

Razvoj proizvodnih zmogljivosti v industrijskih grozdih – primer Slovenski avtomobilski grozd

The Process of Manufacturing-Capability Development in Industrial Clusters – A Case Study of the Automotive Cluster of Slovenia

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Industrijski grozdi so sodobna zamisel mrežnega povezovanja, ki je uveljavljen tudi v slovenskem gospodarskem prostoru, hkrati pa pomenijo tudi nove izzive za raziskovanje na področju opravljenega in proizvodnega menedžmenta. Raziskani so že vzroki in namen nastanka industrijskih grozdov, zelo malo pa je raziskav, ki bi pojasnjevale strateške posledice povezovanja. Zato prispevek obravnava postopek razvoja proizvodnih zmogljivosti, ki smo ga preučevali v industrijskih grozdih z uporabo metodologije študije primerov.

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(Ključne besede: grozdi industrijski, viri proizvodni, zmogljivosti proizvodne, študije CASE)

Industrial clusters are interesting concepts of network collaboration that are also well established in the Slovenian business environment. They represent a new challenge for research in the field of production and operations management. The reasons for cluster formation have been explored for many years, but there is little research that explores the strategic consequences of this type of collaboration. This paper deals with the manufacturing-capability development process and with the research conducted in the industrial clusters. The research is based on a case-study methodology.

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(Keywords: industrial clusters, resource-based view, manufacturing capability, CASE study)

0 UVOD

Industrijski grozdi so nastali kot odgovor na globalizacijo in hiter tehnološki razvoj ter s tem zadostili potrebi po pospešenem razvijanju globalne konkurenčne zmogljivosti gospodarstva v okviru posameznih držav in regij [1]. Industrijski grozdi so zaradi priložnosti, ki jih podjetjem ponujajo, sodobna zamisel povezovanja, ki je razširjena v svetovnem gospodarskem prostoru in tudi v Sloveniji, zaradi tega pa zanimiva tudi za znanstveno preučevanje. Zato ne preseneča dejstvo, da se raziskovanje na področju opravljenega in proizvodnega menedžmenta na eni strani vse bolj usmerja na raziskovanje industrijskih grozdov, po drugi strani pa tudi v raziskovanje proizvodnih zmogljivosti z vidika teorije proizvodnih virov, v pomenu pojasnjevanja doseganja konkurenčnih prednosti tovrstnih mrežnih organizacij.

0 INTRODUCTION

Industrial clusters are the answer to processes like globalisation and rapid technological development, and they can satisfy the need for faster development of global competitive capabilities of the business environment in a single country and region [1]. Industrial clusters are, because of the opportunities they offer, an interesting concept of collaboration, worldwide and in Slovenia. It is a very interesting concept for scientific research as well. It is not surprising that the research in the field of production and operations management is orientated in two directions: first, to study this phenomenon, and second, to explore manufacturing-capability development from the RBV (Resource-Based View) perspective in an attempt to explain how this type of network organisation achieves a competitive advantage.

Večina raziskav na področju teorije proizvodnih virov se ukvarja predvsem s samim definiranjem ter prepoznavanjem zmogljivosti ter njihovim vplivom na specifične vire podjetja, v primerjavi s tem pa najdemo zelo malo raziskav, ki bi obravnavale, zakaj se zmogljivosti oziroma najboljše prakse dejansko razvijajo, kako se razvijajo in vzroke za njihov razvoj. Zaradi intenzivne rasti najrazličnejših oblik mrežnih organizacij pa zasledimo že nekaj poskusov uporabe teorije proizvodnih virov pri preučevanju mrežnih organizacij, pri čemer se le-ta uporablja predvsem za razumevanje oblikovanja in upravljanja mrežnih organizacij.

Neraziskano ostaja tako vprašanje, kako se proizvodne zmogljivosti razvijajo v mrežnih organizacijah, oziroma kako le-te vplivajo na njihov razvoj. Na to vprašanje smo poskušali odgovoriti z raziskavo, predstavljeno v tem prispevku.

Prispevek obravnava postopek razvoja proizvodnih zmogljivosti, ki smo ga raziskovali na primeru industrijskih grozdov, ki so kot oblika mrežne organizacije v poslovnem svetu poznani predvsem kot pomembna nosila gospodarskega razvoja. Tako smo v raziskavi izhajali iz naslednjih teoretičnih predpostavk:

- *V industrijskih grozdih gre za dinamično povezavo med različnimi vrstami zmogljivosti.*
- *Zmogljivosti lahko razvrstimo glede na perspektivo, s katere opazujemo industrijski grozd, in koristi, ki jih imajo vključena podjetja.*
- *Dinamika razvoja industrijskega grozda narekuje razvoj zmogljivosti grozda.*

1 TEORIJA PROIZVODNIH VIROV IN POSTOPEK RAZVOJA ZMOGLJIVOSTI

Teorija proizvodnih virov je vplivno teoretično ogrodje za razumevanje, kako se doseže konkurenčna prednost znotraj podjetja ter kako se le-ta vzdržuje oziroma ohranja ([2] in [3]). Bistvo teorije proizvodnih virov se kaže v trditvi, da je konkurenčni položaj podjetja definiran s skupkom edinstvenih virov in zmogljivosti ter odnosov med njimi [4]. Podjetja, ki so zmožna razviti vire in zmogljivosti, ki so vredni, nezamenljivi in težko posnemljivi, bodo dosegla konkurenčno prednost v primerjavi s konkurenčnimi podjetji ([2] in [5]). Spremembo na področju teorije proizvodnih virov pa pomeni postopek dinamičnih zmogljivosti, pri katerih gre za premik iz statičnih specifičnih virov podjetja v postopek razvoja zmogljivosti [6]. V literaturi

Most of the research in the field of RBV has studied questions like, what are the capabilities, how they can be recognised, and how they influence firm-specific resources? But there is little research that explains why the capabilities and best practices are developing, how they develop and what is the reason for their development. Because of the intensive growth of different types of network organisations, we have noticed some attempts to use the logic of RBV in the research of network organisations, but more in a way to understand their formation and management.

There is still an open research question, how the manufacturing capabilities develop in the network organisation and how network organisation influences their development? We have tried to find the answer with the research presented in this paper.

The paper deals with the process of manufacturing-capability development in industrial clusters as one of the types of network organisations, known as the important tools for economic development. The research is based on three theoretical assumptions:

- *Industrial clusters are about a dynamic connection between different types of capabilities.*
- *Capabilities can be classified with regard to the perspective from which the cluster is viewed and the benefits its members enjoy.*
- *The dynamics of functioning within a cluster dictates the need for the development of cluster capability.*

1 THE RESOURCE-BASED VIEW AND THE PROCESS OF CAPABILITY DEVELOPMENT

The resource-based view represents the influential theoretical framework that explains how the firm achieves and sustains its competitive advantage ([2] and [3]). The essentials of the resource-based view lie in the assertion that the competitive position of an organisation is determined by the sum of its unique resources and capabilities, and the relationships between them [4]. The firms that are able to accumulate resources and capabilities that are valuable, non-substitutable and difficult to imitate will achieve a competitive advantage over competing firms ([2] and [5]). The change in the field of the resource-based view represents the dynamic capability approach, which shifts the emphasis from static firm-specific assets to the dynamic process of de-

zasledimo malo raziskav, ki bi pojasnjevale logiko in dinamiko postopka razvoja zmogljivosti. V splošnem namreč velja, da podjetja "že nekako" razvijajo zmogljivosti skozi čas. Nedavno pa so se raziskave že nekoliko preusmerile v raziskovanje, kako zmogljivosti nastanejo, se razvijajo in spreminjajo skozi čas [7]. Tako se prihodnost raziskovanja na področju teorije proizvodnih virov vse bolj usmerja na vprašanje, kako podjetja razvijajo in zbirajo zmogljivosti v razvojnem postopku.

