 | 273 | 18,955 | ,000 |
| I9 | 1,455 | 4 | ,014 | 273 | 107,533 | ,000 |
| I10 | ,067 | 4 | ,006 | 273 | 10,504 | ,000 |
| I11 | ,277 | 4 | ,007 | 273 | 36,961 | ,000 |
| I12 | ,606 | 4 | ,003 | 273 | 206,064 | ,000 |
| I13 | ,220 | 4 | ,001 | 273 | 158,075 | ,000 |
| I14 | ,188 | 4 | ,005 | 273 | 39,351 | ,000 |
| I15 | ,071 | 4 | ,004 | 273 | 18,991 | ,000 |

## II.6 Oneway

### Descriptives

| | | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound | | |
| I1 | 1 | 89 | ,257 | ,071 | ,008 | ,242 | ,272 | ,077 | ,484 |
| | 2 | 50 | ,431 | ,082 | ,012 | ,408 | ,454 | ,316 | ,752 |
| | 3 | 92 | ,134 | ,068 | ,007 | ,120 | ,148 | ,000 | ,354 |
| | 4 | 2 | ,074 | ,019 | ,014 | -,099 | ,247 | ,060 | ,088 |
| | 5 | 45 | ,498 | ,167 | ,025 | ,448 | ,548 | ,161 | 1,000 |
| | Total | 278 | ,285 | ,168 | ,010 | ,266 | ,305 | ,000 | 1,000 |
| I2 | 1 | 89 | ,590 | ,082 | ,009 | ,573 | ,607 | ,372 | ,779 |
| | 2 | 50 | ,813 | ,105 | ,015 | ,783 | ,843 | ,558 | 1,000 |
| | 3 | 92 | ,421 | ,150 | ,016 | ,390 | ,452 | ,000 | ,720 |
| | 4 | 2 | ,624 | ,033 | ,024 | ,324 | ,923 | ,600 | ,647 |
| | 5 | 45 | ,814 | ,087 | ,013 | ,788 | ,840 | ,629 | ,983 |
| | Total | 278 | ,611 | ,197 | ,012 | ,587 | ,634 | ,000 | 1,000 |
| I3 | 1 | 89 | ,790 | ,006 | ,001 | ,789 | ,791 | ,773 | ,806 |
| | 2 | 50 | ,801 | ,018 | ,003 | ,796 | ,806 | ,766 | ,864 |
| | 3 | 92 | ,788 | ,002 | ,000 | ,788 | ,789 | ,782 | ,794 |
| | 4 | 2 | ,207 | ,292 | ,207 | -2,418 | 2,832 | ,000 | ,413 |
| | 5 | 45 | ,806 | ,062 | ,009 | ,787 | ,825 | ,654 | 1,000 |
| | Total | 278 | ,790 | ,059 | ,004 | ,783 | ,797 | ,000 | 1,000 |
| I4 | 1 | 89 | ,511 | ,146 | ,015 | ,481 | ,542 | ,240 | 1,000 |
| | 2 | 50 | ,657 | ,120 | ,017 | ,623 | ,691 | ,395 | ,892 |
| | 3 | 92 | ,387 | ,177 | ,018 | ,350 | ,424 | ,000 | ,801 |
| | 4 | 2 | ,600 | ,156 | ,110 | -,800 | 2,000 | ,490 | ,710 |
| | 5 | 45 | ,722 | ,134 | ,020 | ,682 | ,762 | ,414 | ,997 |
| | Total | 278 | ,531 | ,196 | ,012 | ,508 | ,554 | ,000 | 1,000 |
| I5 | 1 | 89 | ,657 | ,111 | ,012 | ,634 | ,681 | ,401 | ,880 |
| | 2 | 50 | ,821 | ,070 | ,010 | ,802 | ,841 | ,673 | ,951 |
| | 3 | 92 | ,452 | ,133 | ,014 | ,425 | ,480 | ,000 | ,669 |
| | 4 | 2 | ,940 | ,030 | ,021 | ,672 | 1,209 | ,919 | ,961 |
| | 5 | 45 | ,864 | ,087 | ,013 | ,838 | ,890 | ,676 | 1,000 |
| | Total | 278 | ,654 | ,195 | ,012 | ,631 | ,677 | ,000 | 1,000 |
| I6 | 1 | 89 | ,151 | ,073 | ,008 | ,136 | ,166 | ,019 | ,418 |
| | 2 | 50 | ,166 | ,070 | ,010 | ,146 | ,186 | ,045 | ,346 |
| | 3 | 92 | ,083 | ,038 | ,004 | ,075 | ,091 | ,003 | ,199 |
| | 4 | 2 | ,848 | ,103 | ,073 | -,073 | 1,770 | ,776 | ,921 |
| | 5 | 45 | ,389 | ,158 | ,024 | ,341 | ,437 | ,187 | 1,000 |
| | Total | 278 | ,175 | ,144 | ,009 | ,158 | ,192 | ,003 | 1,000 |
| I7 | 1 | 89 | ,662 | ,112 | ,012 | ,638 | ,686 | ,325 | ,888 |
| | 2 | 50 | ,805 | ,106 | ,015 | ,775 | ,835 | ,564 | 1,000 |
| | 3 | 92 | ,488 | ,157 | ,016 | ,455 | ,521 | ,000 | ,770 |
| | 4 | 2 | ,761 | ,100 | ,071 | -,135 | 1,658 | ,691 | ,832 |
| | 5 | 45 | ,817 | ,085 | ,013 | ,791 | ,842 | ,575 | ,990 |
| | Total | 278 | ,656 | ,182 | ,011 | ,634 | ,677 | ,000 | 1,000 |
| I8 | 1 | 89 | ,782 | ,092 | ,010 | ,763 | ,802 | ,520 | ,959 |
| | 2 | 50 | ,853 | ,078 | ,011 | ,831 | ,875 | ,582 | 1,000 |
| | 3 | 92 | ,687 | ,158 | ,016 | ,654 | ,719 | ,000 | ,959 |
| | 4 | 2 | ,679 | ,101 | ,071 | -,229 | 1,586 | ,607 | ,750 |
| | 5 | 45 | ,771 | ,073 | ,011 | ,749 | ,793 | ,607 | ,939 |
| | Total | 278 | ,761 | ,128 | ,008 | ,746 | ,776 | ,000 | 1,000 |
| I9 | 1 | 89 | ,786 | ,101 | ,011 | ,765 | ,807 | ,550 | ,964 |
| | 2 | 50 | ,915 | ,058 | ,008 | ,899 | ,932 | ,750 | ,999 |
| | 3 | 92 | ,577 | ,165 | ,017 | ,543 | ,612 | ,000 | ,952 |
| | 4 | 2 | ,997 | ,002 | ,001 | ,983 | 1,012 | ,996 | ,999 |
| | 5 | 45 | ,935 | ,057 | ,008 | ,918 | ,953 | ,812 | 1,000 |
| | Total | 278 | ,766 | ,185 | ,011 | ,744 | ,788 | ,000 | 1,000 |
| I10 | 1 | 89 | ,028 | ,008 | ,001 | ,027 | ,030 | ,010 | ,059 |
| | 2 | 50 | ,100 | ,187 | ,026 | ,046 | ,153 | ,025 | 1,000 |
| | 3 | 92 | ,014 | ,007 | ,001 | ,013 | ,016 | ,000 | ,031 |
| | 4 | 2 | ,030 | ,007 | ,005 | -,029 | ,089 | ,025 | ,034 |
| | 5 | 45 | ,059 | ,017 | ,003 | ,054 | ,065 | ,028 | ,106 |
| | Total | 278 | ,042 | ,085 | ,005 | ,031 | ,052 | ,000 | 1,000 |
| I11 | 1 | 89 | ,118 | ,081 | ,009 | ,101 | ,135 | ,000 | ,746 |
| | 2 | 50 | ,135 | ,048 | ,007 | ,121 | ,148 | ,050 | ,237 |
| | 3 | 92 | ,089 | ,069 | ,007 | ,074 | ,103 | ,008 | ,503 |
| | 4 | 2 | ,654 | ,204 | ,145 | -1,184 | 2,491 | ,509 | ,798 |
| | 5 | 45 | ,223 | ,141 | ,021 | ,181 | ,265 | ,105 | 1,000 |
| | Total | 278 | ,132 | ,107 | ,006 | ,119 | ,145 | ,000 | 1,000 |
| I12 | 1 | 89 | ,109 | ,048 | ,005 | ,099 | ,119 | ,000 | ,242 |
| | 2 | 50 | ,124 | ,047 | ,007 | ,110 | ,137 | ,041 | ,287 |
| | 3 | 92 | ,058 | ,027 | ,003 | ,052 | ,063 | ,001 | ,147 |
| | 4 | 2 | ,832 | ,238 | ,168 | -1,306 | 2,969 | ,664 | 1,000 |
| | 5 | 45 | ,273 | ,091 | ,014 | ,246 | ,300 | ,145 | ,589 |
| | Total | 278 | ,126 | ,108 | ,006 | ,114 | ,139 | ,000 | 1,000 |
| I13 | 1 | 89 | ,009 | ,007 | ,001 | ,008 | ,011 | ,001 | ,039 |
| | 2 | 50 | ,029 | ,023 | ,003 | ,022 | ,035 | ,004 | ,094 |
| | 3 | 92 | ,003 | ,002 | ,000 | ,002 | ,003 | ,000 | ,013 |
| | 4 | 2 | ,647 | ,499 | ,353 | -3,839 | 5,133 | ,294 | 1,000 |
| | 5 | 45 | ,055 | ,048 | ,007 | ,041 | ,070 | ,006 | ,215 |
| | Total | 278 | ,023 | ,068 | ,004 | ,015 | ,031 | ,000 | 1,000 |
| I14 | 1 | 89 | ,159 | ,058 | ,006 | ,147 | ,171 | ,072 | ,376 |
| | 2 | 50 | ,113 | ,039 | ,006 | ,101 | ,124 | ,058 | ,239 |
| | 3 | 92 | ,139 | ,059 | ,006 | ,127 | ,151 | ,032 | ,416 |
| | 4 | 2 | ,677 | ,035 | ,025 | ,361 | ,994 | ,652 | ,702 |
| | 5 | 45 | ,200 | ,118 | ,018 | ,164 | ,235 | ,078 | ,765 |
| | Total | 278 | ,154 | ,086 | ,005 | ,144 | ,164 | ,032 | ,765 |
| I15 | 1 | 89 | ,605 | ,068 | ,007 | ,590 | ,619 | ,354 | ,742 |
| | 2 | 50 | ,595 | ,068 | ,010 | ,576 | ,615 | ,474 | ,719 |
| | 3 | 92 | ,594 | ,057 | ,006 | ,583 | ,606 | ,433 | ,704 |
| | 4 | 2 | ,654 | ,007 | ,005 | ,594 | ,713 | ,649 | ,658 |
| | 5 | 45 | ,684 | ,044 | ,007 | ,670 | ,697 | ,599 | ,787 |
| | Total | 278 | ,613 | ,068 | ,004 | ,605 | ,621 | ,354 | ,787 |

**ANOVA**

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| I1 | Between Groups | 5,350 | 4 | 1,338 | 150,450 | ,000 |
| | Within Groups | 2,427 | 273 | ,009 | | |
| | Total | 7,777 | 277 | | | |
| I2 | Between Groups | 7,263 | 4 | 1,816 | 140,640 | ,000 |
| | Within Groups | 3,524 | 273 | ,013 | | |
| | Total | 10,787 | 277 | | | |
| I3 | Between Groups | ,698 | 4 | ,174 | 173,175 | ,000 |
| | Within Groups | ,275 | 273 | ,001 | | |
| | Total | ,973 | 277 | | | |
| I4 | Between Groups | 4,391 | 4 | 1,098 | 48,115 | ,000 |
| | Within Groups | 6,229 | 273 | ,023 | | |
| | Total | 10,620 | 277 | | | |
| I5 | Between Groups | 7,301 | 4 | 1,825 | 152,984 | ,000 |
| | Within Groups | 3,257 | 273 | ,012 | | |
| | Total | 10,558 | 277 | | | |
| I6 | Between Groups | 3,797 | 4 | ,949 | 132,713 | ,000 |
| | Within Groups | 1,952 | 273 | ,007 | | |
| | Total | 5,749 | 277 | | | |
| I7 | Between Groups | 4,892 | 4 | 1,223 | 78,724 | ,000 |
| | Within Groups | 4,241 | 273 | ,016 | | |
| | Total | 9,133 | 277 | | | |
| I8 | Between Groups | ,988 | 4 | ,247 | 18,955 | ,000 |
| | Within Groups | 3,559 | 273 | ,013 | | |
| | Total | 4,547 | 277 | | | |
| I9 | Between Groups | 5,820 | 4 | 1,455 | 107,533 | ,000 |
| | Within Groups | 3,694 | 273 | ,014 | | |
| | Total | 9,515 | 277 | | | |
| I10 | Between Groups | ,268 | 4 | ,067 | 10,504 | ,000 |
| | Within Groups | 1,741 | 273 | ,006 | | |
| | Total | 2,009 | 277 | | | |
| I11 | Between Groups | 1,106 | 4 | ,277 | 36,961 | ,000 |
| | Within Groups | 2,043 | 273 | ,007 | | |
| | Total | 3,149 | 277 | | | |
| I12 | Between Groups | 2,422 | 4 | ,606 | 206,064 | ,000 |
| | Within Groups | ,802 | 273 | ,003 | | |
| | Total | 3,224 | 277 | | | |
| I13 | Between Groups | ,882 | 4 | ,220 | 158,075 | ,000 |
| | Within Groups | ,381 | 273 | ,001 | | |
| | Total | 1,262 | 277 | | | |
| I14 | Between Groups | ,751 | 4 | ,188 | 39,351 | ,000 |
| | Within Groups | 1,302 | 273 | ,005 | | |
| | Total | 2,053 | 277 | | | |
| I15 | Between Groups | ,283 | 4 | ,071 | 18,991 | ,000 |
| | Within Groups | 1,015 | 273 | ,004 | | |
| | Total | 1,298 | 277 | | | |

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# Measuring Organizational Autonomy

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**Abstract**

Through the review of the literature an attempt is made to define organizational autonomy and to explain how it differs from other related concepts like individual autonomy and decentralization. Further the researchers have developed a measure for organizational autonomy. The standard procedures for developing a scale are followed from concept definition to reliability testing. The procedures included establishing psychometric properties of the scale through content validity, scale dimensionality and internal consistency reliability. The outcome of the research is an eighteen item organizational autonomy scale comprising three dimensions of personnel, marketing and goal setting autonomy.

**Keywords:** Organisational Autonomy; Factor Analysis; Chronbach's alpha reliability

## 1. Introduction

### 1.1. Autonomy

Autonomy may be defined as the degree to which one may make significant decisions without the consent of others. The construct could be analyzed at two levels namely; 1) Autonomy of individuals within an organization and 2) Autonomy of an organization or its sub-units (Brock, 2003). An individual may be considered having autonomy in carrying out a particular activity if norms of the organization don't necessitate the individual to seek permission from or advice of superiors, co-workers or subordinates in executing the activity. Similarly, autonomy of an organization or its sub-units refers to their freedom to make decisions and implement them without having to take consent from parties external to the organization or the units. Many researchers have studied individual autonomy and proposed that higher autonomy has association with less complex task assignment, lower risk, more control over information flow, and more formalized interaction (Dill, 1958). Turner and Lawrence (1965) observed autonomy to be a requisite task attribute that promotes job satisfaction and lower absenteeism among employees. Porter *et al.* (1975) considered autonomy to be a human need. Osborn *et al.* (1980) observed that low autonomy is associated with low quality of work life, though it may vary among people. Nielson and Pederson (2003) found that giving front line employees more decision-making autonomy helps competitiveness of the firm.

