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PREFACE

If we start from the well-known dictum "things are changing so fast, we do not have time to change," then this is the time where dictum has the right stronghold. The question arises why? Because we are in a chaos of permanent happenings.

A large number of migrants that nobody anticipated, the Ukrainian crisis, unrest in Syria and terrorist attacks create additional troubles, and there is increased tensions between the countries and creates additional uncertainty and economic problems.

In the field of standardization we have a lot of changes, primarily the acceptance of the new version ISO 9001: 2015 and ISO 14001: 2015, where committee members that wrotes the new requirements of standard believe that will contribute to a visible improvement of the business, but there are those who think differently.

In the future there will be a lot of work for the organization, especially for those who participate in changes in order to went to meet the new challenges. It is one of the real ways survival organization in the market.

Scientific conference QUALITY SYSTEM CONDITIONS FOR SUCCESSFUL BUSINESS AND COMPETITIVENESS organized by the Association for Quality and Standardization of Serbia, Faculty of Business Economics and Entrepreneurship, High Business School of proffesional studies "Prof. Dr. Radomir Bojković", Center for Quality of Faculty of Engineering sciences in Kragujevac, Center for quality of Faculty of Mechanical Engineering in Podgorica and Middle and Southeast Europe Quality Initiative with the support of the Ministry of Defence of the Republic of Serbia gives full contribution to the promotion of improving the quality infrastructure in Serbia and the region.

Papers published in this Proceedings provides an opportunity for entrepreneurs and managers in the public sector to find the right strategy, policy, defining goals, especially in the field of quality management system, environmental management system , health and safety at work management system, thereby strengthening its competitive position and increase customer-citizens satisfaction.

Round table discussion WHAT DO WE GET WITH THE NEW STANDARDS gives an opportunity in the public discussion about new standard requirements, and we can see what advantages and disadvantages (future problems) are, bearing in mind that the discussion involved experts consultants, auditors and representatives from neighboring countries.

Round table discussion MODERN SUCCESS FORMULA shows that people – human resources are key for success. For the Republic of Serbia is important to put human and other resources at the service of business improvement, because these resources are currently unexploited.

On behalf of the Organizing Committee of the XVII National and III International scientific conference to thank to all authors and co-authors of articles, co-organizers, sponsors, and all those who have support, participants from Serbia and abroad who have helped to make this event successfully..

President of the Organizing Committee

Professor Zoran Punoševac PhD

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MANAGEMENT OF COMPARATIVE ADVANTAGES OF THE SUPPLY CHAIN

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Abstract: *Every sucessfull organisation must thrive on the base of an well-organised system. Good organisation is the key for achieving business excelence, and therefore it is crucial that an sucessfully opetarating system is established, which is ranging troughout all levels of an functional organisation. In the context of supply chain management, which is characterized by a variety of subjects linked into an unique network, a good organization is the key for functionality of the system as a whole. Effective supply chain as the end result is essentially the combination of a series of carefully planned, agreed and synchronized actions from the beginning to the end of the chain. Only through proper management of each shackle it is possible to establish an whole system that efficiently and effectively meets all requirements of partners and end customers in a form of product or service for users purchase in a form of an final product on the end-market. It is the complexity within the supply chains, which poses a challenge to their management and the creation of optimal relations for money, that is creating the greatest added value at minimum cost inputs. Benefits in terms of optimal added value can be established inter alia as a competitive advantage, and each shacke of the chain (and thus in the final analysis, supply chain as a whole) should improve and create new competitive advantage by optimizing their own business, but also the supply chain as a whole, through the creation of partnerships competing in an increasingly demanding and highly dynamic global market characterized by increasingly aggressive competition.Comparative advantages in terms of their definition and explanation are important for strategical and operational management, and the ultimate goal of this work is to prove the thesis that the comparative advantages are the elemental factor to be taken into account in managing the supply chain, whith an purpose of achieveming multiple benefits at all levels and for all stakeholders in the chain.*