Teorija proizvodnih virov običajno obravnava posamezno podjetje kot enoto analize. V zadnjem času pa se na tem področju kažejo že nekateri zanimivi poskusi uporabe teorije proizvodnih virov pri obravnavanju različnih oblik mrežnih organizacij. Nekateri avtorji menijo, da je teorija proizvodnih virov ena izmed ključnih področij strateškega raziskovanja, v katerem so velike možnosti tudi za mrežne organizacije [8], pri čemer to utemeljujejo z dejstvom, da so mrežne organizacije nekaj posebnega in da so nastale skozi zaporedje določenih postopkov ter jih lahko obravnavamo kot vir neposnemljivih in nenadomestljivih vrednosti [9].

Vzroki za oblikovanje mrežnih organizacij so že zelo raziskani, kar pa ne moremo trditi za raziskovanje strateških posledic oblikovanja mrežnih organizacij. Zelo malo je raziskav, ki obravnavajo vpliv mrežnih organizacij na razvoj zmogljivosti. Večina študij mrežnih organizacij uporablja teorijo proizvodnih virov z namenom poudariti izmenjavo že znanih zmogljivosti in virov ter raziskati pomen učenja ter zbiranja izkušenj pri upravljanju le-teh. Podjetja si skozi povezovanje pridobijo dostop do virov, ki ustvarjajo nove vrednosti, ter do zmogljivosti, ki terjajo čas, da se razvijejo. Ahuja [10] trdi, da je število partnerjev, ki so se pripravljene povezovati, odvisno od pristojnosti podjetja, proizvodnih zmogljivosti, prodajne mreže in od števila drugih povezav, ki jih je podjetje vzpostavilo kot socialni kapital. Hkrati zasledimo definicijo virov mrežne organizacije, ki pravi, da so viri kakor povezave med podjetji, ki poskrbijo za koristne informacije [11]. Gulati tudi dokazuje, da na pripravljenost podjetij za vstop v novo zvezo vpliva obseg virov mrežne organizacije, ki jim je na voljo [12]. Nekateri avtorji dokazujejo, da se podjetja učijo upravljati mrežno organizacijo na osnovi pridobljenih izkušenj [13]. Z drugimi besedami lahko rečemo, da je uspeh mrežne organizacije odvisen od izkušenj, ki si jih podjetje pridobi skozi povezovanja z drugimi podjetji. Večina takšnih raziskav tako obravnava

veloping capabilities [6]. In RBV literature, very little effort has been made to explain the logic and dynamic structure of the process of developing capabilities. It has been generally assumed that firms somehow develop such capabilities over time. More recently, research has turned to exploring the ways in which firm capabilities emerge, develop, and change over time [7]. The future research in the field of the resource-based view will be oriented more towards addressing the question of how firms develop and accumulate the capabilities in the evolutionary process.

The RBV perspective traditionally adopts an individual firm as a unit of analysis. Recently, this field witnessed some interesting attempts to extend the RBV perspective to different forms of networks. Some authors suggest that the RBV perspective represents one of the key areas of strategy research in which there is a potential for incorporating network organisations [8]. The argument is that a firm's network is idiosyncratic and created through a path-dependent process and can therefore be understood as an origin of inimitable and non-substitutable value [9].

The reasons for the formation of networks are already well known, but quite opposite is the case when it comes to research on the strategic consequences of network formation. There was little research that explored how networks influence the development of capabilities. Most studies of networks use the RBV perspective to emphasise the sharing of already existent capabilities and resources and to explore the importance of learning and accumulating the experience in managing networks. Through the networks firms can obtain access to resources that create value and to capabilities that require time to build up. Ahuja claims that the number of potential partners that are willing to link with a firm is dependent on the firm's competence, manufacturing capabilities, distribution network and the number of ties formed by a firm to its social capital [10]. According to one definition, network resources are like ties among firms that provide informational advantage [11]. Gulati argues that the willingness of firms to enter new alliances is influenced by the amount of network resources available to them [12]. Some authors argue that firms learn to manage interfirm networks as experiences accumulate [13]. In other words, the success of the network is dependent on the number of the firm's ties. The majority of such studies explore the relations between the

razmerje med obsegom povezovanj in uspehom podjetja, po drugi strani pa postopek, skozi katerega podjetja dejansko razvijajo svoje zmogljivosti v mrežnih organizacijah, še ni bil ustrezno raziskan.

Poleg tega pa se zmogljivosti še zmeraj obravnavajo znotraj okvira posameznega podjetja. Tako nekateri avtorji trdijo, da povezovanje v mrežne organizacije predstavlja osnovno zmogljivost podjetja [14]. A večina literature se še zmeraj osredotoča na interno zmogljivost podjetja, na osnovi katere se ustvarjajo koristi povezovanja v mrežne organizacije in ki je pomembna za upravljanje teh povezovanj. Zmogljivosti se namreč še zmeraj obravnavajo kot nekaj, kar je specifično za vsako podjetje. Tako pojem *zmogljivost mrežne organizacije* spreminja to splošno razumevanje.

Zmogljivost mrežne organizacije se razume kot zmogljivost, ki ni značilna oziroma vezana na eno podjetje v mreži, ampak pomeni skupni prispevek h koordiniranju in učenju [15]. Zmogljivost mrežne organizacije se razlaga tudi glede na različne koristi, ki jih imajo sodelujoči v mrežni organizaciji, kar pomeni posamične in skupne koristi [16]. Zmogljivost mrežne organizacije namreč omogoča povezanim podjetjem, da skupaj uporabljajo lastne zmogljivosti z namenom ustvariti nekaj, od česar imajo koristi vsi sodelujoči. Literatura s področja dobaviteljskih verig, ki je preučevala proizvodne postopke v Toyoti, predstavi zmogljivost mrežne organizacije kot take, ki je ne najdemo v nobenem podjetju, ampak je bila izoblikovana skozi prenos pristojnosti in pomembnih izkušenj od osrednjega podjetja do njegovih dobaviteljev ([17] do [19]). V tem primeru zmogljivost mrežne organizacije izhaja iz zmožnosti centralnega podjetja, da usklajuje podjetja, ki sestavljajo dobavno verigo.

Motivi za raziskavo, predstavljeno v tem prispevku, so izhajali iz želje, pojasniti, kako se proizvodne zmogljivosti razvijajo v industrijskih grozdih, ki so kot oblika mrežne organizacije zelo pomembni tako za ljudi iz poslovnega okolja kakor za raziskovalce s področja proizvodnega menedžmenta.

2 INDUSTRIJSKI GROZDI – TEORETIČNA IZHODIŠČA

Gospodarski temelj za obstoj industrijskih grozdov in lokalnih industrij je raziskovalo mnogo avtorjev, pri čemer se kot začetnika omenjata Marshall ter Weber ([20] in [21]). Marshall je izpostavil tri bistvene razlage o nastanku grozdov. Prvič, podjetja se geografsko tesno združujejo iz razloga, ker jim to omogoča razvoj specializirane delovne sile, ki je

number of contracts and performance. On the other hand, the process by which firms actually develop capabilities in networks has not yet been adequately explored.

In addition to that, capabilities are still dealt with merely within the framework of the individual firm. Some authors argue that making an alliance represents a firm's generic capability [14]. Most of the literature still focuses on the firm's internal capability to create value through networks and to manage alliances. In the research work the competitive environment is treated as a network. However, the capability is still understood as something firm-specific. The notion of *network capability* changes this general understanding.

The network capability is like a capability that is not specific or isolated to a single firm in network, but represents joint gains to coordination and learning [15]. Network capability can be explained by using different kinds of benefits available to participants in networks, i.e., private benefits and common benefits [16]. Network capability enables the firms in the network to collectively use their capabilities to produce something that is beneficial to them all. Supply-chain literature studying the Toyota Production System presents such a network capability, where capability did not reside in any given firm, but was created by the transfer of competence and best practices from the central firm to its subcontractors. In this case, the network capability arises from the ability of the central firm to coordinate among firms that constitute the supply chain ([17] to [19]).

The motives for the research presented in this paper result from the context to explain the process of capability development in industrial clusters that are, like a form of network organisations, very interesting for the business environment and also for the researcher from the field of production management.