While studying autonomy at an organizational level the organizations may be rated according to their degree of autonomy. This would be especially relevant in the case of organizations falling as part of a large corporation, or a fraternity that is a part of national fraternity. Likewise corporations that are by design a collection of many subunits like banks with many branches or an organized retailer with many outlets could be rated on the degree of autonomy enjoyed by these subunits or the overall organization. Datta *et al.* (1991) defined organizational autonomy as day-to-day freedom to manage. Centralization and low autonomy have been found to be strongly related to standardization of personal procedures, low functional specialization, percentage of subordinates and percentage of non-workflow personnel (Holdaway, 1975). Research on the autonomy of various units within multinational corporations has found that subsidiary autonomy was greater in certain functional areas (like marketing and personnel) than in others (Research and Development and finance) (Vachani, 1999).

1.2. Autonomy and Decentralization

Autonomy refers to the extent of decision making authority wielded by a given position, person, or organization. In evaluating autonomy we ask the question, "How much of decision making authority does X have?" Centralization concerns the locus of decision-making authority in an organization- the extent to which decision-making is concentrated in a single point or diffused through out the organization. A decentralized organization is one in which power is dispersed among many individuals (Mintzberg, 1989).

Though these constructs may coincide and have similar connotations, they often differ and imply varying organizational outcomes. We may affirm that given reliable and valid measures, effective strategic contingencies for a decentralized unit will differ from that for an autonomous unit, and similarly for a centralized versus a low autonomous organization. That would mean autonomy and decentralization are different also that centralization and low autonomy are different. Fig. 1, depicted below, explains the difference between autonomy and decentralization. A B C and D are unit managers of four different subunits of company ABC LTD.

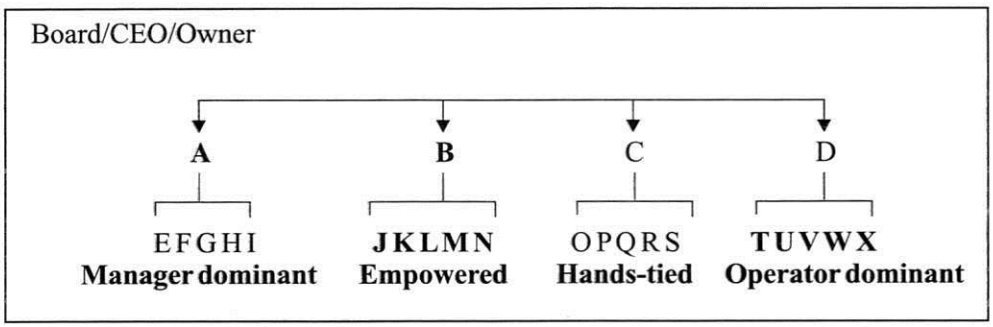


Fig. 1. Depiction of Differences between Autonomy and Decentralization at ABC Ltd.

Autonomy and Decentralization for Four hypothetical Organizations

| Organization | Description of Structure |
|---|---|
| A | Autonomous and Centralized |
| B | Autonomous and decentralized |
| C | Low autonomy and centralized |
| D | Low autonomy and decentralized |

Thus in B autonomy and decentralization coincide; but in D they don't.
In A autonomy and centralization coincide; but in C they don't

Therefore one can clearly ascertain that autonomy and decentralization are two different constructs and that autonomy may not be treated as a surrogate to measure centralization and vice versa. However, as in the case of subunit B autonomy and decentralization coincide at the lowest level in an organization. Therefore, in common usage decentralization may be considered the extent to which operators are autonomous. The term operator autonomy thus is analogous to decentralization; conversely low operator autonomy could indicate centralization.

**2. Measurement of Autonomy**

Inkson (1970) used a 23 item questionnaire to measure autonomy. Intended responses to the measurement items were either 'Yes' or 'No'. This questionnaire did not capture the possibility of decision-making freedom, which

was neither absolute nor non-existent. Moreover, autonomy was used as a measure of centralization (Pugh, 1968) or concentration of authority (Inkson, 1970) in these studies. However, autonomy and centralization are two different concepts. Hackman and Lawler (1971) measured workers autonomy on a seven point scale. Sims *et al.* (1976) studied autonomy and other dimensions of job characteristics with their Job Characteristics Inventory (JCI), a five point scale questionnaire. These studies however treat individual autonomy rather than organizational autonomy.

The instrument measuring autonomy in Inkson *et al.* (1970) is similar to that measuring centralization in Pugh *et al.* (1968). Though similar instruments were used these two studies succeeded in differentiating between autonomy and centralization as follows: Centralization was measured by asserting the level at which the decisions were made. Autonomy was how many decisions could be made at a given position or person. Thus centralization was a characteristic of the entire structure of an organizational unit - a more generalized measure, where as autonomy was a reading of decision - making authority at a specific location.

Inkson *et al.* (1970) established the reliability and validity of short forms for the measurement of four previously established dimensions of organizations- two contextual: technology, dependence and two structural: structuring of activities, concentration of authority. According to the authors an organization lacks autonomy if decisions are taken at a level of authority in context of organization's structure. The organization's autonomy score was measured based on the number of decisions, from a set list of 22 items, which are taken at a higher level of authority. Higher the number greater the concentration of authority and in turn lesser the autonomy. This measurement appears to have two problems. One, it equates autonomy to centralization. The second, It does not account for partial autonomy i.e. a degree of freedom one might have in making specific decisions which ranges between no freedoms to full freedom.

Lioukas *et al.* (1993) studied state owned enterprises (SOEs) in Greece and found that the state control on SOEs has positive relationship to the dependence of SOEs on the State for resources and negative relationship to market competition and demand unpredictability. They treated autonomy as the discretion of the SOE management vis-à-vis the state authorities. The following dimensions operationalized state autonomy:

1. Total state control
2. Control on strategic issues
3. Control on output decisions
4. Control on resource mobilization issues:
   i. Control on human resources
   ii. Control on financial resources
   iii. Control on purchasing decisions

All the six, except output, decisions were composite variables consisting of many distinct measures referring to all partial controls. Each was measured in a five-point Likert-type scale ranging from 1 (full autonomy) to 5 (very tight control). Control was operationalized by the researchers on various functional dimensions. In the present study autonomy is proposed to be operationalized on the same line.

Thus the previous studies treating organizational autonomy are found to be having definitional or measurement problems with the concept. In the current study researchers accepting the definition of Brock developed a measurement scale for organizational autonomy. Literature on scale development along with procedure followed for scale development in the present research is explained below.

### 2.1. Literature on Measurements, Scales and Scale Construction

Measurement is one of the fundamental activities of any science. Measurement consists of two basic processes called conceptualization and operationalization, then an advanced process called determining the levels of measurement, and then even more advanced methods of measuring reliability and validity.

Conceptualization is the process of taking a construct or concept and refining it by giving it a conceptual or theoretical definition. Ordinary dictionary definitions will not do. Instead, the researcher takes keywords in their research question or hypothesis and finds a clear and consistent definition that is agreed-upon by others in the scientific community. Sometimes, the researcher pushes the envelope by coming

up with a novel conceptual definition, but such initiatives are rare and require the researcher to have intimate familiarity with the topic. More common is the process by which a researcher notes agreements and disagreements over conceptualization in the literature review, and then comes down in favor of someone else's conceptual definition. It's perfectly acceptable in science to borrow the conceptualizations and operationalizations of others. Conceptualization is often guided by the theoretical framework, perspective, or approach the researcher is committed to.

Operationalization is the process of taking a conceptual definition and making it more precise by linking it to one or more specific, concrete indicators or operational definitions. These are usually things with numbers in them that reflect empirical or observable reality. They're what link the world of "ideas" to the world of everyday "reality". It is more important that ordinary people would agree on the indicators than those inside the enterprise of science. One imperative at this stage is to ensure a fairly good epistemic correlation, which is nothing but the goodness-of-fit between the operationalized and construct definitions for of a scale.

A level of measurement is the precision by which a variable is measured. For more than half a century, with little detraction, science has used the Stevens (1951) typology of measurement levels. There are three vital things to remember about this typology: (1) anything that can be measured falls into one of the four types; (2) the higher the type, the more precision in measurement; and (3) every level up contains all the properties of the previous level. The four levels of measurement, from lowest to highest, are: Nominal, Ordinal, Interval, and Ratio. The nominal level of measurement describes variables that are categorical in nature. The characteristics of the data one is collecting fall into distinct categories. If there are a limited number of distinct categories (usually only two), then it is a discrete variable. If there are an unlimited or infinite number of distinct categories, then it is a continuous variable. The ordinal level of measurement describes variables that can be ordered or ranked in some order of importance. The interval level of measurement describes variables that have more or less equal intervals, or meaningful distances between their ranks. The ratio level of measurement describes variables that have equal intervals and a fixed zero (or reference) point. Advanced statistics require at least interval level measurement, so the researcher always strives for this level, accepting ordinal level (which is the most common) only when they have to. Variables should be conceptually and operationally defined with levels of measurement in mind since it is going to affect how well one can analyze the data later on.

Reliability and Validity are essential for any research study to be faithful. Reliability means that the findings would be consistently the same if the study were done over again. Validity refers to the truthfulness of findings; i.e., whether it measures what it is to measure. A study can be reliable but not valid, and it cannot be valid without first being reliable.

### *2.1.1. Construct definition*

Psychometric literature recommends construct definition as the first step in scale development. Therefore, drawing from existing literature researcher specified what organizational autonomy is (Brock, 2003; Inkson *et al.*, 1970; Sims *et al.*, 1976) and at the same time differentiated it from other related constructs (Brock, 2003). Autonomy is defined as the degree to which one may make significant decisions without the consent of others (Brock, 2003). Autonomy in the current context is treated as autonomy of an organizational subunit and not that of the whole organization to which the subunit is a part. Thus the unit of analysis is the subunit and the autonomy of a subunit is considered as the freedom the head of the subunit has in making decision without consulting others external to the subunit. Autonomy is conceptually and practically different from other structural variables such as decentralization and empowerment.

### *2.1.2. Content or Face validity*

Face validity demands that on the surface the scale items should appear consistent with the theoretical domain of the construct i.e. items generated should tap the domain of the construct. Judges with expertise in the literature

shall screen items, and several pilot tests on samples from relevant population shall be conducted to trim the items and to refine the pool of items.

Items were generated from junior and middle level executives working in various service organizations. These were executives working at lower or middle managerial levels in various organizations and were participants of an executive development programme. They were asked to list down all decisions that could be taken by a manager with independent responsibility of a business unit in a services firm. 95 items were generated in total. 9 items that were to be obviously out due to duplication or being out of domain of the construct were deleted. Balance 86 items were presented to a panel of four experts with experience in banking and financial services industry ranging from fifteen years to twenty-eight years. They were asked to select only those items from the list they found to be relevant to a branch manager in a bank. Experts also were briefed as to the need for presenting items in the shortest and simplest manner possible to ensure easiness in response as well as reliability. Researcher retained all items that were selected at least by one of the experts, which resulted in 22 items. These items were further pruned by an expert who worked in banking and as well had academic research interest. Four items were dropped by the expert resulting in 18 pruned items.

Setting monthly targets
Marketing territories
Pricing of services
Sales/marketing agents
Marketing budgets
Cost of customer acquisition
To sanction loans
To decide on resource acquisition procedures
Service quality standards to be maintained
Recruiting service staff
Promoting staff
Creating a new job
Dismissing a staff
Remunerating staff
Training needs and methods
Allocating work among available personnel
Advertising or other means of promotion
New product or service introduction

Freedom to make decisions could range from "no freedom" to "very high freedom". A rating scale is appropriate for capturing such a continuous variable. Therefore, a seven points rating scale was used to measure autonomy on all the eighteen items. A score of seven would mean that the respondent has very high freedom and a low score of one would mean that the respondent has practically no freedom.

*2.1 3. Scale Dimensionality*

A constructs domain may be one-dimensional or multi-dimensional. The scale or subscales used to operationalize the construct is expected to reflect the hypothesized dimensionality. Since managerial decisions in a business organization could be classified based on managerial functions such as planning, organizing, staffing, directing and controlling or along business functions such as Finance, Human Resource, Marketing, Production etc. the scale items were expected to belong to any one or a few of these functions. The scale's empirical factor structure could therefore be reflecting these dimensions. To check for the dimensionality of the scale a factor analysis was conducted using SPSS software.

Rotated component Matrix showed that the items loaded on three major components. Items loaded together on two of the three components reflected similarities along business managerial functions namely personnel and marketing functions. Therefore the components were labeled along these business functions. Six items loaded on component one that was labeled as Marketing Autonomy, the seven items loaded on component two labeled Personnel Autonomy. The last component did not reflect any functional connotation but comprised items mostly related to goals to be set and achieved and therefore was labeled Goal Setting Autonomy.

**Factor Analysis for Examining Scale**

**Table 1.1**

**Total Variance Explained**

| | Rotation Sums of Squared Loadings | | |
|---|---|---|---|
| Component | Total | % of Variance | Cumulative % |
| 1 | 4.392 | 24.400 | 24.400 |
| 2 | 4.223 | 23.462 | 47.862 |
| 3 | 3.953 | 21.960 | 69.822 |

Extraction Method: Principal Component Analysis.

**Table 1.2**
**Rotated Component Matrix(a)**

| Items | Component | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| 8. To decide sales/marketing agents | .777 | | |
| 13. create a new job | .754 | | |
| 11. decide on marketing promotion | .735 | | |
| 7. The price of the service | .698 | | |
| 2. to decide on resource acquisition procedures | .638 | | |
| 5. Determine a new product or service introduction | .604 | | |
| 15. decide on remuneration of staff | | .816 | |
| 18. decide on recruitment of personnel | | .776 | |
| 14. dismiss a staff | | .773 | |
| 12. promote staff | | .690 | |
| 10. decide on cost of customer acquisition | | .617 | |
| 9. To decide marketing budgets | | .559 | |
| 16. decide on the training needs and methods | | .523 | |
| 3. service quality standards shall be maintained | | | .836 |
| 17. allocate work among available personnel | | | .733 |
| 4. Decide on the monthly target of the unit | | | .729 |
| 6. Determine territories to be covered | | | .532 |
| 1. to sanction loans | | | .502 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 9 iterations.
(Loadings Below 0.5 suppressed for clarity)

Rotated component Matrix showed that the items loaded on three major components. Items loaded together on any one component reflected business-functional similarity. Therefore the components were labeled along the business function to which the decisions primarily belonged. Thus six items loaded on component one was labeled as Marketing Autonomy, the seven items loaded on component two together was labeled Personnel Autonomy and the last component comprising five items was labeled Goal Setting Autonomy.

*2.1.4. Reliability Analysis (A L P H A) for the Scale*

There are two broad types of reliability in psychometric literature:

1. Test-retest: The correlation between the same person's score on the same set of items at two points in time. It is not done in majority of scale development exercises.

2. Internal consistency: Items comprising a scale or subscale should show high levels of internal consistency. Commonly used criteria for assessing internal consistency are individual corrected item to total correlations, the inter item correlated matrix for all items or for items proposed to measure a given scale dimension, and a number of reliability coefficients.

The most widely used internal consistency reliability coefficient is the Chronbach's alpha. Reliability analysis (alpha) was conducted for the scale as a whole (Table 4.3) and then for each of the components constituting the scale (Tables 4.4, 5 & 6). The rule of thumb for reliability

analysis, according to Nunnally (1978) is that reliability level of 0.70 will suffice in exploratory settings though in those applied settings where important decisions are made a minimum reliability coefficient of 0.90 is a must. The overall alpha value was determined to be 0.951. Note also that no corrected inter-item correlation fell below 0.3, which is a positive signal of the internal consistency of the scale. "Alpha if item deleted" column gives figures, none of which is above the aggregated alpha value for all the items taken together. This means that the overall internal stability will be negatively affected if any variable is removed from the membership in the scale. Alpha values arrived at from the dimension-wise analysis are also presented. Note that the above said conditions are satisfied in dimension wise analysis also.