Keywords: *competitive advantage, supply chain management, business excellence*

JEL Classification: *M21*

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1. INTRODUCTION

Reduced level of political barriers, simplified flow of information and materials as well as advanced technology of many products have resulted in greater competitiveness in the battle for share in the global market. A possible answer to these new challenges is the integrated management of logistical structures and processes, as they are precisely the areas in which the majoritiy of costs for torganizations occurs. Organizations have realized in recent years that the product and the quality of the product - as the main feature of product differentiation in the market - considerably lost significance, which means that the customer does not expect only a comprehensive service during the entire product life cycle, but generally also a high level of flexibility and speed, which implies a quick fulfillment of consumers' demand. In this context it is possible to conclude that there are potential partners on the market, who can perform certain services better and cheaper than it would be possible to implement within the parent organization. The exploitation of such comparative advantages is reflected in the creation of a partner network that brings benefits to all stakeholders and raises the level of their competitiveness.

2. THE IMPORTANCE OF SUPPLY CHAINS

Since the middle of last century, as a result of globalization, the world can focus more intensely on the concept of supply chain management. It was this basis upon which the method of supply chain management has developed, whose primary objective is integration and coordination of processes and individuals in the chain, such as suppliers and customers as well as the organization per se. The supply chain management stands for the creation of centers of expertise, which seek to manage overall (continuous) process from raw materials to the delivery of products to the end customers. In such way organizations, participants in the chain, are not in mutual competitive positions, furthermore the focus of competition shifts to the effectiveness of these centers of expertise. The centers of competence do not consist only of exclusive suppliers of raw materials but also of engineering development, construction and sales. The supply chain in this context incorporates a numerous stakeholders with the same common goal - creating the final product and generating profits or added value. Towards achieving this goal, the chain needs to be managed. Further to the stated above, through the years, the process of logistics evolved in the process of supply chain management (SCM), which is defined as an integrated process that includes planning and management of all activities in the process of defining stakeholders, procurement of materials, transformation of materials into the final product as well as related logistics activities within the entire chain[4]. The organization is in the traditional framework was considered an individual entity that operates independently from the others. Guided by the objective of survival on the market, organizations have interacted as rivals. Such approach on the market can be fatal, and even a reason of self-destruction caused by the company's lack of understanding and unwillingness to work together. Based particularly on this point, the idea of integration of the logistics chains into supply chains arose, where the supply chain is defined as a network of organizations that have been integrated, through the so-called downstream and upstream connections, into various processes and activities that produce value in the form of products and / or services, whose beneficiaries are the final customers.[5] Supply chain management involves the coordination and cooperation of all stakeholders, which can be suppliers, intermediaries, service providers, customers or third parties. It can be said that this is somehow an expanded understanding of the logistics, or the mechanism through which all (related) subjects within the supply chain can be managed. In doing so, the entire time of origin of products has to be taken into account, from suppliers of raw materials, manufacturers, wholesalers, retailers and all the way to the end customer. The flow of the material from the supplier to the end customer also includes the related flows of money and information. It is an integrated management of supply and demand among stakeholders with the primary aim of connecting the main business objectives of stakeholders in the supply chain and business processes into a cohesive and highly effective business model, which includes the management of all of the above mentioned logistics activities, production activities as well as marketing, sales, product design, finance and information technologies in the whole chain.

[4] Council of Supply Chain Management Professionals, Glossary. 187.
[5] Christopher Martin. 2011. Logistics and Supply Chain Management, Creating Value-Adding Networks. Pearson Education limited, UK. 17.