2 INDUSTRIAL CLUSTERS – THEORETICAL BACKGROUND

The economic basis for the existence of industrial clusters in local industries has been explored by many authors, beginning with Marshall and Weber ([20] and [21]). Marshall highlighted three key explanations. First, firms get close together geographically because this allows them to develop a pool of specialised labour that is highly skilled for the specific needs of an

specializirana za specifične namene industrije. Tako imajo podjetja hiter dostop do tega znanja. Nadalje, ta podjetja lahko zaradi geografske bližine uporabljajo ekonomijo obsega pri razvoju novih ali uporabi znanih tehnologij, ali uporabljajo že znano infrastrukturo. Kot tretje pa lahko rečemo, da geografska bližina podjetij omogoči učinkoviti pretok informacij, znanja in idej. Še več literature o industrijskih grozdih poudarja, da nameravajo podjetja znotraj regije dati na voljo podobne vire, stroškovne strukture, miselne modele in konkurenčno obnašanje [22]. Ta tok raziskav predpostavlja, da so podjetja znotraj takšnih regij homogena ter dosegajo podobne ravni učinkovitosti.

Druge raziskave tudi kažejo, da nekaterim podjetjem uspe razviti in ohraniti zmogljivosti, ki jim omogočijo konkurenčnost, po drugi strani pa pešajo podjetja zaradi zastarelega znanja in izkušenj [23]. Enright [24] trdi, da ima mnogo industrijskih grozdov svoj vir v nekaterih specifičnih lokalnih dejavnikih, lokalnih zahtevah ali sorodnih industrijah. Isti avtor prav tako razpravlja o tem, da sta rast in vztrajnost industrijskih grozdov posledica razvoja pritiska, spodbud in zmogljivosti po inovacijski dejavnosti, ki jih ustvarja krajevno okolje. Pečat na področju preučevanja industrijskih grozdov pa je zagotovo pustil Porter [25], ki je s svojim delom opozoril na industrijske grozde kot na močne spodbujevalnike gospodarskega razvoja. Isti avtor trdi, da so: ...grozdi geografske koncentracije medsebojno povezanih podjetij, specializiranih dobaviteljev, storitvenih organizacij, podjetij v sorodnih industrijah in institucij (univerz, agencij, trgovskih zvez) na določenem področju, ki hkrati tekmujejo in sodelujejo.

Kakor lahko razberemo, je zamisel grozdov postala zelo zanimiva za raziskovanje na več področjih znanosti. Pomembnost raziskovanja tovrstnih področij potrjujejo tudi najrazličnejši izsledki v literaturi, zato lahko z gotovostjo trdimo, da bo prihodnje raziskovanje na področju proizvodnega menedžmenta temeljilo med drugim na vključevanju teorije proizvodnih virov v raziskovanje industrijskih grozdov. Eden izmed ciljev takšnega raziskovanja je razvoj temeljnega modela razvoja proizvodnih zmogljivosti v industrijskih grozdih, s katerim bi lahko prepoznavali pomembne spremenljivke ter njihova medsebojna vplivanja.

3 METODOLOGIJA RAZISKOVANJA

Raziskava temelji na metodologiji študije primerov. Razvojna narava postopka razvoja

industry and relatively easy for the firms in need of these skills to access them. Second, these firms can experience economies of scale in developing and using common technologies or a particular capital infrastructure, because they localize themselves in close geographic proximity. Third, firms that join together geographically can generate a maximum flow of information, knowledge and ideas. More literature on geographical clusters argues that firms within a region tend to exhibit similar resources, cost structures, mental models and competitive behaviour [22]. This stream of research assumes that firms in these regions are homogeneous and achieve similar levels of performance.

Other research suggests that whereas some firms manage to acquire and maintain the capabilities to successfully compete, others languish with obsolete skills and routines [23]. Enright affirms that many industrial clusters had their origins in some specific local factor condition, local demand or related industry [24]. The same author also argues that the growth and persistence of industrial clusters results from the development of pressures, incentives and capabilities to innovate, provided by the local environment. But the industrial clusters have become a major consideration in international research circles with the work of Porter, who pointed out that industrial clusters are the promoters of economic development [25]. The same author claims that industrial clusters are geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (e.g., universities, R&D institutions, trade associations) in a particular field that compete but also cooperate.

We can say that the concept of industrial clusters became very interesting in many fields of science. The importance of industrial clusters as a subject of research is confirmed through the many scientific publications. For this reason we claim that the future research in the field of production management will be oriented on the research of industrial clusters. One specific direction of such research would be to develop the basic model of capability development in industrial clusters. Such a model should aim to identify the relevant variables and the interactions among them.

3 RESEARCH METHODOLOGY

A case study methodology was used to conduct the research. The evolutionary nature of the

zmogljivosti v industrijskih grozdih terja vzdolžni postopek raziskovanja. Ena izmed najtežjih in hkrati najpomembnejših stvari v raziskavi je prepoznati razmerja med vzrokom in učinkom, zato je pomembno, v kakšnem časovnem obdobju jih preučujemo. Raziskava sledi razvoju postopka v zadnjih štirih letih, kar se seveda ujema s pričetkom razvoja grozdov v Sloveniji. Leonard-Barton [26] zagotavlja, da poglobljena vzdolžna študija primera zagotavlja notranjo veljavnost raziskav. Model, ki je bil razvit v okviru raziskave, temelji na podatkih, ki smo jih zbrali v dejanskem poslovnem okolju posameznih proizvodnih podjetij in drugih organizacij v grozdu. Model se je razvijal med raziskavo s stalno povezavo, analizo in zbiranjem podatkov. Takšen raziskovalni postopek je skušal zmanjšati razkol med razvitim modelom in poslovno stvarnostjo. Izbrani so bili trije primeri – industrijski grozdi, ki so bili namenjeni za pridobivanje podatkov.

Ti primeri niso bili izbrani naključno, ampak zaradi teoretičnih razlogov. Izbrani so tako, da omogočajo kar najboljše možnosti za obravnavanje predmeta raziskave. Osrednjo študijo primera predstavlja SAG – Slovenski avtomobilski grozd, ki predstavlja primarno in najbolj poglobljeno študijo primera. Druga podpora študija je bil štajerski avtomobilski grozd Styria iz sosednje Avstrije, tretji primer pa je bil Slovenski orodjarski grozd. Zaradi obsežnosti izvedene raziskave, prispevek obravnava samo Slovenski avtomobilski grozd.

Enoto analize predstavlja razvoj proizvodnih zmogljivosti. Za ta postopek so značilne zahtevnost, slaba strukturiranost, posebnost in dinamična historična odvisnost. Ker je postopek razvoja zmogljivosti specifičen za vsako podjetje, je preučevanje tega pojava še toliko zapletenejše na ravni grozda, ki s tega vidika pomeni skupek nekih specifičnih zmogljivosti. Izbrana metodologija zaradi svoje poglobljenosti tako omogoča učinkovito obravnavanje zapletenosti postopka.

Pogovori, poslovna dokumentacija in opazovanja so metode zbiranja podatkov, uporabljenih pri raziskavi. Pogovori s ključnimi osebami v podjetjih so trajali v povprečju uro in pol. Vsi pogovori so bili posneti. Poslovna dokumentacija in arhivski dokumenti so ob pogovorih drugi vir podatkov. Uporaba več različnih virov izboljša notranjo veljavnost raziskave. Za raziskavo je bila pomembna vsa poslovna dokumentacija, ki je omogočala spoznavanje zahtevne poslovne stvarnosti, in tista, ki tako po kakovosti kakor tudi po količini podpira

process of capability development in industrial clusters requires the longitudinal research approach. One of the most difficult and also the most important part in this type of research is to recognize the linkage between cause and effect. Because of this it is very important in which time period the phenomenon is explored. The research followed the last four years of the research problem, which is also the starting point of clustering initiatives in Slovenia. Leonard-Barton argues that a detailed longitudinal case-study research provides internal validity of the research [26]. The model developed through the research is based on data, gathered in the real business environment of production companies and other organisations in the cluster. The model is developed through research, and continuous interaction, analysis and data gathering. This research approach tries to reduce the gap between the developed model and business reality.

