# ANALYSIS OF CORRELATIONS BETWEEN COPRPORATE STRATEGY AND OPERATIONAL STRATEGY CONSIDERING MANAGEMENT SYSTEM STANDARDS

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**Abstract**
*Organizations today have to position themselves correctly in the market in order to survive in the competitive landscape. Corporate strategy often forms the way the operational business is executed. Corporate strategy therefore plays an important role for the internal structure of an organization. But is also the opposite true? The goal of this study is to identify relationships between the internal organization of a company and overall goals and strategic settings of the enterprise. This research empirically compares the use of standardized management systems, developed levels of knowledge management and strategic goals of car manufactures. The main question is how the use of certain methodologies and best practise approaches (TQM, ISO-based management systems, etc.) influences the strategies of an organization.*
*The result of this study shows that there is a correlation between the internal organization and the strategies of corporations. Internal methodologies and processes are defined according to strategic decisions of an organization. Internal processes and methodologies on the other side have an effect on the strategy as well. This study also suggests a holistic framework to assess this effect on strategy.*

**Key words:** *Agility; Business Strategy; Correlation; Porter's Five Forces; Management System*

**JEL Classification:** *L10*

## I. INTRODUCTION

Prospective authors are invited to submit papers that fit within the scope of the journal. Papers should be written in English and submitted in final camera-ready form (for Romanian authors we ask to submit also the Romanian translation of the paper). Corporate strategy sets the basis for the operations of the business units of a corporation (Porter, 1995). Corporate strategy therefore influences many decisions on the operational level and affects aspects as corporate culture. The question is whether the opposite is true as well. Does the internal organization also affect the corporate strategy? To assess this question the first step is to develop an understanding of the effects of internal organization on the strategic level. For this research the focus is set on standard management systems, which influence many different aspects of larger organizations on an operative level. Standardized management systems usually influence processes by suggesting standardized processes, methodologies, and tools for risk management, incident management, information security etc. Once established these systems might influence the operational business as they change the way the business is operated. This organisational change can be measured, and it might have an impact on the next decisions of top-level management and corporate strategy (also, most management system standards are top-down approaches even starting on the management level). Every change in the operational processes raises or lowers the effectiveness and/or efficiency of the way the organizational assets are being used to create output – knowledge and organizational learning is a vital component in this matter. The research measures the effect of the changing of internal organizational processes on a strategic level using the Value Added Intellectual Coefficient (VAIC) method on the one side and the generic business strategies on the other.

The first part will provide an overview of the topic presenting existing scientific research in the field of strategy, organizational culture, intellectual capital and knowledge as well as management system standards. The basis for the hypotheses is set in this part of this research. The second part will analyse the hypotheses using

quantitative and qualitative analyses based on data of car manufactures.

## II. THEORETICAL ASPECTS CONCERNING CORPORATE STRATEGY AND OPERATIONAL STRATEGY

Over the last thirty years several aspects of strategies were in the focus of research. In order to gain competitive advantage companies have to use their resources effectively and efficiently which is the resource-based view of a company (Makadok, R., 2001; Hoopes et al., 2003). Capabilities of companies play an important role (Zacharatos A. et al., 2007) and set the basis for a specific resource, which is very individual to each company. Core competencies are important to gain a competitive advantage (Hafeez et al. 2002). Agha et al. (2012) provides empirical evidence that there is a positive relationship between core competencies, competitive advantage, and organizational performance. Knowledge becomes an important topic (Teece et al., 1997), an intangible resource (in contract to tangible resources which were the focus of the last decades), which has a big impact on the performance of an organization. Teece et al. also suggest dynamic capabilities as the "ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments." In fact scientists emphasize that knowledge becomes one of the most important factors in today's industries. "The concept of dynamic capabilities, especially in terms of organizational knowledge processes, has become the predominant paradigm for the explanation of competitive advantages…" (Cordes-Berszinn, P., 2013). In order to gain a competitive advantage in today's world organizations need to focus organizational knowledge which is part of the companies culture, its processes and values. Scientists found evidence that strategic implementation impact the culture of a company (Janićijević, 2012; Ahmadi et al., 2012; Klein, 2011). There is a causal relationship between the strategy of an organization and the organizational culture which presents processes, the way people learn and implement methods etc. Knowledge management can be seen as part of it. But several aspects of organizational culture have an influence on the strategy in formulation as well as implementation (Ahmadi et al., 2012). Organizational culture is deeply connected with knowledge within an organization, it even empowers knowledge management activities (Allameh et al., 2010; Chmielewska-Muciek et al., 2013). Knowledge processes indirectly impact the outcome of the organizational processes (see figure 1).