**Table 1.3: Reliability ALPHA for All Items of Autonomy Scale**
**Dimension 1: Personnel Autonomy**
**Item-Total Statistics**

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| v1 | 57.7833 | 489.516 | .571 | .483 | .951 |
| v2 | 57.5583 | 469.274 | .756 | .766 | .948 |
| v3 | 56.2667 | 474.869 | .619 | .752 | .950 |
| v4 | 56.6167 | 469.768 | .703 | .761 | .949 |
| v5 | 57.4583 | 469.696 | .756 | .717 | .948 |
| v6 | 56.6250 | 471.194 | .684 | .591 | .949 |
| v7 | 56.7333 | 470.752 | .746 | .719 | .948 |
| v8 | 56.5833 | 465.052 | .723 | .701 | .949 |
| v9 | 57.4417 | 469.778 | .756 | .697 | .948 |
| v10 | 57.9083 | 482.319 | .686 | .602 | .949 |
| v11 | 56.4833 | 464.504 | .740 | .838 | .948 |
| v12 | 56.8000 | 459.304 | .816 | .843 | .947 |
| v13 | 57.1250 | 463.589 | .790 | .792 | .947 |
| v14 | 57.7750 | 484.714 | .692 | .762 | .949 |
| v15 | 57.3833 | 477.079 | .652 | .723 | .950 |
| v16 | 55.7000 | 470.918 | .794 | .753 | .947 |
| v17 | 54.8750 | 500.060 | .500 | .494 | .952 |
| v18 | 56.5667 | 470.836 | .692 | .735 | .949 |

Valid Cases: 120Alpha: .951Items:18

**Table 1.4: Reliability ALPHA for Items of Personnel Autonomy**
**Dimension 2: Marketing Autonomy**
**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| v9 | 19.2314 | 68.313 | .734 | .585 | .904 |
| v10 | 19.7107 | 72.207 | .701 | .521 | .908 |
| v12 | 18.5785 | 63.729 | .819 | .708 | .895 |
| v14 | 19.5620 | 72.515 | .743 | .688 | .905 |
| v15 | 19.1653 | 68.322 | .730 | .684 | .905 |
| v16 | 17.4711 | 69.935 | .718 | .546 | .906 |
| v18 | 18.3306 | 65.473 | .774 | .661 | .900 |

Valid cases: 121Alpha: .917Items: 7

**Table 1.5: Reliability ALPHA for Items of Marketing Autonomy**
**Dimension 3: Goal Setting Autonomy**
**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| v2 | 16.7000 | 60.632 | .744 | .609 | .905 |
| v5 | 16.6000 | 61.570 | .710 | .581 | .909 |
| v7 | 15.8750 | 60.144 | .778 | .635 | .900 |
| v8 | 15.7250 | 57.327 | .775 | .645 | .901 |
| v11 | 15.6250 | 58.068 | .756 | .679 | .903 |
| v13 | 16.2667 | 57.424 | .830 | .727 | .893 |

Valid Cases: 120 Alpha: .917 Items:6

**Table 1.6: Reliability ALPHA for Items of Goal Setting Autonomy**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| v3 | 14.9421 | 24.972 | .716 | .602 | .769 |
| v17 | 13.5124 | 32.719 | .554 | .323 | .819 |
| v6 | 15.2975 | 26.977 | .610 | .436 | .803 |
| v1 | 16.4463 | 31.283 | .520 | .275 | .824 |
| v4 | 15.2727 | 24.667 | .773 | .656 | .750 |

Valid Cases: 121Alpha: .830 Items: 5

Thus the scale satisfies the fundamental requirements for acceptance as a valid and reliable measure for the construct "Organizational Autonomy".

## 3. Conclusion

The current research resulted in the development of a valid and reliable measure for organizational autonomy in the context of organizational subunits. The study has taken a step forward in developing a scale and empirically validating the same. Authors appeal for further empirical validation of the scale in varying domains and contexts. Authors also hope that future researchers would find the organizational autonomy scale useful in their research efforts.

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# Share Buyback Methods and Market Performance in India

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**Abstract**

Open market repurchases (OMRs) and fixed price tender offers (FPTs) are two popular methods of accomplishing share buyback decisions. The empirical evidence available in US shows that OMRs constitute almost 90% to 95% of total buyback announcements. Though OMRs dominate in numbers, they are poor in generating announcement returns to shareholders. Comment and Jarrell (1991) found a three-day CAR of 11% for FPTs and 2.3% for OMRs in US. We find from evidence available in India that OMR is a predominant method of announcing repurchase decision by firms in India. Employing a sample of 70 buyback announcements we find similar evidence in the US i.e. FPTs generate a CAR higher than the OMRs. The 41-day CAR was found to be 9.14% for FPTs and 6.59% for OMRs. The results are not consistent when announcement are classified into first and subsequent buybacks. OMRs yield greater returns in first buybacks and FPTs in subsequent buybacks. We attribute this contradiction to a few number of subsequent buybacks in India.

**Keywords:** Share Buyback; Open Market Repurchases (OMR); Fixed Price Tender Offers (FPT)

## 1. Introduction

A firm can employ dividend and share buyback approaches to distribute cash flows amongst the shareholders. In recent decades, share buybacks are emerging as preferred method of returning cash flows for obvious advantages involved in them. Dividends carry expectations. An increase in dividend in one year would generally lead to similar expectations even in future years also. Failure to pay would signal negatively to the market. On the other hand, the share buybacks do not carry such expectations. Above all, buybacks are flexible forms of returning excess money. There are few restrictions on timing and quantum of distribution. In the US, a clear preference for buybacks is observed in recent decades. The available data indicates that share repurchases in the US are substituting dividends. Buybacks have grown from $ 2 billion in 1981 to $232 billion in 2004 (Rau and Stouraitis, 2006). According to Fama and French (2001) the percent of firms paying cash has fallen from 66.5 in 1978 to 20.8 in 1999. Grullon and Ikenberry (2000), Grullon and Michaely (2004) and Skinner (2008) document a massive increase in the number (and total value) of the U.S. industrial firms repurchasing their own shares since 1982, when a key SEC ruling first provided a legal safe harbour for managers implementing open-market repurchases. Most strikingly, Skinner (2008) shows that the total annual value of share repurchases now usually exceeds that of cash dividends in the United States, and documents that repurchases have become the preferred method of distributing cash to investors.

The approximate correspondence in the timing of the shifts in dividend policy and repurchases suggests that repurchases substitute for dividends although there are other explanations for repurchases, including undervaluation/signalling, the funding of corporate acquisitions, management of the dilutive effects of employee stock options, and the management of reported EPS (Allen and Michaely, 2003; Brave *et al.*, 2005). A high-priced buyback is a signal to the market the manager's strong conviction that the market value is low and needs to be corrected. Further, by announcing share buybacks, a manager conveys to the market his confidence relating to the fundamentals of the firm and expects market to revise upwards the market valuation. It has generally been observed that market greets favourably the announcement of share buybacks. In addition to signalling explanation, Jensen, (1986) extends free cash flow hypothesis for the use of buybacks. There is generally a conflict between managers and shareholders regarding

the use of free cash flows. Shareholders expect firms to distribute as much as possible while the managers regard cash flows as 'source of power' and intend to use such cash flows to further their clout over the firm by investing in mergers and acquisitions. The share buybacks by reducing the extent of cash available in the hands of managers subjects them to be under the market control through the floatation of public issue of securities. The issue of debt commits the use of cash flows to pay interest and return principal amounts while equity issue regulates managers' behaviour through reporting and governance norms.

Share buybacks may be used to achieve a desired capital structure or to finance impending exercise of employees' stock options (Kahle, 2002) or to thwart the hostile takeover attempts. Companies may use buybacks to provide exit options to the shareholders if shares are unlisted or listed but not traded regularly. Further, buyback reduces the quantum of public holding and improves promoters' stake holding. Some consider buyback to be an excellent tool to improve firm's fundamentals or to reduce the servicing cost of equity.

## 2. Methods of buyback

How do firms accomplish share buyback decisions? What are the methods available and which method is more usually employed? Do announcement returns differ from method to method? How do firms select the method of distribution? etc., are some of the questions that have eluded exact answers. Several methods of announcing and completing buybacks are available for a firm. Even the Companies Act, 1956 and SEBI's regulations in India permit companies to use six methods. They are:

- Open offer
- Tender offer
- Dutch auction method
- Reverse rights issue method
- Purchase of odd-lot shares
- Purchase of employees stock options

### 2.1. Open offer

Open offers are known as 'open market repurchases (OMRs)' in US. They represent general offers made to the shareholders at current market price. The method fixes no upper limit on return a particular amount of cash flow and buyback continues till the amount is exhausted. Further, the firm enjoys the liberty of withdrawing this offer at its own will. In view of these reasons, the method has remained the most popular method of buyback of shares. On an average, 90% of buyback announcements in the US are carried through this method (Grullon and Ikenberry, 2000). Further, US firms take, on an average, three years to complete the buyback process under this method (Stephens and Weisbach, 1998). It is employed when a small percent of shares is to be purchased by the firm. Comment and Jarrell (1991) regard the method as a non-serious way of returning of free cash flow and found lower announcement returns. They found an announcement day return of only 2.3% as against higher returns for other methods. The method is not advisable if a firm has specific objectives in mind like preventing hostile takeovers or correcting market undervaluation.

Chan *et al.* (2006) opined that compared to fixed-price buyback methods, open market buyback programmes are simply authorizations, not commitments, which permit management to repurchase stock at their whim, if at all. They finds evidence in their work that firms use OMRs to mislead investors as long-run price movement does not justify the reason for employing buyback method. Vermaelen (1981) also views that the method carries greater credibility if manager's wealth is at stake.

### 2.2. Tender offers

Under tender offers, also known as fixed price tender offers (FPTs) in the US, a firm offers to buy a specified percent of shares within a given time period at a specific price. The price offered is at premium to market price. If the offer is oversubscribed, the firm may decide to buy the shares on pro-rata basis or may elect to buy all the shares offered by the shareholders. On the other hand, the offer date will be extended if the offer is undersubscribed or the firm can cancel the offer if it includes a minimum acceptance clause, or the firm can simply buyback whatever number or percentage of shares was tendered.

Tender offers are used to achieve specific objectives and are time-bound. The firm may use the method to signal undervaluation or to fend-off a hostile bid on the company. Further, the percent of shares bought under the method is relatively higher than OMRs. Dann (1981) found for his

sample of FPT share repurchases totalling 143 observations over the period 1962 to 1976 that the fraction of shares repurchased averaged 20% and the premium offered averaged 23%. Similarly, Vermaelen (1981) found an initial average premium of 23% and the fraction of shares bought as 15%. Dann (1981) and found an announcement effect of 15% and 16% respectively while Comment and Jarrell (1991) covering the period 1984 to 1989 found an average event return of 11% for a three-day window. These figures are higher than what has been generally observed for OMRs.

**Summary of major differences between OMRs and FPTs**

| Sl. No. | Points of difference | Open market repurchases | Fixed price tender offers |
|---|---|---|---|
| 1 | Popularity among companies | Very popular | Used to a limited extent |
| 2 | Price offered | Generally announced at current market price | Announced at premium to current market price |
| 3 | Quantity bought | Small quantities | Bought in larger quantities |
| 4 | Time taken to complete the process | A very long time; in US almost three years | Completed in a spec ific period of time |
| 5 | Motives behind the use | Used to distribute the free cash flow | Used to achieve a specific objective like improving market valuation, preventing hostile takeovers, etc. |
| 6 | Extent of market reaction | Very low | Market reacts favourably |
| 7 | Credibility of the offer | The market views with circumspection, unless the managers' wealth is at stake | The announcement sends strong signals about undervaluation or intention of buyback |

2.3. Dutch Auctions (DAs)

These are also called as reverse book building methods. Under this method, the firm offers to repurchase a specific quantity within a specified time period and at price agreed by shareholders. The firm indicates price-band at which it is willing to repurchase and repurchase only if it gets bids at lower range. Therefore, the Dutch auction is a price discovery method. The firm specifies only the range and expects shareholders to make bids for sale. The Dutch auctions are least popular method of repurchasing shares. Comment and Jarrell (1991) concluded that Dutch auctions are favoured by relatively large firms that are widely followed by security analysts and other informed investors. These are companies in which management owns a relatively low percentage of stock. Because of their stock is widely followed and management stakes are relatively low, these firms are 'ill-suited' to send strongly credible signals in premium repurchase offers. For such firms, Dutch auctions are likely to be substitutes for open-market repurchases. In terms of announcement returns, Comment and Jarrell (1991) found a return higher than OMR but lower than tender offers. The three-day announcement return was estimated by them at 8%.

2.4. Reverse Rights Method

It is also known as proportionate method. Under this method a firm buys shares from every shareholder. It is inverse to rights offer. There are no evidences of its use in US and India.

2.5. Other methods

The buyback provisions of Companies Act, 1956 permit companies in India to repurchases shares in odd-lot category and employees stock options. Since market dealings are in even lots only, the method is rarely used and can be employed to eliminate such odd lot shares. There is no empirical evidence of these methods in Indian context.

**3. Review of earlier literature**

Empirical research on buybacks has been

reaction to announcements, operating performance in post-buyback period, impact on promoters shareholding, methods used and method-wise market reaction, multiple buybacks, crowding effects of buybacks, credibility of offers, etc., have been studied by several authors both in the US and other nations. The available empirical evidence shows that FPTs have greater signalling power followed by DAs and OMRs. Comment and Jarrell (1991) report an abnormal return of 11% for FPTs, 8% for DAs, and only 2.3% for OMRs. They believe that the open market stock repurchase provide weak signals. Vermaelen (1981) also believed in strong signalling ability of fixed-price agreements and the Dutch auctions than open market repurchases. Later studies have reached similar conclusions, including Vermaelen (1984), Ofer and Thakor (1987), Stephens and Weisbach (1998), and McNally (1999). Hua Zhang (2002) finds a contradictory result for Japanese announcements. The author finds significant timing skills among Japanese firms in executing open market repurchases.

Share buybacks were introduced in India in October, 1998 through an amendment to Companies Act, 1956. Pitibash Mohanty (2002), Mishra (2005), Amitabh Gupta (2006), Kaur and Singh (2003) etc., have analysed the announcement effects for share buybacks of Indian companies for different periods and number of announcements. Mohanty (2002) employing a sample of 12 buybacks estimates a CAR of 11.25% for 61-day window period. The announcement day CAR was found by him at 3.86%. He concludes that buybacks in India have not been able to increase the shareholders' wealth perceptibly as argued by the financial economists in the US. Kaur and Singh (2003) using 'comparison period return approach', used by Masulis (1980) in analysing the stock-price behaviour around repurchase, recorded a mean daily return of 1.5% for 77 buy backs for 21-day window period. Mishra (2005) analyses 25 buybacks and finds a favourable reaction around the announcement date. However, he also concludes that this euphoria is only temporary and market price falls to the pre-offer level. Gupta (2006) finds a CAR of 12.69% for 61-day window period, significant at 5% level, for 46 buybacks announced between January 1, 1999 and March 15, 2004. The announcement day AAR and CAR were 1.67% and 11.82% respectively. The study finds that five out of seven companies which announced another buyback programme witnessed a decline in their AARs on days -1, 0 +1 in the second programme. Thirumalvalavan and Sunitha (2006) find a CAR of 2.35% over a five-day period for a sample of 22 companies announcing buybacks between 2002-2004 periods.

A company may accomplish its buyback process employing different methods. The signalling ability varies from method to method. Though literature in the US clearly demonstrates greater signalling ability of FPTs over OMRs, such an analysis in Indian context is a missing line. The present study fills this academic gap. We intend here to study how price behaves under different methods and which method is beneficial from shareholders point of view. Whether the signalling power varies over first and subsequent buybacks and over different window periods? Such an analysis will help corporate managers in making right selection of announcement method. The selection of a suitable method is a strategic decision and needs careful evaluation by corporate managers. Our analysis would provide some additional insights on aspects not covered by other studies.