Three case studies have been selected (industrial clusters) that serve as a source for data gathering. The case studies were not selected randomly, but carefully selected from theoretical reasons. They were selected in such a way that they provide the best possibility to explore the subject of the research. The most important is the Automotive Cluster of Slovenia, which is the most detailed case study. The other two case studies are the Automotive cluster of Styria and the Toolmakers Cluster of Slovenia.

The unit of analysis is the process of manufacturing-capability development. This process is characterised by complexity, bad structure, idiosyncrasy and path-dependency. It is also firm-specific, and for this reason the exploring on a cluster level is more complex because the process represents the bundle of specific capabilities.

The applied case-study methodology is a very appropriate tool to deal with the complexity of a studied process.

Interviews, business documentation and observations were all methods for gathering the necessary data for the research. Interviews with key people in the organisation lasted for 1.5 hours, on average. All the interviews were recorded. Besides interviews, business documentation and archival documents were also used as a source of data. The use of different sources enhanced the internal validity of the research. For the research, all the business documents that led to an understanding of business reality were important, as were those which supported the data obtained during interviews, ei-

podatke, pridobljene z razgovori. Količinski podatki so predvsem tisti, ki lahko z meritvami dokažejo, da so razpoznane zmogljivosti res tiste, na katerih temelji konkurenčna prednost podjetja, in prikazujejo dinamiko razvoja zmogljivosti v proučevanem obdobju. V raziskavi so se kot viri uporabljali opisi in rezultati projektov, notranji časopisi, časopisni članki in drugi pomembni poslovni dokumenti. Analiziranje informacij pomeni bistvo raziskovalnega postopka induktivnega oblikovanja teorije. Ne gre samo za najtežji del raziskave, ampak tudi za njen najbolj ustvarjalen del. Ključni problem pri analizi podatkov je spopad z veliko količino podatkov. Analiza znotraj študije lahko pomaga pri tej poplavi podatkov. Naš namen je, da dobro razumemo vsak primer kot samostojno enoto.

Preden predstavimo rezultate raziskave, si nekoliko pogledjmo Slovenski avtomobilski grozd.

Zgodba Slovenskega avtomobilskega grozda se je začela odvijati leta 2000, ko je Ministrstvo za gospodarstvo objavilo prvi razpis za izbiro pilotskih projektov za razvoj grozdov v Sloveniji, pri čemer je šlo za enega izmed ukrepov politike podjetništva in konkurenčnosti. Avtomobilski grozd je bil eden izmed treh pilotskih projektov, ki so bili med šestimi prijavljenimi predlogi izbrani na razpisu. Nosilno podjetje, ki je sklenilo pogodbeno razmerje z Ministrstvom za gospodarstvo, je bil poslovni sistem CIMOS. Na razpisu je podjetje s partnerji opravilo obsežna usklajevanja o prednostnih projektih za razvoj zahtevnejših izdelkov in infrastrukture ter obravnavalo formalnopravne in organizacijske rešitve. SAG je tako gospodarsko interesno združenje mehanske in kovinske industrije, električne in elektronske, kemijske, tekstilne in industrije transportnih sredstev ter razvojno-raziskovalnih organizacij in drugih storitvenih podjetij v dobaviteljski verigi, ki ustvarjajo in prodajajo izdelke in storitve za avtomobilsko industrijo. Na začetku je bilo v projekt vključenih devet podjetij in tri razvojne raziskovalne organizacije. Prva srečanja so potekala v duhu oblikovanja strategije ter poslanstva grozda, pri čemer so glede analiz zunanjega in notranjega okolja definirali tudi svojo vizijo: *slovenski avtomobilski grozd bo s svojimi člani postal razvojno intenzivna in zanesljiva mreža dobaviteljev za globalne proizvajalce vozil na izbranih segmentih, z izdelki višje stopnje sestavljenosti in dodane vrednosti.*

Danes članstvo Slovenskega avtomobilskega grozda sestavlja 43 industrijskih družb in 7 raziskovalno-razvojnih organizacij, od tega dva

ther qualitatively or quantitatively. Quantitative data are those which can measurably prove that the identified capabilities are the basis for the competitive advantage of companies, and they indicate the dynamics of the capability development in a specific time period. As quantitative data sources we used different descriptions and project results, internal articles and other important business documents. Data analysing presents the essence of the research process for inductive theory building. It is not only the largest part of the research, but also the most creative part. The key problem with data analysing is the conflict with the vast amount of data. The analysis inside the study can help to deal with overflow of data. Its goal is that we understand a single case as an autonomous entity.

Before introducing the research results, we have to describe some basic data about the Automotive Cluster of Slovenia.

The story about GIZ ACS began in 2000, when the Ministry of the Economy announced the first call for pilot projects cluster development in Slovenia. This was one of the measures for promoting entrepreneurship and increasing competitiveness. The Automotive cluster of Slovenia was one of the three pilot projects that was selected from among six registered initiatives. The leading company, which signed the contract with the Ministry of the Economy, was the CIMOS Group. This company made extensive adjustments with its partners about preferential projects for the development of more complex products and infrastructure. They also discussed the formal legal and organisational solutions. GIZ ACS is the Business Interest Association of the mechanical and metal industry, the electric and electronic industry, the chemical industry, the textile industry and the industry of transportation, R&D institutions and other service providers in the supply chain, which produces and sells the products for the automotive industry. At first, nine companies and three R&D institutions were affiliated to the cluster. The first meetings were about defining the strategy and the mission of the cluster, and they also defined the cluster vision: *The Automotive Cluster of Slovenia will become the research and development, intensive and reliable supplier network for global automotive manufacturers on selected segments, providing products with higher added value and complexity.*

There are 43 members in the ACS today from industry and 7 members from different R&D institu-

samostojna inštituta in pet fakultet. Svojo prihodnost vidijo v razvoju ključnih zmogljivosti grozda, v močnem podpornem okolju in v zanesljivih nosilcih razvoja grozda. Prav tako lahko prve uspehe vrednotijo tudi v številkah. Celotna slovenska avtomobilska dobaviteljska industrija je v letu 2003 izdelala za okrog 950 milijonov evrov sestavnih delov in komponent. Pri tem je izvozila za okrog 800 milijonov evrov, kar je blizu 7,5 % slovenskega izvoza blaga. V letu 2004 pa so samo člani SAG, ki imajo skupno 16.500 zaposlenih (50 članov grozda), ustvarili prihodke v vrednosti 1,5 milijarde evrov. V povprečju tako izvozijo 80 % svoje proizvodnje. Ustvarjena dodana vrednost na zaposlenega je nad povprečjem predelovalnih dejavnosti in znaša 25.600 evrov [27]. Njihovi kupci so proizvajalci vozil in sistemski dobavitelji v EU (Nemčija 40 %, Francija 21 %, Italija 8 %, Avstrija 6 %, Anglija 6 %, ZDA 4 %, Španija 3 % itn.).

4 REZULTATI IN RAZPRAVA

Raziskava je postregla z zanimivimi rezultati, pri čemer lahko postopek razvoja proizvodnih zmogljivosti opišemo s posameznimi stopnjami.

1. stopnja: zmogljivosti, specifične za podjetja

To stopnjo razvoja zmogljivosti, za katero lahko rečemo, da se ujema s samimi začetki ustanavljanja Slovenskega avtomobilskega grozda, zaznamujejo intenzivno spoznavanje podjetij med seboj, razhajanja v razumevanju postopka grozdenja, pomanjkanje izkušenj pri povezovanju ter naravnost podjetij v lastne interese. Zastopnik podjetja, vključenega v SAG, pove:

Ko smo se lotili projekta, v bistvu sploh nismo vedeli, v kaj se spuščamo. Na prvih sestankih koordinatorjev smo se spoznali, opazno je bilo nezaupanje, spraševali smo se, kaj bomo sploh delali, zakaj smo sploh tukaj. Zastavili smo si nekaj začetnih skupnih projektov, poleg skupnega informacijskega sistema še skupne dobaviteljske verige, skupno trženje, skupne razvojno-raziskovalne projekte itn. Srečevali smo se enkrat do dvakrat na mesec. Na začetku je bilo očitno, da je bilo vsako podjetje na svoji strani, bili smo zadržani, saj se v bistvu sploh nismo poznali.