3. MANAGING THE SUPPLY CHAIN TROUGH COMPETITIVE ADVANTAGES

The fundamental change in the global competitive environment is that the price trend of raw materials continues to increase, while the pressure on the price level of finished goods, in reality, is harder than ever before. There are many reasons and factors that contributed to the emergence of such new market environment. One of the relevant reasons is certainly the entry of new competitors on the global level, whose ensured their market entry trough placement of cheap products on the market. This statement is shown in the remarkable economic growth in China over the past decade, which is regarded as a major manufacturer of low-budget merchandise on global level. As a second, and not less relevant influential factors, among other factors, the removal of customs tariffs and trade barriers through a number of unions and alliances has to be pointed out, which allows for new entrants on the market and establish themselves relatively quickly in these markets. One of the negative consequences of the above mentioned influencing factors is overcapacity in many industries. Christopher defined overcapacity as the excess of supply in relation to demand, which consequently leads to pressure on the price of the product. [6] The competitive advantage, as a principle which was defined as such by D. Ricardo[7] in the early 19th century, today is one of the prerequisites of business success in the market. The comparative advantage is an criterion for inclusion of a country in international trade, according to which the country should specialize in the production and export of goods that can be produced at a relatively lower cost. Christopher expresses comparative advantage as the product of excellent goods and the excellence of the process which produces the product. Comparative advantages can be realized in various ways. [8] In the context of supply chain and potential comparative advantages at the global level, it is assumed that global corporations will find their competitive advantage in increasing excellence of managing complex relationships within the network of information and material flows, which are a key feature of supply chains. There are numerous comparative advantages that can have a significant impact on supply chain management, such as the costs (of production, labor, housing stock, etc.), flexibility, reducing complexity, delay of assembley, shortening product life cycle, producing more added value, global differentiation, or geographic configuration of added value. Some of these comparative advantages will be exposed below.

3.1. Management of production chain

Management of the production chain is a process in which the time for production and procurement is associated with market demand. At the same time, the management of production chain strives to achieve a competitive advantage in a way to increase the speed of satisfying the market demand. As Christopher[9] points out, the objectives of the production chain are: reduced costs, higher quality level, more flexibility and faster reaction time. The fulfillment of mentioned objectives depends on the supply chain as a whole and the tendency of reducing the length of the chain or accelerating the flow of goods through the whole chain. The time in which value is added is the time in which actions, that improve the product, take place. In other words, a benefit is added which customers are ready to pay for. Production as such, can be characterized as an activity that adds value. Postulate "right product in the right place at the right time," sums up the idea of the activities that from the customer's point of view add value to the product. Any activity that contributes to the fulfillment of this goal could be characterized as an activity that adds value. Activities that do not add value, make up the time that is spent on activities whose elimination would result in a reduction of benefits that the customer gets. Some of the activities that do not add value are necessary because of the flow of production processes themselves, but they are still costs that need to be minimised. The difference between activities that add value and those that do not add value is important for understanding of how it is possible to improve the logistics processes in the supply chain. Mapping processes within the supply chain is the first phase of rationalization opportunities in order to improve productivity through process reengineering. To determine the efficacy of the matter, along with mapping, it is necesarry to determine the duration of the supply chain. It is also necessary to define the duration of those activities that add value. Based on these data it is possible to carry out the calculation of the efficiency of the supply chain with the formula: [10]

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[6] Christopher Martin. 2011. Logistics and Supply Chain Management, Creating Value-Adding Networks. Pearson Education limited, UK. 34

[7] Ricardo, David. 2001. On the principles of Political Economy and Taxation. Batoche Books, Ontario, Canada. 272-276.

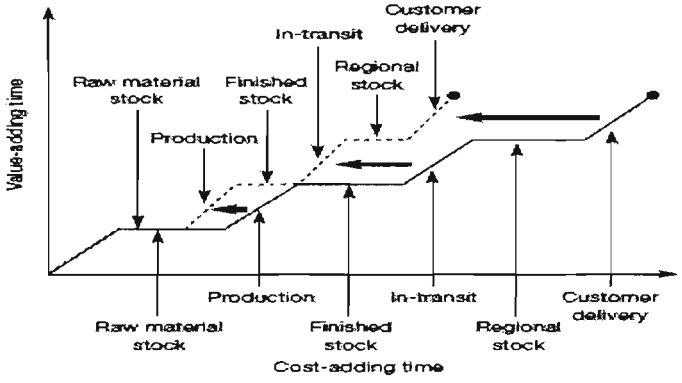
[8] Christopher Martin. 2011. Logistics and Supply Chain Management, Creating Value-Adding Networks. Pearson Education limited, UK. 31