## 4. Research Methodology

The announcement returns for buybacks have been studied in the present work using the standardised event returns approach, i.e., market model. The model takes explicit account of the risk associated with the market and mean returns, hence it is the most widely used method of predicting abnormal returns (J. F. Weston et al 2007). According to market model, the abnormal returns on a given trading day, t, are calculated as:

$$AR_{i,t} = R_{i,t} - \hat{\alpha}_i - \hat{\beta}_i R_{m,t}$$

Where $ARi,t$ is the abnormal return on security $i$ for day $t$, $Ri,t$ is the return on security $i$ for day $t$ and $Rm,t$ is the return a market index for day t, and are intercept and slope respectively and are estimated using the following equation:

$$R_{i,t} = \hat{\alpha}_i + \hat{\beta}_i R_{m,t} + \hat{\varepsilon}_{i,t}$$

For estimating the values of parameters of the model, a broad based market index or portfolio of securities is required. We employ BSE 500 Index

as a proxy for broad based market index or portfolio of securities as there are no broad based market indices. The values are predicted over the period on which no information related to the event is released. This period should be generally large and may be before or after the event period (Weston J F *et al.*, 2007). We employ 200 days before the event as estimation or clean period. In addition, the event studies involve use of window or event period over which the effect of announcement is evaluated. The study employs 3-day, 5-day, 7-day, 11-day and 41-day as event windows. In other words, if the event period is 41-days, this includes 20 days before, event day and 20 days after (-20, 0, +20) and the estimation period for this event period will be -220 days to -21 days.

The sample buyback announcements were considered on the basis of the following two criteria:

- Availability of media and /or public announcement date/s
- Availability of continuous price data both in event and estimation periods.

As against 140 announcements till March 2007, only 70 announcements fulfill both these conditions and hence the sample size is restricted to 70 announcements. Appendix 1 gives the details of these announcements. The media and/or public announcement dates were collected from CMIE sources, press reports and websites of equity analysts. The earlier of media or public announcement dates is taken as the announcement date. The adjusted daily closing prices are used for computing the event returns, which were accessed from CMIE Prowess database.

The average abnormal return on day *t* for all firms is ascertained as shown below:

$$AAR_t = \frac{\sum_{i=1}^{n} AR_{i,t}}{N},$$

*where N is the number of announcements in the sample.*

The daily average abnormal returns are cumulated over the window period for computing the CAR as shown below:

$$CAR = \sum_{t=-d}^{d} AAR_{i,t}$$

Where d; d represent the event or window period.

The study computes t-test and p-values (non-parametric) to test the null hypothesis that event returns are equal to zero using the following formulae:

$$t = \frac{CAR}{\hat{S}(CAR_t)} = \frac{\overline{CAR_t}}{\sqrt{N}\sum_{t=-1}^{n} \hat{S}(CAR_t)}$$

Where

$$\overline{CAR_t} = \frac{\sum_{t=-d}^{a} CAR_t}{N} \text{ and } \hat{S}(CAR_t) = \sqrt{\sum_{t=-a}^{a} (CAR_t - \overline{CAR})^2}$$

In addition to testing the significance of CAR, the study employs t-test or z-test values for testing the significance of daily average returns in 41-day window period. For this purpose, the study employs the approach used by Gupta (2006; 2008). The standard deviation of abnormal returns for the estimation period (200 days) has been computed. The Standardised Abnormal Returns (SAR) for each company is estimated by dividing abnormal returns of the event period, i.e., -20 to +20 by the standard deviation obtained. For the event day t, the Z-statistic for the AARs on N securities is calculated as:

$$Z_t = \sum_{i=1}^{N} SAR_{it} / \sqrt{N}$$

The remainder of the paper proceeds as follows. In the next few pages an analysis of the progress of the buybacks in India has been done followed by analysis of abnormal returns for all sample announcements. The analysis of average and cumulative abnormal returns method-wise, first and subsequent buybacks and year-wise is done in the next part. The last part of the article gives the conclusion.

### 4.1. Year-wise and method-wise classification of buybacks

Table 1 shows year-wise and method-wise classification of total and sample buyback announcements in India. Table 1 indicates wide fluctuations both in total and sample buyback announcements in India. There are 140 announcements till March 31, 2007 (SEBI's Status Report on Buybacks, 2007). 78.57% of

**Table 1**
**Year–wise and method–wise classification of total and sample buybacks**

| Year | Total buybacks announced in India | | | Sample selected for the study | | |
|---|---|---|---|---|---|---|
| | OMRs | FPTs | Total | OMRs | FPTs | Total |
| 1998-99 | 01 | -- | 01 | -- | -- | -- |
| 1999-00 | 10 | -- | 10 | -- | -- | -- |
| 2000-01 | 16 | -- | 16 | 02 | -- | 02 |
| 2001-02 | 18 | 02 | 20 | 14 | 02 | 16 |
| 2002-03 | 20 | 13 | 33 | 12 | 11 | 23 |
| 2003-04 | 19 | 09 | 28 | 08 | 01 | 09 |
| 2004-05 | 08 | 02 | 10 | 08 | 03 | 11 |
| 2005-06 | 11 | 03 | 14 | 04 | -- | 04 |
| 2006-07 | 07 | 01 | 08 | 04 | 01 | 05 |
| (till 31.3.2007) | | | | | | |
| **Total** | **110** | **30** | **140** | **52** | **18** | **70** |

Source: SEBI's status report

these announcements are OMRs and the rest are FPTs. The study has selected 70 sample announcements; out of which 75% are OMRs and the remaining are FPTs. OMRs outnumber FPTs in all the years in both total and sample. In fact, FPTs were employed by Indian companies only in 2001-02, after a gap of 3 years from the date of introduction of buyback. Grullon and Ikenberry (2000) found in their study such similar dominance by OMRs, which constituted nearly 95% to 98% of repurchase activity in US.

4.2. Method-wise classification of quantum of buybacks

Does quantum of repurchase announced by a firm vary with the methods? The research evidence available in the US shows that companies announce smaller quantities in OMRs and larger quantities in FPTs (Murali Jagnnathan, *et al.*, 2003). What is the evidence of India? Table 2 gives details relating to method-wise classification of quantum of buybacks:

**Table 2**
**Method-wise classification of quantum of buybacks**

| Year | Less than 10% | | ≥10% but <15% | | ≥15% but <20% | | ≥20% but <25% | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | OMRs | FPTs | OMRs | FPTs | OMRs | FPTs | OMRs | FPTs | OMRs | FPTs |
| 2000-01 | 01 | -- | -- | -- | 01 | -- | -- | -- | 02 | -- |
| 2001-02 | 08 | 01 | 03 | -- | 02 | 01 | 01 | -- | 14 | 02 |
| 2002-03 | 10 | 05 | 01 | 04 | -- | -- | 01 | 02 | 12 | 11 |
| 2003-04 | 05 | -- | 02 | 01 | -- | -- | 01 | -- | 08 | 01 |
| 2004-05 | 08 | 02 | -- | -- | -- | -- | -- | 01 | 08 | 03 |
| 2005-06 | 04 | -- | -- | -- | -- | -- | -- | -- | 04 | -- |
| 2006-07 | 03 | 01 | 01 | -- | -- | -- | -- | -- | 04 | 01 |
| **Total** | **39** | **09** | **07** | **05** | **03** | **01** | **03** | **03** | **52** | **18** |

Source: SEBI's Status Report on Buybacks

A perusal of Table-2 reveals that 50% of FPT announcements buy in excess of 10% where as in OMRs 75% of announcements repurchase less than 10%. This demonstrates that FPTs are used to mop up bigger quantities of floating stock from the market than OMRs. Though sample includes 18 FPTs and 52 OMR announcements, there are equal number of announcements in both the methods buying in excess of 20% but less than 25%, i.e., 16.67% announcements in FPTs bought in excess of 20% but less than 25%. This percentage for OMRs is only 5.8%.

## 5. Results and Analysis

5.1. Announcement returns and companies with positive AAR

As described in methodology, we compute

announcement effects of buyback by computing excess returns to the shareholders by using the 'time-tested' event returns measurement method, namely, the market model. The results are compiled for 41-day event window. We later on analyse for other events windows. Table 3 AAR and CAR for 70 announcements along with the distribution of companies with positive AAR:

The average abnormal return (AAR) on the announcement day for 70 sample announcements in India is 2.77%, which is

**Table 3**
**Announcement returns and companies with positive AAR**

| Days | 70 Announcements | | | |
|---|---|---|---|---|
| | AAR (%) | Z-test | Companies with +AAR | CAR (%) |
| -20 | 0.3221 | 1.1318 | 39(55.71) | 0.3221 |
| -19 | 0.0388 | 0.3573 | 34(48.57) | 0.3609 |
| -18 | -0.3756 | -0.3027 | 28(40.00) | -0.0147 |
| -17 | 0.4893 | 1.1556 | 37(52.86) | 0.4747 |
| -16 | 0.0053 | 0.2617 | 35(50.00) | 0.4799 |
| -15 | -0.1581 | 0.1012 | 33(47.14) | 0.3219 |
| -14 | -0.0230 | 0.0880 | 31(44.29) | 0.2989 |
| -13 | 0.2889 | 0.1202 | 30(42.86) | 0.5879 |
| -12 | 0.1295 | 0.7439 | 32(45.71) | 0.7174 |
| -11 | -0.4019 | -0.5558 | 27(38.57) | 0.3155 |
| -10 | 0.5717 | 1.0692 | 31(44.29) | 0.8872 |
| -9 | 0.5797 | 1.4987 | 34(48.57) | 1.4670 |
| -8 | 0.8010 | 0.6098 | 31(44.29) | 2.2770 |
| -7 | 0.4494 | 1.1099 | 33(47.14) | 2.7263 |
| -6 | 0.2819 | 0.2341 | 33(47.14) | 3.0082 |
| -5 | 1.3631 | 2.4467** | 40(57.14) | 4.3713 |
| -4 | -0.3567 | 0.0694 | 37(52.86) | 4.0147 |
| -3 | 0.2623 | 0.4179 | 34(48.57) | 4.2770 |
| -2 | 0.4795 | 0.4800 | 31(44.29) | 4.7564 |
| -1 | 0.3849 | 0.2950 | 32(45.71) | 5.1413 |
| 0 | **2.7652** | **-5.6073*** | **50(71.43)** | **7.9066** |
| 1 | -0.0998 | -0.5320 | 37(52.86) | 7.8068 |
| 2 | -0.8052 | -0.8571 | 33(47.14) | 7.0016 |
| 3 | 0.3474 | 0.8478 | 32(45.71) | 7.3489 |
| 4 | 0.7575 | 1.2434 | 41(58.57) | 8.1064 |
| 5 | -0.1686 | -0.0302 | 33(47.14) | 7.9378 |
| 6 | 0.8545 | 1.1392 | 37(52.86) | 8.7923 |
| 7 | -0.9585 | -0.9437 | 23(32.86) | 7.8338 |
| 8 | -0.0486 | -0.0514 | 34(48.57) | 7.7852 |
| 9 | -0.9463 | -0.8739 | 27(38.57) | 6.8389 |
| 10 | 0.6926 | 1.0755 | 43(61.43) | 7.5315 |
| 11 | -0.4143 | -0.1125 | 34(48.57) | 7.1172 |
| 12 | 0.0840 | -0.4106 | 31(44.29) | 7.2012 |
| 13 | 0.3574 | 0.0483 | 29(41.43) | 7.5587 |
| 14 | -0.4310 | -0.7212 | 27(38.57) | 7.1276 |
| 15 | -0.0875 | -0.1271 | 34(48.57) | 7.0402 |
| 16 | -0.5879 | -0.8750 | 31(44.29) | 6.4523 |
| 17 | -0.0628 | -0.1856 | 33(47.14) | 6.3894 |
| 18 | 0.8093 | 1.8246 | 40(57.14) | 7.1987 |
| 19 | -0.6660 | -1.3952 | 29(41.43) | 6.5326 |
| 20 | 0.7081 | 1.2648 | 36(51.43) | 7.2408 |
| Average | **0.1766** | | | **4.6717** |
| S.D | 0.6714 | | | 3.0887 |
| Sq. Root | 0.1049 | | | 0.4824 |
| Median | 0.1295 | | | 6.3894 |
| t-test | **1.6843** | | | **9.6850*** |

****& *indicates significance at 5% and 1% levels respectively.**
**Figures in parenthesis are percentages of companies with +AAR.**

window. The announcement day return is marginally lower than 3% found for the US announcements (Vermaelen, 1981; Dann, 1981; Comment and Jarrell, 1991; Laknoshiok, *et al.*, 1995). Schremper (2002) reports an announcement day abnormal return of 2.63% for 112 German share repurchases. The announcement day CAR is 7.91% while the overall CAR is 7.24%. Though the announcement day return is 2.77%, only 71% sample companies had positive AAR on the announcement day and the remaining announcements had negative returns, indicating that the positive announcement returns are not widely spread in India.

A close observation of the table shows that the movement of AAR and CAR are not in accordance with the signalling or undervaluation hypothesis. According to this hypothesis, buyback is announced to arrest negative trend in market prices in pre-buyback announcement period and market prices move positively in the post announcement period. For Indian buyback announcements, the market prices move positively in the pre-announcement period itself. The overall CAR shows an increasing trend from -10$^{th}$ day itself and is 5.14% on -1 day. The overall CAR on +1 day decreases to 7.81% and to 7% on +2 day. After showing some improvements in subsequent days, the overall CAR decreases to 7.24%, a fall of 0.67% in post-announcement period. The fall in overall CAR in post-announcement period indicates that buyback benefits only in the short-run and not on long-term basis. The returns are only temporary. Even Mohanty (2002) and Mishra (2005) find similar movements in their study.

Why are announcement returns positive in India in pre-announcement period? This could possibly be attributed to listing requirements. The listing requirements of stock exchanges in India insist on companies to intimate the date and agenda of the proposed board meeting one week in advance. This requirement could be influencing the movement in abnormal returns. In the US and other countries, no such mandatory disclosures exist and the announcement of buyback is a surprise element and market reacts favourably. The existence of this norm could work to the disadvantage of small and innocent investors who would not be privy to this price sensitive information. An investor who has an idea of this impending decision could enjoy all the gains arising out of the announcement than others. An investor who buys on -10$^{th}$ day and sells on +6$^{th}$ day, realises an annualised return of 182% [(8.7923 0.3155)/17 days x 365] for 17 days. On the other hand, an innocent investor buying after announcement and holding it till the last day looses 12.23% (-0.67/20 days x 365) annually.

A comparison of our results with similar studies on repurchases in India shows that the AAR on the announcement date of our study is little higher while the overall CAR is relatively lower. Gupta (2006) found an announcement day AAR of 1.66%, significant at 1% level and an overall CAR of 12.69% for 61-day window period. Mohanty (2002) finds an AAR of .56% and a CAR of 3.86% for 12 buybacks on the announcement day while his overall CAR was 11.25% for 61-day window. We use 41-day window period and find an overall CAR of 7.24%. The lower CAR estimated in our study may be due to lower window-period assumed or might be due to a larger sample of less attractive announcements. In another related study on Indian buybacks by Thirumalavalvan and Sunitha (2006) using a different approach of estimation a CAR, a CAR of 2.35% for a 5-day window period was found for a sample of 22 buybacks.

### 5.2. Method-wise announcement returns

The empirical evidence establishes that the OMRs are weak in signalling than FPTs and hence announcement returns are higher in FPTs than OMRs (Comment and Jarrell, 1991; Lakonishok, *et al.*, 1995). Hua Zhang (2002) finds a contrasting evidence for Japanese announcements. What is the Indian evidence? Do Indian FPTs generate announcement returns greater than OMRs? Table 4 provides information relating to this aspect.