To pojasnilo potrjuje ugotovitev, da prva stopnja v razvoju zmogljivosti pomeni zelo konfliktno izkušnjo na samem začetku ustanavljanja grozda. Na eni strani imamo projekt ustanavljanja pilotskih grozdov,

2 R&D institutes and 5 faculties. They see the future in the development of key capabilities, in a supportive environment and in the reliable drivers of the cluster development. They can already measure the first success with numbers. In 2003 the Slovenian automotive-supplier industry produced components in a total amount of approximately 950 million euros. Exports accounted for about 800 million euros, which represents almost 7.5% of the total Slovenian exports of goods. In 2004 the members of the ACS, which have 16,500 employees (50 cluster members), generated revenues to the value of 1.5 billion euros. They export, on average, 80% of their production. The added value per employee is higher than the average of the manufacturing branch, and it amounts to 25,600 euros. They sell mostly to producers and system suppliers from the European Union (Germany 40%, France 21%, Italy 8%, Austria 6%, Great Britain 6%, USA 4%, Spain 3%, etc.).

4 RESULTS AND DISCUSSION

This research has produced some very interesting results. The main point is that the process of capability development can be described in several stages.

1st stage: Firm-specific capabilities

This capability-development stage coincides with the beginning of the ACS. The main characteristics of this stage are the first contacts between companies who are getting to know each other, the differences in understanding the clustering process, the lack of experience in establishing linkages, and the focus on the company's own interest. A representative of one of the ACS companies acknowledges:

When we joined the project, we did not know what we were getting into. At the first coordinators' meeting we got to know each other, there was a lot of mistrust, we were wondering what we were doing here. We decided to work on some joint projects – information system, joint supply chain, joint marketing, joint research and development projects, etc. Since then we have met once or twice a month. It was obvious from the beginning that each company looks after itself; we were keeping back because we did not know each other.

This statement points out the first finding, that this capability-development stage represents a very conflicting experience at the beginning of the cluster formation. On the one side we have a cluster-formation pilot project that is a very sensitive process, and on the other

ki je zelo občutljiv, po drugi strani pa imamo podjetja, ki s tovrstnim delom v večini primerov nimajo nobenih izkušenj. Rečemo lahko, da je pomanjkanje določenih zmogljivosti zelo otežilo začetno izvajanje zastavljenih projektov, saj so ustvarjalci največ časa porabili za usklajevanje, ne pa za plodno delovanje. Vse dejansko kaže na to, da so bila podjetja na začetku daleč narazen, saj gre za zmogljivosti, s katerimi podjetja vstopajo v grozd ter so specifične za vsako posamezno podjetje. Te zmogljivosti so podjetja razvila kot avtonomne poslovne enote v nekem svojem okolju in niso povezane s postopkom grozdenja. Specifičnost teh zmogljivosti pa se potrjuje na več področjih. Če že pogledamo različnost razvojnih in proizvodnih programov, vidimo, da gre za podjetja z zelo različnim tehnološkim znanjem, različnimi kupci in zato tudi različnimi pričakovanji.

AET Tolmin razvija svečke, Agis Plus sedeže, Cimos je uspešen na področju izdelovanja pedalnih sklopov itn. Skupna jim je le usmerjenost na avtomobilski trg.

Rečemo lahko, da se člani SAG med seboj razlikujejo po tržnih položajih pri kupcih, po obvladovanju določenih proizvodnih programov in tehnologij, po razvojnih možnostih in po strategijah. Zelo različna pa je tudi stopnja razvitosti določenih zmogljivosti, ta so rezultat vlog, ki jih imajo podjetja v dobaviteljski verigi. Na primer, nekatera podjetja so že razvojni dobavitelji, druga pa samo dobavljajo različne sestavne dele. Zaradi tega podjetja razvijajo ne samo različne vrste zmogljivosti, ampak je očitna tudi razlika v njihovi stopnji razvitosti. Vso to različnost pa so podjetja v grozdu morala usmeriti v uresničevanje skupnih ciljev, če so želela slediti zastavljenemu videnju, z drugimi besedami, skupni cilji so podjetja začeli siliti v razvoj novih zmogljivosti. Podjetja so spoznala, da jih čaka še veliko dela predvsem na področjih, na katerih imajo iz preteklosti najmanj izkušenj. Podjetja so se morala začeti učiti delati skupaj, za skupne cilje, naučiti so se morala prepoznavati dejanske priložnosti, ki se jim z grozdenjem ponujajo. Z razvojem teh zmogljivosti so podjetja dejansko sprožila postopek, ki pripelje do uresničevanja zastavljene vizije ter do naslednje stopnje razvoja zmogljivosti, ki preide s stopnje zmogljivosti, specifičnih za posamezna podjetja, na stopnjo zmogljivosti izrabe virov.

2. stopnja: zmogljivosti izrabljanja virov grozda

Postopek razvoja zmogljivosti pride do stopnje, ko lahko že prepoznamo zmogljivosti, da

side we have companies that have no experiences with this process. We can assume that the lack of specific capabilities has made the initial implementation of the project extremely hard, since most of the time has to be spent on reconciliation and not for constructive action. It all points to the fact that the companies were far apart at the beginning. The reason is that the capabilities that the companies brought into the cluster are firm-specific. The companies have developed these capabilities as autonomous business entities in their own business environment and they are not in any relation with the clustering process. The specificity of these capabilities is evident in many areas. If we take a look at the differences in the development and production programmes of the companies, we find that these are companies with very different knowledge levels, different buyers and different business expectations.

AET Tolmin produces spark plugs, Agis Plus makes seats, Cimos is successful in the field of pedal systems, etc. Their common point is a focus on the automotive market.

The ACS companies differ in their market positions with buyers, in managing their production programmes and technologies, in development potentials, and in their strategies. But they also differ in their level of specific-capabilities development. This is a result of the different roles that the companies play in the supply chain. Some companies are, for example, system suppliers; others are just delivering different components. This is why the companies develop different types of capabilities and why these are developed on different levels. But all these differences had to be directed towards the implementation of common cluster goals, especially if the companies wanted to follow their cluster vision. To put it in different words: common goals force companies into the development of new capabilities. The companies have realised that there is a lot of work to be done, particularly in the fields where they have very little or no experience at all. The companies had to find a way to work together to achieve common goals. They also have to learn how to recognise opportunities that the clustering process offers to everyone. With the development of these capabilities the companies have launched a process that leads towards the realisation of the cluster vision and to the next stage in capabilities development – the stage of capabilities for using cluster resources.

2nd stage – capabilities for using cluster resources

The capabilities-development process comes to the point where we can observe the capabilities

podjetja znajo izrabljati vire, ki jih grozd ponuja. Da so podjetja prešla v to stopnjo, je bil potreben postopek, na katerega ni vplivala toliko strokovnost posameznih podjetij, ampak so podjetja dejansko morala začeti misliti drugače, širše. To je bil odločilen preskok, da so lahko sledili zastavljeni strategiji. Podjetja so naj tej stopnji spoznala, da je za kakršen koli rezultat potrebna dejavnost vseh tistih podjetij, ki v določenih projektih vidijo svoje interese. Na tej stopnji razvoja zmogljivosti pa poleg samega interesa po izrabi virov drugih podjetij, prihaja tudi do vse večjega pomena samih pomanjkljivosti grozdenja in tudi problemov, ki se pojavljajo. Na tej stopnji razvoja grozda se namreč podjetja še zmeraj spoznavajo in iščejo medsebojno dopolnjevanje. Dejansko gre za postopek razvoja zmogljivosti, ki pripelje do tega, da začnejo podjetja prepoznavati nove priložnosti ter premestijo začetne zadržke, ki dejansko izvirajo iz nepoznavanja in neizkušenosti na področju medpodjetniškega povezovanja.

A očitno je podjetjem v triletnem delovanju v grozdu dejansko uspelo preseči začetne ovire ter vzpostaviti določeno enotno raven razumevanja delovanja grozda, saj se v konkretnem delu že kažejo prvi učinki skupnega dela. V prvi številki glasila SAG Novice, lahko na primer naštejemo trinajst skupnih projektov na ravni grozda, ki so bili že izvedeni ali se še izvajajo, šest prepoznanih mogočih projektov in en izveden projekt na področju deficitarnih tehnologij ter še trije mogoči projekti na področju tehnologij. V tej fazi so se torej člani grozda lotili določenih skupnih projektov, od katerih so lahko imeli vsi koristi: projekti vzpostavitve skupnih informacijskih sistemov, projekti vzpostavitve skupne baze podatkov, projekti skupnih tržnih nastopov in promocije, projekti upravljanja dobaviteljskih verig, projekti skupne nabave, projekti popisa in izmenjave kapacitet, projekti izobraževanja in usposabljanja (projektne šole, seminarji) in prvi skupni raziskovalno-razvojni projekti.

Hkrati pa določena podjetja zaradi svoje dejavnosti ter učinkovitega izrabljanja virov in zmogljivosti drugih članic že opažajo dvig inovativnosti v lastnih podjetjih. Zastopnik podjetja, vključenega v SAG, pove:

V našo tehnologijo smo prenesli znanje drugega podjetja in s tem dejansko kupcu ponudili izdelek, ki vsebuje znanje in izkušnje, ki niso bili v celoti razviti v našem podjetju. Osebnostno menim, da lahko samo v tem projektu pride do štirih ali petih patentov, ki jih še bomo prijavi oziroma so že v fazi prijavljanja. En patent bomo prijavi skupaj z

that enable companies to use cluster resources. In order for companies to achieve this stage a new process took place; this process was not about their expertise knowledge, they had to change their standard way of thinking and start thinking more broadly. This was a decisive turning point in the upcoming common strategies. The companies have realised that to achieve results the active cooperation of all the players that have an interest in specific projects is necessary. At this stage the companies have also become more and more aware of the cluster weaknesses and the problems that might occur. This is still a stage where companies are getting to know each other and where they try to find synergies. A new capabilities-development process is taking place that leads towards a stage where companies start to recognise new opportunities and where they can overcome the initial holding back that originates in ignorance and inexperience in the field of companies cooperation and linkages.

After working together for three years the ACS companies have actually overcome the initial obstacles and have established a specific common level of cluster-activities understanding. The first results can already be recognised. In the first ACS newsletter we can find thirteen common projects on the cluster level that have already been implemented or are being implemented at the moment, as well as six potential projects, one implemented project in the field of deficit technologies and three other potential technology projects. At this stage the cluster members have started to cooperate in many projects that were beneficial for all of them: a joint information system project, a joint database project, joint marketing and cluster promotion projects, supply-chain management projects, joint purchase projects, capacity exchange projects, education and training projects (project schools, seminars) and the first joint research-and-development projects.

At the same time some companies, because of their active role and the effective use of the resources and capabilities of the other cluster members, can observe the growth of innovative activities in their companies. A representative of one ACS company describes a situation in his company:

We have transferred knowledge from another ACS company into our technology, and now we can offer our buyers a new product that includes knowledge and experiences that were not entirely developed within our company. I think that we can come up with four or five patents within this project

našim kupcem, kar pomeni, da je zadeva dobra, resna in pomembna tudi zanj.

Opisani primer in še mnogo drugih, pridobljenih v raziskavi, potrjujejo dejstvo, da so podjetja, ki so v grozdu dejavna, napredovala v razvoju tistih zmogljivosti, ki bodo podjetjem skupaj omogočile slediti zastavljenim načrtom Slovenskega avtomobilskega grozda. Prišli so do stopnje, pri kateri vzajemno učenje že kaže pozitivne rezultate ter do stopnje, pri kateri so postala podjetja samozavestnejša tako v razmerju do članic grozda kakor tudi v razmerju do svojih kupcev. Vendar pot še zdaleč ni končana. S stopnjo so samo zgradili temelje za razvoj strateške istovetnosti grozda.

Po predpostavki dinamika razvoja zmogljivosti pripelje do prepoznavanja zmogljivosti grozda. Njena značilnost je, da ni omejena na eno podjetje. Zmogljivost grozda moramo opazovati s perspektive grozda in pomeni, da podjetja kolektivno izvajajo opravila in ustvarjajo nova znanja, ki jih širijo po celotnem grozdu, tako da imajo skupno korist vsi partnerji v grozdu. Vendar zmogljivosti grozda kot strateške istovetnosti grozda v primeru SAG še ne moremo prepoznati. Vemo, da se zmogljivosti razvijajo v razvojnem postopku [28]. Slovenski avtomobilski grozd pa je še sorazmerno mlad grozd; okolje, v katerem deluje, še ni popolnoma pripravljeno na tovrstno delovanje, podjetja sama so sicer že sposobna kolektivno delovati, vendar se še zmeraj vse pridobljeno znanje ne širi po celotnem grozdu. Še zmeraj je uspeh grozda v veliki meri odvisen od dejavnosti podjetij po eni strani, po drugi strani pa je v grozdu še zmeraj veliko nedejavnih članov. Poleg tega pa še manjkajo izkušnje predvsem pri koordiniranju projektnega dela, saj se podjetja znotraj projektov še zmeraj težko organizirajo. Prav nasprotno pa lahko trdimo za primer AC Styria, kjer pa skozi raziskavo zmogljivost grozda prepoznamo.

5 SKLEPI

Na začetku prispevka smo oblikovali tri predpostavke. Ena izmed njih pravi, da lahko zmogljivosti razvrstimo glede na perspektivo, s katere opazujemo industrijski grozd, in koristi, ki jih imajo vključena podjetja, kar prikazuje slika 1.

Na prvo stopnjo v razvoju zmogljivosti gledamo s čiste perspektive podjetja, saj tovrstne zmogljivosti še nimajo nobene povezave z grozdenjem in so bile razvite za potrebe posameznega podjetja.

that we are going to register. One patent will be registered together with our buyer, and that means that the project is of great importance also for him.

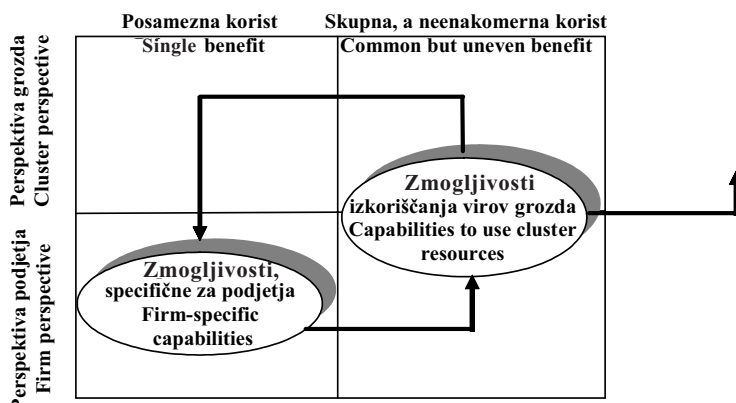
The described example and many others that we came across in our research confirm the fact that the active cluster companies have made progress in the development of those capabilities that will enable companies to follow the ACS vision. They have come to the point where mutual learning gives positive results, and to the point where the companies have become more self-confident in their relationships with other cluster companies and their buyers. But the process is not finished yet. This stage only helps building the foundations for the development of a cluster-strategic identity.

We have assumed that the dynamics of cluster development leads to cluster capability. The main characteristic of cluster capability is that it is not limited to a single company. Cluster capability must be observed from the cluster perspective, where companies collectively perform operations and generate new knowledge that is spreading across the entire cluster in the way that every company gains some benefits. But the cluster capability as a strategic identity of the cluster cannot be recognised in the ACS yet. It is a fact that capabilities are developed in an evolutionary process [28]. The ACS is a young cluster and its environment is not yet fully prepared for all the cluster activities. The companies are capable of performing activities collectively, but generated knowledge is not spread across the cluster. Cluster success depends mainly on the active participation of some companies, since on the other hand there are many inactive cluster companies. There is also a lack of experience in coordinating project work. Companies have difficulties organising common projects. The opposite situation was observed in the AC Styria cluster, where the cluster capability can be identified.