[9] Christopher Martin. 2011. Logistics and Supply Chain Management, Creating Value-Adding Networks. Pearson Education limited, UK. 154

[10] Christopher Martin. 2011. Logistics and Supply Chain Management, Creating Value-Adding Networks. Pearson Education limited, UK. 156

$$Efficiency\ of\ the\ supply\ chain = \frac{Value\ adding\ time}{Duration\ of\ the\ supply\ chain}\ x\ 100$$

It is believed that such chain is as effective as longer the period of time in which value is added, in other words, as the percentage of the value adding timein the entire duration of the chain is greater. The task and the challenge of managing supply chain is finding ways to increase the proportion of value adding time in relation to activities that do not add value. First of all, activities that do not add value, and which can be eliminated without having an negative impact on the final product, should be eliminated. All blockages and obstacles in the processes that lead to the increase in inventories and lengthen the time needed to meet customer demands should also be eliminated. The sources of such blockages can be, for example, too long setup times of machines, too long time of machine repairs, bottlenecks, excessive inventories etc. The next thing to be executed is to optimize the process in a way to reduce the duration of certain activities at the level of the entire supply chain, resulting in a shorter response time, and reduced duration from the beginning to the end of the chain, and therefore shortened the time at which costs are generated. Consequently, in shorter time periods the (same) value is added to the product.



Picture 1.Shortening of lead times

Source: Christopher Martin. Logistics and Supply Chain Management Creating Value-Adding Networks. 2011.159.

3.2. The cost of holding inventory

Costs incurred in the entire logistics process of converting customer orders into cash assets are manifold. However, one of the largest expenditure items is inventory. If all costs incurred by holding the stock would be recorded detailed, the real cost of holding inventory would be about 25% of the booked value of inventories for a year. The reason why this figure is so high is the amount of costs to be included in the calculation.[11] The largest cost element is likely to be the cost of capital. The cost of capital includes the cost of the company in terms of debt and equity a company has at its disposal. The usual method for displaying this relationship is the weighted cost of capital. So, even though the cost of borrowed money might be low, expectations of shareholders in terms of return on equity investments might be high. Other costs to be included in the cost of holding inventory are costs of storage and handling costs, obsolescence, deterioration and small losses in the production process, as well as insurance costs and administrative expenses related to inventory management. So Christopher believes that the actual cost of inventories includes: cost of capital, cost of storage and handling, cost of obsolescence, cost of damage and decay, cost of petty theft / collection, insurance expenses and (inventory) management costs.[12] The definition of the costs of many businesses relies exclusively on the costs incurred in their organization. But considering the fact that today's competition takes place between individual supply chains, all costs from beginning to end chain should be taken into account, given that all these costs are ultimately reflected in the market price of the final product. The optimum quantity of goods to be ordered can be determined with the formula for economic order quantity - EOQ[13]. It is a model that shows the relationship between the cost of procurement of goods and storage of stocks with the ultimate effect of optimizing the cost of financing inventories. The point is that the order should be optimized, so that the total costs consisting of the cost of acquisition and cost of holding

[11] Christopher Martin. 2011. Logistics and Supply Chain Management, Creating Value-Adding Networks. Pearson Education limited, UK. 102

[12] Christopher Martin. 2011. Logistics and Supply Chain Management, Creating Value-Adding Networks. Pearson Education limited, UK. 102

[13] Supply Chain Topics – Economic Order Quantity.

inventories, are minimized, and that the shortage of goods does not appear at any point. In doing so, a warehouse has to be taken into account that has regular requirements for the delivery of a single product. Additional assumptions of the model are: the demand (D) is known, constant and independent; delivery time is known and constant; reception stock is immediate and overall; quantity discounts are not possible; the only two types of costs in the model of the purchase are the cost of purchase and the cost of holding inventory, and the lack of stock can be avoided if the order is performed at the right time. Economic order quantity can be calculated based on the following formula:[14]

$$EOQ = \sqrt{\frac{2ca}{h}}$$

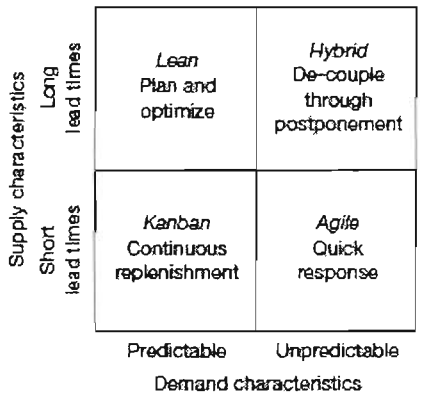
whereby:
c - the cost of ordering
and - the annual consumption in product units
h - storage costs per product unit

Regardless of whether it is a stock in the form of raw materials, components, goods in circulation or finished products, all the more pressure on it to reduce capital tied up in inventory and consequently reduce the costs of holding inventory. Companies that have reduced the amount of its stock in this manner realized the advantages arising in terms of increased flexibility and ability to respond to the demands of their customers.

3.3. Achieving advantage trough flexibility

One of the biggest challenges of modern environment organisations are facing with is the need to respond to the increasing level of instability and unpredictability of demand. Conditioned by numerous reasons, the product life cycle is shortened, competitive pressures cause more frequent changes of the product while at the same time consumers are seeking greater variety than ever before. To meet these challenges, organizations have to focus their efforts on achieving greater levels of agility, such as for example the ability to react faster to changes in terms of volume and in terms of changes of variations. Additionaly, organisations have to be able to quickly adjust the output in order to meet market demand, but must also be able, in very short time limits, to exceed the production of one variant with the production of other variants. Flexibility is not a synonym for lean manufacturing, but it is possible to build up flexibility on the foundations of lean production. Lean essentially means creating multiple units of a product with less effort trough minimizing stock and stock in circulation and in this way to draw closer to the maximum JIT environment. Although the lean organisation may be an element of flexibility in certain circumstances, on itself it will not allow precisely fulfillment of customer requirements as soon as possible. One way how to define the type of management strategy, that is most suitable to choose in certain circumstancesfor a supply chain, is positioning the product in the portfolio of the organization in accordance with its characteristics of demand and supply. Accordingly, Christopher defines four key generic strategies for supply chain management.[15]

[14] Delić, Mia. 2012. Ekonomiča količina nabave. Ekonomski fakultet u Zagrebu. 6.
[15] Christopher Martin. 2011. Logistics and Supply Chain Management, Creating Value-Adding Networks. Pearson Education limited, UK. 119



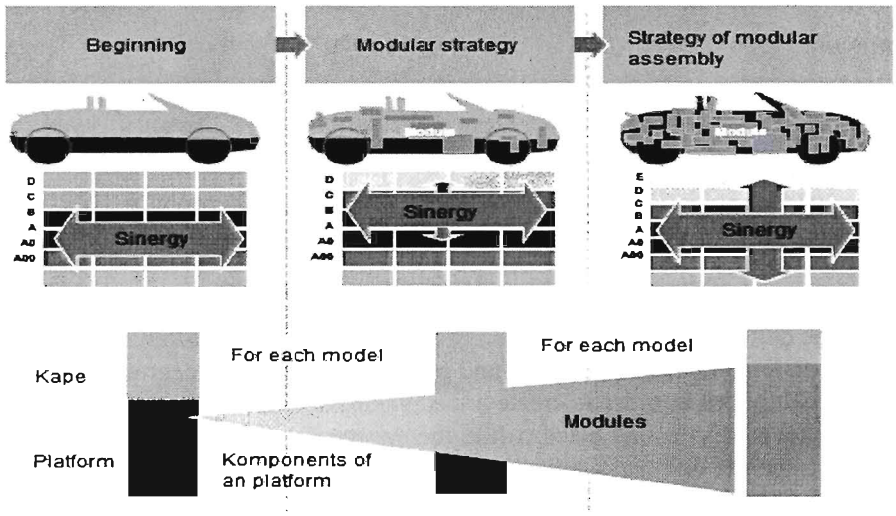
Picture 2. Generic strategies of supply chain management
Source: Christopher Martin. Logistics and Supply Chain Management Creating Value-Adding Networks. 2011.119.

The aim of the hybrid strategy should be the establishment of flexible reactions on a foundation of lean production, and thereby acting on the principles of lean concepts to the separating point, and after the separating point the principle of flexible methodologies should apply. In cases like this, the first priority should be to shorten the delivery time, due to the fact that the unpredictability of the demand is a factor which is outside the direct control of the organization. Reducing delivery times would allow the implementation of flexible solutions. However, if there is no possibility of reducing the time of delivery, it remains to find the ways to get the hybrid solution that is on the one hand flexible and on the other hand, the concept of lean production. Hybrid solutions demand separation in a supply chain in a manner to hold strategic stocks in a generic, unfinished form, whereby the final configuration occures immediately after incoming information about the actual demand. This is the classic strategy of delay. Delay refers to the process in which the final product classification in specific group variability is postponed as long as possible. The longer the process remains generic; it is possible to provide more flexibility in terms of getting the right product to be available at the right time in the right place. Delay does not necessarily have to be feasible in terms of postponed configuration of the product. The period of delay can be realized by maintaining the stock at only a few locations with the possibility of rapid transportation of the product to the desired location as soon information about the actual demand for this product is avaliable. An alternative form of delay in cases where it is not possible to realize the postponement of the final configuration of the product is to delay the distribution of the final product keeping it on a smaller number of locations (or even only at one location), and activating high-speed transport to place the final product on the market in that precise time, when the actual demand is known. First of all, flexible supply chain is sensitive to market developments. This means that the supply chain is capable realizing the true demand and how to respond to it. Most organizations is guided by guesswork, although favorable approach would be to have demand driven approach. In other words, such companies have little direct inputs from the market in the form of actual customer requirements and are forced to generate predictions based on the results of the sales or delivery and then turn the forecasts into stocks.

3.4. Reducing complexity

The complexity is a common issue in supply chains. The complexity can mean that many varieties of primary products are generated, for example, through a different packaging size or in cases when every variation of products consists of different material types. Simplicity is a logical opposite, but it is not always fully feasible. However, there will always be opportunities how to reduce complexities trough reviewing the reasons and causes of why things are the way they are. For example, by asking whether the variety of products is what the customer really wants. It is often the case that an increase of variants is caused or initiated in sales and marketing departments, and that such products are not sold, because there is no real demand for this products and they ultimately generate greater inventory in stock, and therefore also higher costs. The greater the fragmentation of demand, it is very difficult to manage the availability of such variability in demand. It is necesarry to point out the fact that complexity ultimately generates costs and represents a kind of barrier for the concept of flexibility. Simplification can be sometimes achieved finding through a large number of characteristics that are common to a particular product or component. For

example, in the production of vehicles similar models of vehicles are assembled on the uniformed platforms and in essence they require equivalent parts and sub-assemblies, while the differentiation is done only through the individual segments (eg. power / varieties of equipment / interior design / exterior color). One example is a modular vehicle production carried out by the VW Group. According to various sources, in an vehicle on average consists from about 15,000 different parts. Given the complexity of its production, no matter at what stage it is, or at whatever level the implementation takes place (the level of OEM's, first tier suppliers, second tier suppliers, etc.), VW Concern began to systematically introduce the modular production and more recently the model of the modular assembly of vehicles.