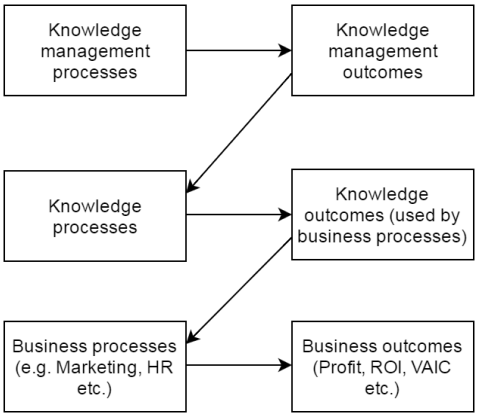


**Figure 1 - Knowledge management influences the outcome of an organization [Data source: McEllroy, 2003]**

### 2.1. Operational strategies supported by Management System Standards

In the previous chapter the authors presented a connection between the strategic levels of a company, the organizational culture and knowledge processes. Knowledge processes influence business processes. They directly have an impact on the operational strategies. Managament System Standards (MMS) are a part of the operational strategy. They have been adopted by companies all over the world. One important system is Total Quality Management (TQM) which is based on a quality approach which focusses on constant improvement and customer satisfaction. Other systems are based on ISO (International organization for standardization) standards (such as ISO 9001, ISO 14001, ISO 27001 etc.). ISO constantly updates the versions of these standards in certain intervals trying to meet the needs of companies in various areas. The number of certificates grew from year to year. The wide adoption of such standards shows the importance of standardized methodologies in various industries which raises the question of integration of different systems. Integration helps to reach a competitive advantage in a more efficient manner (Rebelo, 2011). In a study Kopia (2015) showed that companies rate the leadership commitment as one of the most important success factors when introducing a management system

standard. The author also showed that many companies have several management system standards in place and try to integrate them in order to benefit most of them. Figure 2 shows that the integrative aspect of continual improvement – the basis for almost all ISO based management systems – is beneficial to the knowledge flow within an organization.

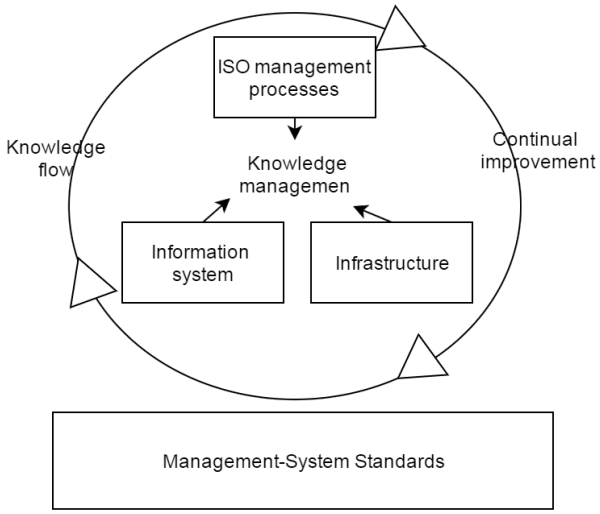


**Figure 2 - Improved knowledge flow through ISO 9000 [Data source: own elaboration based on Lin et al., 2005]**

### 2.2. Measurement of Knowledge and Intellectual Capital

Since IC is related to different intangibles the measurement is a complex topic. In science different method to measure knowledge management have been suggested, starting from benchmarking (Tiwana 2000), balanced scorecard, the house of quality etc. Other frameworks with similar approaches were suggested, such as the European Framework of Quality Management (EFQM), the Value Added method (EVA), Balanced Scorecards, IC-management, and the Value Added Intellectual Coefficient (VAIC) based on Pulics (2000), Calculated Intangible Value (CIV) by Stewards (1997), Intangible Driven Earning (IDE) by Levs (2001) etc. No clear consensus has been reached about a measurement methodology, neither in scientific research nor in practise. Recently scientific researchers measure intangibles by using the VAIC-calculation. This paper focuses on the VAIC (Value Added Intellectual Capital Coefficient) method developed by Pulic (2000, 2003 and 2005). VAIC measures the effectiveness of key resources in the enterprise by calculating the Value-added and the three types of intellectual capital: human capital, structural capital, and capital employed. In this study the VAIC is calculated as follows (see figure 4):

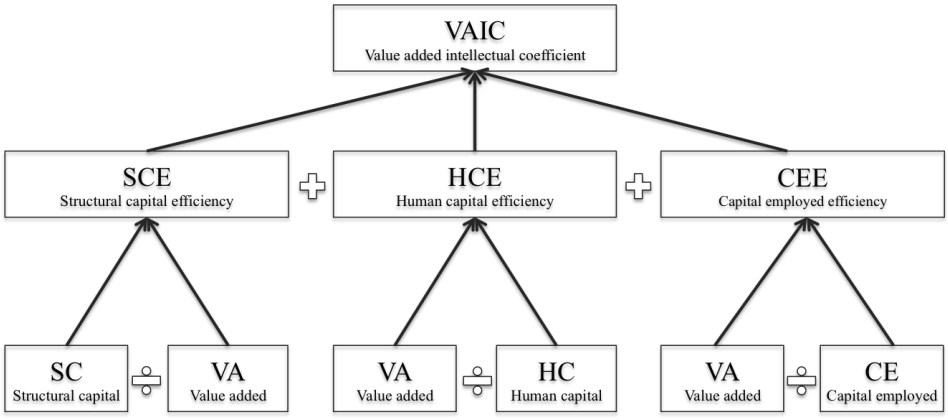


**Figure 3 - VAIC calculation [Data source: Own elaboration based on Stahle, 2011]**

## III. RESEARCH MODEL, HYPOTHESIS AND METHODOLOGY

Based on the literature review and the research results a model and framework has been generated which will be used in order to test various hypotheses via a quantitative analysis.

### 3.1. Suggested research model and hypotheses

In chapter 2 the authors described the fact that strategy and the strategic implementation is very dependent on the corporate culture, the values and actions within an organization. The capabilities to gain and use knowledge play an explicit role today, organizational learning becomes essential. The authors conclude that the market value of a company is highly influenced by the internal structure consisting of people and different intangible assets such as processes, knowledge, skills, customer relationships, patents, information in databases etc. Operational strategies define the way usual assets such as machines etc. and intangible assets work together to generate the result. Standardized management systems help to improve these processes by using best-practise approaches. They require continual improvement, knowledge exchange, and organizational learning. Knowledge flow is the result of continual improvement and vice-versa. The VAIC-method will be used to measure one form of the results in this research since it captures human capital, structural capital and relational capital. Figure 5 shows the interdependencies.

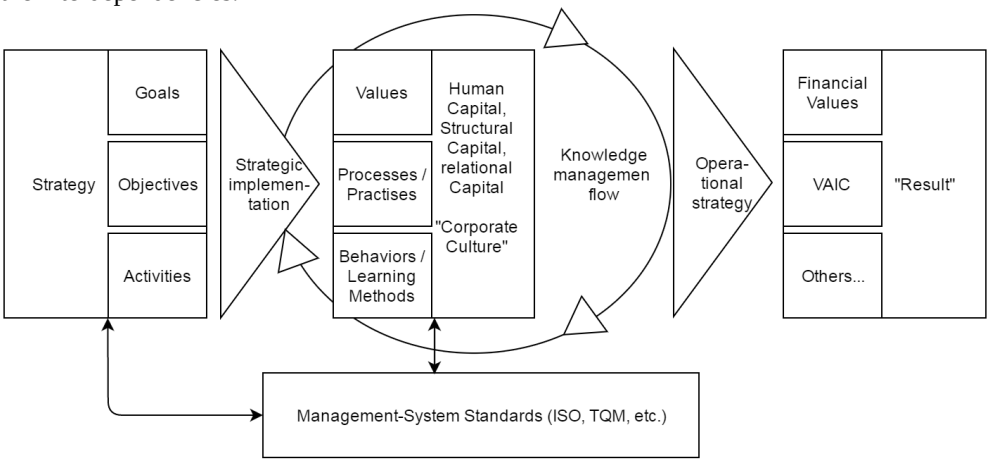


**Figure 4 - The knowledge assessment framework: A knowledge centred perspective of the strategic process [Data source: Own elaboration]**

A fraction of that model can be seen in Toyotas Sustainability Report from 2012. Toyota for example combines long-term strategies and business activities. The overall strategy in the context of a sustainable development with the focus on the topic corporate social responsibility is used as a visionary goal and put into management plans and operational procedures which at the end have impact on the outcome of the business activities.

The authors investigate the following hypotheses considering the research model:
H1: There is a strong correlation between the general business strategy and the internal MMS
H2: There is a high degree of overlapping content between MMS and Business Strategies
H3: MMS (and especially changes of MMS) do have an influence on the KPI “VAIC”

### 3.2. Method and database

The first and second hypothesis will be evaluated based on a qualitative comparison of Management System contents as well as Business Strategy targets within the research database and for the respective time span.

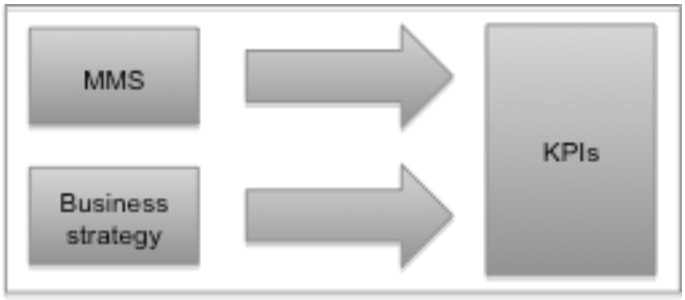


**Figure 5 - Correlation between MMS and Business Strategy and Impact of Management Systems and Business strategies on KPIs [Data source: own elaboration]**

The third hypothesis (see figure 6), which states a correlation between MMS and Key Performance indicators as well as influence of Business strategies, will be analyzed via a quantitative correlation approach. The respective knowledge management KPI (VAIC) is captured for a timespan of up to 20 years and its connection to business strategy and management system introductions will be evaluated regarding the correlation coefficient.

The research database consists of a qualitative literature research regarding management systems and business strategies as well as annual financial reports of 8 major Automotive Original equipment manufacturers located in USA, Europe and Asia. They have been chosen due to a global representation of results and based on a minimum size of 1 Million cars sold per year.

## IV. FINDINGS

### 4.1. Analysis of Hypothesis 1: There is a strong correlation between the general business strategy and the internal MMS

In order to analyse the interdependence of management systems and business strategies (the left and lower part of the suggested model in chapter 3.1) their qualitative content and their implementation dates have been captured within table 1. This first step should provide time-based indications for the impact of MMS objectives on business strategies. As the high level content of each high business strategy can only be captured based on official press releases and annual reports these are general indications. These information are available for all stakeholders in order to provide "the general thrust of [their] strategy" but could differ from internal "confidential" targets (Harald Krueger (CEO BMW) 2016). Both ways of interdependence need to be analysed. For example, if a strategy is focused on quality excellence or fulfilment of customer demand then internally everything is leading to an introduction of a total quality management system, which would be a top-down approach. But on the other hand the introduction of a Management System can also lead to a high-level target and mission adaption of a business strategy. Additionally the table provides insights of the respective business strategies of eight automotive manufacturers, which will be used in the next analysis (hypothesis 2) to compare the content and identify overlapping topics of business strategies and management systems.

The result of the first analysis is that most of the observed business strategies had been succeeding at least the ISO 9001 certification which has been first implemented in the late 1990s (original version of ISO 9000 has been initially established in 1987 (TÜV NORD 2015)). Further certifications such as ISO 14001 (implemented mostly between 2000 - 2005) and ISO 50001 (implemented after 2010) have been established within the planning and realization phase of the observed business strategies. Moreover table 1 shows that most of the business strategies are focusing on four to five main topics: Attractiveness as employer, focus on customer demand, emphasis to quality, strong growth perspectives and profitability.

Based on the corporate strategy implementation date and the region of the manufacturer there can be two groups identified. Europe-based strategies within the research sample have been established in 2006 and 2007. Asian manufacturers in the dataset released their business strategies in 2010 and 2011. As MMS have spread in advance (1990s and beginning of 21st century) there are indications that MMS do have a relation to business strategies. The aspect of time can be seen on the example of environmental awareness. E.g. in 2007 none of the four strategic pillars of Daimler's business strategy contained environmental aspects explicitly. Since 2011 the refurbished strategy included new aspects, one of them was "Leading in green technology and safety" (Wedeniwski 2015). The respective ISO 14001, which is targeting ecology has been implemented in 2004 which shows an interconnection between MMS and business strategy. A second example is Volkswagen. This automotive OEM adapted its strategy in 2008 and emphasized the aspect of ecology with its strategy Mach 18+. Also this is leading to the assumption that Management Systems and Business strategies affect each other, in these cases the Management System was installed prior to the Business strategy adaption. Business strategies that have been released in 2010 or 2011 (which means after the implementation wave of ISO 14001) do mostly contain aspects such as zero emission leadership (Nissan) or environmental awareness (Honda).

In conclusion, there seems to be a time based, a regional and a sector based interdependence of business strategies and management Systems. This will be further analysed via hypothesis 2.

**Table 1. Sequence of Management System and Business strategy implementation and content of strategy [Data source: Own representation based on annual reports]**

| Brand | Release Year of MMS | Strategy anounce | Content of business strategy | |
|---|---|---|---|---|
| VW *"Mach18"* | ISO 9001: 2005 | 2007 | • Leading employer<br>• Leader in customer satisfaction and quality<br>• Growth (sales > 10 Mio.) | • Profitability (21 % Return on capital employed)<br>• *Since 2008 (Mach 18+): Ecological leader* |
| BMW *"One"* | ISO 9001: 2005 (BMW M)<br>ISO 14001: 1998 (BMW US) | 2007 | • Shaping the future: Sustainability & efficient dynamics<br>• Access to technologies and customers | • Growth<br>• Profitability |
| Daimler *"2020"* | ISO 9001: 1998<br>ISO 14001: 2004<br>ISO 50001: 2013 | 2007 | • Flexible footprint and productivity improvement<br>• Technology leadership<br>• Sales leadership | • Capital & cost discipline; Sustainable profitability<br>• *Since 2011: Leading in green technology and safety* |
| Audi *"Route 15"* | ISO 9001: 1996<br>ISO 14001: 2001 | 2006 | • Globally attractive employer<br>• Customer enthusiasm an global Image leader in emotion and quality | • Continuous growth<br>• Leading financial force |
| Honda | ISO 9001: 2005 - 2015<br>ISO 14001: 2001 - 2010 | 2010 | • Major social responsibility initiatives<br>• Philanthropy and Safety | • Environment<br>• Focus on investor relations |
| Skoda | Not available | 2011 | • Top employer with global talent pool<br>• Strategic spearhead focused on price/value, practicability and space | • Sales growth<br>• Profitability and financial strength |
| Nissan *"Power 88"* | ISO 14001: 2011<br>ISO 50001: 2012 (US) | 2011 | • Brand power<br>• Enhancing quality | • Zero emission leadership & Business Expansion<br>• Cost leadership and Sales Power |
| Toyota *"Global vision"* | ISO 9001: 1998<br>ISO 14001: 1998 (Kentucky plant) | 2011 | • Contribute to communities / Contribute to mobility future<br>• Exceed customer expectations | • Sustainable growth<br>• Stable base of business |

### 4.2. Analysis of Hypothesis 2: There is a high degree of overlapping content between MMS and Business Strategies

Within the last 20 years the automotive industry has pushed the overall implementation rate of various ISO certifications (Franceschini F., Galetto M. & Mastrogiacomo 2006). Especially ISO 9001 and ISO 14001 (as well as ISO/TS 16949) are common standards which are widely established in the automotive branch (Hys 2015). This research is additionally focusing on ISO 50001, as recent realizations have been observed in the research database. Further ISO norms have not been investigated in this sample as there is no evidence that they are jointly applied in the automotive industry. But single automotive enterprises do apply further ISO codes. E.g. Toyota Inc. is emphasizing the application of ISO 26000 and its corporate social responsibility guidelines ((Toyota 2015); (Learn2improve 2016)).

Each of these ISO certifications have a distinct focus regarding quality assurance, environmental awareness or energy efficiency. But there is also a big amount of overlapping content across these ISO certifications such as the focus on internal audit, processing sequences, leadership or performance evaluation. The evaluation within this chapter is concentrating on the comparison of these MMS criteria and business strategy targets. Table 2 illustrates the overlapping content between MMS and BS (rated as "Yes") and the criteria of MMS, which are not explicitly mentioned in high-level business strategies (classified as "No"). This analysis should provide indications if the connection of MMS and business strategies displayed in the model, which has been introduced in chapter 3.1 are valid.

Interconnected brands such as Volkswagen, Skoda and Audi do not differ significantly in their strategic high level strategies as they are integrated in the group strategy. Therefore the evaluation regarding MMS criteria is almost identical. The difference between business strategies within this branch was mainly due to different implementation dates. Since 2010 and 2011 almost all objectives are similar (although slightly differently presented or focused) and therefore the results regarding the coverage of MMS criteria could be unified.

As stated within the results of the analysis regarding the first hypothesis, most of the automotive business strategies have been focusing on five main objectives (which have been supplemented in 2010 and 2011 by ecological factors and in recent years by mobility solutions). The first business strategy objective of quality

assurance has been the focus of ISO 9001 in the end of the 1990s. All business strategies within the observation sample do refer to quality standards and the target to preserve and increase quality standards. The urge to increase sustainability and environmental awareness has been established with ISO 14001. These criteria are matching with especially "younger" business strategy targets such as zero emission leadership and environmental importance (such as Honda and Nissan). Recent automotive high level business strategies are emphasizing this topic even more (e.g. the Volkswagen strategy Together - Strategy 2025). The focus on energy efficiency, which has been introduced with ISO 50001 is especially up-to-date within the automotive industry with respect to electrification and increasing exhaust fumes regulations. Energy Efficiency within the product but also within the plants and production process is widely spread within the automotive industry. E.g. the "Think blue" programme of Volkswagen is analysing all input and output information of a plant and is focusing on the reduction of energy consumption while allowing the same output.

But certain aspects of Management Systems are rather operational and therefore are not reflected in business strategies. Especially the topic of training and communication is not mentioned explicitly in the strategic plans of automotive OEMs. Additional to the MMS criteria there are specific non-operative factors, which are mentioned in business strategies but not included in the observed ISO certifications such as the target to increase awareness for the brand and a company's image. These factors exceed the standard definition of the Management System within this research sample.

**Table 2. Comparison of Management systems and Business strategies based on table 1 (2007 – 2015) [Data source: Own representation based on *DQS UL Management Systems solutions, Kefer & Pichler (2013)*]**

| Manage-ment System | MMS Criteria | MMS Criteria as part of business strategy? |
|---|---|---|
| **ISO 9001** | Customer orientation & Quality Steering Plans | Yes: "Leader in customer satisfaction and quality" |
| | Traceability | Yes: "Profitability"; "Capital & cost discipline" |
| **ISO 14001** | Environmental declaration EMAS | Yes (since 2011): "Environment"; "Ecological leader" |
| | Emergency preparedness | Yes: "Sustainability"; "Sustainable growth" |
| **ISO 50001** | Energy efficiency | Yes (since 2011): ""Efficient dynamics" |
| | Energy Saving | Yes (since 2011): "Zero emission leadership" |
| **Overlapping criteria of ISO 9001, 14001 and 50001** | Targets | