Tomas Bata University in Zlín
Faculty of Management and Economics

Doctoral Thesis

Clusters as a Tool for the Development of Human Resources to Strengthen the Competitive Advantage of the Firms

Využití klastrů jako nástroje pro podporu rozvoje lidských zdrojů a posílení konkurenční výhody firem

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DEDICATION

This doctoral thesis is dedicated to my only beloved son,

"Kanishka Binayak Saha"
(16.10.2001 - 22.05.2011)

whose presence continuously inspired and motivated me
to join in doctoral degree study. Silently with his heavenly presence,
he is providing me mental strength to complete this thesis.

ABSTRACT

This doctoral thesis is focused on the role of human resource management within the implementation of cluster activities, which are related to efficiency and competitive ability of the firms.

The investigation of accessible literature has proven that an insufficient attention has been paid to this issue in the current research. The thesis focuses on the issue, because lot of questions remain unanswered yet. This includes mainly the analysis of possibilities that support the development of human resources and of gaining competitive advantages for companies involved in clusters and cluster activities. The content of the thesis deals with methods of how the cluster activities can support the human resource management, and which are the activities concerned.

The survey was conducted in Central European countries, in India and in economically developed countries, with the aim to identify the differences in cluster activities in different cultural and entrepreneurial environment. The main goal was to detect which strategies in the human resource area lead to reaching the competitive advantage of a company, and to determine the task of human resource management in relation to competitive advantage of a company in current conditions. The data were collected by standard methods including questionnaire survey, structured interviews with cluster managers and analysis of available sources of information.

The output of the thesis is identification of strategic activities in human resource management area which influence the efficiency and competitive ability of a company. It was defined that performance and competitiveness of a company can be supported by using the selected cluster activities, which enhance knowledge and skills of the employees and also the potential of utilization of the knowledge for the benefit of the company.

Other key cluster activities which have influence on performance and competitive ability of companies were identified at the level of external relations of a cluster with the environment, intensity of relations between academic and industrial environment, relations between small and large multinational companies, and establishing inter- and intra-cluster relations at regional, national and supranational level.

Recommendations and opinions provided by the thesis could serve as a methodological instruction for cluster networks or individual companies leading to the enhancement of their competitiveness and efficiency.

KEY WORDS

Cluster, Cluster activities, Competitiveness, Competitive Advantage, Globalization, Human Resource Management (HRM), Small and Medium Enterprises (SMEs)

ABSTRAKT

Disertační práce se věnuje úloze řízení lidských zdrojů při realizaci klastrových aktivit, které souvisí s výkonností a konkurenceschopností firmy.

Ze studia dostupných zdrojů vyplývá, že této problematice není v současném výzkumu věnována potřebná pozornost. Chybí celá řada odpovědí, na které se tato disertační práce zaměřuje. Jedná se zejména o analýzu možností podpory rozvoje lidských zdrojů a získávání konkurenčních výhod pro firmy zapojené do klastrů a klastrových iniciativ. Jakým způsobem klastrové aktivity mohou podporovat řízení lidských zdrojů a o které aktivity se jedná, je obsahem této práce.

Průzkum byl realizován v zemích střední Evropy, v Indii a ekonomicky rozvinutých zemích s cílem identifikovat rozdíly v klastrových aktivitách v rozdílném kulturním a podnikatelském prostředí. Zjišťováno bylo zejména jaké strategie v oblasti lidských zdrojů v klastrových strukturách vedou k dosažení konkurenční výhody a jakou úlohu má v současných podmínkách management řízení lidských zdrojů ve vztahu ke konkurenční výhodě firmy. Údaje byly zjišťovány standardními postupy zahrnujícími dotazníkové průzkumy, strukturované pohovory s manažery klastrů a analýzou dostupných veřejných údajů.

Výstupem práce je identifikace strategických aktivit v oblasti řízení lidských zdrojů, které ovlivňují výkonnost firmy a její konkurenceschopnost. Bylo identifikováno, že výkonnost a konkurenceschopnost firmy může být podpořena využitím vybraných aktivit klastrů, které zvyšují znalosti a dovednosti zaměstnanců a potenciál využití těchto znalostí ve prospěch firmy.

Za další klíčové klastrové aktivity, které ovlivňují výkonnost a konkurenceschopnost firem byly identifikovány v úrovni vnějších vazeb klastru na okolí, intenzitě vztahů mezi akademickým a průmyslovým prostředím, vztahy malých a velkých mnohonárodních firem, a ve vytváření inter a intra klastrových vazeb na regionální, národní a nadnárodní úrovni.

Zjištění a doporučení disertační práce mohou klastrovým sítím i jednotlivým firmám poskytnout metodický návod vedoucí ke zvýšení jejich konkurenceschopnosti a výkonnosti.

KLÍČOVÁ SLOVA

klastr, klastrové aktivity, konkurenceschopnost, konkurenční výhoda, globalizace, řízení lidských zdrojů (HRM), výkonnost organizace, malé a střední podniky (MSP)

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LIST OF ABBREVIATIONS AND ACRONYMS

AMA-   American Management Association

AISDE-   Assistance to States for Developing Export Infrastructure and Allied Activities

ALEAP   Association of Lady Entrepreneurs of Andhra Pradesh

AWAKE   Association of Women Entrepreneurs of Karnataka

BDS -   Business Development Services

CAER -   Centre for Applied Economic Research

CDP -   Cluster Development Programme

CE -   Central European Countries

CFC -   Common Facility Centre

CRC -   Cluster Resource Centre

CUSAT -   Calicut University of Science and Technology

CWEI   Consortium of Women Entrepreneurs of India

CZ -   Czech Republic

DC -   Developed Countries

DCSSI -   Development Commissioner Small Scale Industry

EU -   European Union

GOI -   Government of India

GWS -   Global Workplace Standard

HR -   Human Resource

HRD -   Human Resource Development

HRM -   Human Resource Management

HP-   Hewlett Packard

HPO -   High Performance Organization

IC -   Industrial Cluster

ICT -   Information and Communication Technology

ID -   Infrastructure Development

IGA -   Internal Grant Agency

IMR -   Information Management Resource

IND -   India

IT -   Information Technology

ITES -   Information Technology Enable Services

K-BIP -   Kerala Bureau of Industrial Promotion

KC -   Kunstsoff Cluster

KINFRA -   Kerala Industrial Infrastructure Development Corporation (India)

KPSV -   Klastr přesného strojírenství Vysočina

KSAs -   Knowledge Skills and Abilities

LDCs -   Least Developed Countries

MAK -   Moravskoslezský automobilový klastr

MSMEs -   Micro, Small and Medium Enterprises

NABARD -   National Agricultural Bank for Rural Development

NCAs -   National Cluster Associations

NISIET   National Institute of Small Industry Extension Training

NIESBUD   National Institute of Entrepreneurship and Small Business Development

NRC -   National Research Council of Canada

OC -	Old Cluster
OECD -	Organization for Economic Co-operation and Development
OP -	Organizational Performance
OPEI -	Operational Programme Enterprise and Innovation
OPIE -	Operational Programme Industry and Enterprise
PL -	Poland
R&D -	Research and Development
SA -	Social Accountability
SBI -	State Bank of India
SI -	Soft Interventions
SICDP -	Small Industry Cluster Development Programme
SK -	Slovakia
SMEs -	Small and Medium Enterprises
SRI -	Stanford Research Institute
SSA-	Sarva Shiksha Abhiyan
SWOT -	Strengths, Weaknesses, Opportunities and Threats
TI -	Texas Instruments
TQUIP -	Total Quality Improvement Programme
UEE -	Universalization of Elementary Education
UNIDO -	United Nations Industrial Development Organization
UPTECH -	Technology Up-gradation Programme
YC -	Young Cluster

"Globalization has changed us into a company that searches the world, not just to sell or to source, but to find intellectual capital the world's best talents and greatest ideas".

Jack Welch

INTRODUCTION

In the present age of globalization and industrialization, competitiveness is considered as a prerequisite criterion for maintaining high levels of performance, income and employment. Moreover, in this aspect economic geography poses a paradox in the era of globalization. Thus, to sustain in this modern competitive world and to keep pace with the continuously increasing complex network of social, political and economic entities Industry Cluster (IC) approach and Human Resource Management (HRM) strategy plays an eminent role to enhance the regional economy and to boost up the quality of human capital in order to face the global challenges. Beside this, today's economic map of the world is differentiated by cluster. According to Porter, 'cluster' means a group of firms joined together in one place and linked industries and institutions, from suppliers to universities and to government agencies that enjoy unusual competitive success in a particular field where Human Resource (HR) is an integral part of an organization that facilitates a firm to sustain its competitive advantage.

At present, however industry clusters, mainly in the developing countries are facing problems in terms of human intelligence, knowledge, skills, and abilities (KSAs), human resource management and human resource development. In addition, scholars mostly focus on the relationships between entrepreneurs and industry clusters, the connection between professionals and industry clusters, etc. But in research, the practice of HRM is not so profound enough to clarify some key questions such as: what kind of human resource activities can support the sustainable development of cluster core firms? What kind of human resource management and development strategy is acceptable in the clusters? What kind of training mechanism can foster the organizational development of human capital in the clusters? Mainly, these questions have become the bottleneck for the sustainable development of industry clusters.

Hence, my PhD degree study topic has been selected as "*Cluster and Human Resource Management as Tools for Strengthening the Competitive Advantage of a Firm*" for providing some valuable suggestions and recommendations to the enterprises for gaining an overall benefits in business. This dissertation work described about the gap of research (approved research topic) with cited literature, depicted the collected data to perceive about present scenario in clusters approach in business and analyses the data with due justification and references. It is also pointed out in this PhD thesis that a cluster policy today is a leading concept, which acts as an elixir in regional economic development.

This dissertation also highlighted that a smart cluster policy should include a framework for human resource development, i.e. the development of KSAs. This can be done through specialised professional trainings that illuminate the knowledge of individual, group, and organizational levels during action-oriented behavioural change. It is expected that the central added value of this knowledge development process based on cooperation will lead to achieve the competitive advantage through transfer of specific individual knowledge to collective knowledge, and vice versa.

1 CURRENT STATE OF SUBJECT AREA

1.1 Overview of a present business scenario

In order to sustain in this modern competitive world and to keep pace with the continuously increasing complex network of social, political, and economic entities the ideas of *Clustering and Human Resource Management* (HRM) play an important role in organizations to enable them to face the global challenges. Success in today's complex global arena is challenging and the rules are also changing. The simple term of 'management' plays an ever-present key role in the lives of all people when the ever-changing dynamic world is stirring towards the 'technologically-advanced' 21st century. During this period, every organization tries to compete and face those challenges. As a result of it, several Organization for Economic Co-operation and Development (OECD) countries (Savoie, 1990) attempts to provide a new management skills and management development programmes, for their managers in order to strengthen the corporate culture and competitiveness. Therefore, management development has become a matter of growing concern for the public service, particularly for the senior managers. A number of Least Developed Countries (LDCs) were also attracted by these trends and identified a strong priority area for the public management development as well as for organizational development.

According to Drucker (2007), management is a work, management is a discipline, but management is also people. Every achievement of management is the achievement of a manager. Every failure is the failure of a manager. It is people who manage rather than 'forces' or 'facts' (Drucker, 2007; Montana & Charnov, 2000). In short, a company's performance more or less depends on performance of every individual within the organization. In 21st century, several different trends of management development gradually become a part of individual competence pillars. In recent years, many organizations have attempted to manage their performance using the balanced scorecard methodology that measures the multiple dimensions as: financial performance, customer service, social responsibility and employee stewardship. The main aim of this trend is to achieve the company's vision, mission, and target. In this thesis author mainly concentrated on *Organizational Clustering and Human Resource Management* as an important tool that can boost a company to meet their goal as well as it enable them to improve their level of performance as; a recent trend of management is to enhance the level of organizational performance.

According to Richard et al. (2009) organizational performance is one of the most important constructs in management research that encompasses the real output of an organization as it measured by the planned outputs and objectives of an organization in order to maintain their sustainability. Epstein (2008) also indicated that the management is increasingly asking how companies can improve sustainability of their performance, more specifically, how can they identify, manage and measure the drivers of improved sustainability and the systems and structures that can be created to improve performance measurements (Sebhatu,2009). Similarly, another management expert mentioned that increasing number of profit and non-profit organizations is implementing new and alternative management control systems, as the balanced scorecard, critical success factors and key performance indicators, for better organizational results that influence the management control systems and also influence the performance-driven behaviour of an organization (Waal, 2007). Therefore, the ultimate goal and target of an organization is to enhance the level of performance.

Thus, the very beginning of industrialization and internationalization of trade have influenced the increase of global competition that put a growing number of countries and individual businesses under pressure and in a quest for survival beyond their internal resources. At the moment mainly small and medium enterprises (SMEs) are under tremendous pressure to overcome their barriers in order to maintain their business in this modern competitive world and to keep pace with the continuously increasing complexity of social, political, and economic entities. During this transition period, the concept of *clustering* and the importance of *Human Resources* were viewed as an eminent approach facilitating firms to achieve their organizational goal and to increase their performance. Therefore, the cluster phenomenon has increasingly been recognized as an important approach to survive and to compete successfully in the world market. Since then, the cluster concept has been attracting the attention of several policy makers, academics and researchers from developing and developed countries. The idea of clustering has evolved in a process after passing through a numbers of economic theory which has been developed and commenced by Ven Thunen's Location Theory in 1826, Marshal's Industrial District Theory initiated in 1920, Max Weber's Industrial Complex Theory started from 1950 and Industrial Cluster Theory introduced by Michael Porter in 1990. (Das & Das, 2011). The concept of cluster is not a new idea. It acts as a tool for rural, small, medium and household sectors, development and for the growth of regions and communities.

According to Choe et al. (2011) clusters were developed by rival firms and suppliers that were collocating and collaborating on their ways to reduce their external transaction costs, to innovate, to develop new business opportunities and markets to create competitive advantage. Agreeing with this concept, the US President Barack Obama also emphasized the significance of a cluster strategy as a necessity to maintain dynamic interaction process between large and small companies, universities, and financial institutions. He also considered the cluster policy as a vital factor for enhancing the future US national economic competitiveness (Lenchuk & Vlaskin, 2010).

On the other hand, the theoretical framework shows that in the era of globalization, human resources are now viewed as a source of competitive advantage. The values of people management are based on the beliefs that an organization gains competitive advantage by using its people effectively and efficiently (Price, 2007). Similarly, HRM is the management of employees in an organization which can be referred as a 'soft' management skill. Where, it explains that the effective practice within an organization requires a strategic focus to ensure that people resources can facilitate to achieve the organizational goals (Armstrong, 2006). At the same time Miller (1987) suggested that HRM relates to those decisions and actions of management of employees at all levels in the business concerning the implementation of strategies directed towards creating and sustaining competitive advantage (Sharma, 2009).

Consequently, Human Resource Development (HRD) is also a support for the expansion of *human capital* within an organization in order to achieve performance through the development of both the organization as well as the individual. In another way, HRD may refer to increase in human capacities, rights and entitlements from business or economic perspective, or as an instrument of human development, particularly in developing countries, which enables personal and societal advancement towards economic progress and democratic self-determination. It develops the key competencies that enable individuals in an organization to perform their current and future jobs (Kelly, 2006). Groups within organizations use HRD to initiate and to manage change. Therefore, it can be said that human resources with their convenience and competencies are also an important element of an organization assisting to meet the industrial needs and influencing the regional economic development and competitiveness. This research examines, whether a cluster approach and human resource (HR) strategy can act as a driving force for strengthening the economic development and competitive advantage of a firm.

This study seeks to give an overview of research on economic cluster and clustering as a tool for improving human resources and regional development, followed by cluster concept focuses on the internal processes of regional development. The cluster approach has been developed for different institutional and strategic environments focusing on the importance of linking firms, people and knowledge at a regional level, in addition to the national level, as this is one of the ways of making regions and nations more innovative and competitive (OECD, 2007).

1.2 Cluster concept in business

Cluster can be considered as a *media* to an organization for enhancing the organizational performance through human resource development. In the nineteenth century, Alfred Marshall used the expression "industrial districts" while remarking that industries tend to concentrate in specific geographical areas (Fioretti, 2005). In view of that Marshall (1920) also paid much attention on cluster during his study on industries of United Kingdom. During this period the prominence of the cluster concept was particularly triggered by Porter, Enright and several other economists where their keen intension was to improve the firms' competitiveness and to exploit the existing resources, i.e. human resource that enhance the economic growth of a region as well as a nation and to comprehend how innovation works in order to stimulate the regional growth (Das et al., 2008).

Later on during 1990s Porter's cluster approach was introduced and the concept was broadened by defining clusters as: A geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities (Ingstrup et al., 2009). Based on this definition, Porter (1998a) has been given the concept of cluster a new lease of life where he mentioned that clusters encompass different types of actors with different goals and motivation, including suppliers, customers and also governmental and other public institutions such as universities, colleges, standard-setting agencies, think tanks, vocational training providers and trade associations and missions. Again Porter (1998b) argued that competitive advantage and strong industrial clusters are inter-related that enable a firm to achieve its competitive advantage. According to Andersson et al. (2004) clustering, thus leads a firm to gain collective efficiency, where an individual firm can hardly achieve it alone. The concept of cluster has been defined by different authors in different way.

According to Cortright (2006) there is no such fixed and single definition of cluster. It is necessary to modify one's definition depending on the purpose of the given study.

In this doctoral thesis the definition of Porter has been considered According to Porter (1990, 1998a), a cluster can be described as a geographic concentration of mutually interconnected companies, specialized suppliers, service providers, companies working in the same fields and associated institutions, such as universities, agencies and business organizations of different directions that compete but also cooperate[1]. Porter (1990) in his book *'Competitive Advantage of Nations'* expresses an assumption that commonly interconnected fields concentrated geographically in a restricted area are a driving force for national, regional and local growth.

In short, companies can become a cluster as follows:

➢ By increasing the production of the companies in the cluster.
➢ By driving innovation in the field.
➢ By stimulating new business in the field.

The strategy and goals of a cluster usually progress through confirmation and association of all participating members. The members of the clusters have to be aware of the importance of clusters goals, which will be beneficial and significant as well as facilitate and lead them towards increase their performance. While addressing *the areas of joint activities of clusters* several researchers (Breshi & Malerba, 2006; Solvell et al. 2003; Bruskova, 2003; Simon & Troblova, 2007a) and Innovating Regions in Europe (IRE, 2005) subgroup all the way through literature on clusters, emphasizes that it is possible to classify the following basic areas of possible cooperation:

Networking

Networking represents the creation of conditions for a formal and informal flow of information and knowledge within the cluster. It can be done in the form of meeting among the representatives of individual clusters, information can be exchanged through web pages and/or publishing a magazine (newsletter) etc. The management of a cluster may also develop external contacts such as vendors, customers, providers of financial resources, with educational, research and other institutions.

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[1] *INDUSTRY CLUSTERS AS AN ECONOMIC DEVELOPMENT STRATEGY*
Available from http://www.uwex.edu/ces/cced/economies/northernedge/ne_clustersection1.Pdf [Accessed on 12.2.2012].

Management and development of human resource

Management and development of human resources represent the accessibility and qualifications of human resources, which is an important area of cooperation among the companies participating in clusters. There is several human resource management activities that companies can offer to enhance the levels of their human resources such as: personnel administration, training and development, career development, talent management, manpower planning etc. Among them clusters may organize education of employees in professional courses, regular schooling, joint seminars, conferences aided by various educational institutions or form a joint educational center.

Research, development and innovations

Focusing on research and innovations, cluster as well as individual participating companies may achieve a dynamic growth. The support of innovations concentrates on the development of new products, improvement of their properties or on innovation and optimization of company's proprietary processes. The companies joined together in a cluster can share information and ideas and work jointly on research projects or support the formation and development of spin-off companies. They often may work together with research institutions, which enable them to access the necessary material, trained personnel and technical means for the implementation of innovative projects. The research institutions can actually profit from that projects since they can better implement results of their work into practical and commercial sphere.

Business cooperation, marketing and public relations

The area of business cooperation includes for example shared production or joined purchasing including the pressure on suppliers and their conditions. Additionally Simon & Troblova, (2007b) pointed out that the contribution of the cooperation may increase the effectiveness of logistic management through sharing the costs of marketing research and studies, joint attendance on fairs and expositions, joint promotions (for example by means of catalogues of products and services, joint logo, trademark and advertisement).

Investments

For a successful development of a cluster and implementation of joint projects it is necessary to secure suitable and sufficient financial resources. A cluster can attract investors with more advantageous conditions for financing or they can secure a joint financing. This investment approach significantly reduces the capital costs and entrepreneurial risks.

Influencing policies – lobbying

Another important area of cooperation that supports the growth of a cluster is lobbying and influencing policies. This may apply to build the necessary infrastructure, changes of legislation, grant policies etc. A cluster amplifies voice and the power of smaller companies. The basis of establishing the activities of a cluster is the definition of its vision. In initial phases of the development of a cluster a major emphasis is given to fulfil the short-term goals. These are relatively easy projects that do not require any special resources. But while taking initiatives it should reveal that how these joint activities of cluster will be advantageous. Therefore, from the literature it has been viewed that the presence of cluster builds more competitive advantage within the industry and even outside the industry. It seems that cluster has a great impact to facilitate the economic status of a country as well as to any industry. Now, the question arises why cluster has become one of the important media to enhance the competitive advantage of a firm? And how cluster facilitate the firms to promote their competitiveness? To get the answer of all these questions we need to proceed further in our next part. Beside these the study from earlier researchers also shows that by joining cluster companies are getting more benefited than earlier.

This study presents an overview of research on economic clusters and its policy strategy for improving the human resources and regional development. A recent trend in management shows the significance of a cluster as an integral part of business administration, economics, economic geography, and urban and regional planning, where it has also caught the imagination of scholars and policy makers. Research shows that in most developed countries governments at central, regional, and local levels have conducted the cluster studies and introduced policies aiming at supporting existing clusters and human resources within the clusters that stimulating the emergence of new clusters. Today, the developed and developing economy implementing cluster concept as an instrument for the development of rural small and households industries and also for the development of communities related to these industries. Generally the cluster concept suggests a change in the units of analysis from isolated firms to a network of firms, which have an advantage of effective local knowledge up gradation, skill development, empowerment of local community, caste people and innovation etc. (Das & Das, 2011).The successes of these policies are varied substantially but cluster policies seem to become an integral part of the political thinking on industrial and regional policies. For example international organizations, like OECD, have conducted major cluster studies to support the regional development of cluster policies (Karlsson, 2007). The framework of cluster is centred in two key concepts for SMEs development: (i) *innovation clusters* and (ii) *cooperation networks*.

A cluster- based approach or network-based approach; these two concepts are connected and highlight the importance of interactive learning and the diffusion of different types of knowledge: tacit or codified, scientific or practical knowledge etc. According to Ceglie et al. (1999) SMEs are often unable to capture market opportunities that require a large scale of production. They are also unable to achieve economies of scale in the purchase of inputs (such as equipment, raw materials, finance, consulting services, etc.), and the creation of an internal division of labour that could foster cumulative improvements in productive capabilities and innovation. Small size also constrains the internalization of dynamic functions such as training, market intelligence, logistics and technology innovation. Even innovative technology -based firms have a propensity to be deficient in key skills and resources, such as marketing or business capabilities.

Additionally, Berry (1997) noted that small firms' limitations unusually fall in the areas of access to technological information, and guidance on quality control; access to finance; assistance in the purchase of materials or equipment, in workplace organization, in financial management or in other determinants of effective performance and market stability. More significantly, small-scale entrepreneurs in developing countries are often not well prepared to look beyond the boundaries of their firms and capture new market opportunities. Therefore, under these circumstances clustering[2] can improve the competitive position of SMEs and reduce the problems related to their size through mutual help. For example, companies may establish a localized network to become more specialized, to harmonize each other's capabilities (by sharing resources, pooling together their production capacities and purchasing power).This condition may lend them a hand to conquer international markets which are normally beyond an individual's reach (Saha, 2008).

1.3 Role of clustering as a way to achieve competitive advantage

In continuation with our previous discussion the appearance of cluster perception represents one of the most eminent policy approaches to addressing the tension between globalization and localization. The regional specialization that has been built up over decades are transforming nowadays very rapidly. Earlier many regions that were historically production oriented are currently losing out due to lower-cost locations and started to emphasize on reorienting their activities to higher value-added non-manufacturing industries or R&D-intensive manufacturing niches.

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[2] *QUANDT, C. et al. (2000) Fostering the Growth of Innovation Clusters for Regional Development: Building a Network of Software Clusters in Paraná, Brazil Available from http://in3.dem.ist.utl.pt/downloads/cur2000/papers/S11p05.pdf [Accessed on 12.2.2012]*

According to The Institute for Strategy and Competitiveness[3] clusters are described as geographic concentrations of interconnected companies, specialized suppliers, service providers, and associated institutions in a particular field. Where, it gives us an idea about the way clustering facilitates associated institutions, educational and training institutions (to build the workforce for an industry); research institutions (to generate the scientific knowledge) required for technological change. Economist Asheim et al. (2006) stated that in general cluster has three kinds of embedding. Namely: *Institutional embedding* relates the impact of regulation and norms of conduct, taxes, subsidies, legal system, infrastructure, schooling, research and labour market. *Structural embedding* relates the features of networks, density, centrality and the stability of the structure i.e. the rate of entry and exists. *Relational embedding* relates the social network to build the linkage between one firm and another that strengthen the ties, bonds and alliances of the inter-organizational relationships .

Now let us see whether the companies within the cluster are more competitive than the ones who are outside the cluster. Research shows that the companies within the cluster are more competitive and have better conditions for being competitive. However, being in a cluster is not enough. It needs a strategy to be competitive. According to Porter (1996) the key for competitive success is strategy. Competitive strategy is about being different. It means deliberately choosing a different set of activities to deliver a unique mix of value. Some clusters are outperforming others with longer tradition and much richer environment in terms of suppliers, training and technological institutions, associations, etc. It has been observed that enterprises are enables to achieve the optimum level of outcome at minimum investment while they are associated with clusters. In compare with traditional industrial agglomeration, the *basic feature of cluster* has been displayed in following four aspects. These are as follows:

(1) *Cluster is mainly formed by small companies.*

(2) *Cluster is based on the local network which has the character of specialized division and cooperation.*

(3) *The local network has the character of "embeddedness".*

(4) *Cluster has an integrated production department.*

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[3] *PORTER, M.E. (2010) Clusters and Cluster Development*

Available from http://www.isc.hbs.edu/econ-clusters.htm [Accessed on 12.2.2012]

It is necessary to be noted that the process of clustering of enterprises and economic activities has been happening across the globe only the type, scale, scope and timing have been different. In the early stages the driving factors of industrial cluster as well as the major features has been mentioned in Fig.1.1 which illustrates the framework of industrial cluster from the economic development point of view. It demonstrates how the microeconomic foundations as a whole such as: internal aspect (*company operations and strategy*) and external aspect (*micro business environment)* raise the economic growth, i.e. productivity growth. . In another way, the foremost traits of cluster are as follows (a) proximity to raw materials, (b) presence of customers and markets, (c) presence of skilled labour, (d) presence of business development or support services (Feser, 2001).
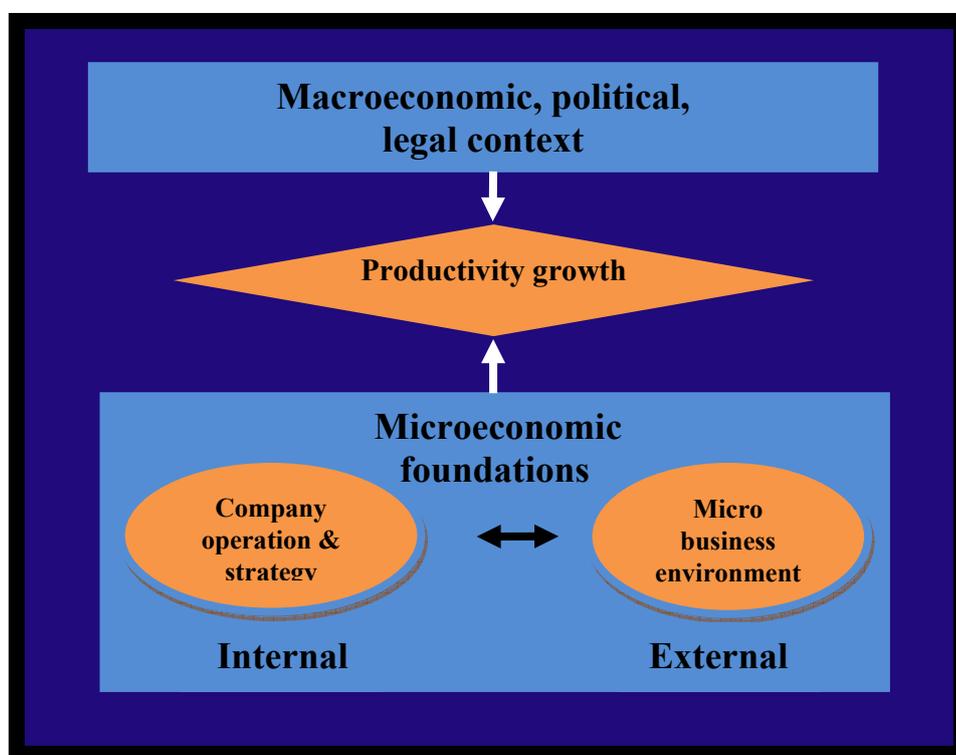
Fig. 1.1: Framework of Industrial Cluster.
Source: Feser, (2001)

At the same time the macroeconomic factor, political and legal context also raise the economic growth of a region. Moreover, these aforesaid microeconomic foundations show the way business can increase their productivity and reduce costs. In short there are four major sources of productivity and cost benefits linked with industrial clusters that access the (1) *inputs and infrastructure* (2) *labour and human resource pooling* (3) *information and performance measures and* (4) *complementary products* (Gugler & Keller, 2009 ; Xuedong et al. 2008).

These benefits occur both directly and indirectly to the firms in sequence to improve and inflate regional growth.
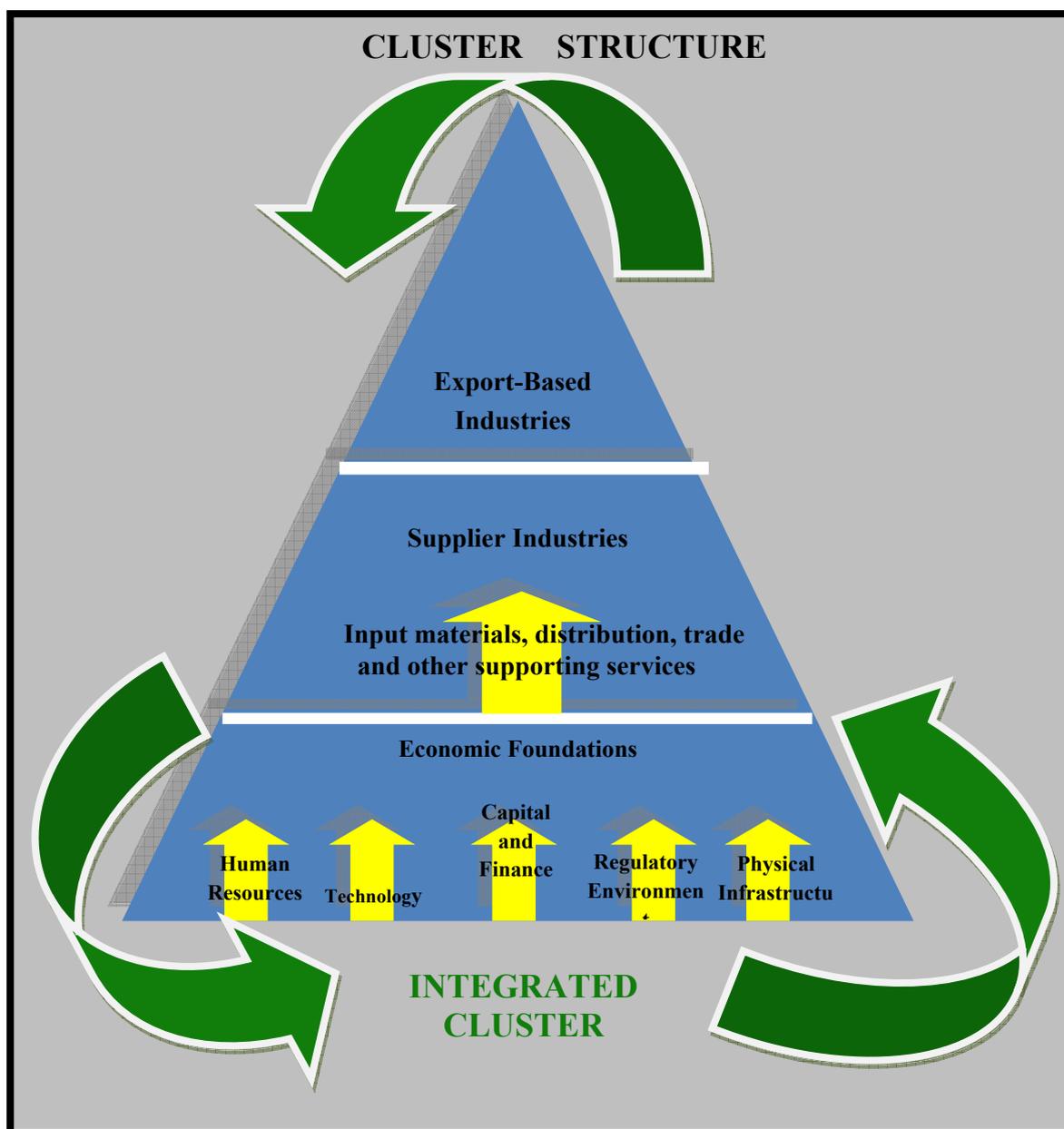
Fig.1.2: Model of Cluster as a Pyramid[4]

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[4] *THE MITCHELL GROUP, INC (2003)Promoting Competitiveness in Practice, An Assessment of Cluster-Based Approaches, series of four Reports, 17th November,2003 Washington, DC 114, p.23.Available from*

http://egateg.usaid.gov/sites/default/files/An%20Assessment%20of%20Cluster%20Competitive ness.pdf [Accessed on 12.2.12]

Simultaneously, Fig.1.2 exemplifies the way clustering supports a firm to keep pace with the dynamic world and endorse the competitiveness of a firm. Where, the model of cluster as a pyramid developed by the Stanford Research Institute (SRI) International tries to focus the major activities undertaken by cluster. In Fig.1.2 the top tier of the pyramid represents the "*core cluster firms*" that export goods or services to other states, regions, or countries. The second tier of the pyramid represents "*supplier firms*" or those firms that provide inputs to the core cluster firms and are an essential part of the value chain. The bottom tier of the pyramid represents the "*foundation factors*" that provide the building blocks of the cluster.

However, perhaps the most important dimension of the model is the arrow that surrounds the pyramid -- in other words, the synergies and dynamism result in that all three layers of the pyramid are engaged and working towards a common goal. Further, Fig. 1.2 shows the way cluster core firms works together in three phases and how they are inter- related to each other within the integrated clusters. These three phases are surrounded by the structure of the cluster and the integrated clusters that allows firms to achieve the common target (Saha, 2008).

1.4 Strategies and driving forces of cluster in today's business

The development of the cluster concept in the era of globalization and localization seems to promise an answer to the challenges created by increased international competition and the growing importance of innovation in the knowledge economy. The existence of cluster increases the overall regional growth by improving the HRM that leads to achieve the competitive advantage and enhance the performance level of an individual firm. Let us try to answer the question on how this is possible. In order to identify the possibilities, we need to know the different fields of cooperation among the members in a particular cluster. There are several fields of cooperation as follows (Pavelkova et al. 2007):

> - Networking
> - Human Resource Management
> - Research and development, innovation processes
> - Marketing, public relations
> - Investments
> - Lobbying, etc.