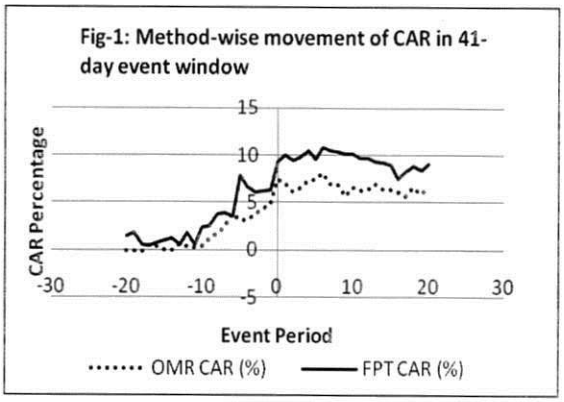
The AAR on the announcement day for OMRs is 2.69% and for FPTs 2.98%, both significant at 1% level. The CAR on the announcement day for OMRs is 7.43% and for FPTs it is 9.28%. These two measures of returns

**Table 4**
**Method-wise Announcement returns**

| Days | Open Market Repurchases 52 | | | | Fixed Price Tender Offers 18 | | | |
|---|---|---|---|---|---|---|---|---|
| | AAR (%) | t-test | No. of +AARs | CAR (%) | AAR (%) | t-test | No. of +AARs | CAR (%) |
| -20 | -0.0766 | 0.4795 | 26(50.00) | -0.0766 | 1.4738 | 1.4099 | 13(72.22) | 1.4738 |
| -19 | -0.0612 | -0.0984 | 23(44.23) | -0.1378 | 0.3278 | 0.8922 | 11(61.11) | 1.8017 |
| -18 | -0.0694 | 0.3592 | 23(44.23) | -0.2072 | -1.2601 | -1.2272 | 5(27.78) | 0.5415 |
| -17 | 0.6876 | 1.2979 | 28(53.85) | 0.4804 | -0.0834 | 0.0827 | 9(50.00) | 0.4582 |
| -16 | -0.0929 | 0.0548 | 24(46.15) | 0.3874 | 0.2891 | 0.4278 | 11(61.11) | 0.7473 |
| -15 | -0.3071 | -0.3940 | 21(40.38) | 0.0803 | 0.2726 | 0.8517 | 12(66.67) | 1.0198 |
| -14 | -0.1166 | -0.2928 | 21(40.38) | -0.0363 | 0.2475 | 0.6389 | 10(55.56) | 1.2674 |
| -13 | 0.6148 | 0.4591 | 26(50.00) | 0.5785 | -0.6523 | -0.5510 | 4(22.22) | 0.6149 |
| -12 | -0.2651 | -0.0369 | 21(40.38) | 0.3135 | 1.2694 | 1.5500 | 11(61.11) | 1.8843 |
| -11 | -0.0673 | -0.3029 | 22(42.31) | 0.2462 | -1.3684 | -0.5507 | 5(27.78) | 0.5159 |
| -10 | 0.0957 | 0.1090 | 22(42.31) | 0.3419 | 1.9468 | 1.8936 | 9(50.00) | 2.4627 |
| -9 | 0.7516 | 1.5190 | 25(48.08) | 1.0935 | 0.0834 | 0.3638 | 9(50.00) | 2.5461 |
| -8 | 0.6575 | 0.4736 | 21(40.38) | 1.7510 | 1.2504 | 0.4520 | 10(55.56) | 3.7964 |
| -7 | 0.5568 | 0.8530 | 26(50.00) | 2.3078 | 0.1390 | 0.7349 | 7(38.89) | 3.9354 |
| -6 | 0.5160 | 0.4179 | 27(51.92) | 3.8237 | -0.3942 | -0.2717 | 6(33.33) | 3.5412 |
| -5 | 0.3389 | -0.1338 | 25(48.08) | 3.1626 | 4.3220 | 5.1017 | 15(83.33) | 7.8632 |
| -4 | -0.0755 | 0.5203 | 30(57.69) | 3.0871 | -1.1690 | -0.7981 | 7(38.89) | 6.6943 |
| -3 | 0.5785 | 0.8274 | 29(55.78) | 3.6657 | -0.6514 | -0.6280 | 5(27.78) | 6.0429 |
| -2 | 0.5865 | 0.4213 | 22(42.31) | 4.2522 | 0.1701 | 0.2772 | 9(50.00) | 6.2130 |
| -1 | 0.4909 | 0.5301 | 26(50.00) | 4.7431 | 0.0788 | -0.3233 | 6(33.33) | 6.2918 |
| 0 | **2.6897** | **4.3778*** | **38(73.08)** | **7.4328** | **2.9836** | **3.5873*** | **12(66.67)** | **9.2753** |
| 1 | -0.3910 | -1.1164 | 25(48.08) | 7.0418 | 0.7414 | 0.8421 | 12(66.67) | 10.0168 |
| 2 | -0.8933 | -0.5257 | 23(44.23) | 6.1485 | -0.5509 | -0.7758 | 10(55.56) | 9.4659 |
| 3 | 0.3581 | 0.7931 | 24(46.15) | 6.5066 | 0.3163 | 0.3818 | 8(44.44) | 9.7822 |
| 4 | 0.7953 | 1.0615 | 30(57.69) | 7.3020 | 0.6483 | 0.6296 | 11(61.11) | 10.4305 |
| 5 | 0.0770 | -0.0097 | 23(44.23) | 7.3790 | -0.8783 | -0.0897 | 10(55.56) | 9.5522 |
| 6 | 0.7161 | 0.7024 | 28(53.85) | 8.0951 | 1.2542 | 1.0798 | 9(50.00) | 10.8064 |
| 7 | -1.1865 | -1.0247 | 17(32.69) | 6.9086 | -0.2998 | -0.1120 | 6(33.33) | 10.5065 |
| 8 | -0.0182 | -0.1144 | 25(48.08) | 6.8904 | -0.1364 | 0.0948 | 9(50.00) | 10.3701 |
| 9 | -1.1903 | -0.8813 | 17(32.69) | 5.7001 | -0.2415 | -0.1938 | 10(55.56) | 10.1286 |
| 10 | 0.9254 | 1.3505 | 34(65.38) | 6.6255 | 0.0202 | -0.2179 | 9(50.00) | 10.1487 |
| 11 | -0.3875 | 0.0999 | 28(53.85) | 6.2380 | -0.4916 | -0.3489 | 6(33.33) | 9.6571 |
| 12 | 0.1298 | -0.7349 | 24(46.15) | 6.3678 | -0.0481 | 0.4068 | 7(38.89) | 9.6090 |
| 13 | 0.6026 | 0.4627 | 23(44.23) | 6.9704 | -0.3509 | -0.6616 | 6(33.33) | 9.2581 |
| 14 | -0.5485 | -0.8268 | 19(36.54) | 6.4219 | -0.0917 | -0.0269 | 8(44.44) | 9.1664 |
| 15 | -0.0543 | 0.0599 | 26(50.00) | 6.3677 | -0.1834 | -0.3271 | 8(44.44) | 8.9831 |
| 16 | -0.2674 | -0.4866 | 25(48.08) | 6.1002 | -1.5138 | -0.9123 | 6(33.33) | 7.4693 |
| 17 | -0.3778 | -0.3065 | 23(44.23) | 5.7224 | 0.8471 | 0.1763 | 10(55.56) | 8.3164 |
| 18 | 0.9014 | 1.7730 | 30(57.69) | 6.6238 | 0.5431 | 0.6095 | 10(55.56) | 8.8594 |
| 19 | -0.7467 | -1.3811 | 21(40.38) | 5.8771 | -0.4328 | -0.4107 | 8(44.44) | 8.4266 |
| 20 | **0.7079** | **0.7986** | **26(50.00)** | **6.5850** | **0.7088** | **1.1470** | **10(55.56)** | **9.1354** |
| Average | **0.1606** | | | **4.1015** | **0.2228** | | | **6.3189** |
| S.D | 0.6835 | | | 2.8892 | 1.1090 | | | 3.7366 |
| Sq. Root | 0.1067 | | | 0.4512 | 0.1732 | | | 0.5836 |
| Median | 0.07703 | | | 5.7001 | 0.0788 | | | 7.8632 |
| t-test | **1.5046** | | | **9.0899*** | **1.2864** | | | **10.8282*** |

*** indicates significance at 1% level. Figures in parenthesis are percentages of companies with +AAR.**

on the announcement day indicate that FPTs in India, like in the US, signal better than OMRs. The overall CAR for 41-day window period decreases to 6.59% for OMRs and for FPTs 9.14%. Figure -1 depicts the pictorial movement of CAR for OMRs and FPTs.




We observe a negative trend in AAR and CAR for OMRs in -20 days, which is arrested from -13th day onwards. The CAR from -.5785% on -13th day shows a continuous increasing trend till the announcement period. A positive movement in -20 day period is a surprising element as signalling theory predicts that OMRs are used to arrest negative trend in pre-announcement period. A positive movement is a pointer at the fact that the market has an understanding of impending buyback announcement even prior to announcement itself. In the post-announcement period, the CAR falls from 7.43% to 6.58%. The decrease is due to negative AAR in post-announcement period. AAR is negative for 11 days out of 20 days. The investors who buy in pre-announcement period pocket greater benefits than those who buy in post-announcement period. The annualised return for an investor who buys on -13th day and sells on +20th day is 71% for 34 days. The investor would earn a return of 148% for 20 day period if he sells on +6th day.

The movement of CAR has been positive for all days under the FPT method though AAR shows negative trend sporadically. The CAR moves appreciably in post-announcement period reaching a peak of 10.81% on 6th day. The fall in overall CAR from its peak level to closing day of the event window is by 1.67%. Like OMRs, FPTs benefit the investor who buys in pre-announcement period than in post-announcement. The annualised return for 41-day period is 81% while it is 146% for 27 days, i.e., buying on -20th day and selling on +6th day.

Though event returns are higher in FPTs, the gains are not widely spread. We find from Table 3 that 70% of total announcements had positive AAR on the announcement day. OMRs generate positive returns across 73% of announcements while FPTs, 67%. OMRs continue to be spreading the positive effects in both pre and post announcements across more companies than FPTs.

### 5.3. Announcement returns for first and subsequent buybacks

We further investigate into announcement returns method-wise by classifying buybacks into first and subsequent buybacks. There are 42 first and 28 subsequent buybacks in the sample of 70 announcements. Table -5 shows the classification of multiple buybacks in India, method-wise:

**Table 5**
**Multiple buybacks in sample**

| | OMRs | FPTs | Total |
|---|---|---|---|
| First | 30 | 12 | 42 |
| Second | 13 | 04 | 17 |
| Third | 05 | 02 | 07 |
| Fourth | 02 | -- | 02 |
| Fifth | 01 | -- | 01 |
| Sixth | 01 | -- | 01 |
| **Total** | **52** | **18** | **70** |

Source: SEBI's Status Report

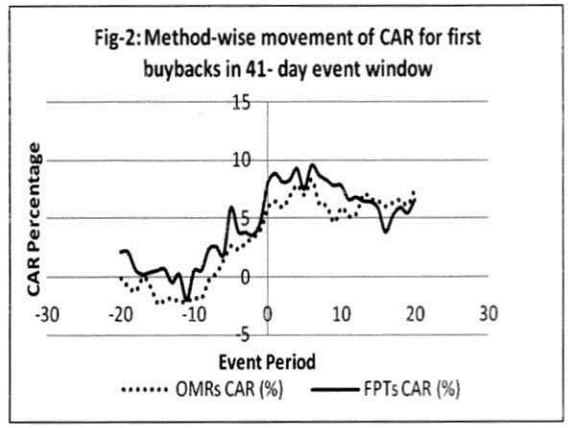
Out of a sample of 70 buyback announcements, 52 announcements pertain to OMRs and 18 are FPTs. 60% of sample announcements are first buybacks and 25% are second buybacks. India has seen very few third and subsequent buybacks. OMRs are nearly 75% of total buybacks and 58% of such OMRs are first buybacks. There are very few subsequent buybacks under FPT method.

Table 6 shows the announcement returns for first buybacks method-wise:

The sample includes 30 first buybacks of OMRs and 12 FPTs. The AAR for OMRs is 1.88% while for FPTs it is 3.34% on the announcement day. The CAR on the announcement day for OMRs is 5.94% which increases to 7.57% by the end of window period. The CAR for FPTs decreases to 6.59% from 8.01% on the announcement day. As far as distribution of

companies with positive AARs is concerned 70% sample announcements in OMR report positive AAR while for FPTs it is 66.67%. These percentages for both the methods are highest on the announcement day as compared to all other days. Figure -2 shows the pictorial movement of CAR for first buybacks for both the methods.

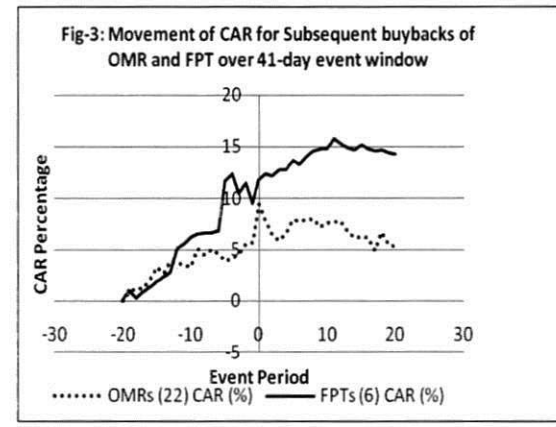
A comparison of the results of Tables 4 and 6 shows a contradiction. For total FPT announcements, the method yields returns higher than OMRs. But when analysis is carried on the basis of first buybacks, OMRs yield 7.57% overall CAR for the same window period as against 6.59% for FPTs, a difference of almost 1%. What could explain this difference in results? These are difficult questions to answer. We may attribute this to market imperfections or the inability to read the managerial actions properly. US markets are well developed and the provision of information is also highly standardised. Indian investors suffer from limited information and fail to identify properly between OMRs and FPTs.




We also investigate whether first-time buyers indulge in any kind of insider trading by observing the price movement in pre-announcement period. Under OMRs, CAR is negative till -8th day and is positive for subsequent days. It shows an increasing trend from -7th day onwards. In case of FPTs, CAR has been positive for all days even in pre-announcement period. Overall conclusion is that the particular listing rule of informing stock exchanges in advance is playing a crucial role in determining the extent of announcement returns in India. This calls for change in the rule to prevent its abuse by interested persons.

The number of subsequent buybacks is less than first buybacks for both the methods. There are 22 subsequent OMRs and 6 FPTs. The research evidence in the US shows that CAR is lower in subsequent buybacks than first buybacks. In other words, subsequent buybacks have lower signalling ability than first buybacks (Murali Jagnnathan and Clifford Stephens, 2003). They also conclude in the same study that infrequent repurchases are greeted more favourably than frequent repurchases. The announcement of infrequent or first repurchase is accompanied by abnormal returns averaging about 2.5%; the subsequent buybacks or frequent repurchases, result in significantly lower abnormal returns, averaging 1.37% for second and 0.86% for third buybacks.

Table 7 gives details relating to announcement returns for subsequent buybacks method wise. A perusal of Table 7 shows an announcement day AAR of 3.8% for OMRs and 2.27% for FPTs. However, the announcement day CAR and overall CAR are higher under FPT method than under OMRs. The overall CAR for subsequent OMRs is 7.24% while for FPTs it is 14.22%. A comparison of Table 6 and 7 yield contradictory results for multiple buybacks under different methods. Shareholders gain more when firms use FPTs for subsequent buybacks than for first buybacks. The overall CAR for OMRs in first buybacks is 7.57% and for subsequent buybacks it is 5.24%. For FPTs, the results are 6.59% and 14.22% for first and subsequent buybacks respectively. Fig.3 gives the pictorial movement of CAR for subsequent buybacks under OMR and FPT methods.