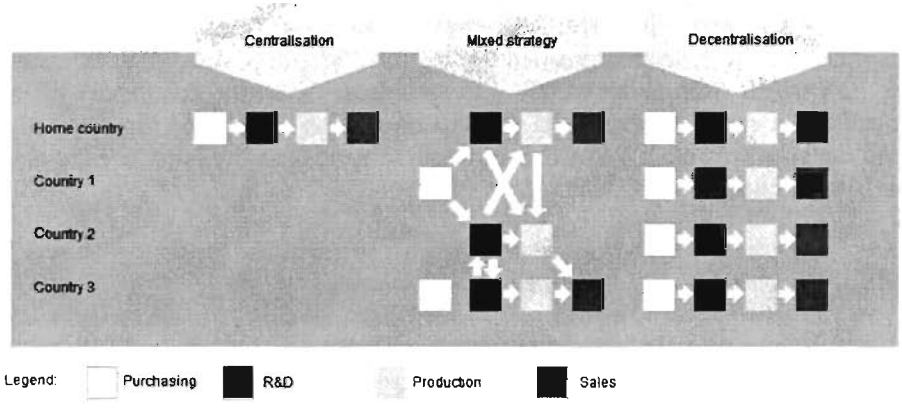


Picture 3. Strategy of modular vehicle assembly
Source: Winterkorn Martin. Strategie 2018 – Qualitative und quantitative Werttreiber für einen globalen Automobilkonzern. 2012.

3.5. The geographical configuration of added value

The competitiveness of international organizations is not conditioned only by low production costs, lean processes or innovation of organizations. The ability to create international value chain in terms of rapid and intense market changes means delegating the right function to right locations, and only such business policy creates the preconditions for the realization of added value in the global market. The key challenge that international organizations are confronted with, is a need of quick adaptation to conditions in local markets, while in addition these same organizations must be able to successfully integrate identical concepts of operations in all locations, regardless on which market the company operates.[16] Schmidt and Grosche stand out four key influential factors for the formation of the international value chain[17]: the current status of global economy, knowing of competition, the ability to meet the requirements of industry and development of new markets appropriate to perform specific activities. Differences in the structure of the constellation of added value of individual market participants can be determined on the basis of actual sales in the home market in relation to sales in other markets, which in turn points out the different approaches to internationalization. This raises the key question of how the geographical distribution of global supply chain activities should look like in order to achieve competitive advantage, and therefore a more favorable market position. At the same time the process of forming supply chains that cross the boundaries of individual countries generates a need for mutual harmonization of activities in different countries / regions, and as such they should be integrated into an existing business system.

[16] Schmidt, Stefan; Grosche Philipp. 2008. Management internationaler Wertschöpfung in der Automobilindustrie. Bertelsmann Stiftung. 6-7.
[17] Schmidt, Stefan; Grosche Philipp. 2008. Management internationaler Wertschöpfung in der Automobilindustrie. Bertelsmann Stiftung. 12



Picture 4. Strategical configuration of activities in global field
Source: Kutschker, Michael; Schmidt Stefan. Internationales Management 6. 2008.19.

Distribution of activities in order to create added value of organization in different geographical areas Schmidt Grosche defined as the configuration of added value.[18] It characterizes on the one hand the degree of geographic dispersion and decentralization and on the other hand the degree of geographic concentration or centralization of activities in order to create added value. Centralization occures when comparable activities are conducted exclusively in one place, while the decentralization occures when comparable activities are geographically dispersed and are simultaneously conducted by various business units. Only through proper coordination of centralized or decentralized activities functional networks of creating added value is developed. For this reason, companies activate various instruments of coordination that help to integrate different or dispersed activities creating added value in the company as a whole. Porter pointed out that everyorganization itself must decide itself separately about the configuration and coordination of each function creating added value[19].

4. CONCLUSION

All the above mentioned facts lead to the conclusion that primarily a good organization of each unit, and then the system as a whole, is the key to creating the foundations for achieving competitive advantages. It is necessary to identify the competitive advantages and employ them in organizations, and consequently in the supply chain, in order to achieve higher levels of added value and ultimately generates higher levels of benefits for all participants in the chain.

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