5 CONCLUSIONS

At the beginning of our paper we proposed three assumptions. One of them states that the capabilities can be classified according to the perspective the cluster is viewed from and the benefits that cluster companies can gain (Figure 1).

The first stage corresponds to the company perspective, since these capabilities are not related to the clustering process and they have been developed for the needs of individual companies.



Sl.1. Postopek razvoja proizvodnih zmogljivosti glede na perspektivo in koristi
 Fig. 1. Process of manufacturing-capability development regarding perspective and benefit

Podobno lahko trdimo tudi glede koristi, saj na tej stopnji opazimo samo posamezne koristi, saj na tej stopnji opazimo samo posamezne koristi, pri čemer izvirajo samo iz dejavnosti, ki z grozdenjem niso povezane. Ko razpravljamo o zmogljivostih izrabljanja virov grozda, še zmeraj prevladuje perspektiva, ki je sicer osredotočena na individualno podjetje, vendar v določeni meri že gledamo nanje s perspektive grozda, saj prihaja na tej stopnji že do delovanja na ravni grozda. Pri tem lahko govorimo že o nekih skupnih koristih, saj se skozi projekte in skupno delo ustvarja novo znanje, od katerega imajo lahko koristi tudi druga podjetja, ki pa zaradi različne intenzivnosti učenja niso enakomerno razporejene med vse partnerje. Zaradi tega ima podjetje, ki uporablja partnerjeve zmogljivosti in vire, po eni strani lahko več koristi kot partner, ki jih ima, po drugi strani pa zna določeno podjetje zaradi svojih zmogljivosti vire tudi hitreje prepoznati in izkoristiti.

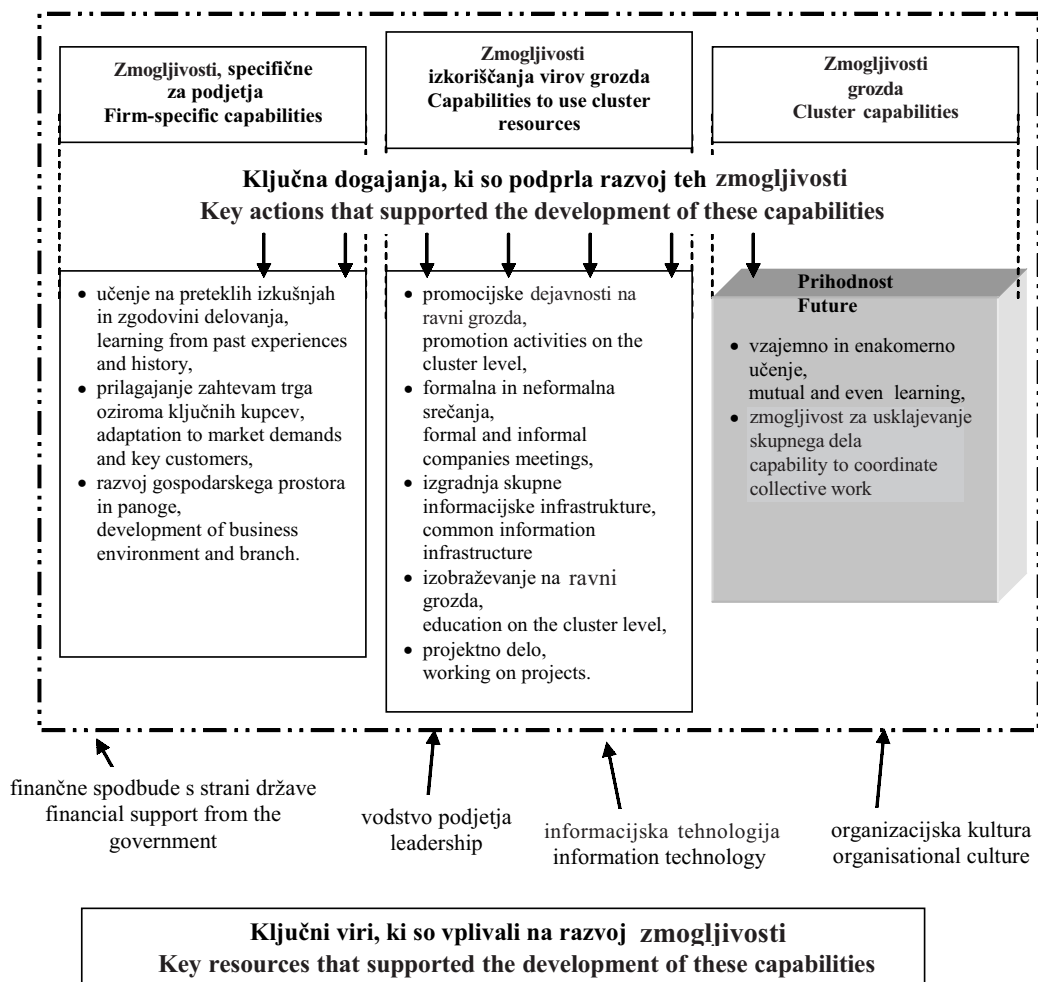
Veliko je dogajanj, ki so na različne načine vplivala na sam razvoj zmogljivosti. Grafično smo predstavili samo tista, ki so se med študijo primerov izkazali kot najočitnejša. Če pogledamo ključna dogajanja za posamezno stopnjo v razvoju zmogljivosti SAG, vidimo, da je prva razvojna stopnja povezana z različnimi dogajanjmi v podjetjih še pred samim začetkom grozdenja. Omenjena dogajanja posredno ali neposredno ter pomembno ali manj pomembno sooblikujejo strateško istovetnost posameznega podjetja, ki pa za podjetja po vstopu v grozd pomeni pomembno odskočno desko. Povedano drugače, zmogljivosti, razvite na ravni posameznega podjetja še pred vstopom v grozd, pomenijo bistveno izhodišče za nadaljnje uveljavljanje posameznega podjetja v grozdu. Po vstopu podjetij v grozd, v neko novo obliko organizacije in dela, pa podjetja, zavedno ali nezavedno, sprožijo določena dogajanja z željo po hitrejšem

The situation with benefits is very similar. At this stage we can observe specific benefits that arise from activities that are also not related to the cluster. When we deal with the capabilities for using cluster resources, the single-point perspective is still the dominant one, but we are already looking from the cluster perspective, since the companies are already cooperating on the cluster level. We can speak about common benefits, since new knowledge is being generated through joint projects. This knowledge can also be beneficial for other cluster companies, but because of a different learning intensity it is not equally spread among all the partners. This is why a company that uses partners' capabilities and resources gains more benefits than the partner that actually possesses those capabilities and resources. At the same time this company has, because of its capabilities, the ability to recognise and use resources.

Many actions took place in previous years with a different effect on capability development. Figure 2 depicts the most obvious ones. If we take a look at the key actions for each stage in the ACS capability-development process, we can state that the first stage corresponds to actions that took place in companies before the clustering process. These actions directly or indirectly and with more or less impact co-form the strategic identity of a specific company. This strategic identity represents a good basis to join the cluster. The capabilities, developed within the specific company before joining the cluster, represent a fundamental starting point for the future establishment of the company in the cluster. After joining the cluster as a new organisational form, companies intentionally or unintentionally trigger

prilagajanju novim razmeram. Tako so dogajanja, kakor so promocijske dejavnosti na ravni grozda, formalna in neformalna srečanja, gradnja skupnega informacijskega sistema, skupno izobraževanje ter konkretno delo na skupnih projektih, dejansko spodbudila postopek nekega skupnega učenja, ki omogoča podjetjem lažje prilagajanje ter s tem vzpostavitev tistih razmer, ki bodo zmanjševale razlike med podjetji, ki so posledica različnih *vstopnih* izkušenj. Povedano drugače, omenjena dogajanja so pomembno vplivala na razvoj zmogljivosti, ki podjetjem omogočijo izrabljati vire grozda. Ker pa v SAG še ne prepoznamo zmogljivosti grozda, lahko na podlagi rezultatov raziskave samo predvidevamo, katera dejanja bodo pomembneje vplivala na razvoj teh zmogljivosti. Skozi raziskavo pa lahko poleg ključnih dejanj, ki so značilna za vsako stopnjo razvoja zmogljivosti posebej,

specific actions to adapt to the new circumstances as soon as possible. Actions, such as the promotional cluster activities, formal and informal meetings, a joint information system, joint education and joint projects have actually stimulated the joint learning process. This learning process allows companies to adapt to the cluster easily and to establish circumstances that reduce the differences between companies that are the result of different *incoming* experiences. These actions have a significant impact on the development of those capabilities that enable the use of resources. Since in the case of the ACS we cannot recognise a cluster capability we can only assume which actions will have an impact on the development of these capabilities. Besides the key actions typical for each capability-development stage, we can also recognise key resources



Sl. 2. Model razvoja proizvodnih zmogljivosti podprt s ključnimi dejanji in ključnimi viri
Fig. 2. Model for manufacturing-capability development supported by key actions and key resources

prepoznamo tudi ključne vire, ki so pomembno podprli sam postopek razvoja zmogljivosti. Tako naslednja slika prikazuje razvoj proizvodnih zmogljivosti, podprt s ključnimi dogajanji ter ključnimi viri – primer SAG.

Predstavljeni prispevek tako opisuje model razvoja proizvodnih zmogljivosti v industrijskih grozdih, ki je nastal kot rezultat triletno raziskave, izvedene v podjetjih in različnih organizacijah, članov treh industrijskih grozdov. Model ne narekuje obnašanja podjetij, ampak je deskriptiven in opisuje predmet raziskovanja v dejanskem okolju. Opisuje pojav, ki je navzoč tako v podjetju kakor na ravni grozda. Zaradi tega smo želeli z razvitim modelom zagotoviti primerno okolje za nadaljnje opazovanje tega pojava tako menedžerjev kakor raziskovalcev, hkrati pa je model predstavlja tudi ustrezno izhodišče za menedžerje, ki vidijo priložnosti v industrijskih grozdih.

Raziskava je kakovostne narave, zato je razviti model primerno izhodišče za oblikovanje kolikostne metodologije, s katero lahko podjetja ugotovijo stopnjo razvitosti svojih proizvodnih zmogljivosti in s katero lahko učinkoviteje prepoznajo priložnosti za izrabljanje virov, ki jih ponuja industrijski grozd. Razviti model podjetjem pomaga pri prepoznavi ključnih dejanj in virov, ki neposredno vplivajo na razvoj proizvodnih zmogljivosti, in rabi kot smernica za učinkovito integracijo v industrijski grozd.

that have supported the capability-development process. Figure 2 presents the manufacturing-capabilities development supported by the key actions and the key resources in the ACS.

This paper presents the manufacturing-capability development process in industrial clusters based on three years of research conducted in the companies and other organisations who are members of the industrial clusters. The model does not dictate the companies' behavioural pattern; it is descriptive and it describes the research object in its real environment. The model describes a phenomenon present in companies and in clusters. This is why our primary goal with the developed model was to ensure a suitable environment for further observations of this phenomenon from the managers' and researchers' point of view. At the same time the model represents an appropriate starting point for managers who can see the business opportunities in industrial clusters.

The research is qualitative; this is why the developed model is an appropriate starting point for designing a quantitative methodology that helps companies to identify the manufacturing-capabilities development level and to recognise opportunities for making use of resources, offered by the industrial cluster, more effectively. The developed model helps companies to identify key activities and resources that directly influence the manufacturing-capabilities development and serve as a guide for the effective integration of companies into an industrial cluster.

6 LITERATURA 6 LITERATURE

- [1] Semolič, B. (2004) Network organisations, business clusters, projects. *Project Management Review* Vol. 7 No. 3, pp. 30-52.
- [2] Barney, J.B. (1991) Firm resources and sustained competitive advantage. *Journal of Management* Vol. 17 No. 1, pp. 99-120.
- [3] Wernerfelt, B. (1984) A resource-based view of the firm. *Strategic Management Journal* No. 5, pp. 171-180.
- [4] Rumelt, E.P. (1991) How much does industry matter? *Strategic Management Journal* 12 (3), pp. 167-185.
- [5] Dierickx, I., K. Cool (1989) Asset stock accumulation and sustainability of competitive advantage. *Management Science* Vol. 17 No. 1, pp. 121-154.
- [6] Teece, D.J., G.P. Pisano, A. Shuen (1997) Dynamic capabilities and strategic management. *Strategic Management Journal* 18, pp. 509-533.
- [7] Helfat, C.E., R.S. Raubitschek (2000) Product sequencing: co-evolution of knowledge, capabilities and products. *Strategic Management Journal* Winter Special Issue 15, pp. 63-84.
- [8] Gulati, R., N. Nohria, A. Zaheer (2000) Strategic networks. *Strategic Management Journal* Vol. 21 No. 3, pp. 203-215.
- [9] Gulati, R., M. Gargiulo (1999) Where do inter-organizational networks come from?. *American Journal of Sociology* Vol. 104 No. 5, pp. 1439-1493.
- [10] Ahuja, G. (2000) Collaboration networks, structural holes and innovation: A longitudinal study. *Administrative Science Quarterly* Vol. 45 No. 3, pp. 387-404.
- [11] Gulati, R. (1998) Alliances and networks. *Strategic Management Journal* Vol. 19, pp. 293-317.

- [12] Gulati, R. (1999) Network location and learning: the influence of network resources and firm capabilities on alliance formation. *Strategic Management Journal* Vol. 20 No. 5, pp. 397-420.
- [13] Anand, B., T. Khanna (2000) Do firms learn to create value? The case of alliances. *Strategic Management Journal* Vol. 21, pp. 295-315.
- [14] Eisenhardt, K.M., J.A. Martin (2000) Dynamic capabilities: what are they??. *Strategic Management Journal*, Vol. 21, No. 10-11, pp. 1105-1121.
- [15] Kogut, B. (2000) The network as knowledge: generative rules and the emergence of structure. *Strategic Management Journal* Vol. 21, pp. 405-425.
- [16] Khanna, T., R. Gulati, N. Nohria (1998) The dynamics of learning alliances: competition, cooperation, and relative scope. *Strategic Management Journal* Vol. 19, pp. 193-210.
- [17] Clark, K.B., T. Fujimoto (1991) Product development performance, *Harvard University Press*, Boston.
- [18] Kamath, R.R., J.K. Liker (1994) A second look at Japanese product development. *Harvard Business Review* No. 11-12, pp. 154-170.
- [19] Hines, P., N. Rich (1998) Outsourcing competitive advantage: the use of supplier associations. *International Journal of Physical Distribution & Logistics* Vol. 28, No. 7, pp. 524-546.
- [20] Marshall, A. (1920) Principles of economics, 8th edn., *Macmillan*, London.
- [21] Weber, A., (1929) Theory of the location of industries, *University of Chicago Press*, Chicago.
- [22] Poudier, R., C.H. St. John (1996) Hot spots and blind spots: Geographical clusters of firms and innovation. *Academy of Management Review* Vol. 21 No. 4, pp. 1192-1225.
- [23] Saxenian, A. (1994) Regional advantage. Culture and competition in Silicon Valley and Route 128. *Harvard University Press*, Cambridge, Massachusetts.
- [24] Enright, M.J. (1990) Geographic concentration and industrial organization. Doctoral thesis, *Harvard University*.
- [25] Porter, M. (1990) The competitive advantage of nations. *Free Press*, New York.
- [26] Leonard-Barton, D. (1990) A dual methodology for case studies: synergetic use of a longitudinal single site with replicated multiple sites. *Organization Science* Vol. 1 No. 3, pp. 248-266.
- [27] Bušen, D. (2004) Orodjarstvo kot inovacijska (tehnološka) podpora avtomobilski dobaviteljski industriji. *Zbornik posvetovanja Orodjarstvo 2004: Poti k novemu napredku*, Portorož, 12. - 14. oktober 2004.
- [28] Pandža, K. (2002) An operations strategy supported with resource-based theory: A case study at the Primat company; *Journal of Mechanical Engineering* vol. 48 no. 7, Ljubljana, Slovenia.

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