Due to limited number of subsequent buybacks, we are constrained in concluding that FPT method is good for subsequent buybacks and OMR for first buybacks. The higher returns in subsequent buybacks under FPT method may be

**Table 6**
**Announcement returns for first buybacks under OMRs and FPTs**

| Window Period | First Buyback Open Market Repurchases (30) | | | | First Buyback Fixed Price Tender Offers (12) | | | |
|---|---|---|---|---|---|---|---|---|
| Days | AAR (%) | t-test | CAR (%) | % of Cos with +ve AAR | AAR (%) | t-test | CAR (%) | % of Cos with +ve AAR |
| -20 | -0.1165 | 0.5722 | -0.1165 | 50.00 | 2.1580 | 1.5987 | 2.1580 | 66.67 |
| -19 | -0.7285 | -0.2244 | -0.8451 | 40.00 | -0.0149 | 0.4191 | 2.1431 | 50.00 |
| -18 | -0.3827 | -0.5837 | -1.2278 | 43.33 | -1.4955 | -0.8630 | 0.6476 | 33.33 |
| -17 | 1.2156 | 1.5191 | -0.0122 | 53.33 | -0.4222 | -0.3017 | 0.2255 | 33.33 |
| -16 | -0.8530 | -0.5476 | -0.8652 | 46.67 | 0.1835 | 0.2523 | 0.4090 | 58.33 |
| -15 | -1.4215 | -1.2452 | -2.2867 | 36.67 | 0.1618 | 0.7664 | 0.5708 | 58.33 |
| -14 | 0.2947 | 0.9937 | -1.9920 | 46.67 | 0.1190 | 0.3722 | 0.6898 | 66.67 |
| -13 | 0.1612 | 0.3774 | -1.8308 | 56.67 | -1.1753 | -1.2485 | -0.4854 | 8.33 |
| -12 | -0.3349 | -0.4231 | -2.1657 | 40.00 | 0.7285 | 0.2299 | 0.2431 | 66.67 |
| -11 | 0.0813 | 0.1423 | -2.0844 | 43.33 | -2.2213 | -1.0659 | -1.9782 | 25.00 |
| -10 | 0.2789 | 0.0960 | -1.8055 | 36.67 | 2.5309 | 1.9067 | 0.5528 | 58.33 |
| -9 | -0.0080 | 0.2381 | -1.8135 | 43.33 | 0.0112 | 0.2103 | 0.5640 | 41.67 |
| -8 | 1.5816 | 1.8513 | -0.2318 | 50.00 | 1.8022 | 0.3140 | 2.3662 | 58.33 |
| -7 | 0.5682 | 0.4673 | 0.3364 | 50.00 | 0.2263 | 0.8128 | 2.5925 | 41.67 |
| -6 | 1.1806 | 0.8655 | 1.5169 | 56.67 | -0.6983 | -0.4497 | 1.8943 | 25.00 |
| -5 | 1.1583 | 1.0544 | 2.6752 | 63.33 | 4.0370 | 2.8741* | 5.9312 | 75.00 |
| -4 | -0.3258 | 0.7066 | 2.3495 | 56.67 | -2.0575 | -1.6117 | 3.8737 | 41.67 |
| -3 | 0.6206 | 0.2746 | 2.9700 | 50.00 | -0.0689 | 0.2003 | 3.8048 | 25.00 |
| -2 | 0.3900 | -0.4048 | 3.3601 | 40.00 | -0.2373 | -0.3266 | 3.5675 | 33.33 |
| -1 | 0.7065 | 0.3005 | 4.0666 | 53.33 | 1.1061 | 1.1406 | 4.6736 | 33.33 |
| **0** | 1.8781 | 1.9305 | 5.9447 | 70.00 | 3.3367 | 3.4401* | 8.0102 | 66.67 |
| 1 | 0.5132 | 0.5508 | 6.4579 | 53.33 | 0.8473 | 0.7378 | 8.8575 | 66.67 |
| 2 | -0.5047 | -0.0401 | 5.9532 | 50.00 | -0.7383 | -1.0289 | 8.1192 | 41.67 |
| 3 | 1.0332 | 1.7797 | 6.9864 | 53.33 | 0.1711 | 0.1588 | 8.2904 | 41.67 |
| 4 | 0.8636 | 0.5841 | 7.8499 | 60.00 | 0.9795 | 0.7625 | 9.2698 | 58.33 |
| 5 | -0.8547 | -1.3376 | 6.9952 | 33.33 | -1.7728 | -0.6595 | 7.4970 | 50.00 |
| 6 | 1.3378 | 1.0425 | 8.3330 | 53.33 | 2.0600 | 1.5920 | 9.5570 | 50.00 |
| 7 | -2.1308 | -2.1449** | 6.2022 | 16.67 | -0.8392 | -0.7435 | 8.7178 | 16.67 |
| 8 | -0.1299 | -0.4912 | 6.0724 | 43.33 | -0.4338 | -0.3858 | 8.2840 | 33.33 |
| 9 | -1.4329 | -0.8690 | 4.6395 | 26.67 | -0.4793 | -0.4334 | 7.8048 | 50.00 |
| 10 | 1.2698 | 0.9916 | 5.9093 | 63.33 | 0.0202 | -0.1864 | 7.8250 | 50.00 |
| 11 | -0.7463 | -0.1253 | 5.1631 | 56.67 | -1.2111 | -0.6780 | 6.6139 | 25.00 |
| 12 | 0.2086 | -1.1415 | 5.3716 | 46.67 | 0.1904 | 0.7062 | 6.8043 | 41.67 |
| 13 | 1.7130 | 1.9197 | 7.0846 | 63.33 | -0.3301 | -0.5613 | 6.4742 | 33.33 |
| 14 | -0.4449 | -0.3997 | 6.6397 | 33.33 | -0.0695 | 0.0986 | 6.4047 | 33.33 |
| 15 | -0.1562 | -0.0205 | 6.4835 | 46.67 | -0.5205 | -0.5143 | 5.8841 | 33.33 |
| 16 | -0.4670 | -0.6022 | 6.0165 | 46.67 | -2.0702 | -0.6623 | 3.8139 | 41.67 |
| 17 | 0.3389 | 0.8812 | 6.3554 | 53.33 | 1.3997 | 0.4635 | 5.2137 | 58.33 |
| 18 | 0.2179 | -0.2755 | 6.5733 | 53.33 | 0.7322 | 0.4722 | 5.9458 | 50.00 |
| 19 | -0.4231 | -0.1288 | 6.1502 | 43.33 | -0.4854 | -0.1235 | 5.4604 | 58.33 |
| 20 | 1.4178 | 1.7396 | 7.5679 | 63.33 | 1.1316 | 1.3977 | 6.5919 | 58.33 |
| **Avg** | **0.1846** | **0.2408** | **3.2865** | | **0.1608** | | **4.5337** | |
| Std dev | 0.9146 | 0.9572 | 3.6051 | | 1.3876 | | 3.2534 | |
| Sqrt | 0.1428 | 0.1495 | 0.5630 | | 0.2167 | | 0.5081 | |
| **t-test** | **1.2923** | **1.6109** | **5.8373*** | | **0.7419** | | **8.9231*** | |

*** and ** indicates significance at 1% and 5% level respectively.**

on account of limited number of announcements or better timing of the announcement. Hua Zhang (2002) concludes in his study on Japanese announcements that the Japanese companies time their announcements better and are able to report greater returns for OMRs than FPTs. A further research in this aspect is very much desired in the Indian context.

5.4. Announcement returns for different window periods

We employ several window periods for measuring announcement returns. There are

**Table 7**
**Method-wise announcement returns for subsequent buybacks**

| Window Period | Subsequent Buyback Open Market Repurchases (22) | | | | Subsequent Buyback Fixed Price Tender Offers (06) | | | |
|---|---|---|---|---|---|---|---|---|
| Days | AAR (%) | t-test | CAR (%) | % of Co with +ve AAR | AAR (%) | t-test | CAR (%) | % of Co with +ve AAR |
| -20 | -0.0221 | 0.0690 | -0.0221 | 50.00 | 0.1055 | 0.1704 | 0.1055 | 83.33 |
| -19 | 0.8488 | 0.1108 | 0.8267 | 50.00 | 1.0133 | 0.9517 | 1.1188 | 83.33 |
| -18 | 0.3578 | 1.2340 | 1.1846 | 45.45 | -0.7894 | -0.8622 | 0.3294 | 16.67 |
| -17 | -0.0324 | 0.2215 | 1.1521 | 54.55 | 0.5942 | 0.5523 | 0.9235 | 83.33 |
| -16 | 0.9435 | 0.7237 | 2.0956 | 45.45 | 0.5004 | 0.3846 | 1.4239 | 66.67 |
| -15 | 1.2125 | 0.8484 | 3.3081 | 45.45 | 0.4940 | 0.4117 | 1.9179 | 83.33 |
| -14 | -0.6775 | -1.6105 | 2.6306 | 31.82 | 0.5046 | 0.5914 | 2.4225 | 33.33 |
| -13 | 1.2334 | 0.2652 | 3.8640 | 40.91 | 0.3931 | 0.7743 | 2.8156 | 50.00 |
| -12 | -0.1699 | 0.4373 | 3.6941 | 40.91 | 2.3511 | 2.3403** | 5.1667 | 50.00 |
| -11 | -0.2699 | -0.6319 | 3.4242 | 40.91 | 0.3374 | 0.5643 | 5.5041 | 33.33 |
| -10 | -0.1541 | 0.0555 | 3.2701 | 50.00 | 0.7785 | 0.6169 | 6.2826 | 33.33 |
| -9 | 1.7873 | 2.0572** | 5.0574 | 54.51 | 0.2276 | 0.3424 | 6.5102 | 66.67 |
| -8 | -0.6026 | -1.4338 | 4.4548 | 27.27 | 0.1467 | 0.2409 | 6.6569 | 50.00 |
| -7 | 0.5412 | 0.7657 | 4.9961 | 50.00 | -0.0357 | 0.1232 | 6.6212 | 33.33 |
| -6 | -0.3903 | -0.3682 | 4.6058 | 45.45 | 0.2139 | 0.1614 | 6.8352 | 50.00 |
| -5 | -0.7785 | -1.4369 | 3.8272 | 27.27 | 4.8921 | 4.7604* | 11.7273 | 100.00 |
| -4 | 0.2658 | -0.0253 | 4.0931 | 59.09 | 0.6082 | 0.9140 | 12.3354 | 33.33 |
| -3 | 0.5212 | 0.9513 | 4.6142 | 63.64 | -1.8163 | -1.3590 | 10.5191 | 33.33 |
| -2 | 0.8545 | 1.1204 | 5.4688 | 45.45 | 0.9849 | 0.9343 | 11.5041 | 83.33 |
| -1 | 0.1970 | 0.4641 | 5.6657 | 45.45 | -1.9759 | -2.1784** | 9.5282 | 33.33 |
| **0** | 3.7963 | 4.4761* | 9.4620 | 77.27 | 2.2775 | 1.4163 | 11.8056 | 66.67 |
| 1 | -1.6241 | -2.3596* | 7.8380 | 40.91 | 0.5296 | 0.4348 | 12.3352 | 66.67 |
| 2 | -1.4231 | -0.7614 | 6.4148 | 36.36 | -0.1761 | 0.1180 | 12.1592 | 83.33 |
| 3 | -0.5629 | -0.8589 | 5.8525 | 36.36 | 0.6066 | 0.4125 | 12.7658 | 50.00 |
| 4 | 0.7023 | 0.9499 | 6.5547 | 54.55 | -0.0140 | 0.0028 | 12.7518 | 66.67 |
| 5 | 1.3476 | 1.5471 | 7.9023 | 59.09 | 0.9106 | 0.7837 | 13.6625 | 66.67 |
| 6 | -0.1316 | -0.1375 | 7.7707 | 54.55 | -0.3575 | -0.3551 | 13.3050 | 50.00 |
| 7 | 0.1013 | 0.9293 | 7.8720 | 54.55 | 0.7789 | 0.8432 | 14.0839 | 66.67 |
| 8 | 0.1340 | 0.3977 | 8.0060 | 54.55 | 0.4584 | 0.7067 | 14.5422 | 83.33 |
| 9 | -0.8594 | -0.3401 | 7.1465 | 40.91 | 0.2339 | 0.2537 | 14.7762 | 66.67 |
| 10 | 0.4557 | 0.9183 | 7.6022 | 68.18 | 0.0201 | -0.1066 | 14.7963 | 50.00 |
| 11 | 0.1017 | 0.2998 | 7.7039 | 50.00 | 0.9473 | 0.3427 | 15.7436 | 50.00 |
| 12 | 0.0223 | 0.2032 | 7.7262 | 45.45 | -0.5251 | -0.2889 | 15.2185 | 33.33 |
| 13 | -0.9116 | -1.5304 | 6.8146 | 18.18 | -0.3926 | -0.3701 | 14.8259 | 33.33 |
| 14 | -0.6896 | -0.8044 | 6.1249 | 40.91 | -0.1360 | -0.1687 | 14.6810 | 66.67 |
| 15 | 0.0847 | 0.1161 | 6.2097 | 54.55 | 0.4910 | 0.1601 | 15.1810 | 66.67 |
| 16 | 0.0046 | -0.0449 | 6.2143 | 50.00 | -0.4010 | -0.6421 | 14.7799 | 16.67 |
| 17 | -1.3552 | -1.5003 | 4.8592 | 31.82 | -0.2581 | -0.3598 | 14.5219 | 50.00 |
| 18 | 1.8335 | 3.0476* | 6.6926 | 63.64 | 0.1648 | 0.3941 | 14.6867 | 66.67 |
| 19 | -1.1880 | -1.9729** | 5.5046 | 36.36 | -0.3277 | -0.5299 | 14.3590 | 16.67 |
| 20 | -0.2601 | -0.8037 | 5.2445 | 31.82 | -0.1367 | 0.0132 | 14.2223 | 50.00 |
| **Avg** | **0.1279** | **0.1363** | **5.2129** | | **0.3469** | **0.3292** | **9.8893** | |
| Std dev | 1.0131 | 1.3058 | 2.2489 | | 1.0781 | 1.0239 | 5.2057 | |
| Sqrt | 0.1582 | 0.2039 | 0.3512 | | 0.1684 | 0.1599 | 0.8130 | |
| **t test** | **0.8084** | **0.6684** | **14.8422*** | | **2.0603** | **2.0584** | **12.1641*** | |

* and ** indicates significance at 1% and 5% level, respectively.

varied views on type of window-period to be used for event studies. Gregory *et al.* (2001) recommend a shorter period of only 3 days for better understanding event effects. Such an event period captures the full effect of announcement of specific events. However, such a short period does not indicate the market behaviour in pre and post announcement periods. We recognise the merits of both the methods and employ short and long event windows. In addition to 41-day event window, we have computed the announcement returns for 3-day, 5-day, 7-day, 11-day and 21-day windows. Table 8 reports announcement returns on these lines:

It can be discerned from Table 8 that, by and large, FPTs generate greater CAR than OMRs for various windows considered here. Even the announcement day AAR and CAR are higher for tender offers than for open offers in both first and subsequent buybacks. Further, the announcement returns are higher for longer windows than for shorter windows for both the methods. It is very difficult to conclude that longer-windows are better reflectors of event returns than shorter-windows on the basis of these results. In India, the listing norms require companies to inform the concerned stock exchanges the date of proposed board meeting with agenda one week in advance. This particular norm could be playing a major role and a longer window reflects these days than a shorter window.

**Table 8**
**Method-wise announcement returns for different window periods**

| First buyback of open market repurchases (30) | | | | | | |
|---|---|---|---|---|---|---|
| | **-1;+1** | **-2;+2** | **-3;+3** | **-5;+5** | **-10;+10** | **-20;+20** |
| **AAR% on AD** | 1.8412 | 1.8319 | 1.6552 | 1.8390 | 1.8628 | 1.8781 |
| **CAR% on AD** | 2.5305 | 2.9679 | 3.2768 | 4.2964 | 7.7876 | 5.9446 |
| **Overall CAR%** | 3.0208 | 2.8231 | 4.3892 | 4.8408 | 7.3280 | 7.5680 |
| **t-test** | 2.9310* | 3.7073* | 5.2479* | 6.0264* | 8.9011* | 5.8373* |
| **First buyback of fixed price tender offer (12)** | | | | | | |
| **AAR% on AD** | 3.3140 | 3.2991 | 3.2987 | 3.3169 | 3.3273 | 3.3366 |
| **CAR% on AD** | 4.3781 | 4.0616 | 3.9865 | 5.9790 | 9.8763 | 8.0101 |
| **Overall** | 5.2059 | 4.1172 | 4.1905 | 5.3927 | 9.6639 | 6.5919 |
| **CAR% t-test** | 2.8050* | 2.6267** | 2.8803* | 6.9348* | 11.7578* | 8.9231* |
| **Subsequent buyback of Open market repurchases (22)** | | | | | | |
| **AAR% on AD** | 9.3388 | 12.6755 | 9.2618 | 3.1658 | 3.2384 | 3.7963 |
| **CAR% on AD** | 9.2536 | -15.4276 | 4.7219 | 4.0989 | 4.9187 | 9.4620 |
| **Overall** | -0.5493 | -22.8673 | -11.5527 | 2.9319 | 3.2667 | 5.2445 |
| **CAR% t-test** | 0.8998 | -8.5611* | -1.3550 | 2.6575** | 6.5292* | 14.8422* |
| **Subsequent buyback of fixed price tender offer (6)** | | | | | | |
| **AAR% on AD** | 2.2431 | 2.2442 | 2.2379 | 2.2707 | 2.2638 | 2.2775 |
| **CAR% on AD** | 0.2382 | 1.1795 | -0.7069 | 4.9014 | 6.1476 | 11.8056 |
| **Overall** | 0.7054 | 1.4113 | 0.0595 | 6.6141 | 8.9607 | 14.2223 |
| **CAR% t-test** | -0.4229 | 1.6923 | -2.5654** | 15.2207* | 8.8567* | 12.1641* |

* and ** indicates significance at 1% and 5% level respectively.

Figures in parenthesis are percentages of companies with +AAR.

5.5. Year-wise announcement results for OMRs and FPTs

Do announcement returns vary across the years? The announcement year, per se, cannot determine the announcement returns. However, crowding effect cannot be ruled out. In years of higher number of repurchases, the announcement

returns could be depressed than the years of fewer repurchases. Therefore, the number of buybacks announced may be a determining factor in announcement returns. This logic could be extended to methods also. In years of higher OMRs, the returns could be depressed than in the years of fewer OMRs. The same is true for FPTs. Year-wise break-up has been revealed in earlier tables. The year 2002-03 has higher number of announcements followed by 2001-02 and 2004-05 in the sample. In all these years, OMRs exceed FPTs. Table 9 shows details relating to year-wise announcement returns:

It cannot be said from the results obtained in Table 9 that there is a crowding effect. The year 2002-03 with greater OMRs saw higher announcement returns in all window periods except in 21-day period. The same is true even for 2004-05. Only in the year 2003-04, the announcement returns for FPT exceed OMRs and

**Table 9**
**Year-wise announcement return for different window periods**

| Year | 2000 – 01 CAR (%) | 2001 – 02 CAR (%) | | 2002 - 03 CAR (%) | | 2003 – 04 CAR (%) | | 2004 – 05 CAR (%) | | 2005 – 06 CAR (%) | 2006-07 CAR (%) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. of BB | 2 BB | 16 BB | | 23BB | | 9BB | | 11BB | | 4 BB | 5BB | |
| Method of BB | OMR (2) | OMR (14) | FPT (2) | OMR (12) | FPT (11) | OMR (8) | FPT (1) | OMR (8) | FPT (3) | OMR (4) | OMR (4) | FPT (1) |
| -1 ; +1 | -1.3678 | 0.7824 | -7.2419 | 5.5764 | 3.7944 | -2.2980 | 14.0952 | 4.7671 | **6.5463** | **-3.5245** | -0.5624 | 5.7152 |
| -2 ; +2 | -1.3655 | -0.0268 | -5.7891 | -26.7823 | 1.8191 | -16.7367 | 13.7696 | 6.6044 | 9.5205 | -1.8557 | -1.3538 | 7.1112 |
| -3 ; +3 | -1.5143 | -1.2619 | -7.2946 | 10.1158 | 4.3650 | -31.0863 | 11.9309 | 6.7317 | -0.9027 | -6.2923 | -0.7926 | 7.9952 |
| -5 ; +5 | 0.3823 | 1.0795 | 3.3993 | 4.5224 | 4.3591 | 9.7379 | 19.5564 | 9.2489 | 3.9616 | -5.4781 | 2.3998 | 7.6680 |
| -10; +10 | 8.2246 | -0.6505 | 13.0064 | 7.2378 | 8.0206 | 14.6962 | 18.7647 | 8.4233 | 9.6241 | 0.8213 | 2.3175 | 7.8537 |
| 20; +20 | 18.7830 | 0.9770 | 18.6305 | 7.5774 | 7.1946 | 8.2165 | 32.4259 | 13.3911 | 5.0176 | 5.1497 | 1.6967 | 0.5564 |

for all the years and for majority of windows, the OMRs yield greater returns. This year-wise result is contradictory to what has been generally argued for tender offers.

## 6. Conclusion

It is a well documented truth in the US that OMRs yield lower announcement returns than FPTs. We get a mixed bag of results for the Indian buybacks. When announcement returns are computed for all sample announcements method-wise, the CAR for FPTs is appearing to be greater than OMRs. The subdivision of announcements into first and subsequent buybacks shows that the returns are high for OMRs in first buybacks while FPTs generate greater returns for subsequent buybacks. In short and long windows, the FPTs yield higher benefits to shareholders than the OMRs. The year-wise analysis again yields contradictory result. The standard method of analysis is to compute returns for all buybacks method-wise and using this approach we can conclude that OMRs are poor in signalling than FPTs, a conclusion similar to that obtaining in the US.

The gains to shareholders are greater if firms employ FPTs than OMRs. We find an annualised return of 81% for FPTs and 48.22% for OMR in 41-day period. When OMRs are really less profitable than FPTs, why do firms prefer OMRs to FPTs? In India and in the USA, OMRs average 90% of total announcements. What makes firms prefer OMRs over FPTs? What should guide a firm in selecting suitable methods of buyback - the shareholders welfare or flexibility involved in the method? The answer lies in the fact that OMR is more practicable, flexible and hassle-free method of returning cash flows amongst the shareholders. Factors which normally influence the selection process include the extent of cash available for distribution, quantity intended to be bought back, ratio of market value to book value, promoters' shareholding percentage, etc. Therefore, OMRs are preferred if firms want to distribute free cash flows over an extended period, fairly valued, faces no threat of takeovers, promoters' holding is high, etc. Corporate managers must weigh all these factors in selecting suitable method for the announcement of buyback of shares. The selection of wrong method can cost shareholders dearly.

Though the study finds announcement effects method-wise and yields results similar to the US, we conclude that buyback is still not a serious proposition for Corporate India. Even after a decade, buybacks are yet to emerge in a big way and are not employed as substitute for dividends. In the US context, share repurchase is an

free cash flows among shareholders. Therefore, further research into substitution of share buybacks for dividends needs to be investigated. A clear research is warranted into the effect of listing norm on market prices. Intra-day and inter-period analysis of movement of prices remains an untouched area in share repurchases in India. Such an analysis will help further in whether an investor can position to benefit from intra-day fluctuation of market prices.

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# Job Satisfaction Among Nursing Professionals

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**Abstract**

This research investigates the Job Satisfaction among nursing professionals. The study covers nurses employed in both private and public sector hospitals. The sample size of the research study is 280, of which 140 nurses are employed in private sector hospitals (70 at the junior level and 70 at the senior level). Similarly, in the public sector hospitals, out of the 140 nurses 70 each worked at the junior and the senior levels, respectively. Job satisfaction differs significantly between the nurses working in the private sector hospitals and those working in the public sector hospitals and between nurses working at the junior and the senior levels. Two-way analysis of variance (ANOVA) was used to test the differences in job satisfaction. Findings of the research supported both these hypotheses. These findings are discussed and suggestions have been made to improve the job satisfaction.

**Key words :** Job satisfaction; Private sector; Public sector; Junior level and Senior level.

## 1. Introduction

Nurses are an integral part of any medical system. 'Nurse' is almost the first association that comes to mind when we say ' Doctor '. At the same time, there is a vast difference in the way the society looks at these two groups of professionals. While doctors are considered to be highly qualified professionals, nurses are given an almost secondary status of mere assistants or helpers. In the medical settings, nurses do all the ancillary duties, which are essential to keep the system running smoothly. It is a well-known fact that the post-operative nursing care a patient gets determines his recovery. Yet, how many of us even spare a thought for these 'Women in white' who go about their duties with almost robotic efficiency. Hence a study of the job satisfaction of nurses becomes necessary.

Job satisfaction is one of the most widely researched subjects in the area of Organizational Behaviour and Human Resource Management. Studies of job satisfaction by applied psychologists appeared as early as the 1910's. The first comprehensive treatment of the topic was given by Hoppock (1935) in his book, *Job Satisfaction*. At about the same time, when Hoppock was doing his studies, Elton Mayo and his associates were conducting a series of ground breaking social experiments called the Hawthorne Studies. These studies showed that human inter - relationship and interactions at work are important motivators and that motivation to work was not wholly economic. This led to the human relations movement in industry. Hoppock's work inspired a large number of job satisfaction studies typically with job satisfaction as the dependant variable studied as a function of demographic variables. The number of such studies grew to such an extent that they became the subject of annual reviews. Until this time, researchers never questioned the assumption that Job satisfaction was related to motivation at work. Brayfield and Crockett (1955) reported study results, which seemed to startle job satisfaction researchers. They found little evidence that job satisfaction was related to job performance. In 1957, Herzberg *et al.* proposed that the causes of Job satisfaction and Job dissatisfaction are different and the former was influenced by job content factors (motivators) and latter by job context factors (hygiene).

In 1964, Vroom proposed the expectancy theory in which was nested a theory of Job satisfaction. Vroom asserted that it was the expectation of what was to come that determined Job satisfaction. Besides expectancy theory there appeared need fulfillment theory, equity theory, goal setting theory intrinsic motivation theory and even behavioural theory. Researchers also became interested in constructs collateral with Job satisfaction like job involvement and organisational commitment. Even as Hertzberg and Vroom emphasised

theory testing, applied psychologists did not neglect the study of Job satisfaction itself and its practical consequences. Job satisfaction was studied as a function of demographic variables, performance, and comparison level; need fulfillment and personal environment etc. Its relation to job performance remained a vital topic. Its consequences for work (like adjustment, withdrawal, aggression, relations with supervisor and co-workers) and consequences for life (like personal adjustment, family life) became important areas of research. There was even spirited debate over whether or not job dissatisfaction was increasing due to "dehumanisation of work" (U.S. Department of Labour, 1974). Consequently, the number of Job satisfaction studies escalated from the mere hundreds to the thousands.

Locke (1976) defines Job satisfaction as a pleasurable or positive emotional state, resulting from the appraisal of one's job or job experiences. The various job dimensions, which make up a job and hence contribute to satisfaction or dissatisfaction that have been studied by previous investigators include:

- Work
- Pay
- Promotion
- Supervision
- Recognition
- Working Conditions
- Company and Management

In the Indian context a number of studies have been conducted on Job satisfaction. Singh and Srivastava (1975) found that the status of a job and Job satisfaction are positively correlated. Venkatachalam *et al.* (1998) found that the mean scores of Job satisfaction and job involvement for superiors were higher than those of subordinates. Ganguli (1994) has also found that higher the cadre, greater the Job satisfaction. Sharma and Bhaskar (1991) reported recognition and appreciation as important determinants of Job satisfaction. Joshi (2001) found that the extent of Job satisfaction is not significantly higher in the private sector than in public sector. He found significant difference in Job satisfaction of managers, supervisors and workers in public sector but no significant difference in the extent of Job satisfaction of managers, supervisors and workers in the private sector. Maheshwaran, Rath and Vani (2003) studied Job satisfaction among faculty members of Business Schools and found that faculty members prefer teaching, pay, co-workers, management and research as the top satisfaction dimensions. The study also found that older faculty members scored higher on Job satisfaction. As the faculty members grow older, their job responsibilities increase and consequently their rewards also increase. However, younger faculty members take time to cope with the dynamic environment and hence feel the pressure of work environment, which results in lesser level of satisfaction. Professors obtained the highest Job satisfaction scores, followed by associate professors, assistant professors and lecturers

Studies of job satisfaction among nurses have focused primarily on autonomy and organisational variables and less on personal factors and health issues. Job satisfaction seriously affects nurse recruitment and retention Researchers have explored the relationship of job satisfaction with structural and psychological empowerment, career satisfaction, job commitment, autonomy, control over practice, professional relationships, organisational environment, and educational preparedness. Laschinger found that 38% of the variance in job satisfaction was explained by structural and psychological empowerment. Thirty-three percent of the variance in job satisfaction among nurses working in long term care was explained by age, Asian origin, supervisor and physician relationships, patient care tasks, work load and scheduling, co-worker cohesion, and clarity of job expectations, Shaver and Lacey found that job setting, job commitment, patient load, and short staffing explained 37% of work satisfaction. Interestingly a range of 62% to 67% of the variance in job satisfaction was unexplained in this group of studies.

There are other determinants of job satisfaction. McNeese-Smith argued that research on nurses' job satisfaction has failed to explore the staff nurse perspective of determinants of job satisfaction. In semi-structured interviews with thirty staff nurses to determine their perspectives on job satisfaction, the findings indicated that there were a wide variety of factors that influenced satisfaction with nursing positions, patient care, environment, balanced workload, co-worker relations, and meeting personal and family

needs. The major attributes of job dissatisfaction were feeling overloaded, dealing with obstacles to provide good patient care, problematic co-worker relationship, and unfair work situations. The participants indicated that heavy patient workloads and stress negatively influenced their job satisfaction. Stress is a moderate to strong correlate of job satisfaction among nurses. Staff working in long-term care facilities indicated that high levels of workload and scheduling problems were predictors of decreased job satisfaction.

In a Meta - analysis of nurses' job satisfaction, the variable stress was most strongly associated with job satisfaction. In Norbeck's study of job satisfaction of 180 critical care nurses, higher levels of perceived job stress were related to lower levels of job satisfaction. Similarly, in a sample of 241 university hospital nurses, job stress was negatively related to job satisfaction. Having significant care giving responsibilities outside of work could be a family issue that would lead to job dissatisfaction. This potential relationship merits further study using quantitative methods.

Evidence from several studies suggests that there is widespread job dissatisfaction among nurses. This situation threatens the provision of a safe healthcare.

## 2. Methodology

This research aims at examining the job satisfaction of nurses. Nurses work both in the public sector and private sector hospitals. Working conditions differ in these two sectors and Job satisfaction is influenced by the working conditions. Hence, this research would make a comparison between nurses working in the public sector hospitals and the private sector hospitals. Nurses work at different levels in the organisational hierarchy. The working conditions like scope for participation in decision-making and autonomy differ across this hierarchy. Hence this research would make a comparison between nurses working at junior levels and senior levels in these hospitals

### 2.1. Variables under study

This research investigated the impact of two independent variables:

(i) Employment Sector and
(ii) Position of nurses

Employment sector refers to Private sector and Public sector.

This research has included:

- Nurses employed in three large private multi-specialty hospitals located in central Mumbai and western suburbs of Mumbai.
- Nurses employed in three large municipal multi-specialty hospitals located in central Mumbai and the western suburbs of Mumbai.

In the private sector, small and medium-sized nursing homes and charitable hospitals are not included in the study. In the public sector, government hospitals and smaller health centres are also not included in the study. This is done to maintain uniformity with reference to size of the organisation as this has been found to be a factor influencing job satisfaction.

Position of nurses refers to Junior level and Senior level.

This research studied nurses employed in the position of Staff Nurse at the junior level and nurses employed in the position of Sister-In-Charge at the senior level.

This research has studied the impact of two independent variables on job satisfaction. Job satisfaction of nurses was measured by the job satisfaction scale developed by *Brayfield and Rothe*, suitably modified by the researchers.

### 2.2. Description of Sample

The sample size of the research study is 280 nurses, taken in equal number from the public sector hospitals and the private sector hospitals. These include equal number of nurses, at junior level as well as senior level, working in different departments of these hospitals.

Out of the 140 nurses employed in the private sector hospitals, as many as 70 (50%) work at junior level as Staff Nurse and 70 work at senior level as Sisters-in- Charge. Similarly, in the public sector hospitals, out of the 140 nurses, as many as 70 (50%) work at junior level as Staff Nurses and 70 work at senior level as Sisters-In-Charge.