Fig. 1.3 is an example of the main driving forces of a cluster that facilitate the industries. Basically, a *cluster core of firms* has five main factors i.e., *the human factor, the technical infrastructure, the network structure, capital resources and knowledge resource*, which become more competent with the existence of certain encouraging conditions like (a) specialist supporting firms, (b) physical supporting environment, (c) social supporting environment and (d) demand market conditions that have a great impact on innovation and competitiveness of firm's management.
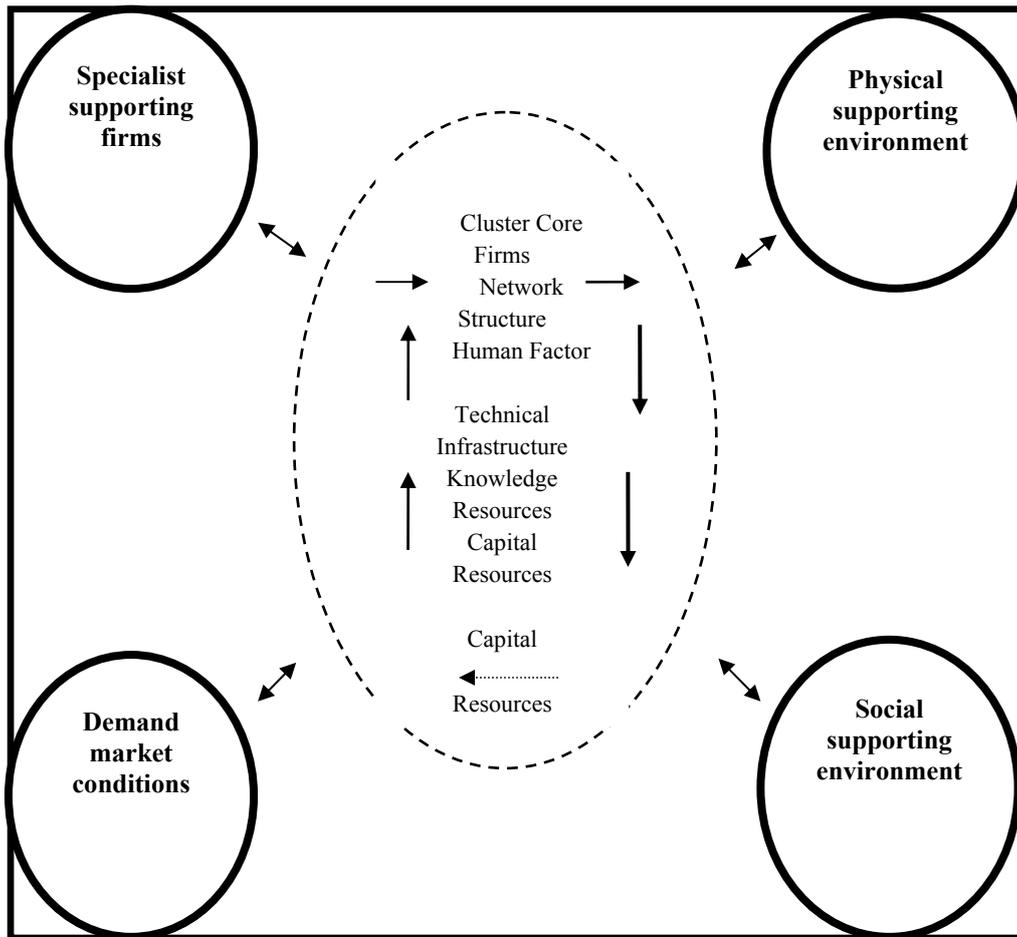
Fig1.3: Integrated Model of Cluster Map
Source: Martinez, (1998),

Each of them measures the competitiveness of firm's management. These five "balloons of competitiveness" are interrelated. Each of them measures the competitiveness of a firm. Each condition has a close inter relationship between them to make an efficient and effective firm (Martinez, 1998).

1. 5 Role of human resource management in business

The term 'human resource management' (HRM) is simply the reflection of three words that does not provide much enlightenment. Where, 'human' implies it has something to do with people; 'management' places it in the domain of business and organization; but 'resource' is a highly ambiguous concept that many people find difficult to relate to (Price, 2004, p.32). Now the question arises what exactly is the 'HRM'? According to Storey (2001), HRM is a distinctive approach to employment management which seeks to achieve competitive advantage through the strategic development of a highly committed and capable workforce. Where, they are using an array of cultural, structural and personnel techniques.

On the other hand, according to American Management Association (AMA, 2000), HRM can be described as the organizational function accountable for obtaining and maintaining qualified employees. In today's complex environment, fulfilling that mission is a major contribution to an organization's success. Therefore, it can be said that HRM is the function within an organization which is predominantly tasked with the different issues. These are as the role of recruitment, selection and introduction, personnel administration, training and development, performance and reward management, talent management, succession and career planning, labour relations and HR planning that is providing a general direction to the employees. In short it can be said that HRM is an important tool that includes

➢ planning and directing

➢ development and proper utilization of human resources

➢ counseling employees,

➢ build public relationship

➢ classify jobs and prepare wage and salary scales

➢ deal with disciplinary problems

➢ negotiate with labor unions and service union contracts

➢ develop safety standards and practices

➢ manage benefit programs, such as group insurance, health, and retirement plans

➢ provide periodic reviews of the performance of each individual employee

➢ recognition of employees strengths and their needs for further development

Traditionally, the role of HRM has been administrative and organizational. This is however changing to a more strategic role with a purpose of utilizing employees to add value to the organization. Therefore, human resource strategy is an important determinant of intensity and diversity of human resource (HR) practices that help and guide managers' HR practices and affect the success of the organization (Garavan et al. 2008; Lengnick-Hall & Lengnick-Hall, 1988; Ozutku & Ozturkler, 2009)

From the previous discussion we came to know that there are numerous different factors playing an important role for increasing organizational performance that leads an organization or a firm to promote its core competences. Among them *human resource* is one most essential factor in an organization that need to be taken into consideration. Several authors have different opinions, among them O'Reilly & Pfeffer (2000) said that, we do live in a world in which knowledge, intellectual capital, rather than physical capital, is increasingly important and we need smart people who can do great things – increase productivity, build new products and services – and do so even more quickly. Researchers Boudreau, Baird & Meshoulam (1997) emphasize that the role of employees in organization is important for obtaining enterprise goals. Beside these Quinn (1992) and Mayo (2001) argued that employees are the most important asset of an enterprise. On the other hand, Hamel and Prahalad (1994) pointed out that *human capital* represents the only sustainable source of competitive advantage.

Therefore, from the above observation it can be said that in the era of globalization human resources are viewed as a source of competitive advantage. Consequently, Price (2004) stated that a philosophy of people management is based on the belief that an organization gains competitive advantage by using its people effectively and efficiently.
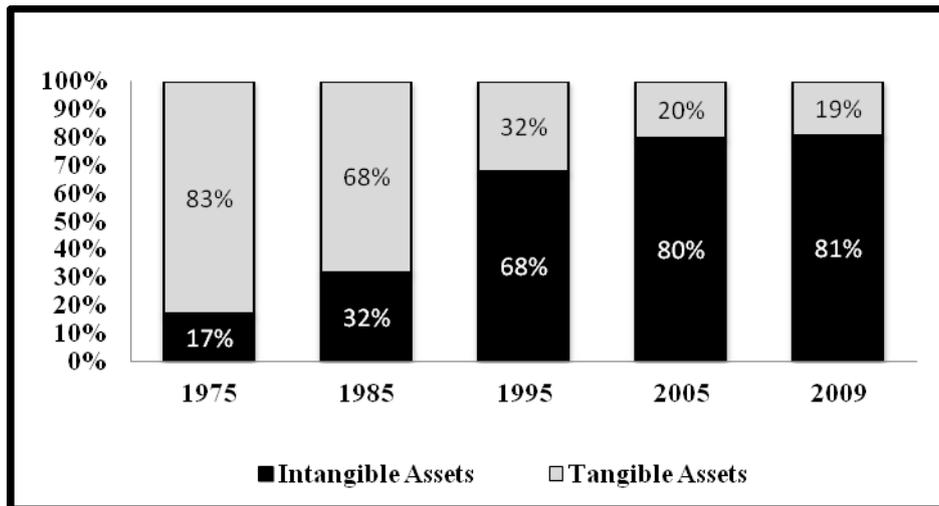
*Fig. 1.4: Source of Market Value Shifted from
Tangible Assets to Intangible Assets.
Source: Ocean Tomo's, (2010).*

Nowadays, the business world has shifted its focus from physical assets to knowledge and information i.e. human capital. This is the most valuable asset as it guides the organization into a correct path, to be on time, to meet the right person, at a right place (Dransfied, 2000) . According to various management experts there are different HR strategies such as: (a) building and guiding coalition, (b) imaging the future, (c) understanding current capabilities and identifying the gap between business strategy and corporate strategy, (d) creating a map of the whole management system, (e) modelling the dynamic of the vision, (f) developing network into action (Rennie, 2003; Khandekar & Sharma, 2005). This research investigation tries to emphasize that present competitive pressures have an influence on the increase of a strategic value of a skilled, motivated and adaptable workforce. Thus, HRM strategies enable a firm to identify and to adopt the human capital initiatives, which are probable for enhancing the competitiveness and shareholders' value (Chew & Horwitz, 2004).The above mentioned Fig.1.4 depicts the way the source of market value has shifted from tangible assets to intangible assets during the period of globalization.

It is the reflection of HRM's importance in today's business world. It shows that even though in 1975 the market value of tangible assets was 83%, in 1985 its growth started to gradually decrease from 68% to 19% in 2009. While in 2009, the implied market value of intangible assets reached 81%, and remained on a high level throughout the years covered within this research (Ocean Tomo's, 2010).

Regarding this new challenge of the HRM, this study seeks to identify whether the HRM can really enhance the competitive advantage of a firm or not? In order to answer this question, we must take a glimpse of other researchers and management experts' views. Coff (1994) mentioned that human assets are a key source of sustainable advantage due to their causal ambiguity and systematic information, which are making them inimitable. Then again Gratton (1997) identified six factors for success of a firm, which are as follows: the commitment of top management; the motivation and aspirations of recruits; the core capabilities of the management team; the team's aspiration; its ability to build and ability to generate commitment and trust, and relationships (Barney, 1991; Grant, 1991). Similarly, Fitz-Enz (2000) highlighted that 'people' are the lifeblood of any business enterprise, which cannot be compared with material things like: cash, buildings, or equipment. Briefly, it is to be noted that HRM in modern enterprises has two inter-related roles (Jassim, 2007): (1) *to foster the performance of an enterprise, and (2) to act as a support for achieving competitiveness through people.*

On the other hand, driving forces are the *knowledge, skills, abilities and initiatives* of human capital, i.e. the *innovative perspective* of balance score card to measure the performance of an economic value added firm. Where, it has been observed that recent management experts believe that *knowledge* is one of the vital and major driving forces of HRM to keep speed with the change and to identify the performance driven behaviour of a firm. According to management expert[5] performance driven behaviour means a combination of performance orientation and professional excellence. This professional excellence facilitate an organization to be a High Performance Organization (HPO) when within the organization there exist an adequate knowledge and skilled workforces that smooth the progress of the organization. Performance driven organization consists of fostering the performance- driven behaviour of a firm, which foster the performance- driven behaviour of an individual.

Similarly, this also aligns the personal objectives with the firm's objectives, and linking performance management with the competency management. Therefore, it can be said that the performance of a firm directly or indirectly depending upon its knowledge worker's abilities and skills that cannot be denied (Saha, 2007).

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[5] *WAAL, A. DE. The Performance Driven Behavior As The Key To Improved Organizational Performance [online]. Available from http://www.pma.otago.ac.nz/pma-cd/papers/1032.pdf [Accessed on 12.2.2012].*

1.6 HRM as a support to achieve competitiveness

From various approaches of HRM we came to know that one of the major sources of competitive advantage of a firm are the employees, i.e. HRM. Currently, the first role played by HRM in a firm is being *support system* that provides guidance and supervision for the people management in the workplace. The second role is that of *human resourcing* that includes necessary tasks as training, development, recruitment, selection and planning. Another role is the *strategic management* that plays an important part of corporate strategy, which is a key part of the decision making cycle.

In short it is to be noted that HRM in modern enterprises has two inter-related roles: (1) *to foster the performance of an enterprise*, and (2) *to act as a support for achieving competitiveness through people* (Poloski & Vidovic, 2007). According to resource advantage theory of Hunt and Morgan (1996), a firm strives for superior financial performance by enabling its resources to capture a position of a competitive advantage in a certain market or a market segment. This position is captured if two conditions are satisfied i.e.: (1) *if the firm can create more customer value than competitors do,* and (2) *if the firm has lower investment costs than competitors.* In a nutshell, it describes the strategies of the HRM that encourage high individual performance on how to lead enterprises and to meet competitive advantage (Burke. & Coope, 2008).

Fig. 1.5: Organizational Learning and Strategic HRM for
Sustainable Competitive Advantage
Source: Khandekar & Sharma, (2005),

From the aforementioned Fig.1.5 we can say how the organizational learning influence strategic HRM to implement human resource practices that can positively impact the knowledge creation process and achieve the strategic goals of the firm. A manager can use human resource practices such as developmental assignments, formal training opportunities, and compensation to create new tacit knowledge, to create new explicit knowledge, and to reduce the loss of tacit knowledge by reducing the employee turnover.

In order to meet the pressure of dynamic environment and to enhance the knowledge workers potential impending, firms must encourage human resource practices that promote the continuous skill development process (Khandekar & Sharma, 2005). Fig.1.5 ensures that strategic human resource practices have a key link between the worker's tacit knowledge.

On the other hand, the central feature of contemporary competition is a company's ability to create strategic advantage through ongoing improvements in its products and processes. Accordingly, Fitz-Enz (2000) mentioned that ccompetitive pressures have increased the strategic value of a skilled, motivated and adaptable workforce that raised the importance of HRM strategies to support and to develop it. A strategic perspective of HRM becomes necessary for the development of a firm in order to identify and adopt human capitals initiatives that enhance competitiveness and shareholders' value.
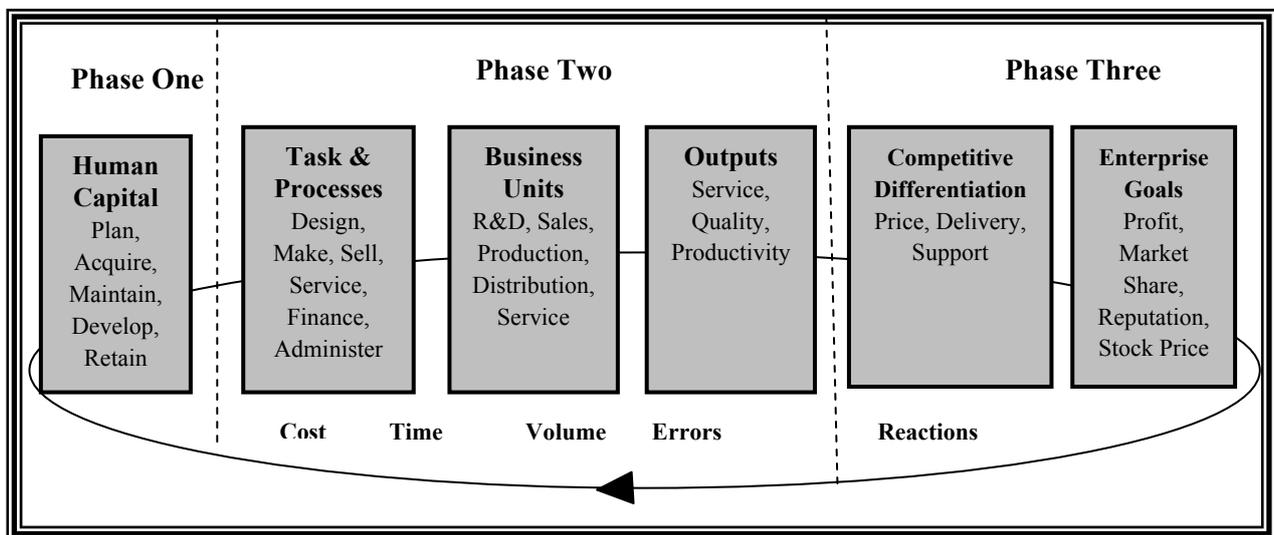
Fig. 1.6: Data to Value Cycle
Source: Fitz-Enz, (2000),

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In continuation with the above discussion Fig. 1.6 shows how HR systems contribute to a firm to improve its productivity, by three phases. These are as follows: *Phase One*- that deals with human capital (where organizations make a plan to achieve their goal and for that they acquire adequate knowledge, skills and abilities). *Phase Two*-that deals with task and process design, business units (R&D sales, production, distribution service) and outputs (service, quality and productivity). *Phase Three*- that deals with competitive differentiation (product price, product delivery and support) and enterprises goals (profit, market share, companies reputation etc.). It has been observed that enterprises deliberately using this strategic HR practices for enhancing their outcome that enable them to maintain a smooth relationship between HR system and organizational performance.

However, this research deals with the outcome of an outstanding HRM and its involvement in an organization that enables them to develop their competitiveness Human resource is one of the most vital organs in any organization. The circular flow of information builds a strong bond among the employees that brings a confidence and responsive attitudes to co-operate each other as a family member. To enrich the performance level, organization needs to take proper supportive actions for the betterment of the employees by providing:

> ➢ Good job opportunities in a constantly growing enterprise

> ➢ Promoting employees through intensive training and further education

> ➢ Offering interesting tasks in a highly technological working environment

> ➢ Offering fringe benefits and modern infrastructure as well as

> ➢ And a secure workplace in an enterprise

This way the employees can devotionally concentrate on their jobs and bring fruitful innovative work, that will lead the organization to be exceptional from other competitors. Thus employees Knowledge, Skills and Abilities (KSAs) will enable to upgrade the level of its products and services. If any organization needs to meet the global competition first of all it has take into consideration about the quality, ability and skills of its human resources and how they represent themselves in the open market (Fitz-Enz 2000).

1.7 Cluster initiatives and cluster policies

While analyzing the different activities of clustering that increase competitiveness and regional growth we cannot ignore the cluster policies too. Cluster policies are currently a hot topic in this competitive age. Policy makers and economists in many countries, both at the national and the regional level, believe that supporting and creating clusters is the major way to be competitive and to win in the globalization race. According to Solvell et al. (2003), the cluster initiative can be said as an organized effort that focused on the increase of growth and competitiveness of a cluster in the region through the participation of cluster companies, government, and/or research community.

As Andersen et al. (2006) and Solvell (2003) have found, clusters and cluster initiatives are supported by governmental and regional institutions in a number of countries, mainly in the following form:

> ➢ informational support and education by means of "Guides", seminars, and conferences,

> ➢ grants supporting mapping of potential clusters,

> ➢ grants supporting the implementation of selected projects.

Generally, clusters positively influence the real income levels in the regions. This has important implications for the regional development polces, which are related to the type of regional cluster policy connected with the: (1) Type of cluster(s), (2) Actual degree of cluster formation in the region, and (3) Information and knowledge about existing clusters and cluster policies held by relevant political authorities.

It is necessary to say that individual countries and regions have different approaches about founding and development of clusters. Below there are few examples of countries having intensive support of development of clusters and cluster initiatives. Through the National Research Council of Canada (NRC), the Government of *Canada* has made a series of investments in clusters as a part of National Innovation Strategy. NRC is composed of 20 institutes located across Canada. Since 1998, the Regional Government of Upper *Austria* has pursued a cluster-oriented economic and technology policy on the basis of the "Upper Austria 2000+" Strategic Program.

In the *Czech Republic* cluster initiatives have been supported by the program "KLASTRY," which began in 2004 and has enabled identification and support of new sectors and sub-sectors with potential to improve competitiveness through collaboration and innovation (Pavelkova et al. 2007).

The 'Information and Communication Technology' (ICT) Cluster in India has also attracted much research and media attention as, it is often referred to as the Silicon Valley of India, where it boasts over 1500 IT firms like Infosys, Wipro, Texas Instruments and Hewlett Packard. And Government of India (GOI) took the initiative to build and create an enabling environment to enhance the emergence of IT cluster in India especially in *Bangalore* (Saha & Pavelkova, 2008b).
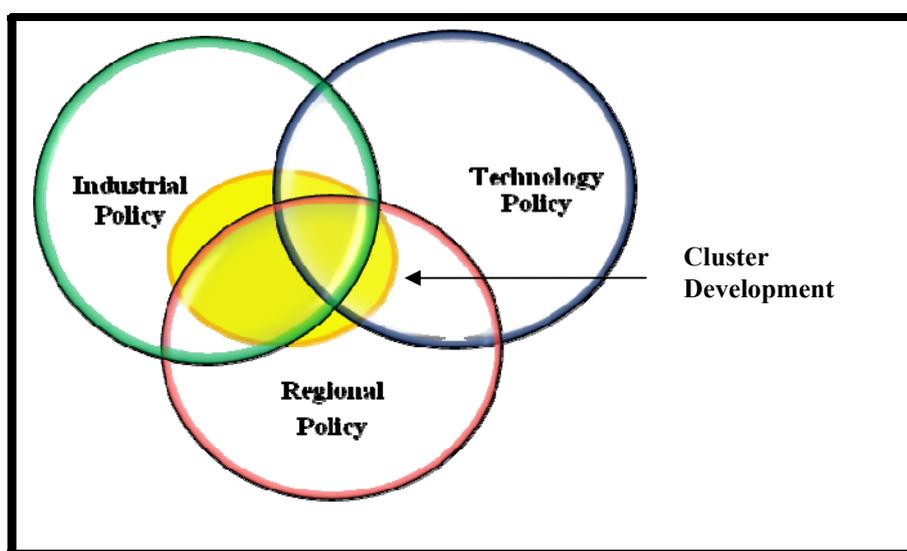
Fig.1.7: Cluster Policy
Source: Paytas et al. (2005)

The above mentioned Fig.1.7 exhibits, the way cluster policy acts as the cluster diamond. Where, Porter mapped four interactive dimensions that impact cluster competitiveness. These are factor conditions, demand conditions, firm strategy and rivalry, and supporting industries. Porter contends that clusters are the building blocks of a productive, innovative economy. A cluster is more than a single industry making a single product(McPherson, 2002) Successful clusters involve a variety of related industries, suppliers and institutions all located in a geographical proximity. He purports that facilitating cluster development is a major role for government.

Therefore, clusters policies enable local regions to build those special relationships and gain those intangible assets of knowledge, brand and reputation, which enable them to compete in the world market. It shows that how the industrial policy, technology policy and regional policy are linked with the cluster development. The way firms compete is the key factor for increasing their growth and productivity which eventually raise the standard of living. Nowadays the competitive pressure has shifted the focus of a firms' strategy in to an innovation by lowering their other investment costs, but emphasizing on the investment required for competent manpower. Simultaneously, growth-oriented firms can push the innovation in a regional cluster, but there must be a sufficient local demand or sensitivity in order to meet the external demand that make available to restrain the innovative attitude of a firm.

It has been overviewed that cluster development strategy tends to focus either on the drivers of national and regional growth or focuses on the needs of small and medium enterprises (SMEs). The cluster approach provides a more transparent, inclusive and potentially less trade-distorting framework for efforts to strengthen strategic sectors than the prior policies of supporting large and often state-owned firms. The initiative or programme to support the clusters of SMEs started during 1980s and be inclined to focus on building critical mass for export, access to information and technology absorption (OECD,2007). The initiatives that spotlight the inconvenienced regions also tend to be closely linked with small and medium enterprises development policy (Paytas et al. 2005). Thus it has been observed that currently small enterprises tend to join cluster to meet the global competition and technological innovations that can promote their competitive advantage with local elements. Basically, proximity brings:

> ➢ Easy access to specialized suppliers, services and human resources.

> ➢ Information spillovers.

> ➢ Flexibility and fast change reaction due to extreme specialization.

> ➢ Imitation facilitates faster innovation adoption.

In short, it can be said that with the help of cluster and government's support small enterprises become more flexible and they can rapidly adopt the modern innovations. It is necessary to say that individual countries and regions have different approaches for founding and development of clusters in turn to facilitate the sustainability and openings of SMEs. Below there are few examples of countries having intensive support of the development of clusters and cluster initiatives in order to sustain SMEs growth.

A group of researchers of Tomas Bata University in Zlin, Faculty of Management and Economics along with its partners carried out a survey using questionnaires and interviews with cluster managers in the first half of 2007. Four plastics clusters were chosen for detailed research from different regions and with different stages of life cycles. These are as follows: (Pavelkova et al. 2008)

➢ *Borg Plast-net from Norway,*
➢ *Kunststoff Cluster (KC) from Austria,*
➢ *Wisconsin Plastic Cluster Partnership from the USA, and*
➢ *Plastic Cluster from the Czech Republic.*

Borg Plast-Net Cluster (Norway) was established in 2000 in Fredrikstad as a membership of legal entities. Presently there are 36 companies in the cluster, which create the core of the cluster. About 92% of the cluster partners are SMEs. There were three main goals of the cluster. They are as follows: (i) *Sharing of information, know-how, technologies, capacity* – The main goal is to build good relationships and mutual trust among the cluster members. (ii) *Joint marketing strategy* – The main goal is to build up through joint marketing the good reputation of the cluster. (iii) *Enhance competitiveness and develop new technologies.*

The Plastics-Cluster (Kunststoff Cluster = KC, Austria) is a super ordinated, plastics sector network. It was founded in 1999. The legal body of the cluster is Clusterland Upper Austria, Ltd. (Linz, Upper Austria) and Ecoplus (The Business Agency of Lower Austria Ltd.) The KC is the largest plastics branch network for plastics technology. The network consists of 400 partner companies. About 84% of the KC partners are SMEs. The main goals of the cluster are as follows: (i) *To support, initiate and coordinate inter-company teamwork, as well as cooperation between companies and technology transfer bodies in the plastics sector.* (ii) To concentrate potential and competencies in order *to increase the innovative capacity and international competitiveness of the partners.*

Plastic cluster (Czech Republic) (Knapkova et al. 2007) was officially founded in the beginning of 2006 comprising of 18 representatives of the founders firms. About 80 % of them are SMEs. Four main spheres of cooperation were set by the firms interested in establishing the cluster:

(i) *Human resources* – The goal is to set up a special training centre providing qualified labour force. (ii) *Shared purchase* – Shared purchasing of electricity and material. (iii) *Research and Development* – The goal is to build a laboratory for material, tools, and technology testing. (iv) *Presentation of the cluster* - Creation of the cluster's logo, design manual, web page, catalogue of products.

Wisconsin Plastic Cluster Partnership (USA) was established in 1998 as a non-profit organization. The cluster has 29 members and about 90% of them are SMEs. The vision of the cluster is: "Wisconsin, the center for plastics in the U.S." The cluster has these goals: (i) *Research and Development (applied and pure) (ii) Education Program.* (iii) *Achieve regulation friendly*. (iv) *Be a Green Industry.* (v) *Obtain fair share of federal funding* (Saha & Pavelkova, 2009).

1.8 Influence of industrial cluster on regional growth

In relevance to the above description of cluster initiatives and policies it makes us curious to find out how industry cluster can enhance the economic development of a region. At a glance, we can witness the different researcher's views and statements about industrial cluster and its effects on regional growth. In the economic literature it has been observed that the demand for clustering of firms has been increased over the last two decades from regional, international and industrial economists According to industrial economists agglomeration economies, network effects and knowledge spillovers were believed to be influenced by cluster. (Fratesi &, Senn, 2009).

Regarding this Hill and Brennan (2000), reveals that industrial cluster as a system causes component firms and institutes to generate higher unit earnings and more efficient operations owing to innovations, stimulated by intense competition and cooperation within clusters. Beside theses, they also propose another composition for an industrial cluster grounded in five elements such as: *driver industries, technology, labour, consumer industries and, supplier industries* (Po-Hsuan hsu et al. 2003).

On the basis of aforesaid discussion, it can be said that cluster moves towards accomplishing two important functions that have great influence to escalate the human capital as well as to accelerate the regional growth are as follows (Lundvall , 2003):(a) Through cluster- *competence is built over time in the course of interactive learning demanding proximity and there are increasing returns in the production and use of knowledge* (b) Through cluster - *competence is localized – some of the knowledge is tacit and cannot easily be separated from the cluster - it is embodied in people, organizations and networks.*

Therefore, clusters develop regional proximity among firms promotes learning and competence building. Where they will attract similar and related firms because they want to exploit the common knowledge base and take part in the interactive learning
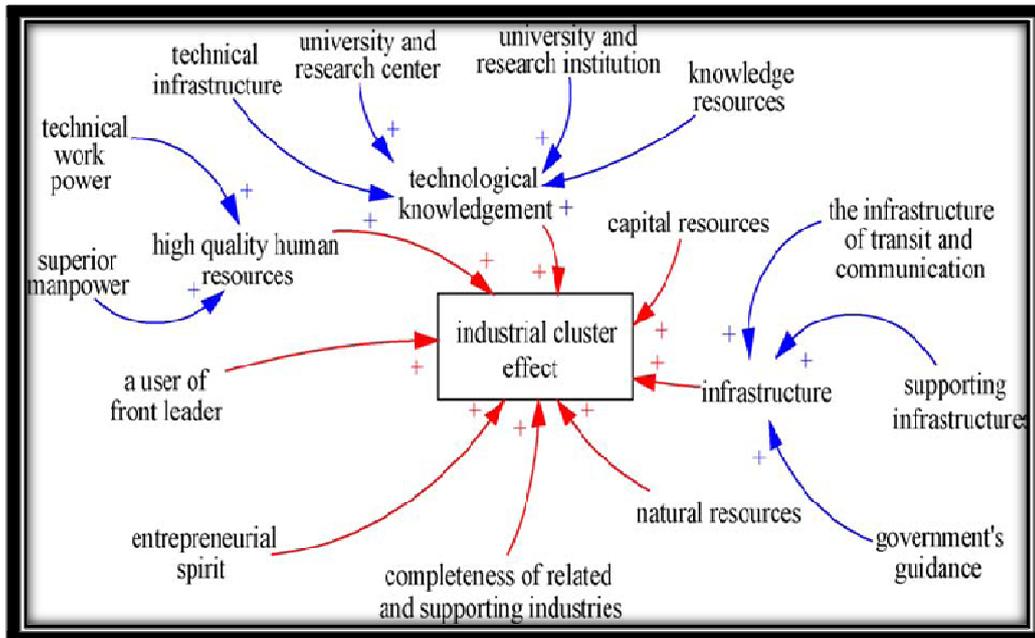
Fig.1.8: Influence of Industrial Cluster on Regional Growth.
Source: Lin et al. (2006)

The aforementioned Fig.1.8 highlighted how the high quality human resources, technological acquaintance, the infrastructure of transit and communication, government's guidance and the chances available have a great power to strengthen the competitive advantage and to increase the regional development. Fig. 1.8 focuses that when entering the competitive environment, companies realize the significance of cluster. In this consequence it is important to see other researcher's opinion about the way industrial cluster influences the regional growth. Carrie (2000) explains that clustering enable a firm to be in the competition between regional firms, to achieve the global activities as firms relied primarily on time-to-market advantages to maintain competitive advantage. At last it can be said that one of the prime conditions of industrial cluster effect include picking up the pace of human resource quality, technological knowledge, capital, flawless infrastructure and foundation of technique that speed up the regional growth.

1.9 Challenges of industrial cluster escalating human resources

In association to our earlier discussion, it has been overviewed that the economy of today is increasingly deemed to the knowledge-based economy, i.e. the skills and abilities of human capital which can be considered as one of the most important resource and learning process.

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According to Baptista and Swann (1998) as well as Bergeron (1998), companies within industrial clusters or regions are more likely to innovate than other companies, as the chances of boosting the technological knowledge are higher. Additionally, Porter (1998) stated that industrial clusters facilitate organizations in making more conscious decisions regarding the selection of their location, fostering productive social relationships in those locations and working with other constituents nurturing the cluster. Researchers claim that the companies, which are within the cluster, are more progressive as they have better provisions and opportunities for being competitive. While associating with clusters, enterprises can attain the following advantages (Pavelkova, 2006):

➢ They can enhance their productivity due to skilled manpower and adequate information.

➢ A cluster can reduce the limitations of SMEs, connect the enterprises from the diverse link of the value chain and enable them to compete against the large enterprises.

➢ A cluster can provide the enterprises an opportunity to reach the critical volumes in key areas by sharing space, personal expenses at fairs and other promotional actions.

➢ Due to cooperation within a cluster, enterprises can increase their accessibility, power and voice in order to make investment in the specialized infrastructure.

➢ Young enterprises can get the benefit of entering into a global market, which enables them studying the marketing strategy.

Therefore, recently the organizations tend to join cluster to integrate and motivate the human resource that enables them to:

➢ develop more skills and specialized labour force,

➢ establish cluster skills centres,

➢ train people for employment,

➢ engage community-based employment intermediaries,

➢ establish new ones to fill gaps,

➢ support regional skills and alliances,

- ➢ enhance its potential,

- ➢ organizations can gain knowledge through attending training and development programme,

- ➢ organize seminars, and conferences (ECOTECH, 2004).

It has been observed that the influence of industrial cluster on human resources, which has a direct impact on the flows of human capital, such as: *demand of professional person, number of research institution, knowledge resources, the need for and way of professional training, quality of human resources, chances of getting high quality human resources, that raise entrepreneurial and technological level, development of entrepreneurial innovative capability, and competitive advantage.* All these factors can enhance the *scope of new business opportunity* that has an immense force in today's business. The present situation in the enterprises raises the demand on the specialized professional employees in order to obtain a better performance facilitating growth and also another factor i.e. establishment of research institutions with aim to enhance the number of expert personnel to meet the global challenges. To overcome the global challenges, companies need knowledgeable people. Within the cluster the chances of knowledge spill over are high. Hence, there arises the need for professional training of employees in order to lead a firm and to increase its technological level. Technological progress within the cluster reduces costs and benefits to be competitive and to gain profitability.

This research tries to demonstrate the way manpower, i.e., human capital flows with the influence of industrial clusters. It has been noticed that human resources are an important factor of forming industrial clusters. Numerous professionals have undoubtedly been gathered for knowledge resources within clusters. Therefore, R&D institutions like universities and public and private research centres play significant roles in providing multi-ways of personnel training, thus satisfying the requirements of specialized training, education, information and technology support. By improving human resource quality and advances in entrepreneurial innovation ability, the competitive advantage of industry is promoted, opportunities are created for new industries, and the attraction of industrial clusters is increased.

Thus, it can be said that clustering increases the overall knowledge, skills and abilities of the human resources that lead a firm with a competent personnel to sustain, achieve, and enhance their performance level and in this way cluster core firms can survive in this era of competition (Saha & Pavelkova, 2010).

1.10   Cluster, HRM and Competitive Advantage

Now the question arises how and in which way HRM and cluster can be a source of competitive advantage. Competitiveness refers to a firm's ability to maintain and gain market share in its industry. Competitiveness is related to firm's effectiveness, which is determined by whether the firm satisfies the needs of stakeholders.

This thesis tries to focus on the way a firm can achieve competitive advantage only if it has adequate knowledge workers and whether the firm realizes the importance of knowledge and utility of knowledge. Generally, organizational knowledge consists of two broad categories: (1) knowledge that is explicit codified knowledge and (2) knowledge that is not codified but exists primarily within the minds of employees, tacit knowledge.On the other hand Porter suggested that competitive advantage theory not only considers the factor endowments such as human resources, physical resources, knowledge resources, capital resources or the infrastructure inherited by organizations industries or regions, but it also emphasizes how these factors are being created and upgraded consistently. Thus, the competitive advantage becomes sustainable, when it resists erosion of competitive behaviour and when the resources and capabilities enhance their market opportunities (Mahapatra &. Shapira, 2003) This study focuses on the fact, that the probability of achieving the competitive advantage of a firm can be higher if a firm has adequate knowledge workers and is aware of the importance of knowledge and its utility.

Generally, organizational knowledge consists of two broad categories: (1) knowledge that is explicitly codified knowledge and (2) knowledge that is not codified, but exists primarily within the minds of employees, tacit knowledge (Jayne, 2006) Therefore, the HRM not only influences the human behaviour in an enterprise, but it also affects the crucial development of human resources as a source of competitive advantage. Researcher Stata (1984), Dertouzos (1989), Whipp and Pettigrew (1991) have argued that growing numbers of organizations realize the importance of human resources as a key to innovative and successful enterprise.

According to them, the rate at which individuals and organizations are educated might become the only sustainable competitive advantage especially in knowledge intensive industries. As it has been observed, the knowledge-intensive industries are under the sunshade of sustainable industry cluster.

Essentially, these clusters find new ways to accomplish their existing status, which develops HR policies and encourage continuous learning, teamwork, flexibility and knowledge sharing attitude (Khandekar & Sharma, 2005; Martin & Mayer, 2008).

In short, it can be said that under the umbrella of cluster, enterprises especially SMEs - become more flexible to compete around the world, access better information, rapidly acquire the specialized resources and adopt the modern innovations. Thus, companies can gain competitive advantage through cluster, though it is not the only main way to be competitive but it enables the human capital of an organization to be more competitive, minimising the cost and maximise the output level, which is the prime object of any industries or organizations.

Furthermore, it is necessary to underline that competitiveness is a lot about attitudes; it is a matter of getting people to think the right way about the problem. The below mentioned Fig. 1.9, Porter's diamond model theory provides a holistic, useful concept, which helps individuals from business, government, labour and other institutions about improving the environment for productivity. It shows again that government has a silent influence on all four major forces that enable a firm to be competitive. This theory stresses that competitiveness involves more than just macroeconomic issues — deficits, stability, and so forth. Countries must begin to understand that the long-term determinant of productivity is rooted in microeconomic conditions in the economy that is the effective and efficient role of government (Porter, 1998b).
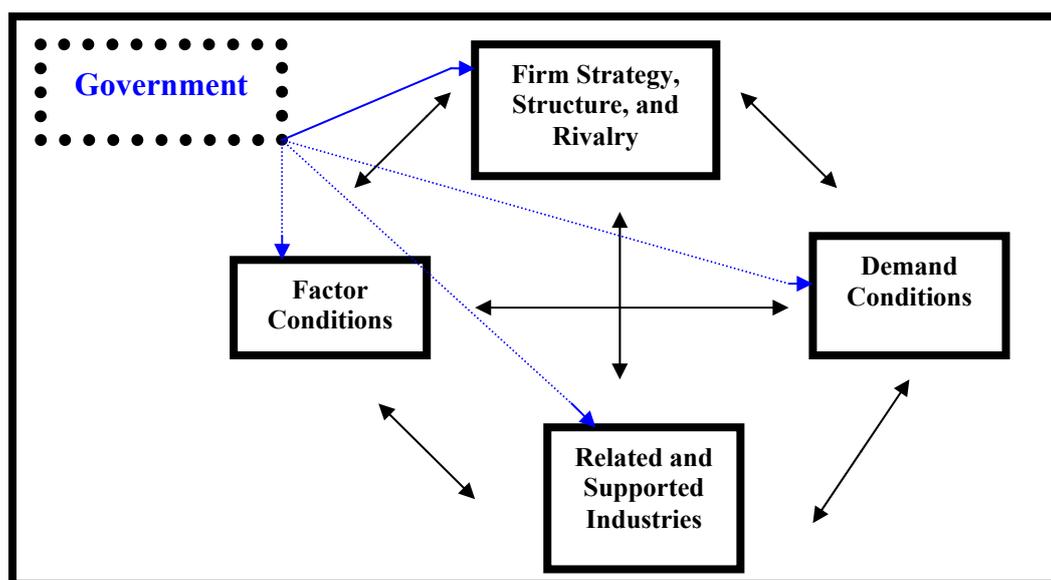
Fig.1.9: Porter's Diamond Model for Competitive Advantage of Nations
Source: Porter, (1998c)

In a nutshell, it is important to emphasize that the economic condition, during the era of global competition, involves a contradiction. It is widely recognized that changes in technology and competition have diminished many of the traditional roles of location.

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The prevalence of clusters reveals important insights about the microeconomics of competition and the role of location in competitive advantage. While clusters represent a new way of thinking about national, state, and local economies, and they necessitate new roles for companies, government, and other institutions in enhancing competitiveness.

Subsequently, to acquire these advantages companies tend to join cluster to meet the global competition and technological innovations that can promote their competitive advantage with local elements. Moreover, it is important to mention that there are three key dimensions of clustering that influence directly the industrial sector which is necessary to study are as follows:. (a) the nature of the market, both the existing and potential as envisaged by the firms; (b) the nature and degree of public and private sector that sustains or drives the production regimes and (c) the macroeconomic environment that can easily and directly persuade the sub sector or region or both. To know, how the clusters as well as HRM can be able to raise a firm's competitiveness this study tries to focus that the influences of industrial clusters reinforce human capital to strengthen their competitive advantage (Saha & Pavelkova, 2009).

On the basis of such insights, this dissertation suggests a theoretical proposal, supported by practical evidence. It tries to focus on how the different factors of industrial clusters can boost up the human capital and hasten the regional growth, which is crucial in determining the national and international industrial competitive advantage. Through a literature review it demonstrates that industrial cluster has a great effect and impact in a global business environment. This condition arises not only for competition between individual companies and supply chains, but also competition among companies in regional clusters. This study considers four important interactive dimensions of industrial competitiveness such as: manpower, technology, opportunity and management. All these factors are inter-related and have a positive effect on growth and development that enables companies to be competitive as well a region to be competitive.

2 AIMS AND OBJECTIVES

The main aim of the thesis is to identify the impact of the *HRM* and a *Cluster* on the Small and Medium Enterprises (SMEs) and the Micro, Small and Medium Enterprises (MSMEs). Main objective of this research is to identify *the value of human resources in cluster activities* persuading to enhance the competitive advantage of a firm. Alternatively, the key principle is to properly justify the aforementioned problem through several specific ideas and views on a cluster and the HRM and their importance pointed in this study.

The purpose of this research is to suggest some recommendations for effective utilization of human resources through clustering that can act as a tool for enhancing the competitive advantage of firm. In order to justify the research goal this study attempts to find the answer for the following queries: If a cluster approach can be a way to enhance the competitive advantage of a firm? What are the strategies and driving forces of a cluster that enable a firm to improve its performance? What is the role of the HRM in today's business world? How the HRM can facilitate a firm to gain its competitive advantage? Consequently, the answers to all these questions were elaborated in further sections of this thesis.

This research also tries to offer some proposals in order to ensure the way a firm can improve and increase its core competences to attain competitive advantage. These are as follows:

➢ *Firstly, this research gives a hint to those enterprises (a) Which are in growing stage but willing to extend their network, (b) Which are seeking to develop their existing resources in an effective and efficient way, (c)Which are looking for a platform to explore and enhance their innovative capabilities at minimum cost. And how they can optimize their efficiency and enhance their organizational performance through clustering and developing human capital, i.e. Human Resource.*

➢ *Secondly, this research suggests the small firms to obtain their superior financial performance by utilising its existing human resources.*

➢ *Thirdly, this research advises to those enterprises, which are under stress to meet their global challenges that they may adopt the industrial cluster strategy as an effective tool to acquire a position in a competitive market.*

2.1 Research assumptions

➢ It is assumed that *Competitive advantage* of a firm will increase if a firm is a part of networking through cluster.

➢ It is assumed that as the modern business environment is changing from financial resource based market *to human resource based market*, **HRM** plays a vital role to enhance the *organizational performance.*

➢ It is assumed that *cluster core firms can enhance their efficiency* due to the presence of skilled manpower and adequate information *gained through clustering*.

2.2 Research questions

The main aim of this research is to identify the significant activities of cluster plus driving forces and strategies of human resources that highlight the importance of linking firms, people, and knowledge at a regional level which is one of the ways of making regions more innovative and making business more competitive. In this research, three different types of questions arise.

Research Questions:

➢ Whether the influence of clustering and HRM are considered as an important factor for achieving the competitive advantage?

➢ Whether cluster activities can support the development of human resources in an organization and can be done by clustering?

➢ Which activities can be effectively provided by clustering?

2.3 Significance of the study

The importance of this study tries to expose the subject matter, which has been chosen to highlight the following issues

- ➢ To enhance the economic status of a firm, in order to meet global challenges by creating the networks.

- ➢ To focus, on how the competitive pressures have increased the strategic value of a skilled, motivated and adaptable workforce, i.e. the Human Resource (HR) that companies need to take care.

Finally from the **Theoretical point** of view it can be said that,

- ➢ *This research will show how the organizations can enhance their competitive advantage with the presence of cluster and efficient utilization of human resources.*

From the **Practical point of view** it can be said that,

- ➢ *This research may catch the attention of those enterprises (a) Which are in growing stage but willing to extend their network (b) Which are seeking to develop their existing resources in an effective and efficient way (c) Which are looking for a platform to explore and enhance their innovative capabilities at minimum cost.*

From the **Academic point of view** it can be said that,

- ➢ *This research may be useful for the students of business administration and management. It can be interesting for them to get an overview about cluster activities that support the development of human resources.*

3 RESEARCH METHODS

This study is mainly based on a combination of both deductive and inductive reasoning. Deductive argument depicts method of gaining the knowledge, whereas, the inductive argument shows some degree of support in the form of probabilistic reasoning.

3.1 Definition of a cluster used in this research

The definition of "a cluster" has been narrowed for the purpose of this research. The main goal of this research (project) is not an examination of natural (Porter's) clusters' functioning. Therefore, it focuses primarily on those clusters, which can be classified as having a "conscious development", i.e. clusters, which are consciously managed and organized (institutionalized).

The reason for the narrower definition is originates in the fact that it is possible to organize, manage, support and develop cluster, to facilitate mutual cooperation among competitors, and ultimately lead to the achievement of numerous effects and benefits both for the cluster members and for the region in which cluster operates.

3.2 Methods of data acquisition

The Faculty of Management and Economics (FaME) at the Tomas Bata University (TBU) in Zlín, in cooperation with a number of other organizations in the Czech Republic and abroad, was actively engaged in the project that had studied the subject of measuring and management of cluster performance. The financial support for the project was provided by the Grant Agency of the Czech Republic (Project No. 402/06/1526: "Clusters Performance Measurement and Management"). The project has been solved by a team of researchers from the Department of Management and Economics of the Tomas Bata University in Zlin. Analytical work involved in this project examined the activities of clusters and cluster initiative in the Czech Republic and in a variety of foreign countries.The time span allotted for this project was from 2006 to 2008. During this project, an extensive research of clusters and cluster initiatives was carried out.

Currently, the research continues within the support of the project entitled "The Development and Evaluation of the Performance of Cluster Policies, of Clusters and their Members with the Usage of the Principles of Benchmarking" supported by the Internal Grant Agency of Tomas Bata University in Zlín grant No. IGA/61/FaME/10/A and the project entitled "Clusters Performance Measurement and Management" supported by the International Visegrad Fund the grant No. 51000656. Their basic goal is the expansion of scientific knowledge and creation of a knowledge database for the study of performance of clusters, cluster policies and cluster members.

Two methods of investigation were used within these projects; *questionnaire and structured interviews.* Questionnaires were directed to the cluster management (steering group) of 640 clusters around the world. The research was based on the results of 165 fulfilled questionnaires. In one-third of clusters, this investigation was supported by a structured interview with the manager of the cluster. The aim of the survey was to obtain information about tools, methods and good practices used for the successful cluster development. The questionnaire was divided into four thematic areas:

- ➢ Basic characteristics of a cluster,
- ➢ Cluster activities (services and joint actions),
- ➢ Cluster management and financing,
- ➢ Cluster performance.

The questionnaire survey was supplemented by structured interviews with managers of the selected clusters. The goal of the interviews was to gather detailed information regarding the process of cluster development, and also to receive the feedback from cluster managers, their views and experience.

Clusters' activities (which were the subject of research) have been identified by literature research and prior to research - communication with cluster managers and experts in clusters and cluster initiatives topic. On the basis of research conducted[6], cluster activities have been divided into the following areas:

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[6] *The Cluster Initiative Greenbook, 2003; Innovating Regions in Europe. IRE subgroup on Regional clustering and networking as innovation drivers: Cluster Management (Learning module 5); CLOE-Cluster Management Guide, 2006; PAVELKOVÁ et al. (2009).*

- ➢ Networking;
- ➢ Human resources;
- ➢ Research and innovations;
- ➢ Business cooperation and promotion;
- ➢ Support activities;
- ➢ Governmental/political area (lobbying);
- ➢ Other activities.

3.3 Characteristics of the research sample

This study presents the results of a survey of 165 clusters obtained through questionnaires and interviews with cluster managers. The group of respondents consists of clusters from around the world. In this research a total of 23 countries responded :from Australia, Austria, Belgium, Canada, Croatia, the Czech Republic, Denmark, Estonia, Finland, Germany, Great Britain, Hungary, Iceland, India, Italy, New Zealand, Norway, Philippines, Poland, the Slovak Republic. Slovenia, Spain, the USA. The vast majority of the respondents were from Europe. The questionnaire survey involved 165 clusters, where 64 clusters responded in 2007, 91 clusters in 2010 and 10 clusters in 2011.

Beside the aforementioned countries clusters there were 9 selected cluster managers from India, Kerala and 9 selected cluster managers from the Czech Republic responded their valuable answers in order to fulfill this study. The goal of structure interview was to gather detailed information about the cluster activities of these selected clusters especially to highlight the purpose of the creation, main objectives, main activities undertaken by the cluster manager, key successful factors for the cluster development, and importance of different cluster activities that provide support to the SMEs and MSMEs as a cluster initiative.

4 MAIN RESULTS

In this doctoral thesis, the author has been given emphasis on the importance of *cluster activities* especially in the area of *human resources* beside other cluster activities. The surveyed data and the results which are presented in the dissertation were obtained in the course of research investigation based on the projects (as mentioned in the page 53-54) carried out at FaME, TBU. The research survey was conducted by means of interviews with the cluster managers in different countries and the survey results are demonstrated below.

It has been noticed that the existing different activities of clusters do not always comprise the performance evaluation of the clusters that monitoring the significance of its activities. Therefore, a basic analysis have been done concerning the activities of clusters provided under human resources in different countries in order to justify the below mentioned research questions. Moreover, some assumptions have been concluded which were recommended to the enterprises specially (small and medium enterprises) for enhancing their core competencies and to attain the competitive advantage.

Therefore, the results of this study made a comparative analysis in order to identify ***the value of human resources in cluster activities for achieving the competitive advantage***. This research examines the cluster activities for giving an explanation of the research questions: (a) Whether the influence of clustering and HRM can be considered as an important factor for achieving the competitive advantage? (b) Whether cluster activities can support the development of human resources in an organization and that can be done by clustering? (c)Which activities can be effectively provided by clustering? Hence, the outcome of this study attempts to illustrate relative analysis of some confirmed data, such as empirical evidence of (i) *cluster activities in different countries*, (ii*) importance* of *human resource activities of cluster in different countries*, (iii) *the type of activities provided by clusters in different countries for the development of human resources.*

Furthermore, brief information about the selected clusters surveyed in India (Kerala) and in the Czech Republic has been described here and also certain issues were highlighted as mentioned below.

On clusters aspect the following points were considered for India

> ➢ General information,
> ➢ Main goals.
> ➢ Main activities undertaken by the clusters,
> ➢ Significance of different activities of clusters.

➢ Significance of different roles of clusters.
➢ Good practices of clusters in India.
➢ Different initiatives undertaken by the Management of Clusters.
➢ Key Factors for the successful development of the clusters in India.
➢ The several key factors facilitate the clusters in India to be competitive.
➢ SWOT analysis of clusters in India

On clusters aspect the following points were considered for Czech Republic

➢ General information,
➢ Main goals
➢ Main activities undertaken by the clusters,
➢ Significance of different activities of clusters
➢ Significance of different roles of clusters

Finally, an assessment has been made considering the activities of clusters familiarized in India and in the Czech Republic. In addition a comparative statement has been made and highlighted about the roles of cluster which may be a beneficial approach for the small and medium enterprises existing in India and Czech Republic.

4.1 Empirical evidence of cluster activities in different countries

The findings from the survey (based on the opinion of the different countries clusters managers) have generally given a comparative overview about the activities of clusters in different countries that enable us to identify the importance of different activities of clusters, as mentioned below.

4.1.1 Comparison of cluster activities in different countries

The below mentioned Tab. 4.1 describes the summary of total numbers clusters of different countries which have been selected for doing the comparative analysis of the activities of clusters in different countries. It can be seen from the Tab. 4.1 that total 165 clusters were surveyed during 2007 to 2011. In 2007 and 2010 about 51 clusters from Poland (PL), 9 clusters from Slovakia (SK) and 50 clusters from the Czech Republic (CZ) were surveyed. In 2009 and 2010, the surveyed data about 9 clusters were collected from India (IND). Finally, 46 clusters information were gathered from Developed Countries (DC) during 2007, 2010 and 2011.

*Tab.4.1. Summary of Data Presentation of Total Number of Clusters
from Different Countries
Source: own interpretation*

Sl. No	Name of the countries	Year of survey	No. of clusters
1	Poland **(PL)**	2007, 2010	51
2	Slovakia **(SK)**	2007, 2010	9
3	Czech Republic **(CZ)**	2007, 2010	50
4	India **(IND)**	2009, 2010	9
5	Developed Countries **(DC)** – USA, Canada, New Zealand, Australia, North and Western Europe - Germany, Belgium, Norway, Italy, Austria, Great Britain, Iceland, Finland, Denmark and Spain.	2007, 2010, 2011	46
Total			**165**

The preliminary results from the authors' own survey, conducted with the usage of interviews of cluster managers in different countries are presented in Tab. 4.2 and Tab.4.3. The aforementioned Tab. 4.2 representing different activities of cluster like: networking, human resources, research & innovation, business cooperation, promotion, support activities, government .and political area and other activities. In this research, the main emphasis has been given on human resource activities of cluster. And the comparison of cluster activities in different countries, i.e. Poland (PL, 51 clusters), Slovakia (SK, 9 clusters), the Czech Republic (CZ, 50 clusters), India (IND, 9 clusters) and Developed Countries (DC, 46 clusters). The answers received from the above mentioned countries clusters are depicted in percentage (%) that highlighted the importance of cluster activities and its execution such as: (a) refers to % of clusters, which have already implemented these activities, and (a+b) refers to % of clusters, which either have already implemented these activities and /or are planning to implement them in the near future [where 'b' denotes, which clusters are planning to implement them in the near future].

Tab. 4.2 gives the impression that all the developing countries (PL, SK, CZ and IND) as well as developed countries clusters put relatively much emphasis on human resource activities after the networking within all cluster activities. In PL and in the CZ clusters, activities under the HR constitute around 50%, but in SK clusters, activities under human resources shows difference, i.e. less than 50%.Furthermore, it has been observed, that in IND and in DC clusters HR activities have been appraised as the highest priority at almost the same level (75% and 79% respectively).

Tab. 4.2. Comparison of PL, SK, CZ, IND and DC Cluster Activities –
Already Implemented
Source: Saha et al. (2011)

Cluster Activities	Answers of clusters in % (a)				
	PL	SK	CZ	IND	DC
Networking	69	65	80	80	85
Human resources	**53**	**44**	**53**	**75**	**79**
Research &Innovations	51	38	64	65	74
Business cooperation	16	17	19	18	16
Promotion	49	63	54	51	59
Support activities	39	28	34	33	54
Govt./Political area	41	52	43	54	60
Others	18	13	11	17	29

 Note: (a) refers to % of clusters, which have already implemented these activities.

On the other hand, Tab. 4.3 shows that the following developing countries (PL, CZ, IND) and DC appreciate the importance of human resources (all around 85%) subsequent to the networking activities. In CZ clusters, activities in the area of research and innovations appear as the second most important (more than 90%), thus indicating that boosting the research and innovation's competency is vital in cluster organizations. According to them research and innovation *is more important factor for the successful development of a cluster as well as to enhance the clusters competitiveness in compare to HR*. The major exception can be observed in SK clusters, where HR activities are on a comparatively lower level – 44 % in Tab.4.2 and 70 % in Tab.4.3. As clusters in Slovakia are very young, in their embryonic stage of development, therefore, HR activities are not their highest priority at the moment for their survival. But the increase of percentage (%) under HR activities, i.e. 70% in Tab.3 shows some sorts of sign that they don't disagree with the importance of HR as an eminent factor for their existence and to be competitive. So, considerably after networking activity cluster managers of different countries appreciate HR activity.

Therefore, it can be said from the given illustration, that cluster managers and members in the above mentioned countries comprehends the importance of HR and as an outcome *human resource activity* shows the highest value. However, a special attention is being paid to implementation of these activities in the future. A greater part of cluster managers agree that if a firm has a qualified workforce i.e. human resources, the chances of achieving the competitive advantage are higher.

Tab.4.3. Comparison of PL, SK, CZ, IND and DC Cluster Activities –
Already Implemented or Planned to Implement in the Future
Source: Saha et al. (2011)

Cluster Activities	Answers of clusters in % (a+b)				
	PL	SK	CZ	IND	DC
Networking	88	91	95	91	92
Human resources	**85**	**70**	**85**	**86**	**86**
Research &Innovations	79	50	91	82	83
Business cooperation	45	46	44	45	27
Promotion	80	84	78	80	75
Support activities	71	44	54	46	66
Govt./Political area	66	60	70	62	74
Others	49	33	26	34	44

Note: (a+b) refers to % of clusters, which either have already implemented these activities and /or are planning to implement them in the near future [where 'b' denotes, which clusters are planning to implement them in the near future].

In addition to the above investigation it has been observed that other researchers also agree with the same opinion about the importance of human resources in enterprises. For example, in PL and in the CZ the activities offered by clusters under human resources are considered as an important factor for increasing the innovativeness of the individual firms (Barsoumian et al., 2011). A great example constitutes India's "ICT Cluster" often referred to as the Silicon Valley of India and the remarkable "IT cluster" in Bangalore, due to the presence of a large pool of human capital that leads them to achieve the competitive advantage (Balachandirane, 2007).

4.1.2 Comparison of cluster activities between young and old clusters

The consequent results of this research have been presented in Tab. 4.4, Fig. 4.1 and Fig. 4.2 that gives us an impression of comparison of cluster activities between young and old clusters in different countries. The classifications of young clusters (YC) and old clusters (OC) have been made on the basis of their age of formation. The clusters which are under 5 years or 5 years from the period of their establishment during survey (i.e. 2007 and 2011) have been considered as 'YC'. And the clusters which are above 5 years from the period of their establishment during survey (i.e. 2007 and 2011) have been considered as 'OC'.

While considering the survey period 2007, the clusters which were formed *in 2002 and later*, were considered as 'YC' and for the period of 2011 survey, the clusters which were formed in *2006 and later*, were considered as 'YC'. Similarly, during the survey period of 2007 the clusters (which were formed in 2001or before) were considered as 'OC' and the survey period of 2011 the clusters (which were formed in 2005 or before) were considered as 'OC'.

Tab. 4.4. Summary of Data Presentation of Total Numbers of
YC and OC in Different Countries
Source: own interpretation

Sl. No	Type of cluster	Year of survey	Name of countries	No. of cluster	Age limit
1	**Young cluster (YC)**	2007, 2011	Developed Countries (DC),Poland(PL), Czech (CZ), and India(IND)	128	Under 5 years (from the period of formation during survey)
2	**Old cluster (OC)**	2007, 2011	Developed Countries (DC), India (IND)	28	Above 5 years (from the period of formation during survey)
Total				**156**	

The answers of YC and OC are depicted in percentage (%) where, (a) represent the activities of cluster have already implemented. On the other hand, (a+b) refers about the percentage (%) of clusters, which either have already implemented these activities and /or are planning to implement them in the near future [where 'b' denotes, which clusters are planning to implement them in the near future].

Tab. 4. 4 shows the summary of total numbers of YC and OC that has been considered for analyzing the comparison of cluster activities in different countries. Though in this research the total numbers of responded clusters 165, but for this result 156 responded clusters have been considered as YC and OC from the following countries as: CZ, PL, IND and DC clusters. The clusters from Slovakia (SK) has not been included in this result as the sample of SK clusters are not so remarkable for doing the comparison of YC and OC activities.

In this result 128 clusters were observed as YC and 28 clusters were observed as OC. And the contributions from the YC are as follows: CZ-50, PL-51, IND - 2 and from DC-25 clusters. Similarly, the contributions from the OC are as follows: IND – 7 and from DC- 21 clusters. It is to be noted that mostly the Czech and Polish clusters are very young and new, so the percentage (%) of OC response is very low which has not been considered in this result.
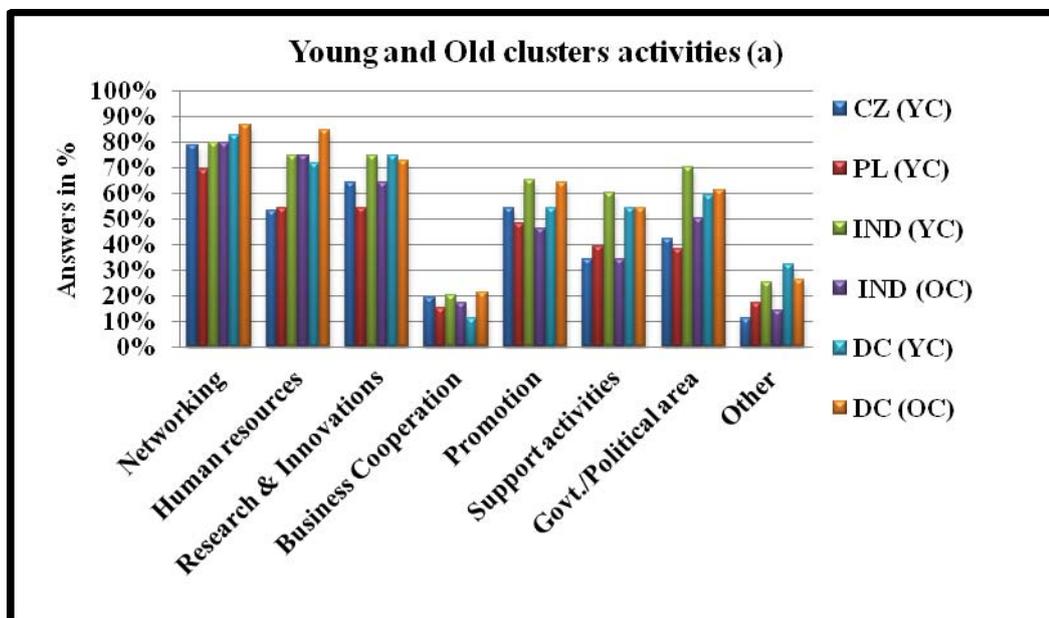
Fig. 4.1. Comparison of Cluster Activities between YC and OC in Different Countries (a)
Source: own interpretation.

The Fig.4.1 shows the comparison of cluster activities among YC and OC in different countries of (a) i.e. CZ, PL, IND and DC, where it has been observed that Czech and Polish young clusters are initially not that much interested in human resource (HR) activity (i.e. 50 -54 %). Whereas, it can be noticed from the Fig. 4.1 that in compare to *human resource activity* the Czech and Polish clusters have given much emphasis on networking (70 %), on research and innovation activity (i.e. more than 60 %) and for promotional activities (around 50 %). Incidentally, it is essential to mention that aforesaid countries (CZ and PL) clusters are very new and they are in the development stage thus, may be at the moment HR is not the main important activity for them. But the noticeable difference can be observed in Fig. 4.1 that Indian and developed countries young clusters shows very much interest in HR activity (i.e. above 75 %). This means that the Indian and developed countries clusters and the firms involved in clusters have realized the value of human resource management. Similarly, the old clusters of the aforementioned two countries (IND and DC) also demonstrated their prime interest in HR (i.e. 70 – 80 %) activity.
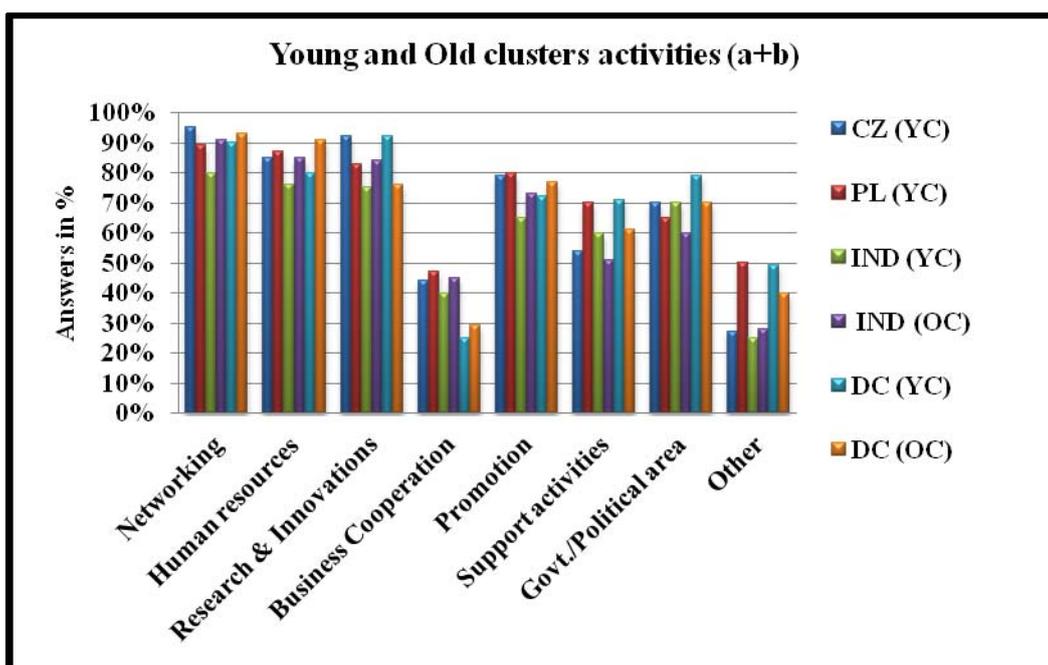
Fig. 4.2. Comparison of Cluster Activities between YC and OC in
Different Countries (a+b)
Source: own interpretation.

On the other hand, in Fig 4.2 exhibits the comparison of cluster activities among YC and OC in different countries of (a+b) i.e. CZ, PL, IND and DC, .Here, the visible difference have been observed within the activities of Czech and Polish young clusters.

It can be seen from the Fig. 4.2 that though earlier these aforesaid countries (CZ and PL) young clusters were not taken much initiative in HR activity (as shown in Fig. 4.1), but in due course of time they realizes the significance of HR and accordingly put emphasis on the improvement of their manpower. As a result, the value of HR activity has been raised from 54 % to more than 85 %. However, according to their judgment as young clusters are in growing and developing stage, so they need more assistance and support for promoting their cluster organization. To survive and to cross the threshold in a competitive market they need to implement some research and innovation activities which are more crucial at this stage. But later on the importance of HR has been recognized among the YC. Hence to enhance the employees pioneering skills and capabilities indirectly cluster organizations need to care and increase their important existing resources, i.e. HR and the value has been abruptly increased from **50 % in (a) to 85 % and above in (a+b.** This confirms that gradually they are implementing HR activities along with research and innovation activity because *research and innovation activity* demonstrates around 90 % in (a+b). Though, *networking activity* reveals highest among all the activities of clusters, i.e. more than 90 % in (a+b).

Correspondingly, Fig. 4.2 explains that Indian and developed countries old clusters are taking a large extent of attention for HR activity in order to improve their existing human resources as it shows above 80 % in (a+b) for India and above 90 % in (a+b) of developed countries. Which indicate that almost the same interest for networking activity, i.e. above 90 % in (a+b). Reasonably, it signified that old clusters are also emphasizing on *research and innovation activity* like young clusters do, but not that much same as young clusters as shown in Fig.4.2 (i.e. around 70 to 80 %). According to old cluster networking activity is the most important which shows more than 85 % in (a) and more than 90 % in (a+b). The comparative analysis of YC and OC in regard to HR activity showed that old clusters has taken much interest in HR activity right from the beginning thus shows higher values, i.e. 80% in DC and IND clusters. Here, it can be mentioned that the young clusters are also realizes about the value of HR and started to implement more HR activities than earlier.

In contrast, it is necessary to point out that as old clusters are in the stage of maturity level so, they have already existence and have some experience in the market. But to be competitive they need to take some special attention to upgrade their technological know-how through networking with other quality institutions and organization in order to strengthen their competitive advantage. Therefore, they highlight on networking to extend and enhance their cooperation with other cluster organization.

Thus, from the aforementioned illustrations it has been observed that both the YC and OC have highlighted the *HR activity* 85 % in (a+b) next to networking specially YC shows more than 90 % in (a+b). So, they agree with the importance of human resources and their activities within the clusters are essential for their competitiveness. Alternatively, depending upon the development and survival of young and old clusters, it is necessary to underline that eventually both the YC and OC need to concentrate on the activities of human resources to sustain in this ever changing competitive world. It is well-known that the presence of an expert and professional manpower can facilitate an organization or a firm to progress their innovative capabilities to overcome the technological barriers. It shows that nowadays enterprises are able to introduce pioneering improvements to their products and processes and look beyond the boundaries of their firms to capture new market opportunities. Hence human resources can be considered as one of the most essential part of an organization that leads an organization to face the challenges, as a result of it the value of HR activity among YC and OC have been increased which, shows a positive effect on human resource management for cluster management and cluster excellence.

4.1.3 Comparison of cluster activities between developed countries and central European countries clusters

The following Tab. 4.5 and Tab. 4.6 demonstrate the comparison of cluster activities between *developed countries* (DC) and *central European* (CE) countries clusters. The answers of (DC and CE) countries clusters are presented in percentage (%) where, (a) represent the activities of cluster have already implemented. On the other hand, the answers of (DC and CE) countries clusters are expressed in percentage (%) where, (a+b) represent the activities of cluster have already implemented and /or are planning to implement these activities in future [where 'b' denotes, which are planning to implement in the near future].

Tab. 4.5 shows the summary of total numbers of DC and CE countries clusters were contributed their answers during the survey period of 2007, 2010 and 2011. In this research the following countries U.S.A, Canada, New Zealand, Australia, North and Western Europe - Germany, Belgium, Norway, Italy, Austria, Great Britain, Iceland, Finland, Denmark, and Spain were considered as a Developed Countries (DC) countries and 46 clusters were answered, i.e. the responded clusters were from these countries.

Likewise, from the Central European (CE) countries following countries (Czech Republic, Hungary, Poland and Slovakia) responded during clusters survey. From these countries about 112 clusters were answered.

Tab.4. 5. Summary of Data Presentation of Total Numbers of
DC and CE Countries Clusters
Source: own interpretation

Sl.No	Name of the countries	Year of survey	No. of cluster
1	**Developed Countries (DC) -** USA, Canada, New Zealand, Australia, North and Western Europe - Germany, Belgium, Norway, Italy, Austria, Great Britain, Iceland, Finland, Denmark and Spain.	2007, 2010, 2011	46
2	**Central European (CE) -** The Czech Republic, Hungary, Poland and Slovakia	2007, 2010, 2011	112

Tab. 4.6 explains the comparison of cluster activities among the developed countries and central European countries clusters where, it shows that developed countries clusters provides a greater part of their activities in the area of human resources, i.e. almost 80 % in (a) and more than 85 % in (a+b). It can also be seen from the Tab.4.6 that the importance provided on human resource activity next to networking, i.e. 85 % in (a), 92 % in (a+b). But, remarkable difference has been observed in business cooperation activity, i.e. less than 20 % in (a) and less than 30 % in (a+b). On the other hand, central European countries clusters indicated that they are not so interested in the area of human resources like developed countries clusters which shows, only 53 % in (a).

Tab.4. 6. Comparison of Cluster Activities between
DC and CE Countries Clusters
Source: own interpretation

Cluster Activities	Answers of clusters in % (a)		Answers of clusters in % (a+b)	
	DC	CE	DC	CE
Networking	85	74	92	92
Human resources	**79**	**53**	**86**	**84**
Research &Innovations	74	57	83	83
Business cooperation	16	17	27	45
Promotion	59	52	75	80
Support activities	54	36	66	61
Govt./Political area	60	43	74	68
Others	29	14	44	38

Note: (a) refers to % of clusters, which have already implemented these activities, (a+b) refers to % of clusters, which either have already implemented these activities and /or are planning to implement them in the near future [where 'b' denotes, which clusters are planning to implement them in the near future].

As it has been observed that in this research CE countries (The Czech Republic, Hungary, Poland and Slovakia) are young clusters and they are in the process of their emergent and developmental stage. Thus, for them HR activity is not the prime activity at this preliminary stage. But immediate after networking activity which shows 74 % in (a), 92 %in (a+b) for them research and innovations and promotional activities are equally important than HR which indicates 57 % in (a), 83 % in (a+b) and 52 % in (a), 80 % in (a+b) at the beginning of their cluster organization.

Furthermore, the exception has been observed that the percentage (%) of HR activities in CE countries clusters have been increased more than 80 % in (a+b). In this circumstance, it is to be noted that the DC clusters activities highlighted HR activity as an important activity of a cluster that facilitate a cluster organization to uphold in this competitive world. According to their observation the chances of achieving the competitive advantage of a cluster-core firm can be higher due to their knowledge skills and abilities.

Thus, through these skilled, motivated and adaptable employees, firms or organizations can able to challenge the competitive market. Consequently, CE countries clusters activities were influenced by the clustering concept of DC clusters that boosted and enlighten them to focus on HR which shows 84 % in (a+b).

According to their opinion HR is a key activity after networking activity. As an example it is necessary to point out that US President Barack Obama also raised the significance of human resources their convenience and competencies within the cluster which becomes essential in order to maintain dynamic interaction process between large and small companies, universities, and financial institutions. Through efficient HR cluster organizations are able to meet their industrial needs that influence the regional economic development and enhance competitiveness (Lenchuk & Vlaskin, 2010). Similarly, other researcher's also mentioned that HRM has a great role in an organization which enables a firm to foster their performance and act as a support for achieving competitiveness through people (Fitz-Enz, 2000).

Therefore, it can be said from the aforementioned all results about the different activities of cluster in different countries and their illustrations shows the significance of HR for achieving the competitive advantage. From the description it has been observed that all the developing and developed countries clusters, YC and OC of different countries confirms more or less HR activity within the cluster can be considered as an important factor in compare to other activities of clusters for achieving the competitive advantage.

According to some cluster managers opinion ***the influence of clustering and HRM should be considered as an important factor for achieving the competitive advantage and further development of their cluster organization.*** *Though, some exceptions have been observed in this research depending upon the clusters purpose and their requirements.*
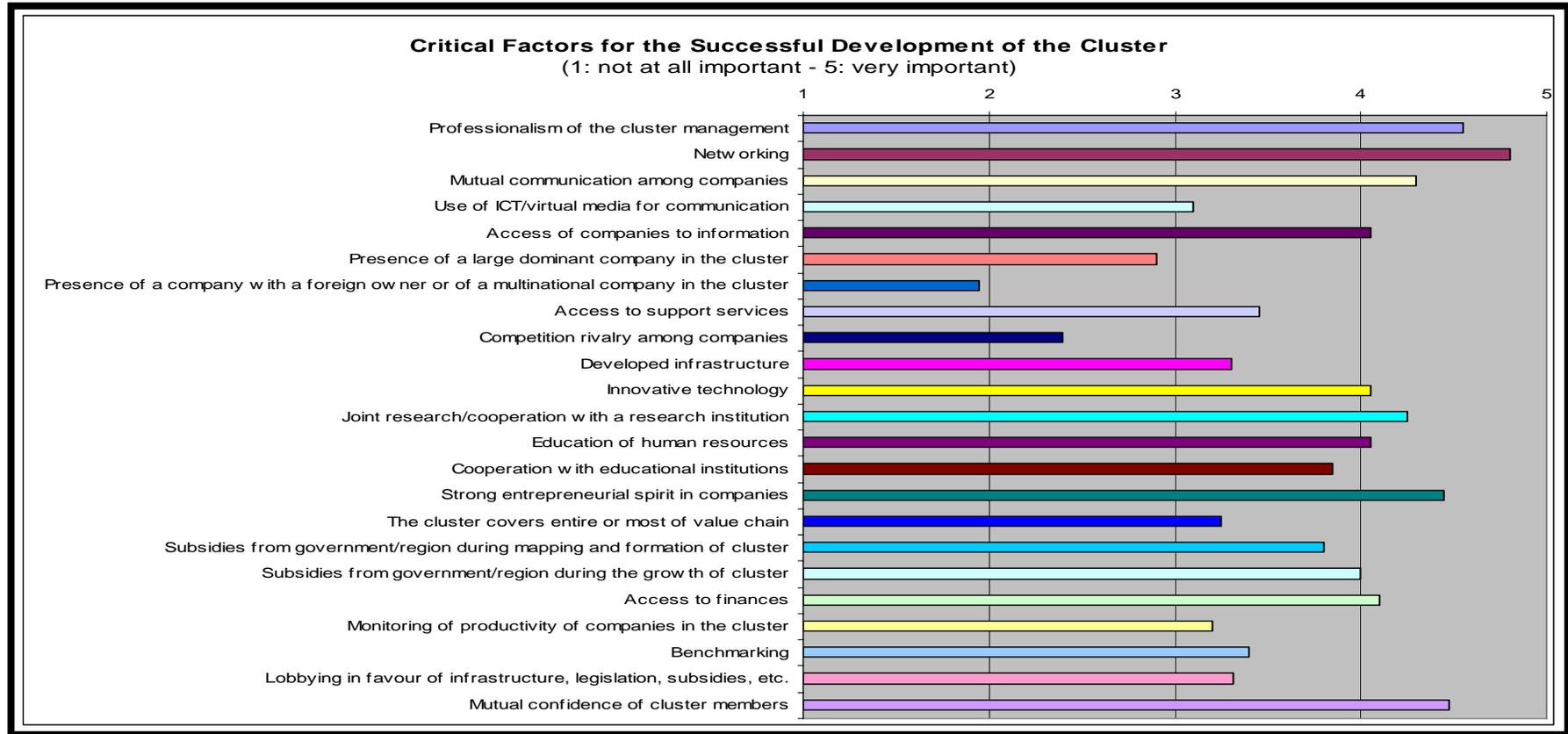
Fig. 4.3. Cluster Managers' Opinion on the Critical Factors for the Successful Development of the Cluster
Source: Pavelkova et al. (2007)

On the other hand, it is necessary to highlight the cluster managers' opinion on the critical factors for the successful development of the cluster in order to justify the above mentioned proposition. Fig. 4.3 gives us a more confirmation about the importance of human resources within the cluster, where the *education of human resources* factor shows also an important critical factor for the successful development of clusters. This confirms the importance of HRM. Fig. 4.3 indicates that the performance of cluster not only depends on a single-dimensional concept, but it has a wide range of factors influencing this performance.

The efficiency of cluster management plays a significant role in the development of a cluster and its members, as well as of cooperating institutions. The above discussion follows that there are many activities that can be implemented within the cluster and this, can contribute to the increase of efficiency of SMEs (Pavelkova et al. 2007).

4.2 Empirical evidence of human resource activities of cluster in different countries

Another major finding of this research has been carried out a comparative analysis of cluster activities in the area of human resources. This analysis has been done based on different countries cluster managers' opinion in order to distinguish the importance of HR activity within the cluster.

4.2.1 Comparison of cluster activities in the area of human resources in different countries

The most vital results of this research based on the aforesaid survey have been presented in Fig. 4.4 and in Fig. 4.5 that provide us an insight about the importance of human resource activities within the cluster in different countries. This result gives an overview of developing and developed countries cluster managers' opinion for considering HR as an important element for their cluster organization and cluster management. The answers of different countries clusters are presented in percentage (%) where, (a) represent the human resource activities of cluster have already implemented. On the other hand, the answers of different countries clusters are expressed in percentage (%) where, (a+b) represents the activities cluster have already implemented and /or are planning to implement these activities in future [where 'b' denotes, which clusters are planning to implement them in the near future].
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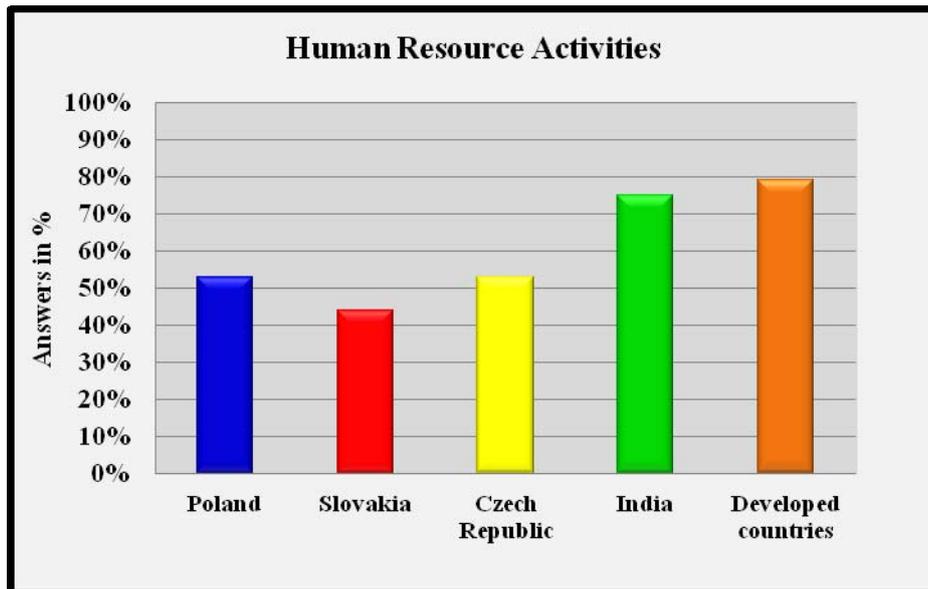
Fig. 4.4. Comparison of Human Resource Activities of Cluster in Different Countries- (a).
Source: own interpretation.

The Fig. 4.4 exhibits an impression of human resource activities within the cluster in developing countries such as Poland, Slovakia, Czech Republic, India, and in developed countries. This result has been presented in the responses of aforesaid countries cluster managers opinion about the value of human resources in cluster core firms It can be seen from the Fig. 4.4 that developed countries clusters have drawn attention to human resource activity as a key factor for their progress and successful development which indicated around 80 % on the activities of human resources. However, mostly the developing countries like: (Poland, Slovakia, and the Czech Republic) clusters have a different perception and consideration about the significance of HR in their organization, as it demonstrates that the range of their evaluation is very low, i.e. 53 % and 44 %). But in India, it is exclusively different view that demonstrates around 75 %. It looks like the clusters in India agree with the importance of human resources, i.e. the occurrence of qualified personnel in an organization can enable firms to add value.

On the other hand, it is required to mention that the clusters in Slovakia are very new and they are in the process of implementing different activities of cluster that will allow them to exist in this competitive market. So, in that case HR is not that much important for Slovak clusters.

Moreover, it is necessary to see the purpose of these above mentioned countries (PL, SK, CZ, IND and DC) clusters for taking into consideration about the values of human resource activities whether the HR activities are really very essential for them or it is just important.

While analyzing Fig. 4.4 it has been observed that in developing countries like Poland, Slovakia, the Czech Republic clusters are offering less attention in the area of HR respectively 53 %, 44 %, and 53 %. But in Fig. 4.5 it can be seen a different outlook of the aforementioned countries cluster activities where, their interest on HR activities have been increased than earlier i.e. 85 % and 70 %. It gives the impressions that in the meantime they started to put into practice HR activities as a key aspect in order to be more challenging and competitive. In the case of Indian clusters and other developing countries (PL,SK and CZ) clusters, it has been viewed that they are concentrating on HR activities of cluster more than before (i.e. 85 % and above).
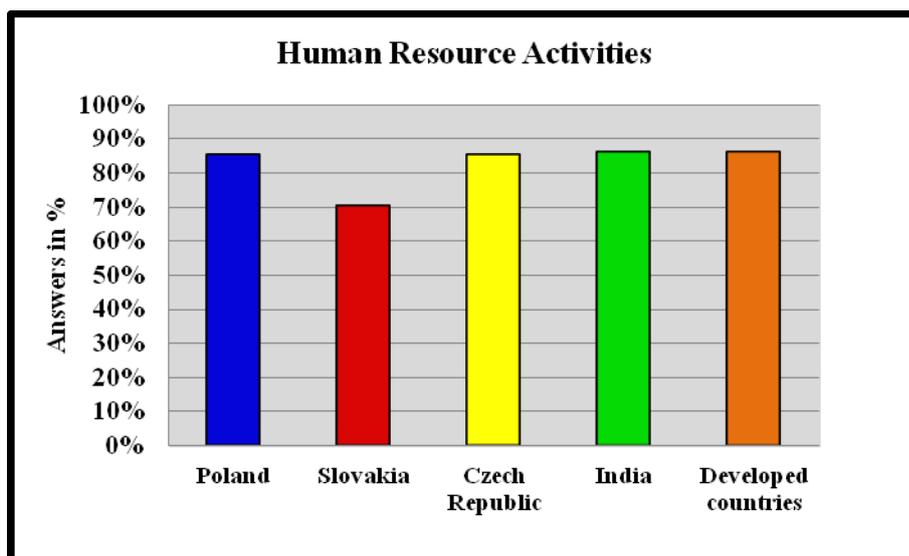
Fig. 4.5. Comparison of Human Resource Activities of Cluster in
Different Countries- (a+b).
Source: own interpretation).

In order to find the reason for giving emphasis on HR in cluster activities, we need to have a look of some developing countries main reason and purpose for taking care of their human resources as an important element of successful cluster organization.

For example the clusters in Poland[7] , consider the importance of HR in order to promote cluster development and expand national and international cooperation, to increase innovativeness through transfer of knowledge and innovation, i.e. research and development. For the clusters in Slovakia (Chlebikova & Mrazikova, 2009) the importance of HR is to stimulate the development of employment and quality of education, to increase cooperation and communication among domestic and foreign companies.

Clusters in the Czech Republic[8], consider the importance of HR to create a favourable entrepreneurial environment for improving the conditions for enterprising and innovation, to develop a competitive advantage through cooperation among research, education and entrepreneurial spheres. While clusters in India[9] , consider the value of HR in order to cope up with dynamic business environment, to solve the problems of knowledge fragmentation and co-ordination, to enhance entrepreneurship, to be professionally knowledgeable as these are essential for the successful cluster development and management. And for developed countries clusters, the importance of HR is to achieve a sustained improvement in the competitiveness, to strengthen the clusters innovative ability through a stronger and more dynamic interaction between the industry, R&D institutions, universities and the public sector, to spin the technology for diversifying types of businesses and a successful business (Shields et al, 2004).

Hence, in brief it can be said that though HR cannot be considered the only main factor for achieving the competitive advantage, still we cannot disagree that HR can be considered as one of the key feature of an organization for enhancing and expanding its competitiveness. As organization's pillars of success mainly depend on its useful resources. Moreover, it has been observed from various researches that the main source of sustainable competitive advantage is the development of firm-specific resources that generate knowledge, quality of products and processes, innovation and flexibility. Organizations at present face innumerable challenges in nurturing and managing knowledge.

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[7] *CLUSTERS POLISH INNOVATION PORTAL.*

Available from http://www.pi.gov.pl/eng/chapter_86522.asp [Accessed on 12.2.2012]

 [8] *Available from http://www.czechinvest.org/en [Accessed on 12.2.2012]*

[9] *MAJOR INDUSTRY CLUSTERS OF INDIA The Business Portal of India [0nline] Available from http://business.gov.in/starting_business/major_industry.php[Accessed on 12.2.2012].*

Unlike manufacturing activities, knowledge activities are difficult to monitor and control, because only a part of knowledge, i.e. employees skills and abilities are internalized by the organization, the other part is internalized by the individual's talent. So the significance of human resources arises. (Ganesh &.Bhatt, 2002).

4.2.2 Comparison of cluster activities in the area of human resources between young and old clusters in different countries

The other essential results of this research are exhibited in Fig.4.6 that explains us the comparison of human resource activities of cluster between Young (YC) an Old (OC) clusters in different countries mainly from the Czech Republic (CZ), Poland (PL), India (IND) and in Developed countries (DC) clusters. The answers of these aforementioned countries 156 young and old clusters have been presented in this result. And the answers of YC and OC are in percentage (%) where, (a) represent the human resource activities of cluster have already implemented. Then again, the answers of YC and OC clusters are stated in percentage (%) where, (a+b) represents the activities of cluster which have already implemented and /or are planning to implement these activities in future [where 'b' denotes, the clusters which are planning to implement them in the near future].It is needed to be revealed that in this result the opinion of the cluster managers of old clusters are mainly from the developed countries and from India, as the Czech and Polish clusters are almost new so the the opinion of the cluster managers of old cluster's percentage are minor.

From the following Fig. 4.6 it can be seen that earlier young clusters mainly the Czech and Polish clusters were not so aware about the importance of human resource activity for their existence and successful development. As a result, during the implementation period they considered less attention on human resource activity that shows around 50 % in (a). But the noticeable exemptions have been observed from the young clusters in DC and in IND where, they consider HR activity (i.e. 75 - 85 % in (a) and in (a+b)) as an essential factor for their development from the beginning. On the other hand, it is required to state that though old clusters were quite matured in compare to young clusters, still the above noted countries clusters are considering the significance of HR as their most driving factor for cluster organization and clusters development. It shows much attention, i.e. above 80 % to 90 % in (a) and in (a+b). Also it is to be noted that though young clusters were not highlighting HR in (a), but gradually they (those who were not taking attention for HR) started to induce HR activities for the benefit of their organization and to upgrade the cluster members competencies and as a reflection it shows high interest, i.e. 85 % in (a+b).

Especially Fig.4.6 shows that the Czech and Polish clusters have taken into consideration the significance of HR activities which raised the value amazingly in (a+b) same as the old clusters in India and developed countries. Therefore, it is quite noteworthy to be mentioning that provides a great confirmation to consider the value of human resource activities within the clusters are significant which, cannot be denied whether the cluster is YC or OC.

This has been recognized as an eminent factor for the successful expansion of these clusters that leads them to achieve their organizational goal as well as to sustain in this competitive marketplace.
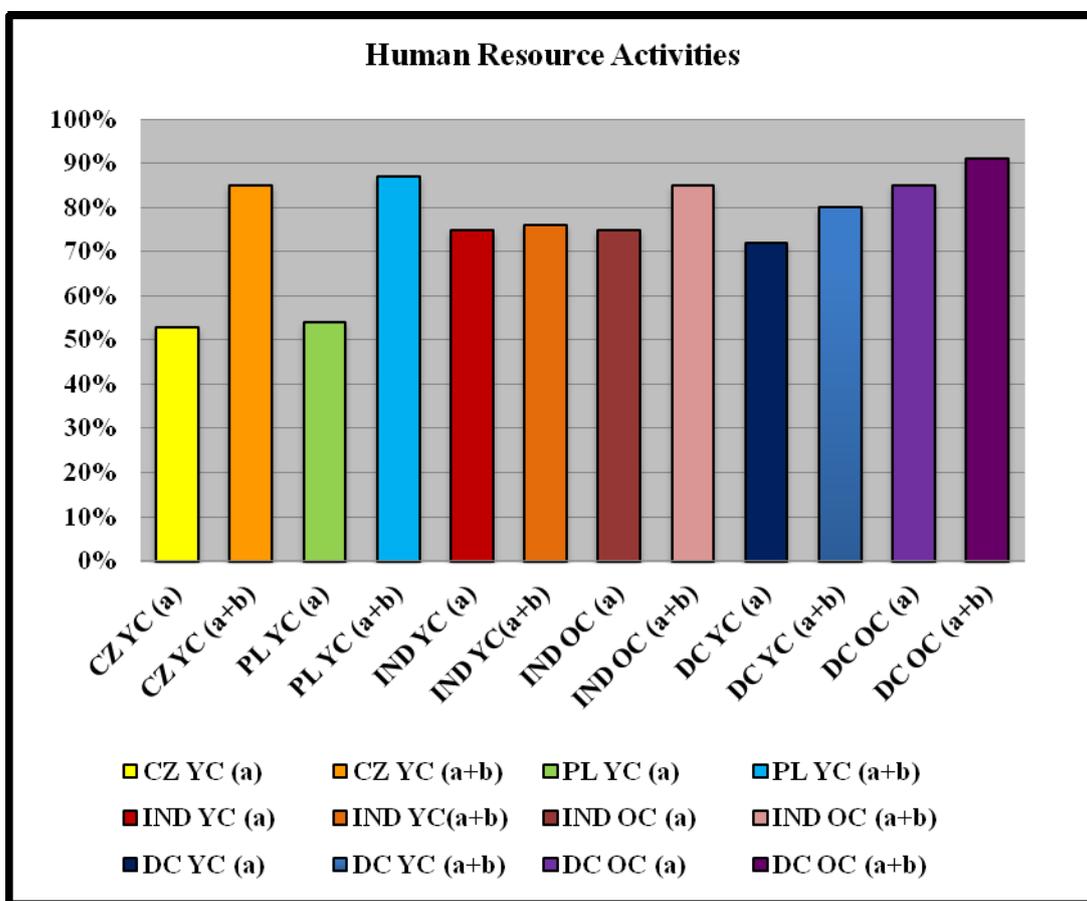
Fig.4.6. Comparison of Human Resource Activities of Cluster between YC and OC Clusters in Different Countries - (a) and (a+b)
Source: own interpretation

4.2.3 Comparison of cluster activities in the area of human resources between developed countries and central European countries clusters

The below mentioned Fig. 4.7 demonstrates the comparative study of human resource activities of cluster between the following countries clusters namely: *Developed Countries* (DC) and *Central European* (CE) countries clusters. The answers of (DC and CE) countries clusters have been presented in percentage (%) where, (a) representing the human resource activities of cluster have already implemented.

Then again, the answers of DC and CE clusters have been presented in percentage (%) where, (a+b) signifies the activities of cluster which have already been implemented and /or are planning to implement these activities in future [where ' b' denotes, the clusters which are planning to implement in the near future.

Fig.4.7 describes the comparison of human resource activities of clusters among DC and CE countries. At first, it is crucial to mention that DC clusters indicating the highest value on human resource activity , i.e.79 % in (a) and 86 % in (a+b).While, CE countries clusters showing not that much interest, only showing about 53 % in (a) but exhibiting 84 % in (a+b). This big difference among DC clusters and other CE clusters in (a) and (a+b) representing that at the preliminary period CE countries clusters were not so responsive to realize the utility of HR.
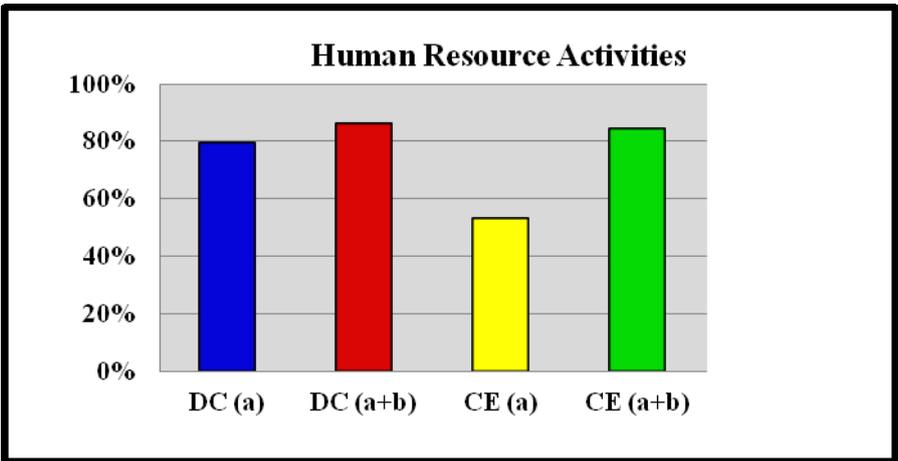
Fig.4.7. Comparison of Human Resource Activities of Cluster between
DC and CE Countries Clusters – (a) and (a+b)
Source: own interpretation

Nevertheless, later on the clusters of the CE countries show a positive approach towards the implementation of HR activities after observing the success stories of the clusters of DC countries. Such as, the high technological success of advanced industrialized countries clusters provides the main motivation to other countries clusters which facilitate them to eliminate the barrier to enter into the global market. These advance countries cluster activities enlighten the other emerging clusters, to follow their way of awareness about HR in order to boost their *novel knowhow*, *qualifications* and *abilities.* As, eminence and professionally equipped cluster organizations need quality personnel to enhance their competitive advantage as well as to sustain in this competitive world.

Hence, all the clusters of CE countries were encouraged to implement more human resource activities in their cluster organization in order to meet the global challenges. It ensures that the presence of competent employees enable enterprises to build its competitiveness that motivate those employees concerning to their development. For example: it can be said that nowadays each and every organizations are thriving to sustain in this competitive world. And the knowledge-intensive clusters are a subset of sustainable industry clusters, which are highly depending on the activities provided for human resource management, human resource development and technical knowledge (Martin & Mayer, 2008). That's why, the importance of HR always exists and mainly it exists for facilitating the cluster organization's ability to survive.

Therefore, from the given illustrations of all the aforementioned results about the importance of human resource activities in cluster gives an idea that all the developing countries and developed countries clusters have a more or less positive attitude on HR activities for their successful cluster organization and development. It has been noticed that though at the formation period especially YC clusters were not much interested in HR activities, but while observing the success of other OC clusters and successful clusters activities that influenced and encouraged them to implement the HR activities within their cluster. In this case it is viable to give an example of the success of natural cluster, i.e. Silicon Valley in Bangalore shows the presence of human resources providing a major contribution to the IT industries in India. Due to the availability of large pool of highly qualified human resources that added values to the IT cluster for fulfilling the business needs. Simultaneously, it is connecting people from divergence and foster high levels of productivity and innovation (Saha & Pavelkova, 2007).

4.3 Empirical evidence of different activities of cluster provided for the development of human resources in different countries

The main final findings from the survey carried out were the comparison of cluster activities provided for the development of human resources. The comparative analysis has been made on three different categories of clusters such as: (i) comparison of the clusters of developing and developed countries, (ii) comparison of young and old clusters and (iii) comparison of the clusters of developed and central European countries. The purpose of this comparative analysis is to identify the important activities offered by clusters for their members in the area of human resources. It is necessary to focus on the most important activities of human resource management which are as follows: recruitment, personnel administration, training and development, performance management, talent management, carrier planning and manpower planning, organizing. For this research cluster managers feel the following: *Organizing joint seminar*, *training* and *cooperation with educational institutions* activities under human resources are most effective, value oriented and cost effective activities for the cluster core firms, so they implement these activities in order to boost human resources in an organization.

4.3.1 Comparison of activities of cluster provided for the development of human resources in different countries

Another most important result of this research described the comparison of cluster activities in Poland (PL, 51 clusters), Slovakia (SK, 9 clusters), the Czech Republic (CZ, 50 clusters), India (IND, 9 clusters) and Developed Countries (DC, 46 clusters). The answers of these countries clusters are presented in percentage (%) where, (a) represents the activities provided for the development of human resources that have already been implemented. Then again the answers of clusters are in percentage (%) where, (a+b) represents the activities provided for the development of human resources either implemented and/or are planning to implement them in the future [where 'b' denotes, the clusters which are planning to implement in the near future].

Concurrently, Fig. 4.8 and Fig. 4.9 demonstrates the comparison of cluster activities in the area of human resources in PL, SK, CZ, IND and DC, which are already being implemented by these aforementioned countries clusters exhibited in Fig. 4.8 and are either already being implemented or are planned to be implemented in the future exhibited in Fig. 4.9. Available results confirm the significance of the activities provided under human resources in the specified countries.

In Fig.4.8 the clusters of developing countries (PL, IND) and developed countries focus mainly on the *organization of joint seminars and conferences* which shows above 60-80 % as vital activities for the development of human resources in enterprises. The only the exception has been observed in the case of CZ and SK (i.e. 56 %) which is very low in compare to other developing countries. In contrast, when considering the *cooperation with educational institution*, it can be seen that the developing countries (CZ, IND) and DC are giving much emphasis i.e.70 – 90 % that leads them to enhance their competencies. But the exceptions have been observed for PL and SK which shows less than 60 % in compare to other countries (IND and DC).

	Organization of joint seminars & conferences	Training of employees	Cooperation with educational institution
PL	68	36	54
SK	56	22	56
CZ	56	30	73
IND	78	67	78
DC	84	61	93
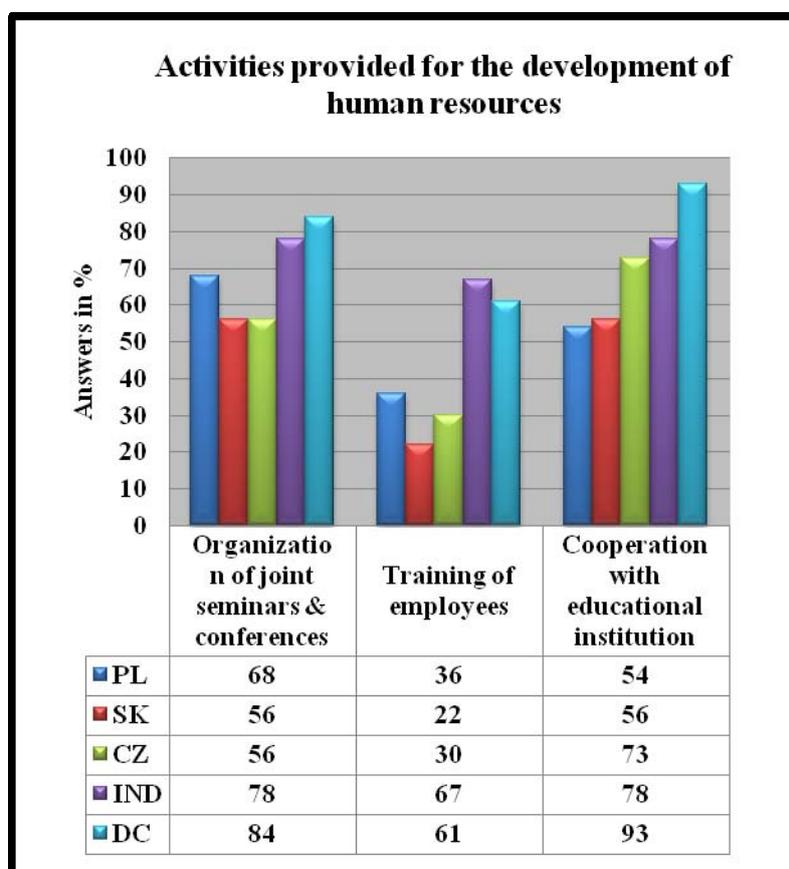
Fig. 4.8. Comparison of Activities of Cluster Provided for the Development of Human Resources in Different Countries (a)
Source: own interpretation

Similarly, most of the developing countries (PL, SK and CZ) clusters assume that the *training activities* for the employees are not much important for the development of their human resources in an organization as the values representing less than 40 %. But the remarkable difference has been observed in the case of IND and DC clusters, which shows more than 60 % compare to others.

Furthermore, the presented results confirm the importance of human resource activities in the specified countries (PL, CZ, IND) and DC clusters consider *conferences and joint seminars* as well as *cooperation with educational institutions* as vital activities for the development of human resources in enterprises as it shows very high interest in this fields, i.e. 80-90 %. The exception has been observed in the case of SK which indicates only 78 % compare to others.as shown in Fig.4.9
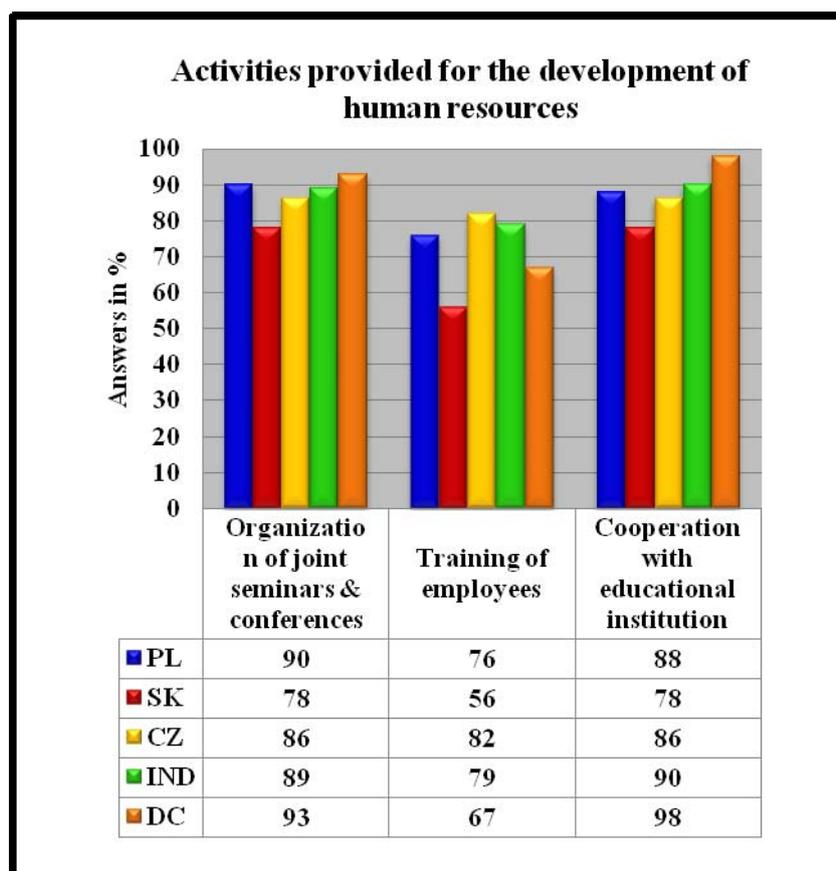
Fig. 4.9. Comparison of Activities of Cluster Provided for the Development of Human Resources in Different Countries (a+b)
Source: Saha et al. (2011)

Simultaneously, the clusters of (PL, SK, CZ, IND and DC) aligned the value for *training of employees'* very low in contrast with the other activities such as *organization of joint seminars or conferences* and *cooperation with universities*. From this study, it can be perceive that a cluster usually provides these activities for the development of human resources in cooperation with educational institutions (which is directly or indirectly supported by the public or private sector).

For example, employees quality improvement programme, financed either by clusters' own resources (funds) or financially supported by different projects or organizations (e.g. UNDP, UNIDO and OECD etc).It has been observed that the development of human resources become essential in order to encourage and raise the efficiency of an individual that can be provided through cluster management and cluster governance where, they can foster high levels of productivity and innovation.

The conducted research confirms that the above mentioned countries clusters put emphasis on the essence of innovation processes in the industry, which is directly or indirectly related with people. Therefore, in order to achieve better industrial outputs, clusters involved in the survey either have already implemented the specified activities in HR area or are under preparation to do so. Almost all clusters are providing such type of activities means *cooperate with educational institutions.* for human resources development As an example, the strong connection between a university and Information Communication Technology (ICT) cluster named as Z@ict (Sovair, 2009) in Slovakia can be referred. The Czech National Cluster Association's (NCA's) proposal of a training scheme (for cluster facilitators, cluster managers and stakeholders) constitutes another concrete example, where the importance of human resource development is considered as vital matter (Bruskova, 2011). Also, the Information Technology Cluster (ITC) in India sets an example of the presence of a strong cluster in a region that may also attract talents from elsewhere.

4.3.2 Comparison of activities of cluster provided for the development of human resources between young and old clusters

In addition the other results of this research illustrate the comparison of young and old clusters activities provided under human resources in different countries. The below mentioned Fig.4.10 and Fig.4.11 give explanations about the responses of 128 young clusters and 28 old clusters. Where, the answers of these young (YC) and old (OC) from different countries have been presented. The answers of these YC and OC are presented in percentage (%) where, (a) correspond to the activities of cluster provided under human resources which have already been implemented. Then again, the answers of YC and OC are presented in percentage (%) where, (a+b) correspond to the activities of cluster provided under human resources have already implemented these activities and/or are planning to implement them in the future [where 'b' denotes, which care planning to implement in the near future].

The aforesaid Fig 4.10 and 4.11 illustrate the subject matter of cluster activities that has been provided by the cluster managers in different countries YC and OC for the development of their human resources in cluster organization.

It shows their interest in different human resource activities which enable their employees to enhance and expand their levels of knowledge, skills and abilities. It is required to be mentioned that the human resource management activities are as follows: *personnel administration*, *manpower planning*, *training and development*, *performance reward management*, *knowledge management*, *talent management*, *succession* and *career planning, motivation*, *job rotation*, *recruitment* and *selection*.

The demonstration of this result reveals the importance and advantages of those HR activities that has been offered to the cluster members within the cluster. These activities may be valuable and crucial to implement through clustering. Fig. 4.10 demonstrates the activities provided under human resources by YC and OC for the development of their cluster members and cluster organization. The above mentioned types of clusters involved in this survey, shows their importance of human resource management as an essential factor, in compare to other activities of cluster for intensifying their core competencies. It gives us an insight about the activities of cluster in the area of human resources, where it has been recognized that YC and OC usually categorizes these activities by *organizing joint seminars and conferences*, *providing training to the cluster members* (technical or professional training) as per their requirement, and *co-operating with educational institutions* in, entrepreneurship, international collaboration and cooperation.

In the same way, Fig. 4.10 shows that a DC (YC and OC) especially emphasizing on *cooperation with educational institutes* for boosting their employees which shows 85 % to 100 % in (a). Though, exceptions have been observed in PL (YC) which shows less than 60 % in (a).At the same time, according to their judgement through joint seminar and conferences also cluster member's knowledge and expertise can be more upgraded and it can facilitate them to develop their own innovative capabilities. Hence, it confirms the range around 70 % to 90 % and above in (a). In contrary, the importance of training activities for cluster members doesn't show much effective, like other activities of human resources which shows around 50 % to 60 % and above in (a). Especially in CZ and in PL (YC) shows less than 40 % interest in training.

In this consequence it is necessary to say that these countries clusters are new so for them offering training programme for their members may be expensive rather they could arrange joint seminars and conferences in cooperation with other research and educational institutes which could be beneficial for their human resources development. Wherever, it can be finance either by their own resources or it can be finance through different supporting projects and by different agencies that uphold these activities.

Activities provided for the development of human resources

	Organization of joint seminars & conferences	Training of employees	Cooperation with educational institution
■ CZ YC (a)	57	29	72
■ PL YC (a)	69	35	57
■ IND YC (a)	77	69	79
■ IND OC (a)	78	67	78
■ DC YC (a)	74	57	85
■ DC OC (a)	92	64	100
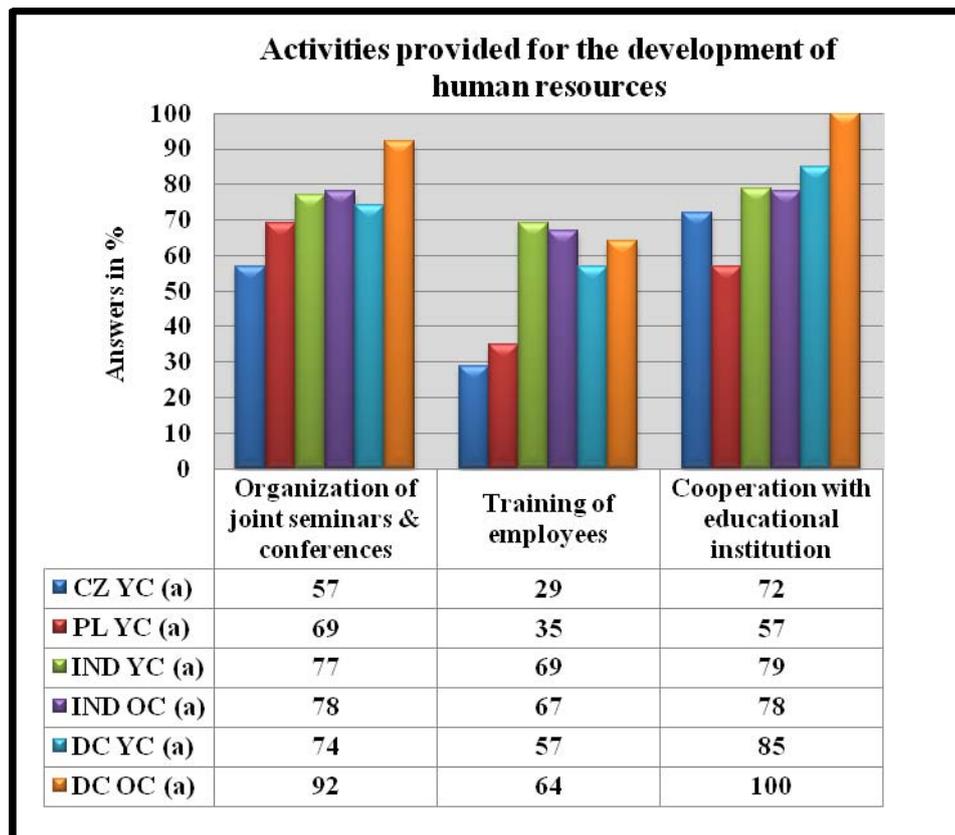
Fig. 4.10. Comparison of Activities of Cluster Provided for the Development of Human Resources between YC and OC clusters in Different Countries - (a)
Source: own interpretation

According to Fig.4.10 and Fig.4.11 all YC were much more interested in organizing seminar or conferences, cooperation with research and educational institution as each activities provided by them shows very high %, i.e. almost 90 % in (a+b). Though at the beginning they were not providing much interest for organizing seminars (only 60 % in (a). But for training also these clusters were not providing much that shows very low initiative, i.e. less than 40 % in (a).

At the same time as they are new not familiar to other cluster member so, they need to take special attention for organizing seminars and conferences to get the platform for meeting the experts and head-hunters to expand their business cooperation in future. In contrary, OC were very much optimistic in building and developing cooperation with research and educational institute to upgrade their level nationally and internationally through various seminars and conferences meeting develop connection with quality personnel. And as a result they offer very high percentage, i.e. 100 % in (a+b) for cooperation with other educational institutes and organizing joint seminars or conferences.

On the other hand, for training purpose YC and OC were providing about 60 % to 80 % indicated in (a+b). Nevertheless, it is essential to highlight that though at the beginning these aforesaid YC and OC were not offering much importance on training activities but gradually they took initiative on these factors for the development of their human resources that has been observed in (a+b).

Activities provided for the development of human resources

	Organization of joint seminars & conferences	Training of employees	Cooperation with educational institution
■ CZ YC (a+b)	88	82	86
■ PL YC (a+b)	92	78	92
■ IND YC (a+b)	79	70	79
■ IND OC (a+b)	88	78	89
■ DC YC (a+b)	84	62	95
■ DC OC (a+b)	100	72	100
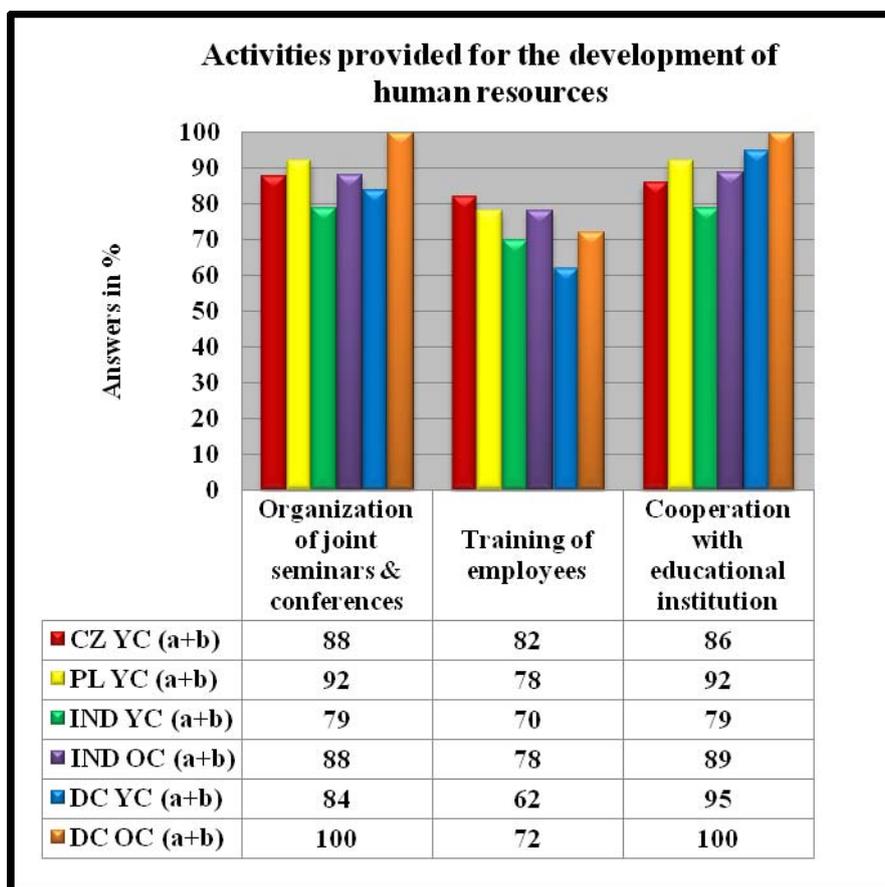
Fig. 4.11. Comparison of Activities of Cluster Provided for the Development of Human Resources between YC and OC Clusters in Different Countries - (a+b) Source: own interpretation)

In another way as they were already known to other cluster members and they have some reputation too, for them building cooperation with other organization become more essential than other activities. Simultaneously, it is required to be mentioning that in compare to other countries clusters DC clusters were providing and offering these above mentioned activities much more. Thus, to be an internationally recognized cluster as well to be a globally competent cluster these above mentioned HR activities are essential.

As an example, it can be said that the *rubber cluster* in India (Kerala), which has been considered as OC has a direct connection with the Dept. of Polymer Science and Rubber Technology, Calicut University of Science and Technology (CUSAT) for surveying the task of their major rubber product manufacturing units in India. As a result of it this cluster received the recognition of a successful cluster in that region. Afterwards, several clusters have emerged in that region as inspired and motivated by the key successful factors of this cluster. Accordingly, the Development Commissioner-Small Scale industry (DCSSI) of India also took the initiative[10] to enhance this clusters development and enable this cluster to get the recognition of internationally competent cluster.

4.3.3 Comparison of activities of cluster provided for the development of human resources between developed countries and central European countries clusters

The Fig. 4.12 exhibits the comparative analysis of the activities of cluster provided under human resources between developed countries (DC) and central European (CE) countries clusters. Where, the answers of DC and CE countries clusters are in % where (a) represents the activities of cluster provided under human resources have already implemented. Alternatively, the answers of clusters are in % (a+b) represent the activities of cluster provided under human resources have already implemented these activities or are planning to implement them in the future. Further, Fig. 4.12 reveals the activities provided under human resources in DC, and in CE countries clusters for the improvement of their cluster members and cluster organization. The above mentioned countries clusters involved in this survey, shows their necessity and main spheres of their cluster to facilitate their business by organizing national and international seminars, inviting different countries clusters members to enhance their networking through these activities.

According to these (DC and CE) countries cluster members perception, the activities which fall under the head of human resources can be an essential factor for the development of HR and to strengthen their core competencies in compare to other activities of cluster. It shows that DC and CE countries clusters usually categorizes the HR activities by *organizing joint seminars* and *conferences, providing prerequisite training* (to upgrade their employees) , also *co-operating and collaborating with educational institutions* (in order to boost the entrepreneurship, and business development).

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[10] *CLUSTER TIDINGS KERALA (2004) Newsletter, 1(1) May 2004,.*

Available from http://www.keralaindustry.org/cluster/May2004.pdf [Accessed on 12.2.2012]

Therefore, the activities undertaken by the DC and CE countries clusters are either supported by the different funding agencies, development agencies resources or by their self finance that facilitate and encourage these activities

Activities provided for the development of human resources

|	Organization of joint seminars & conferences	Training of employees	Cooperation with educational institutins
■ DC (a)	84	61	93
□ DC (a+b)	93	67	98
■ CE (a)	62	32	63
■ CE (a+b)	87	77	87
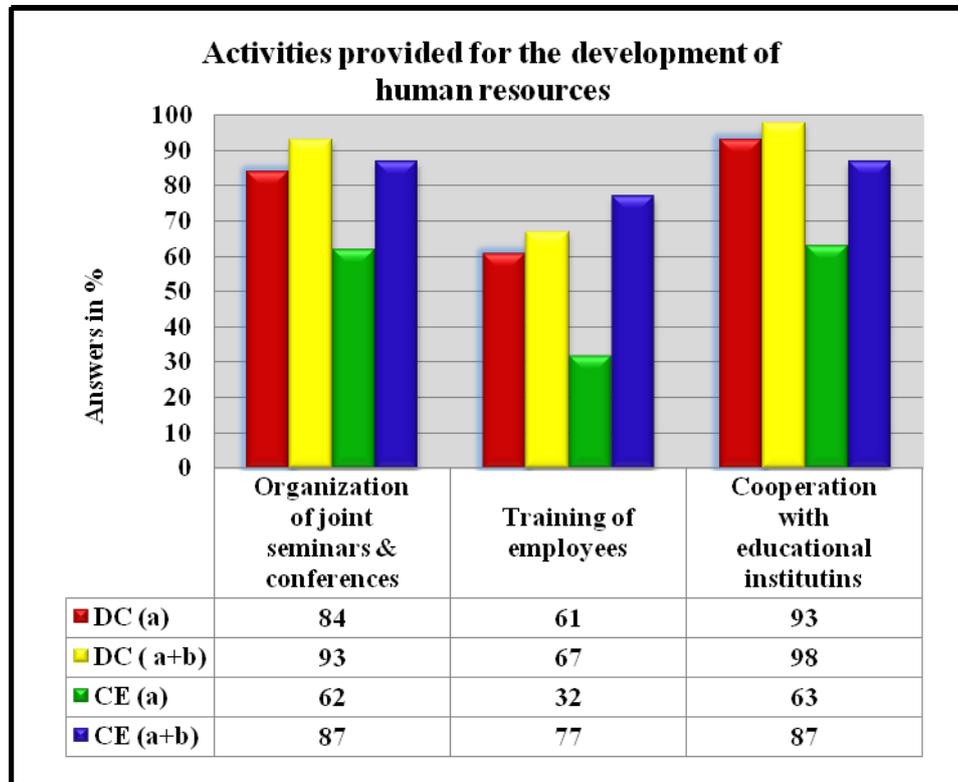
Fig. 4.12. Comparison of Activities of Cluster Provided for the Development of Human Resources between DC and CE Countries Clusters – (a) and (a+b)
Source: own interpretation

According to Fig. 4.12 , DC clusters are keen interested in building cooperation with educational institutions , organizing seminars for increasing their innovative capabilities and escalating their human resources which show high contribution i.e. 93 % in (a), 98 % in (a+b) and 84 % in (a), 93 % in (a+b) respectively. As DC countries clusters members were more or less technically knowledgeable, so they don't need much contribution to upgrade their employees thus they provide only 60 % in (a) and less than 70 % in (a+b) for training purpose. On the other hand, CE countries clusters activities provide around 60 % in (a) but more than 85 % in (a+b) for organizing seminars, building cooperation with educational and research institutions present also only 63 % in (a), but later on these CE countries clusters shows quite high interest, i.e. 87 % in (a+b) . The exception has been observed regarding training of their employees (as shown in Fig 4.12). It shows very low interest i.e. less than 40 % in (a) in compare to other activities.

Though they have less recognition in the business world compared to DC clusters but they were emphasizing more to those activities similarly to DC clusters. It indicates that other countries clusters were following the trends of DC clusters. For them cooperation development is more important than other activities that will facilitate them to develop into a worldwide recognized cluster, which are the main ambitions of the DC and CE countries cluster.

As an example of CE countries cluster (*Czech Stone cluster*) is a form of co-operations founded in 2006, providing training programme for human resources development, creating a strong group of cooperating companies that are linked with various fields of production, suppliers, cooperating with research and educational organizations[11] to link with science, education and practice in order to improve competitiveness, and to increase innovation[12]. Where, this cluster's philosophy is to create unique products from materials that are not found elsewhere in Europe and preserve the value of professional honour. Thus in short, it is to be noted that the above mentioned DC and CE countries clusters mainly focus on developing effective ways of managing and developing their human resources skills and abilities. Though most of them believe in offering common training, professional training of employees and some countries are planning to organize training series in order to be proactive in reaching their organizational goals. But majority of them are inclined in organizing seminars, building cooperation with educational and research institutions as these factors according to them are most cost effective and useful at the growing stage. To enter in to the global market organizations need quality resources and for that professional training is required to be expert in their field.

On the other hand, through *seminar & conferences* small firms can save their cost and take part in an international seminar that enable them to identify and explore their hidden skills. Simultaneously, cooperation with educational institution enables a firm to be connected with professional experts and implement their valuable suggestions for successful cluster organization through these essential parameters of human resource activities the possibilities of achieving the competitive advantage of a cluster core firm can be higher than the individual firm.Therefore, from the given illustrations of all the aforementioned results, it shows that the different countries clusters as well as young and old clusters of developing and developed countries realizes that ***the activities chosen by the cluster are supporting the development of human resources in an organization.***

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[11] *Available fromhttp://www.czechstonecluster.eu/, http://www.czechstonecluster.eu/nase-strategie[Accessed on 12.2.2012]*
[12] *Available from http://www.czechstonecluster.eu/co-je-to-klastr, [Accessed on 12.2.2012]*

4.4 Statistical evidence about the significance of cluster activities - an example

In this dissertation the activities of cluster provided for the development of human resources in companies or firms has been considered as an important factor which has been already analyzed and illustrated on the basis of random sampling of data. But to verify these random sampling of data the statistical analysis has been performed as a trial where this analysis tries to prove whether the difference in relative amount (i.e. represented in percentage (%) against cluster activities) is significant or not. In order to prove this, the Chi Square Statistical analysis method has been chosen as chi square (χ^2) statistic is used to investigate whether distributions of categorical variables differ from one another.

This analysis has been done as a trial for verification of random sampling data. It is to be noted that this Chi Square Statistical analysis proves the difference in relative amount (i.e. the observed changes in (a) and (a+b)) is significant. This has been observed when considering the *different activities of cluster* in different countries (PL, CZ, SK, IND and DC), young (YC) and old clusters (OC) as well as developed countries (DC) and central European (CE) clusters relative amounts are varies. This variation of relative amount means the values are increasing when the situation changes from the condition of (a) to (a+b) where, 'a', means which have already implemented these activities, 'b' denote, which are planning to implement these activities in future and (a+b), means which have already implemented these activities and are also planning to implement them in future. This verification test confirms that it is convincing and justified as well when the situation change from (a) to (a+b).

Let us consider the results presented in Fig.4.1 and Fig.4.2 (page 61 & 62) for statistical analysis as an example given below i.e. some cluster activities (*networking*, *human resource*, *research and innovation*, *business cooperation* and so on) of the Czech Republic and Poland

Moreover, it can be seen from the below mentioned Tab. 4.7 concerning the Czech clusters statistical analysis of data signifies that out of 50 clusters in (a) 40 clusters responded to the networking aspect. The same thing happened in the case of human resource (27 of 50), research and innovation (32 of 50) and business cooperation activities (10 of 50) of cluster. In this circumstance, it is required to be point out that when the situation changes from (a) to (a+b), the importance of networking, human resource, research and innovation, business cooperation activities are increasing to level of 48 / 50, 43 / 50, 46 / 50 and 22 / 50 respectively. In relative way, it means the value increases for networking (16 %), human resource (32 %), research and innovation (22 %) business cooperation (25 %) and so on.

Tab.4. 7. Statistical Data about the Significance of Cluster Activities
Source: own interpretation (Details available in Appendix-I)

Cluster Activities	(a)		(a+b)	
	CZ	PL	CZ	PL
Networking	40	35	48	45
Human resources	**27**	**28**	**43**	**44**
Research &Innovations	32	28	46	42
Business cooperation	10	8	22	24

Note: (a) refers to the no of clusters, which have already implemented these activities, (a+b) refers to the no of clusters, which either have already implemented these activities and /or are planning to implement them in the near future [where 'b' denotes, the clusters which are planning to implement in the near future].

Similarly, in Tab 4.7 with reference to Polish clusters the statistical analysis of data signifies that out of 51 clusters in (a) 35 clusters responded to the networking aspect, the same thing happened in the case of human resource (28 of 51), research and innovation (28 of 51) and business cooperation activities (8 of 51) of cluster. In this circumstance, it is required to be point out that when the situation changes from (a) to (a+b), the importance of networking, human resource, research and innovation, business cooperation activities are increasing to level of 45 / 51, 44 / 51, 42 / 51 and 24 / 51 respectively. In relative way, it means the value increases for networking (16 %), human resource (32 %), research and innovation (28 %) business cooperation (25 %) for Czech clusters as well as for Polish clusters the value increases for networking (20 %), human resource (33 %), research and innovation (29 %) business cooperation (32 %)and so on.

This has been proven by χ^2 analysis where, it shows that the values (relative amount) has been increased (all the variables of cluster activities considered for the Czech Republic and Poland are presented in Tab 4.7) is significant. The possible interpretation behind this statistical analysis of data (illustrated as an example) shows that the importance of HR activity is increasing as well as other activities are also increasing when the changes occurs. Since, the +b factor significantly changes the cluster managers' opinion concerning the importance of the above mentioned cluster activities

Therefore, according to the aforesaid statistical analysis the results of this research demonstrate the same indication about the importance of HR activity for the development of human resources.

4.5 Cluster concept in India (empirical evidence from the activities of clusters surveyed) - Case study

Finally, the last but not least results of this research have been obtained from the survey of selected clusters in India (Kerala). Where, *the names of these clusters have been referred to as (IND A, B, C, D, E, F, G, H, I).* In **India,** SMEs sector has acquired a prominent role in the socio-economic development of the country during the past 50 years. Thus, apprehending the value and importance of small enterprises for the development and growth of the economy, Govt. of India (GOI) constituted an Expert Committee on Small Enterprises in 1996 headed by Prof Hussein (1996). This Expert Committee advocated industrial cluster development and support policies, strategies as the pivot of the small enterprises development. Previously in 1989, State Bank of India had initiated a technology up-gradation program targeted at selected clusters. Beside this, in 1992 Small Industries Development Bank of India had initiated technology focused cluster development program. On the other hand, in 1997 UNIDO initiated its Cluster Development Program as well. In 1998, Small Industries Development Organization (SIDO), an arm of the Govt. of India started its program on industrial cluster development.

Over and above, in 1999 NABARD (National Agricultural Bank for Rural Development) had also taken the initiative for the sustainability of industrial cluster program called National Program for Rural Industries.

India has generally two types of clusters, Industrial (SME) Clusters and Artisanal Clusters. There are around 400 SME clusters and 3500 Artisan Clusters in India. In India the efficient cluster initiatives are of recent origin. Clusters have been found to be important in any economy, all over the world. In India cluster alone contribute up to 40 % of the country's industrial output which comes from cluster. And 60 % of the country's manufactured exports come from cluster. Beside this, they also have a significant workforce and a high share in employment generation. Hence, the development of Industrial Clusters in India is a project of UNIDO, based on the success of worldwide Italian cluster model originated in the late 1970's.

During 1995 the rapid growth of SMEs all over the world has been speculated and especially to the developing countries. Since 1996, UNIDO assisted several Indian clusters on a pilot basis to customize its innovative Cluster Development methodology to the Indian environment (Bhaskaran, 2008a). It is important to recognize that the *concept of clustering* is not a new idea for Indian context. It has already existed historically but at the present time this *cluster concept* is emerging in a notable manner, especially those linked to the information technology (IT) and IT enabled services (ITES).The success of *Bangalore IT cluster* is a concrete example of it. These have been growing importance as major employment hubs.

The purposes of cluster development in India are as follows:

➢ to give rise to collective benefits through the spontaneous inflow of suppliers of raw materials, components and machinery or the availability of workers with sector specific skills;

➢ to favour the creation of providers of specialized technical, administrative and financial services;

➢ to create a conducive environment for the development of inter-firm co-operation as well as of co-operation among public and private institutions;

➢ to promote local production, innovation and collective learning.

In India the *cluster development policy was first initiated* by *State Bank of India under the project Technology Up-gradation Programme (UPTECH)*, where it's most important concerns were *(i) technological up-gradation* and *(ii) greater share in the global markets*. The main purposes were *(i) optimal utilization of human resources, (ii) large number of firms' involvement in a cluster and (iii) widening the effect of the initiative.*

The *second initiative* was taken by *the Govt. of Kerala as Consortia based Interventions,* where the consortia constituted the cluster and Government of India has recognized the State as the *'Model State'* for *Cluster Development*. Kerala*, state is considered as a God's own country* located in the southern part of India blessed with *unique natural resources* as well as *traditional and skilled manpower*. The main aims of cluster development were *(i) to make the enterprises aware of recent trends in the international market, (ii) to provide Business Development Services (BDS), (iii) to build cooperation with international support agencies.*

The *third and most vital initiative* was taken by *United Nations Industrial Development Organization's (UNIDO's) Cluster Development Programme (CDP)*. Its objective was *(i) to contribute to the overall performance and collective efficiency of clusters, (ii) to make a diagnostic study, and (iii) functioning out a need-based program that mainly focuses on capacity building through training, participation in fairs/workshops/study-tours etc*. The main objectives were *(a) to strengthen the competitiveness of selected SME clusters by enhancing collective efficiency and networking, (b) to select and broadcast a methodology for cluster development suited to Indian conditions, (c) to promote a cluster development movement in India and (d) to enhance the contribution of cluster development in the reduction of poverty.*

In India, the most significant constituent of financing the clusters is done through enhancing the project cost for (i) Common Facility Centre (CFC) (ii) Soft Interventions (SI) and (iii) Infrastructure Development (ID) It is observed that from $ 0.2 million USD to 125 million USD has been invested for cluster development in India[13]. On the other hand, a billion dollar could be invested in 2007-12.In 2002, Govt. of India took the initiative to start up a chapter of an international networking group for entrepreneurs called TiE (The World's Largest *Network of Entrepreneurs)* to expand their networks in India and abroad to achieve the Millennium Development Goals in developing Asia. In 2003 the Ministry of Micro and Small Enterprises (MSME) initiated a scheme Small Industry Clusters Development Programme (SICDP). Earlier it was called Integrated Technology Up-gradation and Management Programme (UPTECH).GOI is planning to invest 5.9 million US $ for Integrated Cluster Development Programme that will focus on technology, management, skill development and the environment. It will be implemented by 2014 at sites in Pithampura, Chennai, Pune, Ankhleswar, Kanpur and New Delhi, according to the specific needs of each industrial location[14].

As another fact in order to highlight the good practices of Indian clusters it can be said that the role of *National Institute of Small Industry Extension Training (NISIET)* is noteworthy. This institute is the mother of entrepreneurship development and the first Indian institute in India to boost the human resources of small enterprises. *The main aim of this institute* is to provide trainings to the officers dealing with small industries as well as entrepreneurs' development through a cluster approach.

On the other hand, National Institute of Entrepreneurship and Small Business Development (NIESBUD): is also another national institute which was established in 1983 in Delhi by the Ministry of SSI, Government of India. The purpose of this institute is to coordinate and to organize the entrepreneurship development programs. Its main goal is to promote, support, and sustain entrepreneurship and small business through training, education, research, consultancy, and other interventions in India and other developing countries. Its main activities are evolving effective training strategies, developing methodology and standardize model for entrepreneurship training, organizing trainers' for providing training programs, and undertaking research in entrepreneurship development.

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[13] *Cluster Kraft grooming growth- Gateway to Industrial and Artisanal Clusters*

Available from www.clusters.org/faq.asp [Accessed on 12.2.2012]

[14] *Department of Commerce (2009) Date : 24 Aug 2009, New Delhi*

Available from http://www.commerce.nic.in/pressrelease/pressrelease_detail.asp?id=2465

[Accessed on 12.2.2012]

*Similarly, Association of Women Entrepreneurs of Karnataka (AWAKE) is also another remarkable association that e*stablished in 1993 in Bangalore, Karnataka, with the mission of empowering women through entrepreneurship development. The purpose of AWAKE is to develops, guides, and extends assistance for potential women entrepreneurs in Karnataka through counseling, training, handholding, and peer group support.

Correspondingly, *Association of Lady Entrepreneurs of Andhra Pradesh (ALEAP) is also another vital organization that* was established in 1993 at Hyderabad, Andhra Pradesh, by several women entrepreneurs with the aim of empowering women to establish small and medium enterprises. Its major activities are identification of projects, guidance for finance, training, organizing exhibitions, and creating industrial infrastructure for developing women entrepreneurs.

Likewise, Consortium of Women Entrepreneurs of India (CWEI) is also another registered society that works for the economic empowerment of women through entrepreneurship strategy. Its main activities are participating in trade exhibitions, organizing training programs, providing escort services. CWEI widely uses e-governance, e-commerce, and other services which are especially beneficial for the rural and tribal women with traditional skills and have been greatly motivated towards entrepreneurship by CWEI (Entrepreneurship Development for Competitive SMEs, 2007).

It is to be noted that though India's cluster development policy shows high progress, but there lies also some difficulties. Such as since 2008 and continued till 2010 the Indian Micro, Small and Medium Enterprises (MSMEs) maintain growth and perform steadily. But due to fierce of high competition it is speculated that though it is growing very fast, but this growth may not be sustained in 2011-12. As owing to several problems in policy that create hindrance for the rapid progress in some cluster development policy issues. Such as inadequate financial support; inability to promote their products and services in domestic and international markets; lack of support from government organizations, large enterprises, etc; lack of appropriate need-based training and development programme; lack of knowledge about low-cost brand communication solutions; unavailability of latest news, trends and technologies and lack of adequate networking opportunities and poor knowledge management[15] .

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[15] *Micro & Small Enterprises Cluster Development Programme (MSE-CDP) Available from* *http://www.msmedildh.gov.in/cdp.pdf [Accessed on 12.2.2012]*

4.5.1 Brief information about the different activities of selected clusters surveyed in India

The results of this case study discuss the information about the selected clusters surveyed in India (Kerala). Where, the names of these clusters have been signified as *(INDA, B, C, D, E, F, G, H, I)*. The intention of selecting these clusters as a sample to fulfil this study, as these clusters are under the Kerala the Bureau of Industrial of Promotion (K-BIP). On the other hand, Government of India has acknowledged the State (Kerala) as the *'Model State'* for *Cluster Development* which is blessed with *unique natural resources* as well as *traditional and skilled manpower.*

The main purpose of doing this case study is to identify and justify the research questions. Through this study, it enable us to get an idea about the significance of different cluster activities and initiatives undertaken by the cluster managers in India in order to facilitate the promotion of human resources and regional economic development within the region to sustain in this competitive world, i.e. to survive in this global contest. The results of this study investigate the success of these selected clusters that gave thrust to the cluster development activities in India. Wherever, it attempts to highlight and explore the hidden treasures of driving forces that plays a great role behind the sustainability of these below mentioned clusters in India that supports them to gain the competitive advantage.

In short it can be said that through this case study it is possible to identify the potential methods of overcoming the inherent constraint and shortcomings of SMEs that lagging them behind to enter in to the competitive market.

But through clustering they may overcome the barriers. Therefore, clusters have been viewed as an opening out of small enterprises that would forward a new strength to them. Through this cases study it enables us to see the challenges of cluster initiatives in India that promote human resources and regional economic development are as follows (Porter, 1998), (Bhaskaran, 2008b)[16], (Ketels et al. 2006) , (Ketels, 2004a)[17] , (Ketels, C., 2004b)[18].

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[16]*Bhaskaran, P.B. (2008b) A Framework for Cluster Initiatives in the Indian Context, Cluster Initiatives*

[17] *Ketels, C. (2004a) All Together Now: Clusters and FDi attraction*, in: FDi Magazine, June/July issue 2004

[18] *Ketels, C. (2004b) European Clusters: Structural Change in Europe 3 –Innovative City and Regions, Hagbarth Publications*

➢ Enable small enterprises to achieve competitiveness in the global market through cost minimization.
➢ Allow to attain better access for international market through quality up-gradation.
➢ Facilitate to develop new marketing strategy through networking.
➢ Make possible to create .better patent regime and better enforcement.
➢ Permit to build an innovative culture and a vibrant eco-system that attracts better talents, i.e. human resources in all fields.

Therefore, the answers of these clusters have been represented in this study in the form of following manner as (*1-very important, 2-important, 3-partially important, 4-not important*), (denote *Yes* or *No*, where *Yes- refers clusters take these initiative* and *No- refers clusters don't take these initiative*) and (*1- fully benefiting, 2-benefiting, 3- partially benefiting, 4- not benefiting*). And all these clusters information has been depicted in tabular form and enclosed here with as follows.

Tab. 4.8 represents the list of clusters surveyed in India (Kerala), which providing a general overview of existing clusters in Kerala that have been surveyed. Tab. 4.7 mentioned concerning the name of the clusters, name of the consortium, their location, year of establishment, legal form of these clusters, name of their founder and the number of members (beneficiaries & consortium) associated with these clusters.

Tab. 4.8. List of Clusters Surveyed in India (Kerala)[19].

	Cluster name	Consortium name	Location	EST	Legal Form	Founder	No. of members
INDA	Rubber Cluster , Changanassery, Kottayam	Natural Rubber & Fibre Products Manufactureres Consortium (P) Ltd,(NRFPMC	Kottayam	2003	Pvt. Ltd. Company	Beneficiaries	Cluster Beneficiaries: 315 nos. Consortium: 49 nos.
INDB	Plastic Products Cluster, Aluva, Ernakulam	Aluva Plastic Consortium (P) Ltd.	Ernakulam	2004	Pvt. Ltd. Company	Beneficiaries	Cluster Beneficiaries: 108nos. Consortium: 28nos.
INDC	Rice Millers Cluster, Kalady, Ernakulam	Kalady Rice Millers Consortium (P) Ltd	Ernakulam	2004	Pvt. Ltd. Company	Beneficiaries	Cluster Beneficiaries: 125nos.. Consortium: 33nos.
INDD	Wood Furniture Cluster, Ernakulam	Kerala Furniture Consortium (P) Ltd	Ernakulam	2005	Pvt. Ltd. Company	Beneficiaries	Cluster Beneficiaries: 5179 nos. Consortium: 36 nos.
INDE	Wood Cluster, Malappuram	Valluvanad Wood Consortium (P) Ltd	Malappuram	2005	Pvt. Ltd. Company	Beneficiaries	Cluster Beneficiaries: 550 nos. Consortium: 30 nos.
INDF	Plywood Manufacturers Cluster, Perumbavoor, Ernakulam	Perumbavoor Plywood Manufacturers Consortium (P) Ltd	Ernakulam	2004	Pvt. Ltd. Company	Beneficiaries	Cluster Beneficiaries: 85 nos. Consortium: 24 nos.
INDG	Ethnic Food Processing Women Entrepreneur Cluster	Omax Foods (P) Ltd, Kottayam	Kottayam	2007	Pvt. Ltd. Company	Beneficiaries	Cluster Beneficiaries: 250 nos. Consortium: 27nos.
INDH	Tile Cluster, Thrissur	Terra Tile Consortium (P) Ltd	Thrissur	2004	Pvt. Ltd. Company	Beneficiaries	Cluster Beneficiaries: 50 nos. Consortium: 20 nos.
INDI	Offset Printers Cluster, Kozhikode	Calicut Offset Printers Consortium (P) Ltd	Kozhikode	2007	Pvt. Ltd. Company	Beneficiaries	Cluster Beneficiaries: 50 nos. Consortium: 27 nos.

[19]*CLUSTER TIDINGS KERALA (2005)Newsletter,.1(5) Available from http://www.keralaindustry.org/cluster_tidings/cluster_July.pdf [Accessed on 12.2.2012]*

Tab.4.9. represents the general information about the above mentioned clusters, specially described the purpose of creating of these clusters.

Tab. 4.9. General Information of the Clusters in India (Kerala).

	Cluster name	Purpose behind the creation of these clusters
INDA	**Rubber Cluster , Changanassery, Kottayam**	(a) Kottayam District in Kerala State is the leading producer of rubber (raw rubber/ rubber latex) in India.(b) Due to plenty availability of raw material (rubber latex) in this region, lots of rubber based industries were formed.
INDB	**Plastic Products Cluster, Aluva, Ernakulam**	a) Micro / Small scale plastic industrial units has been functioning in Aluva, Ernakulam District about 30 to 40 years ago. (b) These industries investments vary from Rs. 5 to 350 Lakhs(approx. 10,000 USD to 680,000 USD) and turnover per annum is about Rs. 380 crores (approx.73, 500 million USD).
INDC	**Rice Millers Cluster, Kalady, Ernakulam**	(a) Kalady rice millers Consortium is the biggest rice producing cluster in Kerala. (b)The pure water available from river Periyar is one of the main reasons for the development of the rice mill in kalady. (c) Kalady region is concentrated with rice milling units, exporting rice & related products to Middle East & European Union Countries
INDD	**Wood Furniture Cluster, Ernakulam**	a) The wood furniture cluster of Ernakulam district is an important cluster. It has an annual turnover of over Rs. 750 crores (approx. 145,000 million USD). (b) The cluster at Ernakulam has about 5179 small and tiny/cottage units in the sector.
INDE	**Wood Cluster, Malappuram**	(a) Malappuram district is famous for high quality timbers. (b) Due to the availability of the raw material (wooden logs). People started setting up Micro / Small / Medium units. of wood and related products
INDF	**Plywood Manufacturers Cluster, Perumbavoor, Ernakulam**	(a) In Kerala State, the maximum numbers of plywood manufacturing units are located in Perumbavoor region of Ernakulam District.(b) In Ernakulam district there are 85 plywood manufacturing industrial units functioning under SSI sector. (c) Creating employment opportunities directly to 7000 persons and indirectly to 3500 persons.
INDG	**Ethnic Food Processing Women Entrepreneur Cluster**	(a) There are 100's of women in Kottayam district and especially in Pala district there are about 250 women, producing ethnic foods. (b) The exporters sell these foods to non – resident Keralites living mainly in Europe, Middle East and American countries.
INDH	**Tile Cluster, Thrissur**	(a) The majority of tile units in Kerala State are located in Thrissur district. (b) These units have been launched and started to function in Thrissur district long time back.
INDI	**Offset Printers Cluster, Kozhikode**	a) The innovation of offset printing industry in Kerala started in 1980 and in Kozhikode in 1985.(b) The demand for printing increases the no. of units to launch that raises the importance of offset printing industries. (c)Provide a good number of indirect employment opportunities by way of Desk Top Publishing and Designing works.

Tab.4.10. represents and highlights the main goals of these below mentioned clusters. It elaborates the individual clusters main goals.

Tab. 4.10. Main Goals of the Clusters in India (Kerala).

Cluster name		Main Goals
INDA	**Rubber Cluster , Changanassery, Kottayam**	**Goals:** (a) To become an internationally preferred source of rubber and rubber related products. (b) Utilize the natural resource and enhance the economic status of that region. (c) Solve the problems of knowledge fragmentation and co ordination. Entrepreneurship. (d) Set up special training centre and training programme for the Govt.officials, bankers, financial institutions, and also for the cluster members.
INDB	**Plastic Products Cluster, Aluva, Ernakulam**	**Goals:** (a) To become a full-fledged cluster in India with self developed infrastructure. (b) To build a network with the research institutions and the industries. (c) Cluster firms' presentation to meet global competitiveness. Entrepreneurship. (d) Modern tool room as CFC.(b) Raw Material Bank.(e) Captive power project. (f) Industrial park (g) "Zero" waste plastic project for saving environment. (f) Common marketing under common brand.
INDC	**Rice Millers Cluster, Kalady, Ernakulam**	**Goals:** (a) To become a model cluster. (b) Making value added products from the remains of the main product. (c) To meet the demands of sustainability and preservation of environmental quality. Entrepreneurship. (d) geared up to overcome the technological challenges. (e) Improve the efficiency. (f) Implement Eco friendly strategies[20].
INDD	**Wood Furniture Cluster, Ernakulam**	**Goals:**(a) Facilitate the transition of cluster SMEs from low-end manufacture to World Class `eco-friendly' manufacture (b) To be a retailer nationally and globally. Entrepreneurship.(c)Protecting Domestic Industry and Employment (d) Move up the value chain to design and produce quality products.
INDE	**Wood Cluster, Malappuram**	**Goals:** (a) Develop a globally competent Wood Working Cluster. (b) Providing modern training and facilities for value addition and securing sustainability. (c) Improving the livelihood. (d) Facilitate regional growth by Entrepreneurship. (e) Initiatives for Business Development

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[20] *Available from http://www.kaladyricemillersconsortium.com/ [Accessed on 12.2.2012]*

INDF	**Plywood Manufacturers Cluster, Perumbavoor, Ernakulam**	**Goals:** (a) To become a globally preferred centre for plywood. (a) Increase their market potentiality. (b) To compete with manufacturers of other states such as Uttar Pradesh, Chhattisgarh, Gujarat, Assam etc. (c) To increase its productivity, improve quality, capacity utilization, product diversification and marketing etc[21].(d) Increasing employment opportunities.
INDG	**Ethnic Food Processing Women Entrepreneur Cluster**	**Goals:** (a)To evolve as a globally preferred centre for ethnic foods.(b) Facilitate regional growth by Entrepreneurship.(c) Cluster Development Programme (CDP) put emphasis on public institutions regarding innovation
INDH	**Tile Cluster, Thrissur**	**Goals:** (a) Implementing the CFC, with testing facilities. (b) Optimizing plastic clay consumption with new attractive shades and better drying properties. (c) Improve the performances of this tiles cluster in total. (d) Facilitate regional growth by Entrepreneurship. (e) CDP put emphasis on Business development.
INDI	**Offset Printers Cluster, Kozhikode**	**Goals :**(a) Facilitate the transition of cluster SMEs from low-technology printing to World Class Printing' competitively. (b) Protecting Domestic Industry and Employment. (c) Progressively, greater export. (d) Facilitate regional growth by Entrepreneurship and emphasize on business development.

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[21] *Perumbavoor Plywood Manufacturers Consortium Pvt. Ltd-Proposal for Setting up of a Common Facility Centre under Small Industries Cluster Development Programme Scheme of office of DC (SSI)Available from http://dcmsme.gov.in/schemes/PlywoodClusterPerumbavoor.pdf [Accessed on 12.2.2012]*

Tab.4.11. signifies the main activities undertaken by these below mentioned clusters. It describes about the main spheres of cooperation of these cluster.

Tab. 4.11. Main Activities Undertaken by the Clusters in India (Kerala)

	Cluster name	Activities undertaken for main spheres of cooperation
INDA	**Rubber Cluster , Changanassery, Kottayam**	(a) Human resource development to solve the problems of knowledge fragmentation and co-ordination. (b) Cost reduction to establish Raw Material Bank (RMB) and Common Facility Centre (CFC). (c)Market expansion to set up product marketing and brand building
INDB	**Plastic Products Cluster, Aluva, Ernakulam**	(a) Market expansion to set up product marketing and brand building. (b) Planning to set up a Common Facility Centre for mould making, repairing and manufacturing etc. (c) Improving the performance of individual employees. (d) Cost Reduction
INDC	**Rice Millers Cluster, Kalady, Ernakulam**	(a) Setting up of centralized bran oil refining unit under CDP as CFC. (b) Enable cluster members to get maximum cost for rice bran. (c). Eliminate the storing charges incurred for rice bran.(d). Emphasize on value added product.
INDD	**Wood Furniture Cluster, Ernakulam**	(a) Improve productivity and efficiency in manufacturing. (b) Add value to products through better design. (c)Optimize input sourcing, sources and volumes by networking.
INDE	**Wood Cluster, Malappuram**	(a) Establish a CFC for efficient and value-added processing of wood. (b) Provide training on efficient mechanical wood processing to cluster members.(c) Undertake activities Such as (production) for self sustenance of the CFC.
INDF	**Plywood Manufacturers Cluster, Perumbavoor, Ernakulam**	(a) Setting up of a CFC for Urea formaldehyde resin for veneer bonding, high density plywood making press. Advantages of CFC are: 1.Improving the quality of the products, 2.Product segregation, 3. Reduction of production cost.
INDG	**Ethnic Food Processing Women Entrepreneur Cluster**	(a) Support traditional food manufacturing by CFC. (b)Creating a centralized quality and consistent place. (c) Increase technical and managerial competitiveness. (d) Raise skill, quality& efficiency. (e) Boost productivity and novelty through R&D.
INDH	**Tile Cluster, Thrissur**	(a) Setting up CFC for blending different clay samples with non-clay earth and grinding. (b)Establish quality control laboratory to train the manpower. (c) A common laboratory for testing the properties of clay.
INDI	**Offset Printers Cluster, Kozhikode**	(a) Improve productivity and efficiency. (b) Add value to the products through better design. (c) Provide technical training for International level of printing. (d) Optimize input by networking.

Tab.4.12 highlighted the significance of different activities of the above mentioned cluster like networking, human resources, research and innovation, business cooperation and promotion, support activities, governmental and political activities, other activities (market widening , It can be seen from the Tab.11 that networking and human resources activities of clusters are the prime important factor among other different activities of clusters.

Tab. 4.12. Significance of Different Activities of Clusters in India (Kerala).

Different activities of Clusters	Clusters								
	INDA	INDB	INDC	INDD	INDE	INDF	INDG	INDH	INDI
Networking	1	1	1	1	1	1	1	1	1
Human resources	1	1	1	1	1	1	1	1	1
Research & Innovation	1	2	2	2	2	1	2	2	2
Business cooperation &promotion	1	2	2	1	3	1	1	2	3
Support activities	2	2	2	2	2	3	2	2	2
Govt. & political activities	2	2	2	2	2	2	2	2	2
Other activities(Market widening)	1	1	1	2	2	2	2	2	2

** **IND** A , B, C, D, E, F, G, H, I- refers to the name of the clusters, *1-very important, 2-important, 3-partially important, 4-not important*

Tab.4.13. highlighted the significance of different roles (integrate global economy, strengthen competitive advantage, facilitate regional growth, accessibility of manpower, enhance productivity and support cluster development policy) of clusters that is benefiting the enterprises situated in Kerala. It can be seen from the table that the above mentioned clusters are mainly getting benefit for strengthening their competitive advantage and it enables to support cluster development policy.

Tab. 4.13. *Significance of Different Roles of Clusters in India (Kerala)*

Different roles of Clusters	Clusters								
	INDA	INDB	INDC	INDD	INDE	INDF	INDG	INDH	INDI
Integrate Global Economy	1	2	1	1	2	2	1	2	1
Strengthen Competitive Advantage	1	1	1	1	1	2	1	1	1
Facilitate Regional Growth	1	1	1	1	1	2	3	3	2
Accessibility of Manpower	1	1	1	1	2	3	1	1	2
Enhance productivity	1	2	1	2	3	3	1	3	2
Support Cluster Development Policy	1	1	1	2	1	1	1	2	1

* *IND A , B, C, D, E, F, G, H, I- refers to the name of the clusters, *1- fully benefiting, 2- benefiting, 3- partially benefiting, 4- not benefiting*

Tab.4.14. focuses on the good practices of clusters in India (Kerala) that boost its human resources to promote regional economic development and to achieve their competitive advantage.

Tab.4.14.Activities Offered by Indian Cluster for Reinforcing Human Resources

From Human Resource point of view:	IND A	IND B	IND C	IND D	IND E	IND F	IND G	IND H	IND I	From Research and Innovation point of view:	IND A	IND B	IND C	IND D	IND E	IND F	IND G	IND H	IND I
Organizing joint seminars, conferences, and awareness workshops for financial institutions.	✔	✔	✔	✔	✔	✔	✔	✔	✔	*Cooperation with research institutions*	✔	✔	✔	✔	✔	✔	✔	✔	✔
Resolving the problems of knowledge fragmentation and co-ordination among the cluster members.	✔	✔	✔	✔	✔	✔	✔	✔	✔	*Providing Joint research and development*	✔	✔	✔	✔	✔	✔	✔	✔	✔
Setting up special training centre and training programme for the Government officials, bankers, financial institutions, and also for the cluster members	✔	✔	✔	✔	✔	✔	✔	✔	✔	*Linking with both Technical universities and industries.*	✔	✔	✔	✔	✔	✔	✔	✔	✔
Building Cooperation with educational institutions	✔	✔	✔	✔	✔	✔	✔	✔	✔	*Application of modern technology*	✔	✔	✔	✔	✔	✔	✔	✔	⇨
Organizing a workshop regarding Social Accountability (SA) 8000	✔	✔	✔	✔	✔	✔	✔	✔	✔	*Emphasize on innovation of products and processes*	✔	✔	✔	✔	✔	✔	✔	✔	✔
Providing professional and technical training(Skill up-gradation programme)	✔	✔	✔	✔	✔	✔	✔	✔	✔	*Support of spin-off creation*	⇨	⇨	✔	⇨	⇨	✔	⇨	⇨	✔

Where * IND A, B, C, D, E, F, G, H, I- refers to the name of the clusters, * ✔ -refers clusters currently offering, ⇨ -refers clusters are planning to offer

As a result therefore, it is essential to appraise the cluster activities in India that allow us to understand and have a look on how this above mentioned cluster's strategies promote and facilitate human resources to be more competitive in this ever-changing world. The above mentioned Tab.4.14 shows what are the good practices of Indian clusters from the HR point of view that assist to boost their human resources which enable and facilitate the region to enhance its core competencies. And with the help of its core competencies it will be more flexible for them to be economically developed and more competitive in compare with other regions. For e.g. the Rubber cluster in India *organizing a workshop regarding Social Accountability 8000 (SA 8000) that increases the turnover, increases the employment opportunity, increases the export. Similarly,* Kalady Rice Millers cluster in Ernakulam district *also providing Technology up-gradation programme* to set up a rice-bran oil extraction plant that needed 100 tonnes of rice bran every day that increases the annual turnover (Bhaskaran, 2008a). On the other hand Ethnic Food Processing cluster in India also associated with *NISIET, NIESBUD and CWEI* (mentioned in page 92-93) *that* organizing training programs, providing escort services and export marketing for the benefit of first-generation women entrepreneurs. In their activities, CWEI widely uses e-governance, e-commerce, and other services. Where, specially rural and tribal women with traditional skills have been greatly motivated towards entrepreneurship. It is to be noted that recently CWEI has started networking with women entrepreneurs of other countries in order to market the products manufactured by women entrepreneurs in India (Entrepreneurship Development for Competitive SMEs, 2007).

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Tab. 4.15. indicated the different initiatives namely: (business development programme, cluster development programme, trust building activities, awareness programme, technical workshops, professional training programmes, public institutions initiative in innovation and initiative for joint projects) that undertaken by the management of clusters or cluster members.

Tab. 4.15. Different Initiatives Undertaken by the Management of Clusters/ Cluster Members in India (Kerala).

Different initiatives undertaken by the Management of Clusters/ Cluster members	Clusters								
	INDA	INDB	INDC	INDD	INDE	INDF	INDG	INDH	INDI
Business Development Programme	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Cluster Development Programme	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trust building Activities	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Awareness Programmes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Technical Workshops	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Professional Training programmes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Public Institutions initiative in innovation	No	No	No	No	No	No	Yes	No	No
Initiative for Joint projects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

* *INDA , B, C, D, E, F, G, H, I- refers to the name of the cluster*   *Yes- refers clusters take initiative,   No- refers clusters don't take initiative*

Tab. 4.16. Underlined the key factors for the successful development of the clusters in India.

Tab. 4.16. Key Factors for the Successful Development of the Clusters in India (Kerala).

	Factors facilitate the success	Clusters								
		INDA	INDB	INDC	INDD	INDE	INDF	INDG	INDH	INDI
1	Excellent Communication network	5	5	5	5	5	5	5	5	5
2	Education of Human resources	5	5	5	5	5	5	4	5	5
3	Professionalism of the cluster management	5	5	5	5	5	5	5	5	5
4	Use of ICT/virtual media for communication	5	5	5	5	5	5	5	5	5
5	Innovative technology	5	5	5	5	4	5	4	5	5
6	Joint research/cooperation with a research institution	5	5	5	5	5	5	5	5	5
7	Cooperation with educational institutions	5	5	5	5	5	5	5	5	5
8	Developed Infrastructure	4	4	4	3	5	5	4	5	5
9	Strategic Location	3	4	4	4	4	4	4	4	4
10	Demography	4	2	2	4	2	3	4	3	3
11	Availability of plenty resources (natural)	5	1	5	4	4	4	2	2	1
12	Pro-active Government policies	5	5	5	5	5	5	5	5	5
13	Pro-enterprise incentives	5	5	5	5	5	5	5	5	5

14	Existence of promotional agencies and well organized supply chain	5	5	5	5	5	5	5	5	5
15	Accessibility of subsidies during mapping and formation of cluster	5	5	5	5	5	5	5	5	5
16	Support by means of subsidies at the initial stage of cluster	5	5	5	5	5	5	5	5	5
17	Consortium's support for setting up Common Facility Centre (CFC)	5	5	5	5	5	5	5	5	5
18	Mutual understanding among the cluster members	4	5	5	5	5	5	5	5	5
19	Competition among neighbouring industries/companies	4	5	4	5	5	5	3	4	5
20	Creating employment opportunities for the regional people	5	4	4	4	5	5	5	4	5
21	Access to finances	5	5	5	5	5	5	5	5	5
22	Conducting diagnostic study of companies in the cluster	5	5	5	5	5	5	5	5	5
23	Benchmarking	5	5	4	5	4	4	5	4	5
24	Monitoring of productivity of companies in the cluster	4	4	5	4	4	4	4	5	5

* IND A , B, C, D, E, F, G, H, I - *refers to the name of the clusters,*   * *1* – *not at all important,* *5* – *very important.*

Tab. 4.17. highlighted the several key factors as (supportive policy environment, effective networks, skilled workforce, strong technical base, entrepreneurial culture, support services, growing industry base, ability to attract members, foundations and infrastructure and availability of finance) that facilitate the clusters in India to be competitive.

Tab. 4.17. Several key Factors Facilitate the Clusters in India (Kerala) to be Competitive

Supportive policy environment	Under supportive policy environment it has been observed that the clusters in Kerala region have a profound regulatory framework initiated by the Govt. of India (GOI) as well as by the State Govt. And these initiatives have been taken for implementing appropriate plan and innovation policies that can enable them to boost and enhance their regional economic development.
Effective networks	From the effective networks point of view it is to be noted that the clusters in India have a very strong network system for promotion of sector specific clusters. It tries to build and develop synergies with the different training institutes for its staff members in order to enhance the marketing facilities. And also took initiative on technology transfer for keeping pace with the modernization.
Skilled workforce	The clusters in India (Kerala) put emphasis mainly to upgrade its workforce in order to cope up with dynamic business environment. As result of it they provide and arrange professional training for cluster members in association with other successful cluster members through conferences, joint workshops and seminars. For example the *rice miller's cluster* has been organizing some joint workshops with Kerala Agricultural University under a new scheme.[22]
Strong technical base	The above mentioned all the clusters in Kerala region have a strong link with universities and research institutes, teaching institutes. As for example the *rubber cluster* has direct connection with the Dept. of Polymer Science and Rubber Technology, Calicut University of Science and Technology (CUSAT) for surveying the task of major rubber product manufacturing units in India. Development Commissioner-Small Scale industry (DCSSI) also took the initiative as part of bench marking study[23]

[22]*CLUSTER TIDINGS KERALA (2006) Newsletter, 2(7) February 2006. Available from http://www.keralaindustry.org/cluster_tidings/cluster_mar_06.pdf [Accessed on 12.2.2012]*
[23] *Available from http://www.keralaindustry.org/cluster/May2004.pdf [Accessed on 12.2.2012]*

Entrepreneurial culture	To enhance and expand the entrepreneurial culture within the region these clusters adopted a plan to increase the commercial awareness among the cluster members. Thus it set up a programme as cluster presentation in association with different members from UNIDO, SIDO, SISI and different state and specialist of CDA. It highlighted on virtual catalogue of the firms' products. And also organizing monthly, weekly News letter named: CLUSTER TIDINGS – Kerala, as role model and recognition.
Support services	Regarding support services these clusters have a technical and financial support both from the Central and State Govt. These clusters are cooperating with other regional clusters and Indian clusters mainly with the clusters under UNIDO by exchanging important information and know-how about the management of clusters in different parts of India. The Kerala Business to Business Meet 2005[24] (B2B) 2005 was a part of Government of Kerala's effort and support to promote the State's SMEs in the global markets and help the manufacturing sector to access larger markets for their products.
Growing industry base	The growing industry base is to facilitate and boost the SMEs- *to get a platform*, *to enter in to the competitive market*. Organizing a workshop regarding *Social Accountability 8000 (SA 8000)*, which is a leading workplace standardization and verification system. To create a Global Workplace Standard (GWS), a tool for retailers, brand companies, suppliers and other organizations. To assure a decent working conditions in the supply chain.
Ability to attract members	Another vital factor that enables these clusters in India (Kerala) is to attract their members in order to motivate through offering opportunities for critical mass, suggesting regular awareness intensive courses to improve the cluster members' ability to start a new business. As a result the rubber cluster in Kottayam is the first ever professional and legally constituted sustainable cluster in Kerala, India under CDP. The success of this cluster made the Department realize the necessity and importance of the cluster approach in the other sectors.
Foundations and infrastructure	Foundations and infrastructure is also another critical factor plays a key role especially on the availability of land, labour and capital. The unique natural resources availability becomes one of the great advantages for some clusters in this region. The infrastructure facilities of this region were upgraded under the AISDE scheme of Govt. of India sanctioned by Kerala Industrial Infrastructure Development Corporation (KINFRA)[25],[26].
Availability of finance	The one of the leading factor behind these clusters success are the availability of subsidies for their development and realization of their joint projects with UNIDO, SSI, and SIDO as a venture capital. The aforesaid business agencies grant their subsidies through mutual communication and understanding among the cluster members.

[24] *CLUSTER TIDINGS KERALA (2005) Newsletter, 1(6) October 2005 Available from http://www.keralaindustry.org/cluster_tidings/Cluster_october.pdf [Accessed on 12.2.2012]*
[25] *Available from http://www.kinfra.org/index.htm [Accessed on 12.2.2012]*
[26] *Available from http://www.keralaindustry.org/cluster_tidings/cluster_July.pdf [Accessed on 12.2.2012]*

Lastly, Tab. 4.18. described about the strength, weaknesses, opportunities and threats (SWOT) analysis of these above mentioned clusters in India.

Tab.4. 18. SWOT Analysis of Clusters in India (Kerala)

STRENGTH	WEAKNESS
➢ Skilled manpower. ➢ Abundance of raw material production ➢ Availability of cheap labour(workforce) ➢ Growing economy and domestic market ➢ Progressive reforms ➢ Trigger regional learning process ➢ Locational advantage ➢ Innovative infrastructure	➢ Highly fragmented ➢ Absence of local web site, brand name, Products advertisements ➢ Lower productivity ➢ Some time technological obsolescence
OPPORTUNITIES	**THREAT**
➢ Shift in domestic market to branded readymade garments and international market of IT industries ➢ Increased disposable income ➢ Value of supply chain ➢ Renovate regional economic imbalance ➢ Growing Industry Base ➢ Strong Technical Base ➢ Boosts up the SMEs competitiveness	➢ Stiff competition from developing countries; China specially for textile industries ➢ Pricing pressure ➢ Lack of formal financial assistance, being an unorganized sector, though Govt. takes initiatives. ➢ Conventional marketing techniques ➢ Lengthy Government procedures for getting approval and implementation of the project

4.6 Cluster concept in the Czech Republic (empirical evidence from the activities of clusters surveyed) - Case study

Furthermore, the next ultimate results of this research have been obtained from the survey of selected clusters in the Czech Republic. Where, the names of these clusters have been referred as *(cz A, B, C, D, E, F, G, H, I)*.In the **Czech Republic**, the concept of cluster activities started to develop in 2003. During the period (2005-2008) the National Cluster Strategy was elaborated as a main document in the area of clusters. It contained the main principles, measures and aims of application of a successful economic model of a cluster in regards to the existing conditions. In Czech Republic, cluster initiatives have been supported by the program "KLASTRY," which, began in 2004 has enabled identification and support new sectors and sub-sectors with potential to improve competitiveness through collaboration and innovation[27].The most important component of financing clusters in the Czech Republic are from public sources provides structural funds of European Union (EU) in order:

(i)   to seek out and identifying the enterprises open for cooperation and preparation for potential cluster creation,

(ii) to establishment of cluster for the purpose of further business development.

At present, Czech clusters are within the Programme Operational Programme Enterprise and Innovation (OPIE) 2007-2013[28].

The main aim of this programme is

➢ *to support and create a favourable entrepreneurial environment,*
➢ *to improve the conditions for enterprising and innovation,*
➢ *to develop a competitive advantage,*
➢ *to progress the linkages among research, education and entrepreneurial sectors.*

Under this new programme there were certain supported activities need to be highlighted as common cluster projects that has been considered in the area of technical infrastructure, in the area of innovation, cluster promotion, in the area of human resources development and networking, sharing know-how and capacity. It is essential to mention that this new program has broadened the opportunities for cluster development in the Czech Republic in compare to the previous programme.

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[27] *Available fromhttp://www.czechinvest.org/en [Accessed on 12.2.2012]*

[28] *Operational Programme Enterprise and Innovation Available from*
http://www.czechinvest.org/en/opei [Accessed on 12.2.2012]

On the other hand, it can be said from the industrial development point of view that this new cluster development policy is more flexible than earlier one as, the so called "cluster mapping" is not put into practiced and a cluster formalization is not the first and foremost criteria for the membership of the company from a certain region and adjacent regions. However, there were some other regulations which have been considered as a significant issue in order to maintain the successful development of clusters in the Czech Republic such as: (i) a cluster needs to have minimum 15 numbers of independent members, (ii) at least 60% members of the cluster have to be SMEs and (iii) a tertiary education institution (university) or research institute has to participate in a cluster.

From the policy perspective point of view it is to be noted that the ideas about cluster development policy under industrial policy in the Czech Republic first appeared in the year 2000-2001 Later on it materialize while preparing the National Development Plan, Operational Programme Industry and Enterprise (OPIE) and to get the EU Structural Funds (2004-2006) from the Ministry for Industry and Trade[29]. Clusters in the Czech are an entity of support surrounded by the European Union (EU) coherent policy within the EU structural funds for the years 2007-2013. This cluster development policy and initiatives have been realized not only to enhance the national level but also to enhance the regional government level which is surrounded by *Regional Operational Programs, i.e. Regionální operační programy* and *regional innovation strategies* (Pavelkova et al. 2011).

4.6.1 Brief information about the different activities of selected clusters surveyed in the Czech Republic

The results of this case study surveyed in the Czech Republic, discuss the information about the selected clusters designated as *(CZ A, B, C, D, E, F, G, H, I)*. These clusters have been considered as a sample of this case study in order to get a general overview of cluster activities and cluster initiatives implemented in the Czech Republic. It is important to highlight that the clusters which have been chosen in this investigation are comparatively new than the clusters surveyed in India. In fact, this study has been carried out to identify how the clustering concept has influenced and supported the development of human resources in an organization.

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[29] *SKOKAN, K. (2007)The Role of Clusters in the Regional Policy of the Czech Republic 2nd Central European Conference in Regional Science – CERS, 2007 pp.955-962 Available from http://www.cers.tuke.sk/cers2007/PDF/Skokan.pdf [Accessed on 12.2.2012]*

The survey results exhibits the significance of different cluster activities, their main goals, main activities undertaken by the managers of these selected clusters. The answers gathered from these clusters have been presented in the following manner i.e. 1,2,3 and 4 (where, 1-very important, 2-important, 3-partially important, 4-not important), Yes or No (where, Yes- refers clusters take these initiative and No- refers clusters don't take these initiative) again 1, 2, 3 and 4 were used which denotes (1-fully benefiting, 2- benefiting, 3- partially benefiting, 4- not benefiting). All the information about the surveyed clusters has been depicted in a tabular form.

Tab. 4.19. represents the list of clusters surveyed in Czech Republic, which provides a general overview of existing clusters in Czech, i.e. the name of the clusters, their location, year of establishment, legal form of these clusters, founder and the no of members associated with these clusters.

Tab. 4.19. List of Clusters Surveyed in the Czech Republic

	Cluster name	Location	EST	Legal Form	Founder	No. of members
CZA	Network Security Monitoring Cluster	Brno	2010	Cooperative	Own initiative and interest of companies, support of government and university representatives	19
CZB	Czech Stone Cluster	Lázně Bělohrad	2006	Cooperative	Own initiative and interest of companies	16
CZC	Energoklastr	Brno	2008	Civic association	Own initiative and interest of companies	20
CZD	HIT klastr	Hradec Kralove	2008	Association of legal persons	Own initiative and interest of companies, support of university representatives and Czech Invest	19
CZE	Klastr inovací v dopravě	Brno	2008	Association	Own initiative and interest of companies	
CZF	Klastr povrchové úpravy	Pardubice	2009	Joint-stock company	Own initiative and interest of companies and support of Czech Invest	18
CZG	KPSV (Klastr přesného strojírenství Vysočina)	Moravské Budějovice	2007	Civic association	Own initiative and interest of companies	18
CZH	MSAK (Moravkoslezský automobilový klastr)	Ostrava	2006	Civic association	Own initiative and interest of companies, support of government and a regional agency	50
CZI	Omnipack Cluster	Jaroměř	2005	Cooperative	Own initiative and interest of companies, government support	57

Tab. 4.20. describes the general information, i.e. the purpose of creation of these clusters. It describes about the purpose behind the creation of these below mentioned clusters.

Tab. 4.20. General Information of the Clusters Surveyed in the Czech Republic

	Cluster name	Purpose behind the creation of these clusters
CZ_A	**Network Security Monitoring Cluster**	**Network Security Monitoring Cluster (NSM Cluster)** is a co-operative industrial cluster focusing on the network security and security in ICT. It was founded in 2010 in South-Moravian Region (Brno) by 21 members together with Masaryk University in Brno and it is open for other members[30].
CZ_B	**Czech Stone Cluster**	**Czech Stone cluster** is a form of co-operatives and Kamenolom Javorka Company Ltd., was the initiator of the Czech Stone Cluster project, in the field of stone processing. This cluster was founded in 2006 and currently it has a total of 19 members, of whom 8 are from academics and 11 are from businesses (Jasikova etal.2011)
CZ_C	**Energoklastr**	**Energoklastr** is a civic association form of competence-oriented cluster working mainly on the cooperation of small and medium-sized enterprises, research organizations, universities and public sector. It has a total of 20 members and founded in 2008 in Brno. Its existence contributes significantly to the development of innovation, applied research and transfer of technology in reducing energy consumption.[31].
CZ_D	**HIT klastr**	**HIT cluster** is an association of a legal entity having its registered office founded mainly in the Hradec Kralove region. This cluster project was launched in 2007and later on it was established in 2008 it was established. This cluster working in the sectors of information and communication technologies and other related services[32].

[30] *Available from http://www.nsmcluster.com/en/, http://www.nsmcluster.com/en/about-us/[Accessed on 12.2.2012]*

[31]*Avail from http://www.energoklastr.cz/ [Accessed on 12.2.2012]*

[32] *Available from http://www.hitklastr.cz/ [Accessed on 12.2.2012]*

CZ_E	**Klastr inovací v dopravé**	**Klastr inovací v dopravě cluster** is a Civic Innovation in Transport Association that supports business development of new technology. It was founded in 2008 in Brno to bridge the existing gap between research institutes and the needs of the society[33].
CZ_F	**Klastr povrchové úpravy**	**Klastr povrchové úpravy (The Cluster finish company)** is a Joint- stock company founded in Pardubice in the year 2009 after the certification and successful mapping phase supported by the different Board members as well as Structural Funds. It has a total number of 18 members[34].
CZ_G	**KPSV (Klastr přesného strojírenství Vysočina)**	**KPSV (CLUSTER precision engineering HIGHLANDS)** is a civic association established in 2007 in the Moravian Budejovice region, based on long tradition of engineering and metalwork production in the region. This cluster has a total number of 18 members and is associated with GRANT Company Ltd., which is a member of the cluster and also a processor of the project, supported after successful mapping[35].
CZ_H	**MSAK (Moravkoslezský automobilový klastr)**	**Moravkoslezský automobilový klastr (Moravian-Silesian Automotive Cluster Association)** was established in 2006 in Ostrava after receiving the constructive support from structural funds in order to promote innovation and enhance the competitiveness and export capabilities of interconnected companies, entrepreneurs and institutions active in the Moravian region. The legal form of this cluster is a civic association having 50 numbers of members that seeks to build a common identity firms in the cluster and to restore confidence and positive attitudes towards the automotive industry in the entire region. the automotive industry in the Czech Republic and abroad[36].
CZ_I	**Omnipack Cluster**	**Omnipack cluster** is a co-operative industrial cluster focused on packaging and packaging technology. It was founded in 2005, after the successful mapping and a constructive support from structural funds. This cluster is situated in Hradec Karlove region having 57 numbers of members[37].

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[33] *Available from http://www.inovacevdoprave.cz/kontakt.html, http://www.i4f.eu/IIT_EN/IIT_Mission_EN.html [Accessed on 12.2.2012]*

[34] *RIS-Regional Information Service Available from http://www.risy.cz/en [Accessed on 12.2.2012]*

[35] *Available from http://www.kpsv.cz/[Accessed on 12.2.2012]*

[36] *Available from http://www.autoklastr.cz/ [Accessed on 12.2.2012]*

[37] [37] *Available from http://www.klastromnipack.cz/ [Accessed on 12.2.2012]*

Tab. 4.21. shows the main goals of these below mentioned clusters. It shows the main aims of these individual clusters.

Tab. 4.21. Main Goals of the Clusters Surveyed in the Czech Republic.

	Cluster name	Main Goals
CZ_A	**Network Security Monitoring Cluster**	**Goals:** The aim of this cluster is to become interregional grouping in Czech Republic and also in Europe too[38]
CZ_B	**Czech Stone Cluster**	**Goals:** The main aim is to link with science, education and practice in order to improve competitiveness and to increase innovation in the rational utilization of mineral resources[39]. This cluster's philosophy is to create unique products from materials that are not found elsewhere in Europe and preserve the value of professional honor and remember the roots.
CZ_C	**Energoklastr**	**Goals:** The main aim of this cluster is to focuses on technologies that reduce emissions of peace and sustainability in the energy sector and in sectors such as manufacturing of electrical equipment, aerospace, automotive, IT and construction. The main scope exists in the area of Central Region, Highlands Region, and the Olomouc region[40].
CZ_D	**HIT klastr**	**Goals:** The main aim of this cluster is to provide its services to the middle and high schools, on-governmental organizations that deal with these technologies[41].
CZ_E	**Klastr inovací v dopravé**	**Goals:** The main aim of this cluster is to encourage innovative activities in all relevant sectors in order to develop a versatile transport sector in a particular way by promoting innovation[42]
CZ_F	**Klastr povrchové úpravy**	**Goals:** The main aim of this cluster is to acts as an association of companies (located in different regions and also in different countries) engaged in various finishes such as "plating (electroplating, hot"), organic coating (powder coating, KTL, wet paint "), special coatings, surface treatment of nonmetallic materials (e.g. wood, plastic).It mainly works on coatings, which is important for many industrial products, and productions such as: traffic engineering, electronics and furniture[43].

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[38] *Available from http://www.nsmcluster.com/en/, http://www.nsmcluster.com/en/about-us/ [Accessed on 12.2.2012]*

[39] *Available fromhttp://www.czechstonecluster.eu/co-je-to-klastr, http://www.czechstonecluster.eu/nase-strategie [Accessed on 12.2.2012]*

[40] *Available from http://www.energoklastr.cz/[Accessed on 12.2.2012]*

[41] *Available from http://www.hitklastr.cz/[Accessed on 12.2.2012]*

[42] *Available from http://www.inovacevdoprave.cz/kontakt.html, http://www.i4f.eu/IIT_EN/IIT_Mission_EN.html[Accessed on 12.2.2012]*

CZ_G	**KPSV (Klastr přesného strojírenství Vysočina)**	**Goals:** The main aim of this cluster is to identify the needs of engineering companies with the help of grants under the OPIE in a region and to be competitive cluster. The mission of this cluster is to build a prestigious modern production and development base, to build a precision engineering and precision metalwork production (based on quality human resources and cutting-edge technologies)[44].
CZ_H	**MSAK (Moravkoslezský automobilový klastr**	**Goals:** The main aim is to ensure the continued competitiveness of regional suppliers for the automotive industry in the Czech Republic and abroad. And to create the conditions for raising the level of human resources and technical capacities that will strengthen the image of the Moravian-Silesian region as a promising region for life and business[45]
CZ_I	**Omnipack Cluster**	**Goals:** The main aim of this cluster is to enhance competitiveness and economic growth of entrepreneurs in the field of packaging and logistics services through innovativeness. To create an environment for transformation and development of knowledge within the cluster members. Strengthening the links with the scientific-research and educational institutions, and systematic education among the cluster members[46].

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[43] *Available from http://www.risy.cz/cs/vyhledavace/projekty-eu/detail?id=93515/[Accessed on 12.2.2012]*

[44] *Available from http://www.kpsv.cz//[Accessed on 12.2.2012]*

[45] *Available from http://www.autoklastr.cz//[Accessed on 12.2.2012]*

[4646] *Available from http://www.klastromnipack.cz//[Accessed on 12.2.2012]*

Tab. 4.22 highlights the main activities undertaken by these below mentioned clusters and shows the individual clusters own interest.

Tab. 4.22. Main Activities Undertaken by the Clusters Surveyed in the Czech Republic.

Cluster name		Main activities undertaken by the clusters
CZ_A	**Network Security Monitoring Cluster**	(a) Dealing with scientific and research projects in terms of technical innovative infrastructure (b) Designing complex solutions integration in network security monitoring field (c) Promoting cluster. (d)Networking and knowledge sharing. (e) Giving education and training about network security monitoring. (f) Sharing information about real network security trends.(g) Creating commentary draft bills concerning the dilemma of network security monitoring and security in ICT[46].
CZ_B	**Czech Stone Cluster**	(a) Arranging joint advertising and marketing at national and international level to elevate the entire stone industry's innovation, science and research. (b) Providing training programme for human resources development.(c) Creating a strong group of cooperating companies that are linked with various fields of production, suppliers, research and educational organizations[46].
CZ_C	**Energoklastr**	(a) Supporting small and medium enterprises in the quest for innovation and combine them with research organizations in the field. (b) Facilitating the application for energy research and energy savings in practice. (c) Extending their hands to support many industries members interested in this areas and partner organizations
CZ_D	**HIT klastr**	(a) The main activity of HIT cluster is to provide security services for its members in order to jointly improve management quality, increase innovation, save costs. (b)Develop business opportunities in the following areas: Human Resources Development; Marketing, Sharing knowledge, Research and innovation.
CZ_E	**Klastr inovací v dopravé**	(a)To support and establish the new development projects at national and international levels. (b)To build cooperation with state authorities for preparing strategic documents that aimed to develop the transport sector. (c) To implement innovative processes and technologies in the field of transport. (d) Support those activities that lead to greater competitiveness and international cooperation. (e) Support entrepreneurship in the development of new technologies. (g) Actively participate in cooperative research and development institutions through projects that improve the quality of cooperation and support these activities[46].

CZ$_F$	**Klastr povrchové úpravy**	The main activities undertaken by this cluster are as follows: (a) Research and development of surface treatments with specific properties for use as plasma deposition and surface modification. (b) Modification of existing surface features, especially organic, editing. (c) Testing and analyzing the behaviour of surface treatment for various conditions. (d) The development of robots and manipulators for the application of surface treatment, especially in health damaging environments. (e) Joint Technology Information Centre. (f) Providing special training to improve the staff's skills in the field of surface treatments. (g) Inviting experts for their advice on finishing "design, technology, manufacturing, surface treatment (control and maintenance). (h) Taking expert's opinion and support when dealing with customers. (i) Arranging promotional activities to encourage the staff members as well as customers.
CZ$_G$	**KPSV (Klastr přesného strojírenství Vysočina)**	The main activities undertaken by this cluster are as follows: (a) Emphasizing on economic growth and competitiveness in the cluster. (b) Supporting innovation and new technologies. (c) Increasing the professional competence awareness programmes for the employees and companies in the cluster. (d) Providing the common practice for companies dealing with authorities and institutions. (e) Cooperating with the tertiary sector. (f) Expanding international cooperation focusing on the export of products. (g) Implementation of common commercial and marketing policy for the cluster. (h) Cooperating with research institutes and universities of applied research in order to achieve skilled labour.
CZ$_H$	**MSAK (Moravkoslezský automobilový klastr)**	The main activities offered by the cluster for the benefits of its members are as follows: (a) Providing developing and coordinating innovative approaches. (b) Providing special education and training to boost up the employees competencies. (c) Developing and supporting innovative projects. (d) Processing value added products. (e) Providing opportunities for the SMEs.
CZ$_I$	**Omnipack Cluster**	The main activities provided by the cluster members are as follows: (a) To support the implementation of joint projects of the cluster members. (b) To support the innovative activities for enhancing their competitiveness. (c) Arranging activities that strengthen the links between R & D & Innovative industrial enterprises in the cluster. (d) Providing education in order to get skilled labor in the cluster. (e) Create a standard communication system through ICT in the cluster. (f) Focusing on sharing effective information among the cluster member for the development of human resources.

Tab. 4.23. highlighted the significance of different activities (networking, human resources, research & innovations, business cooperation & promotion, support activities, Govt & political activities and other activities) of clusters. It can be seen from the table that research and innovation activity is the prime factor and then the human resource activity is important among other activities to these aforementioned clusters.

Tab. 4.23. Significance of Different Activities of Clusters in the Czech Republic

Cluster Activities	Clusters								
	CZA	CZB	CZC	CZD	CZE	CZF	CZG	CZH	CZI
Networking	1	1	2	1	1	2	2	2	1
Human resources	1	1	3	1	2	1	1	1	1
Research & Innovation	2	1	1	1	1	1	1	1	1
Business cooperation & promotion	1	1	2	3	2	1	1	1	3
Support activities	3	2	3	2	1	2	2	3	2
Govt. & political activities	1	2	2	2	1	4	3	3	4
Other activities	0	0	0	0	0	0	0	0	0

* *CZ A , B, C, D, E, F, G, H, I- refers to the name of the clusters,*1-very important, 2-important, 3-partially important, 4-not important*

Tab. 4.24. underlines the significance of different roles of clusters in Czech that benefits the enterprises. It can be seen from the table that the above mentioned clusters in Czech are getting benefit for strengthening the competitive advantage, support cluster development policy, facilitating regional growth.

Tab. 4.24. Significance of Different Roles of Clusters in the Czech Republic

Roles of Clusters	Clusters								
	CZA	CZB	CZC	CZD	CZE	CZF	CZG	CZH	CZI
Integrate Global Economy	1	1	2	2	3	2	1	1	1
Strengthen Competitive Advantage	1	1	2	1	2	1	1	1	1
Facilitate Regional Growth	2	1	2	1	1	2	2	1	1
Accessibility of Manpower	1	1	2	3	2	2	1	1	1
Enhance Productivity	1	2	3	2	1	2	2	3	1
Support Cluster Development Policy	1	1	1	2	1	2	1	3	1

* CZ A , B, C, D, E, F, G, H, I- refers to the name of the clusters,   *1- fully benefiting, 2- benefiting, 3- partially benefiting, 4- not benefiting

4.7   Comparison of clusters in India and in the Czech Republic

The fundamental reason behind this comparison of clusters in India and in the Czech Republic is to see the difference of cluster activities that have been already implemented or planning to implement in future by the Czech and Indian clusters Here, it is required to be mentioned that the Czech clusters are mainly young clusters whereas, the Indian clusters are mostly old clusters which leads to contemplation whether the Czech clusters as well as Indian clusters are considering the *human resource activity* as an important factor for their existence and further development. Through this comparative analysis, it makes it possible to get an idea about the cluster activities in India as well as in the Czech Republic, which draws attention to the different roles of Indian and Czech clusters that facilitates the individual companies or firms to sustain their competitive advantage. Finally, this comparative study will enable us to see, which kind of cluster activities, the Indian and Czech clusters are emphasizing and providing for human resources development and human resource management.

➢ *Comparison of activities of clusters in India and in the Czech Republic*

Based on the preliminary results obtained for the selected clusters surveyed in India and in the Czech Republic, it can be said that there are some justified points to do comparison of cluster activities in India and in the Czech Republic. Results of this case study describes that in both countries clusters have considered *networking* as an important activity of clustering at present they have been implementing around 80 % , but in future they have a plan to implement more than 90 %. On the other hand, Czech clusters are contributing with their activities to HR only with 50 % which is not so much like clusters in India, where i.e. more than 70 %. However, later on it has been observed that HR activity is showing higher % for both the countries i.e. 85 % and 86 % for India and the Czech Republic respectfully.

The exception observed in the area of *research and innovations*, as the Czech clusters consider research and innovations most important for their development after networking .It shows about 91 % whereas, the clusters in India shows around 80 % contribution and they consider HR is the main important factor after networking. Therefore, research and innovation is important for their existence and further development. It has been noticed that in compare to the other activities of clusters both in India and in the Czech *business cooperation activities* and *other activities of clusters* indicated very low interest i.e. less than 20 % and less than 50% respectively.

Though clusters in India sometime taking interest *in market widening activities* under other activities of cluster, it can be said from the given illustration, that cluster members of both the countries more or less appreciate the existence of expert professional within the cluster that facilitate enterprises to be competitive. Therefore, the consequence of HR shows an important element for successful cluster development and cluster management.

➢ *Comparison of the roles of clusters which benefiting the enterprises in India and the Czech Republic*

The next vital results of the selected clusters surveyed in India and in the Czech Republic are presented in this case study demonstrates the different roles of clusters that some time direct or indirectly benefiting the enterprises in India and in the Czech Republic. Where, the answers of the above mentioned countries cluster manager represent their opinion and concern that indicating the different roles of clusters which are benefiting them to be a competent cluster core firm. In continuation to our previous illustration, it is the important to say in India cluster core inter-firms are gradually enhancing and achieving their core competences through cooperative understanding and collaboration among their group members.

As it shows that by joining cluster, enterprises are gaining more than 80% for strengthening their competitive advantage. Similarly, another important role of cluster is their support for cluster development policy which indicates around 80 %. Other roles of cluster that enable the enterprises to enhance their accessibility of manpower facilitate regional growth and enhancing productivity. And the cluster managers in India strongly agree with the above noted important roles of clusters performing to get their place in this competitive world. Where cluster strategy facilitating them for mobilization of financial and human resources, and leading them to gain the cooperative efficiency.

Additionally, it also explains that the enterprises are getting opportunities for raising their integration among cooperating firms, expanding and enhancing their regional growth, developing workforce through knowledge management as, they are within the cluster core firm. On the other hand human resources are an integral part of a larger "organization" that facilitates the individual companies to sustain their *Competitive Advantage.*About the opinion of cluster managers in Czech Republic they also agree with the view of cluster managers in India that SMEs get benefit by joining cluster mainly to strengthen and sustain their competitive advantage (90 %).

If we compare with the clusters in India and in the Czech Republic, it has been viewed that the next to competitive advantage *supporting cluster development policy* (85 %) shows the second leading role then thirdly comes *increasing accessibility of manpower*, fourthly, *integrating global economy*, then finally *regional growth* .captures the fifth position .Thus, on the basis of all results and findings it can be said, that through clustering and human resource management firms can able to integrate their global economy, strengthen and develop their competitive skills, that facilitate them to meet and gain regional economic growth. Through this process of development automatically organizational work force pool is also increasing, which leads them to access their manpower, enhancing performance level and the level productivity too, that encouraging future enterprises to work in collaboration and in supporting cluster development policy. At last the clustering enterprises have realizes the importance of human resource for cooperation in turn to face the new competitive pressure; and as an outcome co-operating firms are performing better than those, which have not. Alternatively, it can be recommended that clustering could be a very lubricating and sophisticated phenomenon for small and medium enterprises to enter in the competitive world as well as to be in the competition.

> ## Comparison of the activities of clusters provided under human resources in India and in the Czech Republic clusters

The last but most important final results of the selected clusters surveyed in India and in the Czech Republic highlighted the activities of cluster provided under human resources for the development of their cluster organization. The obtained results substantiate the importance of human resources activities in the specified countries. Both the developing countries clusters consider *joint seminars and cooperation* with educational institutions which is an important element for the development of human resources in enterprises which indicate more than 70 % for Czech Republic and more than 85 %.for India

Alternatively, the value of *employees' training* signifies a lower interest though it has been observed that the clusters in India often offering some *professional training programme as total quality improvement programme (TQUIP); Technological up gradation programme (UPTECH);* but the percentage(%) is not that much remarkable. Hence, we can perceive that these countries clusters generally provides the activities for the development of human resources in cooperation with educational institutions ,as they often avail some support either from the public sector or from the private sector. And according to them these activities are most essential and cost effective in order to enhance cluster members competencies.

Providing these activities may lead their cluster organization to achieve their goals as well as it can improve the individual employees' competitiveness. Therefore, from all these aforementioned results illustrations, the cluster managers of different countries, agrees that *the influence of clustering and HRM* can be considered as an important factor for achieving the competitive advantage. Accordingly, it has been confirmed that the activities offered by cluster facilitate the development of their human resources and further development of their cluster organization. The most important activities of cluster in the area of human resources enable these cluster core firms to strengthen their competitive advantage and the different roles of cluster are also benefiting the enterprises to achieve their competitive advantage.

4.8 Discussion

This dissertation mainly discusses about the importance of cluster and human resource management for strengthening the competitive advantage of firms. Therefore, this research investigation tries to enlighten the ways to improve the human resources of the companies or institutions that can be supported by the cluster concept and to go ahead with industrialization and globalization. Empirical evidence of this research shows, companies tend to enhance their level of performance by managing and improving their existing resources like tangible assets as well as intangible assets. Regarding intangible assets, we can mention about knowledgeable workforce, system of quality management, corporate social responsibility, cooperation, social networking, and equal opportunities etc. as these are the hidden sources of the potential development. Normally, it can be recognized that the people working for a firm are one of its main assets and one of the vital factors in determining its progress. Every individual's qualities, attitudes and behaviour in an organization, together with other factors, play an important role in order to resolve a company's success or destiny of it. There are several diverse aspects playing an important role to enhance a company's performance and to strengthen its competitive advantage. Performance, that leads a firm or a company to promote its core competences. Among them, *human resource* is one of the most indispensable parts in an organization that needs to be taken into consideration. Though this type of resource is one over which companies do not have any complete control to enhance their performance. But the idea of cluster strategy facilitates them to exert their influence on the quality and performance by aligning the supply of skilled and qualified human resources under one umbrella.

Thus, based on all the results and findings which are reported in this dissertation work it is assumed that through clustering and human resource management a firm can able to strengthen and develop their competitive skills and integrate them with global economy. The concept of cluster facilitates them to meet and gain regional economic

growth. Through this process of development automatically organizational work force pool is also increasing, which leads them to access their manpower, enhancing the performance level and the level of productivity too, that encourages the upcoming enterprises to work in collaboration and to support for successful cluster development.

At last, the clustering enterprises have realizes the importance of human resource for cooperation in turn to face the new competitive pressure; and as an outcome co-operating firms are performing better than those, which have not join in cluster. On the other hand, it can be recommended that clustering could be a very lubricating and sophisticated phenomenon for small and medium enterprises to enter in the competitive world as well as to be in the competition.

Beside all these above mentioned explanations, it is necessary to highlight the importance of human resource activity of cluster, which demonstrates some more view in this research such as:

(a) In presence of cluster human resources (dealing with the information, common meetings, arranging contacts with cluster members, vendors and suppliers) are accomplish to improve their competitiveness, which comes through increased productivity and leading to comparative advantage. Being part of a cluster each and every individual works more efficiently and more productively.

(b) To be in a cluster the chances for better access to employees and suppliers are more for Small and Medium Enterprises (SMEs) and Micro, Small and Medium Enterprises (MSMEs). Where companies can tap into an existing pool of specialized and experienced employees that lowering the hunt and transaction costs in recruiting.

(c) The presence of a significant group of people with similar skills and interests also make it easier to attract further talented people from other locations. Similarly, it helps to access a deep and specialized supplier base that is provided. Resourcing locally can lower the transaction costs instead of distant providers, while proximity improves communication and commitment.

(d) Thus, through clustering human resources (mainly organizing seminar, conferences and workshops for cluster members, providing training, motivating members for knowledge development, cooperating with educational institutes- like universities) gets an opportunity to develop a system of quality management network, social network for the betterment of business as well as for company's too.

Cluster make available to interact with suppliers, clients, partners, R&D institutions and service providers. In addition, cluster networks have greater purchasing power than individual companies that is also a most important factor of Small and Medium Enterprises (SMEs).

These suggestions have been established by authors own survey carried out while interviewing the cluster managers in different countries as mentioned in the earlier part of this thesis. Beside there are also some critical factors like: networking, joint communication, combined research, and innovation, education of human resources, strong entrepreneurial spirit in businesses, access to information, etc. those are essential for the cluster development and cluster performance management that facilitates a firm to enhance its level of performance.

### 4.8.1 Justification of research investigation

In this thesis, the author organized the research investigation based on three research questions (presented in chapter 2, page 51). In order to justify whether *the influence of clustering and HRM* can be considered as an important factor for achieving the competitive advantage or not; whether *cluster activities support* the development of human resources in an organization or not; whether *the activities provided by clustering* are effective or not .The Fig. 4.13 enables us to understand how the industrial cluster's indirectly influencing the development of human resources. This furnishes us an idea about the flows of human capital that reveals continuously positive reactions to meet the competitive pressure and the consequence of the industrial cluster.

To get a more vivid representation, at first we need to explain the following factors, which has a direct impact in this process of human capital flows. Such as: *demand of professional person, number of research institution, knowledge resources, need and way for professional training, quality of human resource, chances of getting high quality human resource, raise entrepreneurial technological level, develop entrepreneurial innovative capability, Competitive advantage*, all these factors can enhance the *scope of new business opportunity* that has a immense force in today's business. Regarding the demand of professional individual, in Fig.4.13 we can say that present situation in the enterprises raise the demand of specialized professional employees in order to get a better performance that can facilitate the growth of a new form. Simultaneously, this factor lifts up to induce another factor, i.e. establishment of research institutions to enhance the number of expert personnel's to meet the global challenges. As in order to meet the global challenges companies need knowledgeable people while, within the cluster the chances of knowledge spill over is more.

In another way, knowledge may flows in two ways either inflows or outflows. Inflows mean when the knowledge of an employee is sharing within the firm, where as outflow of knowledge mean when the knowledge of an employee is sharing outside the owner company. But both have its positive and negative effects.

The probability of positive effect is higher than the negative effect to raise the sustainability and competitiveness of a company. Now the question arise how a company can have such knowledgeable people. And there arise the need for giving professional training to the employees who needs specialized training.
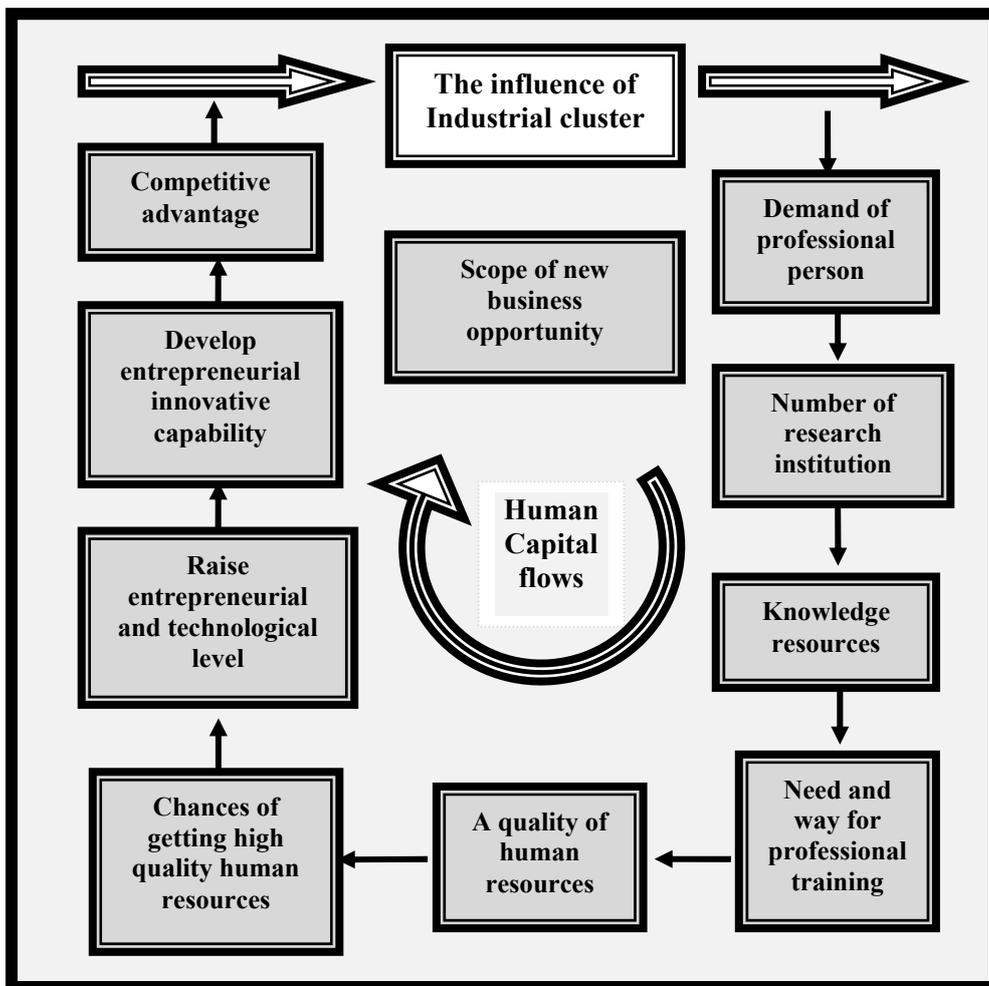
Fig.4.13. Thematic Model of Industrial Cluster Boost Human Capital
Source: Saha & Pavelkova, (2010).

In this process the possibility of having a quality human resource, chances of getting better highly qualified people within the company that may lead a firm to increase its technological level. Technology is also another key factor influenced by industrial clusters. Thus, within the cluster technological progress reduces costs and benefits both competitiveness and profitability. Opportunities for cooperation increase among firms so as to expand the scale of production (Saha & Pavelkova, 2010).

In order to justify the proposed assumptions (presented in chapter 2, page 51), the author of this thesis represents the Fig. 4.14 with reference to the other researchers' opinion concerning the importance of human resource management. From the Fig. 4.14 it can be seen that a firm can achieve competitive advantage only if it has adequate knowledge-based worker and if firm realize the significance of knowledge and necessity of knowledgeable employee. Generally, organizational knowledge consists of two broad categories: (1) knowledge that is explicit codified knowledge and (2) knowledge that is not codified but exists primarily within the minds of employees, tacit knowledge.
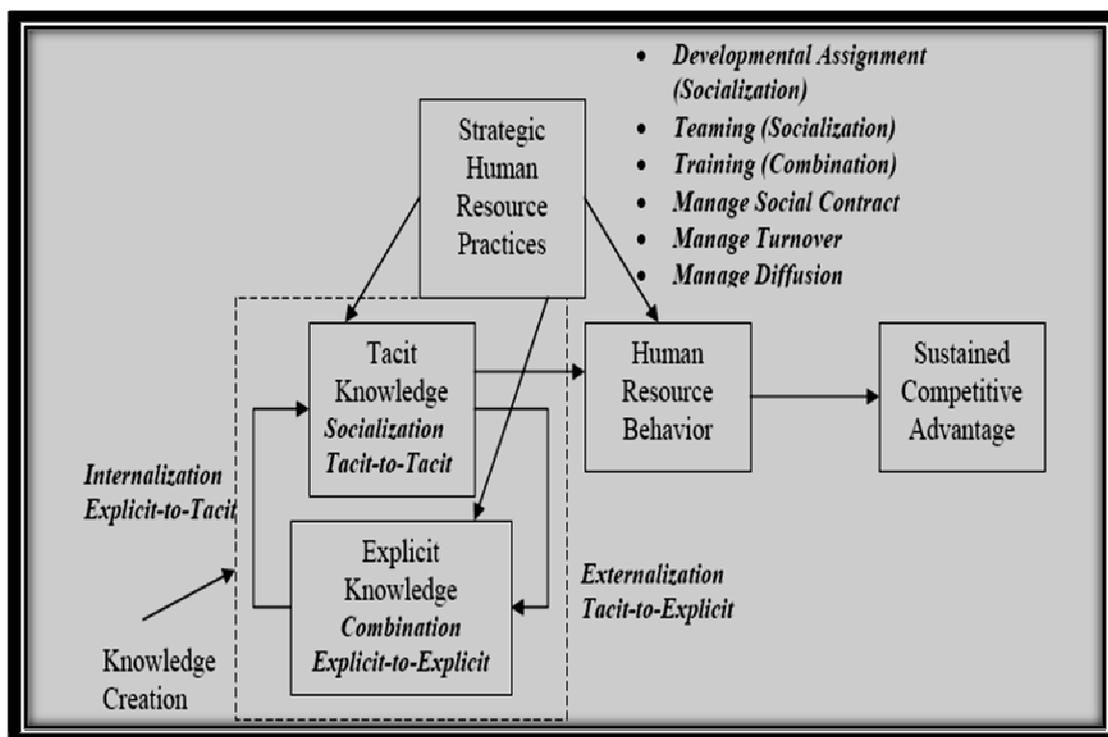
Fig.4.14. Human Resource Management as a Source of
Sustained Competitive Advantage
Source: Jayne, (2006)

Further, Fig.4.14 shows that the distinction between organizational explicit and tacit knowledge is the difference between "know-what" and "know-how" in which organizational "know-how" puts "know-what" into action. One can view tacit knowledge as being intuitive, difficult to express, gained through experience, and shared with others through interaction. Thus tacit knowledge is the information about work processes and products that individuals hold (Jayne, 2006). .HRM does not only influence human resources behaviour in an enterprise, but it also influences the crucial development of human resources as a source of competitive advantage.

Evidently, HRM proves to be the key factor for increasing employees' productivity, meaning that HR practices turn employees into resource of development, as well as into source of competitiveness. Based on Fig.4.14 it can be recommended that *Proposition 1*: suggests that socialization activities (such as teaming and developmental assignments) aid in developing tacit knowledge as a source of sustained competitive advantage. *Proposition 2*: suggests that formal training practices aid in developing explicit knowledge, indirectly leading to new tacit knowledge as a source of sustained competitive advantage. *Proposition 3*: suggests that appropriate human resource practices that elicit productive employee behaviour moderate the relationship between tacit knowledge and sustained competitive advantage (Jayne, 2006).
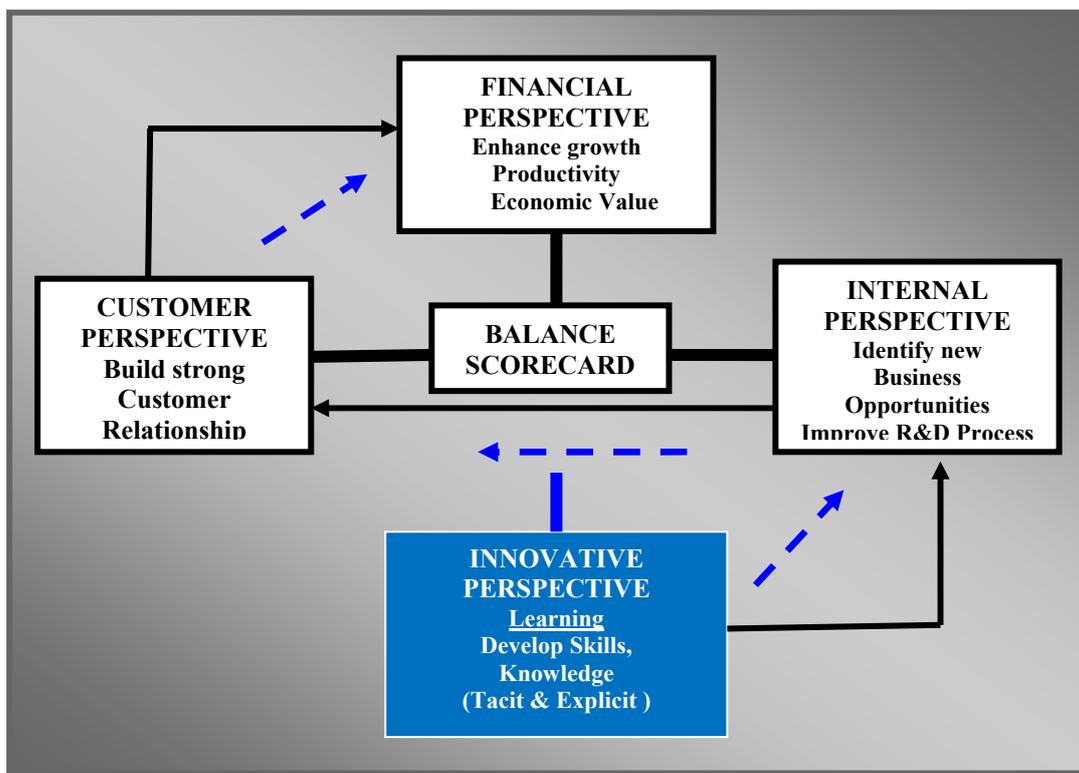
Fig.4.15. Link between the Different Perspectives of Balanced Scorecard
Source: Kaplan &Norton, (2001).

In another way, this thesis tries to argue that human resource plays a great role behind the success of a firm on the basis of other researcher's views and comments. The aforementioned Fig.4.15 shows that people, i.e. human resources plays a vital role to promote a firm to achieve and gain its competitive advantage as human resource is the one, has the innovative power of thinking.

Here in this study author took the concept of balance scorecard to emphasize the importance of HRM. In balance scorecard the importance of HRM has been showed as innovative and learning perspective. Where this perspective includes employee training and corporate cultural attitudes related to both individual and enterprises self-improvement.

In an organization, people are the only repository of knowledge, i.e. the main resource. In the current climate of rapid technological change, it is becoming necessary for knowledge workers to be in a continuous learning mode for the betterment of the firm. Nowadays, Government agencies often find difficulties to hire new technical workers and at the same time are showing a decline in training of existing employees. This is a leading indicator of 'brain drain' that must be reversed. So nowadays there is a tendency of modern firms to implement the competitive modern strategies and methods to expand the level of productivity and enhance the competitive advantage.

Hence, it can be seen from the Fig.4.15 that if a firm can provide and develop more learning environment for its employees either by sharing knowledge (Tacit as well as Explicit) or through its skills a firm can have a better opportunity to gain the competitive advantage. Recent business firms tend to put more emphasis on its intangible assets, i.e. human resource rather than tangible assets.

Where, it is viewed that the *innovative perspective* measure the learning activities of human resources, skills, knowledge of human capital through which a firm can identify and improve its products and R&D. Efficient and effective manpower enable a firm to enhance its competitive advantage through its innovation process.

The *internal perspective* of balanced scorecard enables a firm to identify its new business opportunities to enter in to a new competitive market. So it shows us that all these can be possible if a firm has competent intangible asset, i.e. human capital so that they can invest.

On the other hand, *customer perspective* of balanced scorecard shows that with strong manpower and with modern product a firm can enter in to the market and can build good relationship with the customers.

Last but not the least in *financial perspective* of balance scorecard it is important to emphasize that if a firm's other three perspectives are strong enough then automatically another vital perspective, i.e. financial part with enhance the growth and productivity. This is the bottom line for measuring the performance of a firm where the ultimate goal of firm is to enhance the economic value (Saha, 2007).

Equally, this study also tries to justify another research assumption by focusing the concept of **competitive advantage in relation with cluster and HRM**. The resource-based view emphasizes, that a firm utilizes its resources and capabilities to create a competitive advantage that ultimately results in superior value creation.
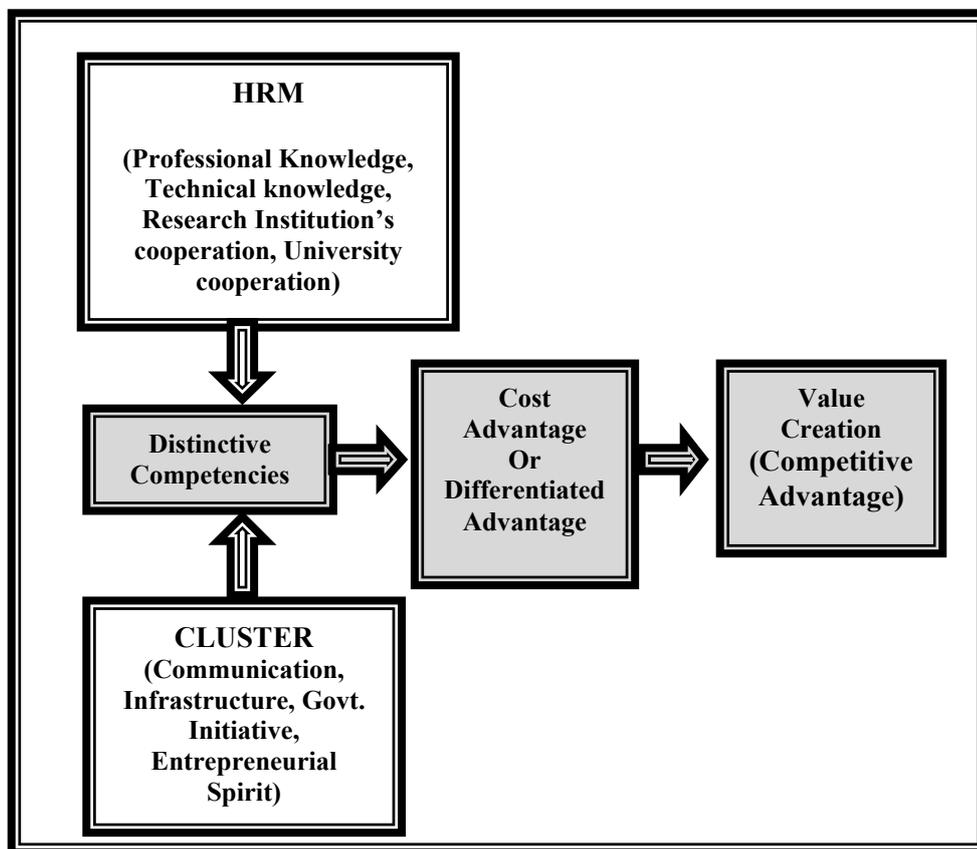
Fig.4.16. Thematic Model of Competitive Advantage in
Relation with HRM and Cluster
Source: Saha &Pavelkova, (2008a)

The Fig.4.16 combines both the resource-based and positioning views to illustrate the perception of competitive advantage in association with HRM and cluster. From this figure we can view that how a firm can enhance its value, i.e. competitive advantage if they have professionally skilled and efficient personnel as well as if the concern firm exist within a cluster core firm, then the chances of achieving competitive advantage is higher. Fig.4.16 clarifies that if the distinctive characteristics and unique competencies of *HRM and cluster* merge together in one roof, which minimise the cost factor and permit a firm to get the benefit of cost advantage or differentiated advantage. In addition it provides potential opportunities to a firm, for value creation (competitive advantage).

In a nutshell, it is important to spotlight that the economic condition, during an era of global competition, involves a paradox. It is widely recognized that changes in technology and competition have diminished many of the traditional roles of location.

The prevalence of cluster reveals important insights about the microeconomics of competition and the role of location in competitive advantage. As clusters represent a new way of thinking about national, state, and local economies, and they necessitate new roles for companies, government, and other institutions in enhancing competitiveness. And as a result nowadays companies, tend to join cluster to meet the global competition and technological innovations that can promote their competitive advantage with local elements (Saha & Pavelkova, 2008a)

Therefore, finally it can be assumed that the existence of cluster, increase the overall regional growth by improving the human resources that leads to achieve the competitive advantage and enhance the performance level of an individual firm. Cluster is also another media for enterprises to optimize their productivity. With the help of both human resource and cluster, firms can survive in this era of competition. The presence of cluster builds more competitive advantage within the industry and even outside the industry. It seems that cluster has a great impact to facilitate the economic status of a country by facilitating the SMEs. Research study shows that the companies are more competitive who are within the cluster and have better conditions for being competitive. However, being in a cluster is not enough. It needs some strategy to be competitive. It is to be noted that to achieve the optimum level of outcome at minimum investment that benefiting the enterprises while associating with clusters.

So, the explanation of these results fully and partially answered the research questions. It shows according to the above mentioned description that the activities offered by cluster under human resources facilitate a firm or a company to strengthen its competitive advantage

5 RECOMMENDATIONS

This dissertation finally recommended some suggestions based on several preceding evidences for the successful development of cluster organization. This thesis highlighted that at this industrialized age clustering concept providing abundant opportunities to the enterprises for thriving in this global market. Which, drives their innovation, boost their existing resources, enhance their regional development and increase their competitiveness. It has already been discussed in the earlier part of this thesis about the critical factors and driving forces behind the successful development of cluster and cluster management. From this investigation it has been observed that all over the world the challenge today is not only to improve the enterprises competitiveness but also to find out the way how they can enhance their existing resources competitiveness and survive in this dynamic world. Therefore, this research suggested that *clustering could be a very challenging and sophisticated approach for small and medium enterprises in order to create new business opportunity* with worldwide competency.

On the other hand, to deal with the global demands various tools and evidence-based information's are required to promote the performance of cluster and excellence of cluster in an organization. Therefore, this dissertation has intended to formulate the way of elevating the competitive advantage of cluster and cluster organizations. Based on aforesaid research investigation this thesis has outlined some strategy as suggestion for raising the competiveness of cluster core firms. Preliminary explanations of these recommendations are stated below:

Recommendation 1*: offer tools for enhancing competitiveness*

Cluster core firms play an important role for facilitating the action in cluster initiatives as well as for the development of human resources. Cluster managers should raise the efforts that have been initiated within the cluster, and should offer a number of tools (*e.g. Balance Scorecard tools for arranging different types of training and employee development programme, good management system for upgrading their manpower; allowing the members to express their opinion about new innovative ideas; motivate and encourage the members to develop their knowledge and skills through professional training; good communication and knowledge sharing attitude among each other)*. Additionally it is required to be pointed out that there are also some other more vital tools (things) which need to be kept in mind to achieve the competitive advantage. Cluster members must be *loyal and transparent* about their activities provided for employee development, cluster members must have *trust* and mutual understanding among themselves.

They need to *arrange regular meetings* with the cluster members, *common and open discussion* about the recent trends of management as well as to *enhance the quality of cluster initiatives*. As cluster organizations/managers represent an important stakeholder group thus efforts should be made to make sure that the stakeholder group is stimulated with appropriate tools to ensure professionalism and continued improvements in practices.

Recommendation 2*: building networks and reducing the cultural difference*

While doing this study it has been observed that cluster managers should build networks (for the benefit of human resources development) with other cluster core firms that enable them to be competitive and on the other hand it also reduces the gap of cultural differences. For example in India the talented and skilled immigrants who have studied and worked abroad, while back home they transfer not only technology and capital but also their managerial skills and institutional know-how. In this way they try to link the local producers directly to the market opportunities to enhance the networks and reduce the cultural barriers. As a result of it in India many entrepreneurs have started to set up companies like 'Mastech', 'Syntel' and Information Management Resources (IMR) in U.S. that relied on Indian programmers to provide support to the domestic clients. *Bangalore IT cluster* is an example where 71 to 75 multinational software companies are situated in Software Technology Park (STP) and these companies are headed by Indians who lived and worked for overseas.

Recommendation 3*: building and creating an enabling environment*

Building and creating an enabling environment is also another important area of supporting human resources development and management that facilitates the growth of a successful cluster, i.e. *lobbying and influencing* policy related issues. These conditions may enable firms to make the essential infrastructure, which is required to meet the demand at an international level as well as to build a successful cluster organization such as: *amendments of legislations, funding* etc are required to take initiative and implement human resource development programme. Clusters intensify the influence and the power of small enterprises that may benefit them to enhance their core competencies. As a result of it cluster core firms in India are getting benefit and gradually becoming more competitive (Bangalore IT cluster). Where, it has been observed that the legislative bodies in India took the initiative for developing their existing resources skills, abilities and innovativeness. Therefore, they emphasize creating a *physical supporting environment, modern and diverse transport systems* and *advanced technical communication systems* to facilitate the openings of small enterprises in global market.

Recommendation 4: *linking multinational firms and small private firms*

In the earlier part of this thesis it has been already mentioned about the various activities of cluster that enhance the firms' competitiveness where small firms can get in touch with the large firms. Several small firms in different countries have started to offer their workforce on project basis to the large firms in an arrangement of contract. Such as System Logic, Datacons Pvt. Ltd, Intertec Communications and Nataraj Technologies are lending a part of their workforce to the multinational firms as Texas Instruments (TI) Hewlett Packard (HP), Robert Bosch to get the work done efficiently and effectively within a short period of time. Thus, we can say that this is also another way how the small cluster core firms in India are becoming more competitive (through the development of their human resources) to get the optimum level of outcome and to sustain in the long run.

Recommendation 5: *linking the relationship between academy and industry*

Another important aspect to be more competitive is to link the relationships between *academician* and *industrialist* to uphold the performance of small enterprises, which is possible through clustering. As an occurrence it can be said that how India's large pool of knowledgeable manpower has been utilized and organized for the successful development natural clusters (Silicon Valley). Where, India's public policy supported these clusters (through opening more institutions and technical universities near to the Software Technology Park complex) to grow in advance in compare to other developing countries. So that the fresh pass out students can easily absorb in the professional field and provide their modern knowledge and skills to these industries. Due to this academia-industry linkage, Bangalore city of India has been renowned as a special hub of IT industries.

Recommendation 6: *inter and intra-cluster linkages*

Inter and Intra-cluster linkages of clusters also build a strong relationship among the same category of firms. This relationship can facilitate a firm to build a close network within the region, country and even outside the country that boost the social as well as the political stability of that country . It may able to reduced the probability of industrial dispute and improve the physical infrastructure to build a well structured cluster organization. Therefore, the paradigm of the successful development of IT cluster in India may inspire other enterprises to gain more benefits the way they have been acquired.

5.1 Suggested actions

➢ To increase the superiority of cluster management, cluster managers should offer training facility, quality indicators, and peer assessment. This thesis provide some suggested actions that cluster core firms should develop a methodological framework like balance scorecard and benchmarking (i.e. milestone of appraising the quality) in order to improve their competitiveness. To ensure that training, needs are addressed through the development of a range of training modules that targeting cluster managers' expertise in different levels of performance management. For example cluster associated firms can measure their performance driven behaviour using balance scorecard methodology. It provides a framework that not only offers performance measurements, but helps planners to identify what should be done and measured. It enables executives to truly execute their strategies.

➢ To increase the excellence of cluster management, cluster managers should offer education and guidance about the development and advancement of their members

➢ To improve the cluster based firms competitiveness cluster managers should develop cooperation with other firms in order to enhance joint development as well as to reduce cultural divergences.

➢ In addition, there is always a demand has been observed where enterprises are in search for a common practices intended for assessing the effectiveness of cluster policy. And to assess the impact of cluster policies and disseminating the "good practice" for the successful cluster development. These represent the importance human resources activities that act as a useful tool to stimulate reciprocal learning and continuous improvement.

Thus, it can be suggested that even though clusters are natural phenomena and exist without organized cluster management, but still there raise the demand for increasing the benefits of organizing efforts within and between clusters in a more strategic manner. Nowadays cluster core organizations (driven by cluster management) function as "speeds" to cluster initiatives –responsible for catalyzing and facilitating action within and between cluster initiatives. Therefore, it can be said that if the cluster core firms are maintaining these above mentioned key factors in order to be more challenging and dynamic, then the chances and possibilities of achieving the competitive advantage of the firms can be higher in compare to their competitors.

This dissertation also highlighting that the clustering can be considered as an important business tool for achieving the competitive advantage of an organization. Thus, by joining cluster, human resources of a company can expand the level of their competencies, as the HRM:

➢ promote and connect the interpersonal relationships among the individuals by creating and motivating them with different within the organization.

➢ offer the enterprises better facilities to modify and sustain their technological interdependencies through transmission of tacit knowledge within and outside the firm.

➢ increase employees' initiatives by satisfying their self-actualization needs – personal growth, self-fulfilment, realizing personal potential, seeking knowledge and meaning, etc.

➢ enhance individuals due to the presence skilled and sophisticated manpower that enables them to streamline their innovative capabilities.

➢ reduces the limitations of small and medium industries (SMEs) rather connect the enterprises from the diverse link that facilitate them to compete against large industries.

➢ provides the enterprises ample opportunity to reach their goal by sharing their existing knowledge, skills and modern technologies of R& D.

➢ reduces small firms' initial expenditures for entering in to the global market.

➢ provide essential training especially for the professional expertise like cluster manager, stakeholders that may lead them for cluster excellence and to develop a successful organization.

6 LIMITATIONS OF RESEARCH

This dissertation work has been done with great efforts and expectations to study the importance of Cluster that support the development of human resources for strengthening the competitive advantage of the firms. But nothing in this world can be done fruitfully; hence several factors lead to limitations for the study.

6.1 Ethical point of view:

Method: The way of collecting data is also a very important factor for doing a research. As this study is based on interview and survey of the companies, sometimes the chances of getting biased answer may lead to wrong perception.

Media: In this research the media used were telephone and email. To communicate and interact with people through telephone sometimes gives vague and irrelevant idea.

Language: The research has been done in English. Sometimes language becomes a barrier to get the adequate information when necessary.

6.2. Practical point of view:

Cost: While doing this study it is noted that to conduct an interview through telephone was more expensive than a face-to-face interview is one aspect.

Culture: Some organizations hesitate to provide information to the outside world. It is like organization's culture to maintain their confidentiality.

Time: Deep study and rigorous research needs abundant time to grasp the whole matter.

6.3 Approach for further study

This study does not cover all aspects of clustering and HRM. Therefore it is difficult to give a general conclusion based on this dissertation. While doing this research it has been observed that it is necessary to give some suggestions to enterprises or organizations about the way of designing various HRM policies as well as an effective clustering policy and programme that may guide them to enhance their competency faster. As to sustain in this competitive market it is also another major strategic point which has not been discussed in this thesis. Specifically due to this gap and the constraints discussed above it is recommended to make a further study in this subject matter.

7 CONTRIBUTION OF THESIS TO SCIENCE AND PRACTICE

This chapter comprises mainly three sub sections like the theoretical point of view, practical point of view, and the academic point of view of this study. This study developed the very limited research on the different activities and initiatives of cluster in addition to the strategies and driving forces of human resource management that facilitate a firm, specially small firms to attain and sustain their competitive advantage.

7.1 Theoretical perspective of this study

This study provided some models in order to highlight the influence of clustering and HRM as tools for strengthening the competitive advantage of firm. Where, Fig.4.13 *The Thematic Model of Industrial Cluster Boost Human Capital* in (chapter 4) shows the way industrial boost the human capital and provides a new business opportunity. Fig.4.14 *Human Resource Management as a Source of Sustained Competitive Advantage* explains about the importance of human resources. Where, it shows that HRM in an organization not only influence human resources behavior but it also influences the critical development of human resources as a source of competitive advantage. Fig.4.15 *Link between the different perspectives of Balanced Scorecard* explains about the importance of human resources in an organization as innovative and learning perspective. Where, this perspective includes employee training and organizations cultural attitudes related to both individual and enterprises self-improvement. Fig.4.16 *A Thematic Model of Competitive Advantage in Relation with HRM and Cluster*) in order to show *how, the organizations can enhance their competitive advantage with the presence of cluster and efficient utilization of human resources.*

This research mainly tries to highlight some of the issues pertaining to clusters and its policy strategies, which can in the crease the performance of an individual and the performance of the regions, which leads to the economic development of a nation. Outcomes have been drawn based on certain investigations using interviews with cluster managers; the preferences of individual activities; and the results of authors 'own investigation between cluster managers, which confirmed the identification of the selected factors significantly affecting the performance of clusters alone that have been evaluated. Finally, it can be said that in number of countries, the government implements a cluster policy that depends on the forms of support of identification, formation and development of clusters. Some selected examples of such policies have been presented in this thesis.

On the other hand, it has been observed in this study that the escalation and expansion of a knowledge economy largely depends on the international competitiveness of its companies which, mainly depends on the organizations backbone, i.e. the strength of human resources to respond and to face the competitive pressures in international markets. And human resource is one of the most vital organs in any organization. The circular flow of information builds a strong bond among the employees that brings a confidence and responsive attitudes to co-operate each other as a family member. To enrich the performance level, most of the countries cluster member's recognized the spirit of human assets and consequently, they take initiative to implement proper supportive actions, for the betterment of the employees by providing: superior job opportunities in a constantly growing enterprise; promoting employees through intensive training in order to lead their member's skilled behaviour. As through training and education employees are enables to know their level of competencies. Though organizations are always providing peripheral benefits and modern infrastructure so that the employees can devotionally concentrate on their jobs and bring fruitful innovation work that will guide the organization to be exceptional from other competitors.

7.2 Practical perspective of this study

From the practical point of view, it can be said that this study *may catch the attention of following enterprises:*

(a) Enterprises which are in growing stage but willing to extend their network,

(b) Enterprises which are seeking to develop their existing resources in an effective and efficient way,

(c) Enterprises which are looking for a platform to explore and enhance their innovative capabilities at minimum cost.

This dissertation provides some suggestion to the enterprises, how they can optimize their productivity and enhance the organizational performance through clustering and developing human capital, i.e. Human Resource.

These following advices may be useful for the enterprises intending to join cluster, intending to increase their competitiveness through their existing resources.

(a) *Enterprises need to focus on managing their human resources in an effective way that will enable them to be the peak performers in this competitive world.*

(b) Enterprises need to apply the best collective practice approach like systematic managerial strategy, policies and practice in order to control and supervise the human factor.

(c) Enterprise should look forward and provide best facilities to their employees (people) as they are the most important assets of an organization comparing to other tangible assets.

(d) So to be competitive, enterprises need to identify the right person (having the capabilities of knowledge, skills, and abilities) that will work hard for them to increase the level of organizational performance.

(e) Enterprises need to be proactive in reaching the goals, and cluster members must study the new ideas, approaches, and technologies, through learning the powers of persuasion.

These are the things that make employees attractive to employers, and propel them up the ladder to success. Success in anything occurs when one takes initiative. So to cope with the present business environment knowledge Skills and Abilities **(**KSAs) development has become an essential criterion as a part of an organization as the present business environment is changing significantly around the world. It can be said that hopefully the above mentioned guidelines will facilitate the enterprises to except the change through their new experiences, new ideas, skills, and opportunities. Therefore, it is necessary to underline that clustering policy can be a strategy for improving human resources, doing business and regional development. This is followed by the way cluster concept is focusing on the internal processes of regional development where, policy has been developed for different institutional and strategic environments. This thesis tries to highlight the importance of linking firms, people, and knowledge at a regional level, which are one of the way of making regions more innovative and making business more competitive.

7.3 Academic perspective of this study

From the academic point of view, it can be said that this *research will motivate the young generation to go for higher education keeping in mind how, they can add value to a firm that can boost the economic status of a nation.* It is necessary to state that human resource is all about people and their mind set, activities, approaches towards every challenge. Thus, through HR every organization and every nation tries to enhance the level of its performance. On the other hand this research may be useful for business management student as a practical case study.

This may provide an instruction for their further studies related to business management. *As an example it is necessary to underline* the rise and growth of IT industry in India is human resource that we must agree, which is also a great advantage of India. As we all know that the international competitiveness of a firm mainly depends on its backbone, i.e. strength of human resources to respond and to face the competitive pressures in international markets that already exists in India. In India, human resource is adding value to the business houses through its large pool of human capital, human behaviour that lead India towards competitive advantage. Explicitly, it ensure the presence of competent employees that enable an enterprise, i.e. IT industries in India to build its competitiveness that motivate those employees concerning to their development.

Finally, it can be concluded that the above mentioned all factors and ways are the means how different countries cluster core-firms are progressing to sustain in this dynamic world with the help of various above mentioned factors especially with government incentives, with its large pool effective and efficient manpower and with clustering that broaden the scope of networking. The example of India's rubber industry in Kerala region and IT industry in Bangalore gives us an insight about the competitive advantage of India's small scale industries. It is necessary to say that cluster in India represents a new way of thinking about national, state, and local level that provides a new role for companies, government, and other institutions for enhancing the competitiveness of a firm. Consequently, *Sarva Shiksha Abhiyan*[47] *(SSA)* is a flagship programme of the GOI (Government of India), *Universalization the Elementary Education (UEE)* by community-ownership of the school system, where the *Cluster Resource Centre (CRC)* is also involved in this association. It is a response to the demand for quality basic education all over the country. The SSA programme attempts to provide an opportunity for improving human capabilities to all children, through provision of community-owned quality education in a mission mode. Thus, it can be said that GOI encouraging the future generation to maintain and to uplift a countries present status.

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[47]*Module on Communication Skills in English Distance Education Programme Sarva Siksha Abhiyan (DEP-SSA)*
    Available from http://depssa.ignou.ac.in/wiki/images/c/ca/Communication_skills_in_English.pdf [Accessed on 12.2.2012]

8 CONCLUSIONS

On the basis of previous discussion regarding *clusters* and *human resource development and management*, it is necessary to point out the fact that nowadays, the phenomenon of clusters constitutes a leading concept, which acts as an elixir for the regional economic development and for the competitive advantage of a firm. A well-tuned policy based on clusters always includes a framework for the development of human resources that illuminates the knowledge on individual, group and organizational levels during the action-oriented behavioural change. Such change is facilitated by planned and systematic interventional activities that aim to give a free rein to human expertise for the purpose of improving work performance, which is one of the pre-requisites of the cluster concept sustainability.

However, at present, industry clusters, mainly in the developing countries are facing problems in terms of applying human intelligence, knowledge, skills, and abilities (KSAs), human resource management (HRM) and development. In addition, scholars mostly focus on the relationships between entrepreneurs and industry clusters, connection between professionals and industry clusters, etc. Nevertheless, in research, the practice of the HRM is not profound enough to clarify some key questions about the activities of human resources (HR) that can support the sustainable development of cluster's core firms. The HRM and human resource development (HRD) strategy, as well as the appropriate training mechanism to foster the organizational development of human capital, are crucial for industry clusters and their sustainable growth. In this thesis, the empirical evidence shows that the key dimensions of the present business environment are concentrating on proper access to knowledge, skills and technology, where the HRM is considered to be a key player. Thus, HRM is the backbone of any business, enabling a firm to enhance its core competencies through interaction and pooling of information between individuals within an organization or a cluster. It is assumed that the added value of this knowledge development process will lead the firms to achieve their competitive advantages through the transfer of specific individual knowledge to the collective knowledge, and vice versa.

The conducted research underlines the importance of a high level of implementation of activities in the area of human resources, where the education of HR and cooperation with educational institutions appear as critical factors for the successful cluster development. This study highlights the activities which, when provided by a cluster, can support the development of human resources in an organization that facilitate them to enhance their organizational performance and to achieve the competitive advantage.

Through this research study it is understandable that if the cluster activities (mentioned in results part) are provided or implemented in the area of HR, they will strengthen the following issues i.e.

➢ Within the cluster the probabilities of individual knowledge gaining and knowledge sharing scope is higher due to the availability of numerous professional personnel.

➢ Within the cluster small firms can arrange quality improvement programme (QUIP) like: technology up-gradation programme (UPTECH), and continuous learning programme for all categories of employees through several funding agencies that support the human resource development activities.

➢ Within the cluster, emerging but dynamic firms can quickly adopt and effortlessly explore their novel ideas in cooperation with various research and development institutions. The ideas may widen their market place to sustain in this competitive world.

Even though, some results have been drawn based on the research survey (i.e. by arranging interviews with cluster managers of different countries and through literature review), a tranquil debate still exists, whether globalization will influence the increase of the importance of clusters or not. Some economists argue that regional specialization and clustering of related activities are becoming more and more important aspects of the world economy as a result of globalization.

Finally, this study proposes that companies should invest more efforts and resources for skill development and to train their work forces, in order to maintain their steady growth at current times of rapid industrialization and globalization processes. In regard to these far-reaching changes, the most important factors are enhancing the education, knowledge and skills of workers, and finding the most effective means of business and competitive worldwide strategies. A well-trained and adaptable work force constitutes one of the key elements leading to establishing productive and competitive economy in the new Millennium. Thus, we can conclude that clusters may represent different forms of vertical as well as horizontal integration of companies. Still, the contest whether globalization will make clusters more important or not is ongoing. However, according to the opinion of some economists, the clustering phenomenon and the regional specialization of firms have become a burning issue due to the globalization effect. The last recommendation would be as follows:

"Companies nowadays are willing to join cluster,
since the sheer necessity is to achieve the Competitive Advantage faster".

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APPENDIX-I

Example of the Czech Republic:

> prop.test(x=c(40,48),n=c(50,50)) # **Networking**

2-sample test for equality of proportions with continuity correction data:
c(40, 48) out of c(50, 50)
X-squared = 4.6402, df = 1, p-value = 0.03123
alternative hypothesis: two.sided
95 percent confidence interval:
-0.30346217 -0.01653783
sample estimates:
prop 1 prop 2
0.80 0.96

> prop.test(x=c (27,43),n=c(50,50)) # **Human resources**

2-sample test for equality of proportions with continuity correction data:
c(27, 43) out of c(50, 50)
X-squared = 10.7143, df = 1, p-value = 0.001063
alternative hypothesis: two.sided
95 percent confidence interval:
-0.5083288 -0.1316712
sample estimates:
prop 1 prop 2
0.54 0.86

> prop.test(x=c(32,46),n=c(50,50)) # **Research & Innovations**

2-sample test for equality of proportions with continuity correction data:
c(32, 46) out of c(50, 50)
X-squared = 9.8485, df = 1, p-value = 0.0017
alternative hypothesis: two. sided
95 percent confidence interval:
-0.4528269 -0.1071731
sample estimates:
prop 1 prop 2
0.64 0.92

> prop.test(x=c(10,22),n=c(50,50)) # **Business Cooperation**

2-sample test for equality of proportions with continuity correction data:
c(10, 22) out of c(50, 50)
X-squared = 5.5607, df = 1, p-value = 0.01837
alternative hypothesis: two. sided
95 percent confidence interval:
-0.43670138 -0.04329862
sample estimates:
prop 1 prop 2
0.20 0.44

Example of Poland:

> prop.test(x=c(35,45),n=c(51,51))# **Networking**
2-sample test for equality of proportions with continuity correction
data: c(35, 45) out of c(51, 51)
X-squared = 4.6943, df = 1, p-value = 0.03026
alternative hypothesis: two.sided
95 percent confidence interval:
-0.37072203 -0.02143483
sample estimates:
prop 1 prop 2
0.6862745 0.8823529

> prop.test(x=c(28,44),n=c(51,51))# **Human resources**
2-sample test for equality of proportions with continuity correction
data: c(28, 44) out of c(51, 51)
X-squared = 10.625, df = 1, p-value = 0.001116
alternative hypothesis: two.sided
95 percent confidence interval:
-0.4993728 -0.1280782
sample estimates:
prop 1 prop 2
0.5490196 0.8627451

> prop.test(x=c(28,42),n=c(51,51))# **Research & Innovations**

2-sample test for equality of proportions with continuity correction

data: c(28, 42) out of c(51, 51)

X-squared = 7.6955, df = 1, p-value = 0.005536

alternative hypothesis: two.sided

95 percent confidence interval:

-0.46615323 -0.08286638

sample estimates:

prop 1 prop 2

0.5490196 0.8235294

> prop.test(x=c(8,24),n=c(51,51)) # **Business Cooperation**

2-sample test for equality of proportions with continuity correction

data: c(8, 24) out of c(51, 51)

X-squared = 10.2455, df = 1, p-value = 0.00137

alternative hypothesis: two.sided

95 percent confidence interval:

-0.5028251 -0.1246259

sample estimates:

prop 1 prop 2

0.1568627 0.4705882

LIST OF PUBLICATIONS

Publications (related to the PhD thesis work) **published in peer reviewed Journal** (International) or as a **Book** (Chapter)

[1]   SAHA.N and PAVELKOVA.D "Organizational Clustering and HRM: Are they the Effective Tools for Company Performance Improvement?" *The International Journal of Knowledge Culture and Change Management,* Volume 8, Number 5, ISSN: 1447- 9575 (2008) indexed in Google Scholar.

[2]   SAHA.N and PAVELKOVA.D "Clustering Can Act as a Gateway to SMEs by Escalating Human Resources for Doing Business" FOCUS, *The International Journal of Management Digest,* Volume 5, Number 1&2, ISSN: 0973-9165, Special Issue (2009).

[3]   SAHA.N and PAVELKOVA.D "Industrial Clusters, Human Capital, and Regional Growth" (Book Chapter) *Business Clusters : Partnering for Strategic Advantage,* ISBN 978-0-415-60231-0 Routledge Taylor &Francis Group, New Delhi (2010).

[4]   SAHA.N and PAVELKOVA.D "Promotion of Human Resources and Regional Economic   Development through Industrial Cluster Strategy- A case of Rubber Cluster in India (Kerala) Region" FOCUS, *The International Journal of Management Digest,* Vol.7, No.2. ISSN: 0973-9165 Special Issue, (2011).

[5]   SAHA.N, JIRCIKOVA E and BIALIC-DAVENDRA M "The Power of Clustering and HRM as a Source of Competitive Advantage: Evidence of clusters from Poland, Slovakia, the Czech Republic, India and Developed Countries" *Journal of Competitiveness,* Issue 4/2011, 87-103, ISSN 1804-1728 (2011).

[6]   PAVELKOVA.D, JIRCIKOVA E, KNAPKOVA A, BIALIC-DAVENDRA M, SAHA.N, "Empirical Evidence of Development of Plastic Clusters under Different Conditions" DAAM International Scientific Book 2011. pp 619-634. Chapter- 50. ISBN 978-3-901509-84-1, ISSN 1726-9687.

Publication in Conference (National and International)

[1]   SAHA.N, PAVELKOVA.D "Role of Cluster for Human Resource Management in Organizational Performance" *MEKON Conference* in Ostrava, Czech Republic (proceedings in CD), ISBN 978-80 248-1324-0, (2007).

[2]   SAHA.N, "Role of HRM: Adding value to the Business in today's" *BATA Conference* in Zlin, Czech Republic (proceedings in CD) ISBN 978-807318-529-9, (2007).

[3]   SAHA.N "Empowerment of SMEs in India through HRM and Clustering: A case of Textile industry" *FaME Conference* in Zlin, Czech Republic (proceedings in CD) ISBN 978-80 7318-536-7, (2007).

[4]   SAHA.N, PAVELKOVA.D "Sustainability of IT Industries in India: What makes India's IT industry Competitive?" *10th International Conference Society for Global Business and Economic Development* (SGBED) in Kyoto, Japan, (proceedings in CD) ISBN 13:978-0-9797659-0-2, ISBN 10: 0-9797859-0-0, (2007).

[5]   SAHA.N, "Is Human Resource Management really enhancing the Competitive Advantage of a firm?" International conference on Knowledge Economics in Luhachovice, Czech Republic (proceedings in CD) ISBN 978-80 7318-646-3, (2007).

[6]   SAHA.N, PAVELKOVA.D "Clustering as a policy strategy for improving Human Resources and Regional Development" *An International Scientific Conference on Current Problems in Economics and Business Activity in the context of the European Union,* in Bratislava (proceedings in CD) ISBN 978-80-969320-3-0, (2008).

[7]   SAHA.N, CHODUR.M "Trends of Management Development: Can Benchmarking act as a Tool for Performance Improvement?" *BATA Conference* in Zlin, Czech Republic (proceedings in CD), ISBN 978-80 7318-663-0, (2008).

[8]   SAHA.N "Clustering as a Strategy to Promote the Competitive Advantage of a Firm" *Clusters and Cluster Initiatives in Czech Republic – Current status and perspective of further development*, Zlin, Czech Republic, (proceedings in CD), ISBN 978-80-7318-755-2, (2008)

[9]   SAHA.N "Is Human Resource Management Really Adding Values in Today's Business?" *TRANSCEN*, The Workshop on Development of Human Resources in Science and Research organized by Technical University of Liberec, VUTS Liberec Plc, and Elmarco. Ltd. Liberec, Czech Republic, (2008).

[10]   SAHA.N, PAVELKOVA.D "The Influence of Industrial Cluster boost up Human Capital to Accelerate the Regional Growth" *11th International Conference Society for Global Business and Economic Development* (SGBED) in Bratislava, Slovak Republic, (Proceedings in CD) ISBN 13:978-0-9797659-5-7, ISBN 10: 0-9797659-5-1, (2009).

[11]   SAHA.N, PAVELKOVA.D "Promotion of Human Resources and Regional Economic Development through Industrial Cluster Strategy- A Case of Rubber Cluster in India   (Kerala) Region"*3rd International Conference on "Doing Business in India*", Bangalore,   India (proceedings in CD) (2010)

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Education

➢ 2009 - Present: **Ph.D**. degree study as *a combined PhD student* (Economic and Management specialization in Cluster and Performance Management), Faculty of Management and Economics (FaME), Tomas Bata University in Zlin, the Czech Republic, Europe.

➢ 2008 - Passed **Doctoral Degree** (State) **Examination** and passed the self study courses (Macroeconomics III, Microeconomics III, Mathematics and Statistics, Scientific & Research Work Methodology Management and English), Tomas Bata University in Zlin, the Czech Republic, Europe.

➢ 2006 - 2009: **Ph.D.** degree study as *a full time PhD student* (Economic and Management specialization in Cluster and Performance Management), Faculty of Management and Economics (FAME), Tomas Bata University in Zlin, the Czech Republic, Europe.

➢ 2005 - 2006: **M.B.A.** (specialization in Corporate Strategy and Economic Policy) Maastricht School of Management (MsM), Maastricht, the Netherlands, Europe.

- 1994 - 1997: **P.G.D.B.A.** (equivalent to M.B.A.) (Specialization in Human Resource Management), Institute of Engineering and Management (IEM), recognized by All India Council for Technical Education (AICTE) and affiliated to West Bengal University of Technology (WBUT) in Kolkata, West Bengal, India.

- 1991-1994**: B.A.** (Sociology (Hons), Economics, Political Science and English), Moulana Azad College, Calcutta University, Kolkata, India.

- 1991 **H.S.** - Language (Bengali, English), History, Political Science, Geography, Nutrition, West Bengal Council of Higher Secondary (WBCHS), India**.**

- 1987 **S.E.** - Language (Bengali, English), Science (Mathematics, Physical Science, Life Science), India and her People (History & Geography) West Bengal Board of Secondary Education (WBBSE), India.

Work experience:

- July 2009 - Present: **Visiting Researcher**, Centre for Applied Economic Research, Faculty of Management and Economics, Tomas Bata University in Zlin, Czech Republic.

- 2006 (1month): **Internship**, Tomas Bata University in Zlin, Czech Republic.

- 1997 - 2005: **Junior Administrative Officer,** Institute of Engineering and Management (IEM), Kolkata, West Bengal, India.

- 1997 (6 months): **Trainee,** Jayshree Tea & Industries Limited, B.K. Birla Group of Industries, Kolkata, West Bengal, India.

Research experience:

October 2006 to till date (Cluster and Performance Management).

Served as **Session Chair** in *The Eighth International Conference on Knowledge, Culture & Change in Organizations* Cambridge University United Kingdom, 05-08 August, (2008)

Served as **Session Chair** in *11th International Conference Society for Global Business and Economic Development* (SGBED) in Bratislava, Slovak Republic, (2009)

Teaching experience:

- ➢ Taught EHRM lessons in summer semester to Erasmus International students & Bachelors for Business Administration students at TBU in (2008).

- ➢ Taught Organizational Behaviour lessons to MBA students (While working in IEM) in (2004-2005)

List of publications:

Thesis

[1] SAHA, N. *"Strategy and Policy in Mobilizing Resources for the Employability Enhancement: West Bengal, India"* (*thesis submitted for the fulfilment of MBA degree*), Maastricht School of Management (MsM), Maastricht, the Netherlands, Europe (2006). [Manuscript under preparation for Journal publication].

[2] SAHA, N. *"Motivating the Employees through increasing Productivity" (thesis submitted for the fulfilment of P.G.D.B.A degree)*,Institute of Engineering and Management (IEM),   recognized by All India Council for Technical Education (AICTE) and affiliated to West Bengal University of Technology (WBUT) in Kolkata, West Bengal, India (1997).

Journal (International) and **Book** (Chapter)

[1] SAHA.N, HUANG.W.X "The Challenges of Microfinance: India and Bangladesh", E+M *Economic and Management* 102, 2/2007, ISSN 1212-3609, (2007) indexed in Scopus.

[2] SAHA.N, PAVELKOVA.D "Organizational Clustering and HRM: Are they the Effective Tools for Company Performance Improvement?" *The International Journal of Knowledge Culture and Change Management,* Volume 8, Number 5, ISSN: 1447- 9575 (2008) indexed in Google Scholar.

[3] SAHA.N, PAVELKOVA.D "Clustering Can Act as a Gateway to SMEs by Escalating Human Resources for Doing Business" FOCUS, *The International Journal of Management Digest,* Volume 5, Number 1&2, ISSN: 0973-9165, Special Issue (2009).

[4] SAHA.N, PAVELKOVA.D "Industrial Clusters, Human Capital, and Regional Growth" (Book Chapter) *Business Clusters : Partnering for Strategic Advantage,* ISBN 978-0-415-60231-0 Routledge Taylor &Francis Group, New Delhi (2010).

[5] SAHA.N, PAVELKOVA.D "Promotion of Human Resources and Regional Economic Development through Industrial Cluster Strategy- A case of Rubber Cluster in India (Kerala) Region" FOCUS, *The International Journal of Management Digest,* Vol.7, No.2 ISSN: 0973-9165 Special Issue (2011).

[6] SAHA.N, JIRCIKOVA E, BIALIC-DAVENDRA M "The Power of Clustering and HRM as a Source of Competitive Advantage: Evidence of clusters from Poland, Slovakia, the Czech Republic, India and Developed Countries" *Journal of Competitiveness,* Vol.3, Issue 4, pp.87-103 (2011).

[7] PAVELKOVA.D, JIRCIKOVA E, KNAPKOVA A, BIALIC-DAVENDRA M, SAHA.N, "Empirical Evidence of Development of Plastic Clusters under Different Conditions" DAAM International Scientific Book 2011. pp 619-634. Chapter- 50. ISBN 978-3-901509-84-1, ISSN 1726-9687.

[8] SAHA.N, "Human Resource Development for Cluster Management and Governance" (Book Chapter) [Manuscript submitted in 2011]

In Conference (National and International) **participation and presentation**

[1] SAHA.N, PAVELKOVA.D "Role of Cluster for Human Resource Management in Organizational Performance" *MEKON Conference* in Ostrava, Czech Republic (proceedings in CD), ISBN 978-80 248-1324-0, (2007).

[2] SAHA.N, "Role of HRM: Adding value to the Business in today's" *BATA Conference* in Zlin, Czech Republic (proceedings in CD) ISBN 978-807318-529-9, (2007).

[3] SAHA.N "Empowerment of SMEs in India through HRM and Clustering: A case of Textile industry" *FaME Conference* in Zlin, Czech Republic (proceedings in CD) ISBN 978-80 7318-536-7, (2007).

[4] SAHA.N, PAVELKOVA.D "Sustainability of IT Industries in India: What makes India's IT industry Competitive?" *10th International Conference Society for Global Business and Economic Development* (SGBED) in Kyoto, Japan, (proceedings in CD) ISBN 13:978-0-9797659-0-2, ISBN 10: 0-9797859-0-0, (2007).

[5] SAHA.N, "Is Human Resource Management really enhancing the Competitive Advantage of a firm?" International conference on Knowledge Economics in Luhachovice, Czech Republic (proceedings in CD) ISBN 978-80 7318-646-3, (2007).

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[7] SAHA.N, CHODUR.M "Trends of Management Development: Can Benchmarking act as a Tool for Performance Improvement?" *BATA Conference* in Zlin, Czech Republic (proceedings in CD), ISBN 978-80 7318-663-0, (2008).

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[9] SAHA.N "Is Human Resource Management Really Adding Values in Today's Business?" *TRANSCEN*, The Workshop on Development of Human Resources in Science and Research organized by Technical University of Liberec, VUTS Liberec Plc, and Elmarco. Ltd. Liberec, Czech Republic (2008).

[10] SAHA.N, PAVELKOVA.D "The Influence of Industrial Cluster boost up Human Capital to Accelerate the Regional Growth" *11th International Conference Society for Global Business and Economic Development* (SGBED) in Bratislava, Slovak Republic, (Proceedings in CD) ISBN 13:978-0-9797659-5-7, ISBN 10: 0-9797659-5-1, (2009).

Other achievements:

Participated in **CNCB** (Cluster and Network Cooperation for Business Success in Central Europe**) Mid term Conference**, November 29th -30th, 2011, Prague, Czech Republic.

Received (**Graduate Student Assistantship Fee Waiver award)** to attend *The Eighth International Conference on Knowledge, Culture & Change in Organizations* Cambridge University United Kingdom, 05-08 August, (2008)

Article in FOCUS **(selected as 2nd best paper and received prize),** submitted International Conference on "Doing Business in India" held at IFIM Business School, held at IFIM Business School, Bangalore India (2008)

Received **Scholarship (2006-2009)** to pursue PhD degree study as full time PhD student at Tomas Bata University in Zlin, the Czech Republic

Received **The Netherlands Govt. Fellowship (NPF)** to pursue MBA (2005-2006) degree study in"Corporate Strategy and Economic Policy" at Maastricht School of Management (MsM), the Netherlands.

Received **The Netherlands Govt. Fellowship (NPF)** to attend short term course on "Energy Management and Cleaner Production in Small and Medium Scale Industries" jointly organized by the University of Twente and Maastricht School of Management, the Netherland (2000).

Received **Silver Medal** for project work and overall performance in PGDBA Course studied at Institute of Engineering and Management (IEM), recognized by All India Council for Technical Education (AICTE) and affiliated to West Bengal University of Technology (WBUT) in Kolkata, West Bengal, India (1997).