### 2.3. Data Collection Method

#### *2.3.1. Tools for Data Collection*

This research uses the Job satisfaction Scale developed by Brayfield and Rothe (1951) and

modified by the researchers. The Job satisfaction scale has 18 items to be rated on a 5-point scale ranging from *strongly agree* to *strongly disagree* responses which are scored from 5 to 1 and summed up to obtain the total job satisfaction score. The possible range of scores is thus between 18 and 90. Half the items are reverse scored. This measure was used, as it is applicable to a wide variety of jobs.

*2.3.2. Procedure*

Data in the public sector hospitals was gathered from the respondents in small groups after obtaining permission from the concerned authorities. In the case of some private sector hospitals, data was gathered after obtaining permission from the concerned authorities. In other cases, personal contacts were used to collect data. This became necessary due to non-cooperation of some private hospitals. The academic nature of the research and its purpose was explained to them. To ensure complete confidentiality, the respondents were not required to mention their names or the names of their hospitals in the questionnaires.

2.4. Hypotheses

This research tested the following hypotheses:

(i) Job satisfaction differs significantly between the nurses working in hospitals in the private sector and nurses working in hospitals in the public sector.

(ii) Job satisfaction differs significantly between nurses working at the junior level and nurses working at the senior level.

## 3. Findings

The study findings have validated both these hypotheses:

(i) A significant difference was observed between job satisfaction of nurses in the private sector and that of nurses in the public sector $\underline{F}$ (1,276) = 42.673, p 0.000. Job satisfaction of nurses in the private sector ($\underline{M}$ = 67.036) was higher than the job satisfaction of nurses in the public sector ($\underline{M}$ = 62.614).

(ii) Further a significant interaction effect was also observed between the sector of employment and the level of employment on the job satisfaction of nurses $\underline{F}$ (1,276) = 8.300, p 0.004. Job satisfaction was highest among nurses working at the senior level in private sector hospitals ($\underline{M}$ = 68.786) and lowest among nurses working at the junior level in the public sector hospitals ($\underline{M}$ = 58.914).

**Table 3.1.1 : Anova Results: Job Satisfaction**

| SOURCES OF VARIATION | df | MEAN SQUARE | F |
|---|---|---|---|
| Sector of Employment (A) | 1 | 1368.432 | 42.673** |
| Level of Employment (B) | 1 | 2079.175 | 64.837** |
| AB | 1 | 266.175 | 8.30* |
| Error | 276 | 32.068 | |
| Total | 280 | | |

(iii) Further a significant interaction effect was also observed between the sector of employment and the level of employment on the job satisfaction of nurses $\underline{F}$ (1,276) = 8.300, p 0.004. Job satisfaction was highest among nurses working at the senior level in private sector hospitals ($\underline{M}$ = 68.786) and lowest among nurses working at the junior level in the public sector hospitals ($\underline{M}$ = 58.914).

The study results indicate that job satisfaction is higher among nurses working in the private sector as compared to the nurses in the public sector. The reason for this difference could be the fact that nurses from the private sector especially in the large hospitals covered by this study, have comparatively a lower workload and better working conditions. In the public sector hospitals the workload is much higher. Moreover, the types of patients with whom nurses have to deal are also very different. The nurses' job requires constant patient contact. Municipal hospitals provide almost free medical aid and hence are generally frequented by patients belonging to the lower socio - economic strata of society, and also from mofussil areas, which lack good medical facilities. The level of education and awareness and the general levels of hygiene among such patients are low. The private hospitals, on the other hand, cater to the upper middle class and higher income groups in society. The level of education and awareness and the general level of hygiene among such patients are higher. It is the responsibility of the to deal on a one to one basis with these patients every day. Over a period of time this adversely affects their level of job satisfaction. In the interviews with nurses, many from municipal hospitals indicated inter alia, that due to the

lower standards of hygiene, they are also exposed to many infections. In most of the municipal hospitals the actual number of patients far exceeded the sanctioned bed strength of a ward. This was never the case with private hospitals. This study found that the job satisfaction was higher among nurses at senior level as compared to the nurses at junior level. Nurses at the junior level have greater workload and lower level of freedom in decision-making. They are answerable to senior nurses. Most of the nurses are also younger. They have taken up this profession with many idealistic goals. However, when they find the ground realities are harsh they are likely to experience greater levels of frustration and disappointment. As they become older and assume senior responsibilities they learn to adapt to the conditions around them. Also senior nurses have more decision-making authority and are less dependent on others. Thus their lot improves leading to higher Job Satisfaction.

The study also found an interaction effect between sector of employment and level of employment. Job Satisfaction was highest among nurses working at the senior level in the private sector hospitals. This group can truly be considered the privileged group. As discussed above these nurses enjoy better working conditions and greater participation in decision-making. They also enjoy a position of authority among patients and nursing staff alike. This contributes to higher Job Satisfaction. The junior level nurses in public sector are the worst hit groups. They have to work under the worst conditions and enjoy lowest levels of authority.

The findings of this study indicate that nurses do not work in the best of conditions and a lot needs to be done to improve their working conditions. The condition of nurses in the public sector hospitals is worse than those in the private sector. Government spending on public health must increase as this would mean more facilities for all staff, and the staff and the patients would both be benefitted. Better infrastructure can be provided, more staff can be appointed, salaries can be increased. These would benefit the patients both directly and indirectly. If need be, private and public partnerships can be worked out.

One aspect of the nurses' job that needs to be addressed is the role of the nurse in the medical setting. Nursing is a highly skilled job but continuous nurse training is seldom given importance. In the same way nurses are seldom given any decision-making power in the medical set up. They are simply expected to execute the decisions made by the hospital administration. This affects their job satisfaction because they feel their job lacks autonomy. The participation of nurses in the public sector hospitals, especially at lower levels is dismal. This is because of the bureaucratic nature of public sector undertakings. It is high time, public sector hospitals' administration is handed over to professional managers with knowledge and experience in administrative work. Currently it is left to the senior doctors who are excellent doctors but may be poor administrators. Another option would be to give training to medical personnel so that they develop managerial skills. When hospitals are managed professionally they would provide an excellent work set up for nurses. Application of modern management practices would definitely enhance job satisfaction of nurses. This would also lower absenteeism of nurses in public sector hospitals.

This study research focuses only on job satisfaction of nurses and it does not investigate the impact of low job satisfaction on patient care. In future, it would be interesting to correlate these factors with patient's experiences in the hospitals. Hospitals comprise of different departments and these departments differ with respect to the nature of ailments they deal with, the socio-economic strata of patients, the number of patients they have to deal with and many other such factors. Given these differences future research could focus on these differences and their impact on the working life of nurses. This type of research would help hospitals to understand the close connection between nurse satisfaction and quality of patient care. When hospitals see this close link, they would be more willing to undertake initiatives to improve the working conditions prevalent in hospitals. This would help nurses' work as professionals, which, in turn can improve health care systems in the society.

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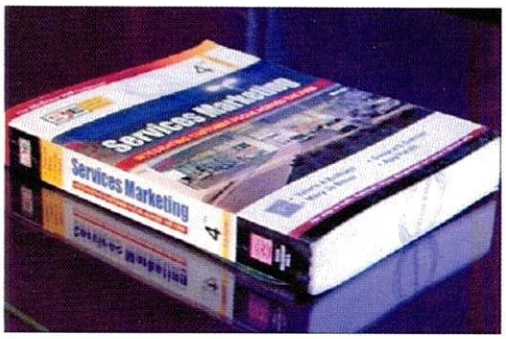


# Services Marketing

## Integrating customer focus across the firm

**Publisher** : The McGraw Hill Companies
**Author** : Valarie a Zeithaml, Dwayne D. Gremler, Mary Jo Bitner and Ajay Pandit
**Price** : Rs. 425
**Pages** : 743

The book is jointly authored by Valarie A Zeithaml, Mary Jo Bitner, Dwayne D. Gremler and Ajay Pandit.

The heart of the book's content is the development of strong customer relationships through quality service (and services) The topics covered are equally applicable to those institutions whose core product is service viz, banks, insurance, transportation companies, hotels, healthcare and hospitals, tourism, educational institutions, entertainment, professional services, telecommunication and logistics and also to those institutions that depend on service excellence for competitive advantage

Basically the book's content focuses on imparting knowledge needed to implement service strategies for competitive advantage to all the industries. Each of the topics represents pivotal content for tomorrow's businesses as they structure around process rather than task, engage in one-to-one marketing, mass customize their offerings, and attempt to build strong relationships with their customers. Further, the book includes substantial content on practices followed by Indian organizations. The increased emphasis on Indian services marketing practices makes the book more approachable to the students, managers and educators in India and boosts their understanding of the concepts and their applications.

A feature is added called "Strategy Insight" in each chapter a feature that focuses on emerging or existing strategic initiative involving services. This feature is supplemented with a feature having a similar theme called "Indian Service Strategy Insight", which appears at the end of each chapter (before "Summary"). A chapter on service recovery includes a conceptual framework for understanding the topic. Cross functional treatment of issues through integration of marketing with other disciplines such as operations and human resource management is undertaken. The authors emphasis the description of a set of tools that must be added to basic marketing techniques when dealing with services rather than goods. Introduction of three services Ps to the traditional marketing mix and increased focus on customer relationships and relationship marketing strategies are assessed. The book contains a chapter that recognizes human resource challenges and human resource strategies for delivering customer-focused services. Further coverage of new services development processes and a detailed and complete introduction to services blueprinting- a tool for describing, and positioning services , the customer's role in service delivery and strategies for making customers productive partners in services creation has also been highlighted A chapter on the role of physical evidence, particularly the physical environment or "servicescape." is also covered.

The book focuses on a synthesized research and conceptual material from many talented academics and practitioners It relies on pioneering work of researchers and businesspeople from diverse disciplines such as marketing, human resources, operations, and management. The book has developed integrating frameworks in most chapters. e.g. creating new frameworks for understanding services recovery strategies, service pricing, integrated marketing communications, customer relationships, customer roles, and internal marketing.

The structure of the book is completely different from the standard 4Ps (marketing mix) structure of introductory marketing texts. It is organized around the gaps model of service quality which is described fully in chapter 2. Beginning with Chapter 3. the book is organized into parts around the gaps model. The managerial content in the rest of the chapters is framed by the gaps model using part openers that build the model gap by gap. Each part of the book includes multiple chapters with strategies for understanding and closing these critical gaps.

The book is useful to the students with career interests in services industries as well as goods industries with high services components (viz industrial products, high-tech products, and durable products) and need to understand these topics. Students wishing to take up consulting work as a profession and/or entrepreneurial activities, would want to learn the strategic view of marketing, which involves not just physical goods but also the myriad services that envelop these.

The book contains 18 chapters in all divided into six parts. Introduction and overview has been highlighted. Focuses on listening to customer requirements including chapters covering marketing research for services, building customer relationships, and service recovery, which are included in part 2 and part 3 respectively.

Part 4 involves aligning service strategy through design and standards and includes chapter on service development and design, customer defined service standard and physical evidence and the service scape.

Marketing communications and pricing services have been highlighted in part 5 and part 6 respectively.

Financial and economic effect of service quality has been discussed in the last part of the book.

The book concludes with cases as a guide to the users in the field of service marketing.

Reviewed By
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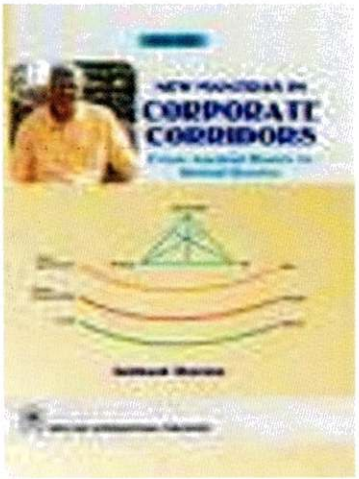


# New Mantras in Corporate Corridors:
## From Ancient Roots to Global Routes

**Author** : Dr. Subhash Sharma
**Publisher** : New Age International (P) Limited
**Price** : Rs. 295

We have entered the era of knowledge economy. This era requires new mantras and new conceptualizations. Dr Subhash Sharma's new book, New Mantras in Corporate Corridors: From Ancient Roots to Global Routes is a timely contribution to provide futuristic perspectives on evolution of management thought. Subhash Sharma with his creative style has once again added feather to Indian Management.

This book is divided into four parts, each addressing different perspective of management.

Part-I Social setting and Ancient Text in New Context provides the social aspects of management ideas in Indian context. There are many interesting insights such as new perspective to INDIA-Infinity and Diversity In Absolute, HCR-Human Capital Reserve, E-NSC Extended Nation-State-Civilization, three basic movements viz. Vedic, Bhakti and Freedom, Dignity of self, Dignity of Community and Dignity of Nation etc.

Prof. Sharma has stressed the need for balancing three types of values namely market values, social values and spiritual values. He has also given RICH mantra as a mantra for holistic development. His Viswa (Videshi + Swadeshi) matrix gives a new perspective of how Vishwanization and Globalization are in contrast to each other. A very comprehensive table of Indian Ideas in Management gives a clear picture of how many Indian ideas are very much adopted in practical terms but lacked projection before the world.

His concepts like, "Udyoga as Yoga", "Vedanta-in-practice", "KOSHA energies" and "Management as Joy of living" provide a strong basis for new conceptualizations in management thought.

Part II : Enlightened Leadership and Human Quality Development.

In this part, Prof. Subhash Sharma provides many new models of leadership such as CEO (Creative Enlightened Organic) leader and Corporate Rishi. Theory K suggested by him integrates the traditional approaches to management viz. Theory X, Theory Y and Theory Z.

He has also discussed in detail the OSHA model based on guna theory. He has extended this model in terms pf OSHA-OSHE model for analyzing human behavior.

Author's 3 (Transactional, Transformational and Transcendental) Model of Management is a self evaluation tool, with the help of which we can check our behavioural management style.

In a nut shell the second part provides new tools and techniques which are required for an enlightened leader for holistic development of human quality of corporate world.

Part III: Strategic Gearing and Enterprise Performance Improvement Models

Today's buzzword for organizations is 'best'. Prof. Sharma's BEST gives a new dimension to the organizations for effective performance. It inculcates four dimensions i.e. Behavioral, Economic, Strategic and Technological. All these need to work in harmony as a Steering Wheel for the 'best' performance.

He also suggests the concept of CINE matrix for strategic scanning. This matrix is constructed on the basis of Controllable and Non controllable factors affecting a decision unit. Matrix is useful to managers to find out solutions to the day to day problems they face.

Forward Engineering and anti-bench marking are again refreshing which give strategy planning a new dimension. His SPOT (Space, Pace, Opportunities and Threats) takes us beyond SWOT model.

The author also presents some Enterprise Performance Improvement Systems (EPIS). He suggests nine dimensional VSP model of ODM (Organization Development and Management) that takes us beyond the well known 7S framework.

Part IV: Management Thought, Social Discourse and Spiritual Concerns: Toward New Corporate Awakening.

This part provides solution to corporate and social issues such as Gender, Oppression, Liberation response, etc.

Through 'Re-see' science the author has given a new dimension to normal science. His WISDOM matrix is again a breakthrough for many behavioral issues.

Corporate Rhymes given by the author is new and original concept based on his experiments at WISDOM, IBA and MDPs for Corporates. These rhymes have been found to be an effective way of teaching new management concepts.

'Omega-circle' is once again an unique way of looking at various view points, which becomes possible through 're-see' approach. His 'Candle Light' experiment is also unique to invoke inner creativity.

In the last part, the author has unfolded the holistic vision of sacro-civic society in the form of 'holistic globalization' through an integration of forces representing market, society and self.

## Conclusion

I find this book as an add on to Vedas. Use of simple slokas, Corporate rhymes, matrices, models, makes this book different and interesting. It is must read for every Indian management scholar as well as student. This book is an eye-opener to many issues and gives a different and new perspective. It also can be used to evaluate self as well as environment to achieve excellence at all levels. In the present scenario, where everyone is talking about 'survival of the fittest to eliminate the rest' this book suggests 'arrival of the best to lead the rest' which gives it a unique positioning.

I also recommend this book to Corporate managers who will find new ways to tackle managerial problems in an effective way.

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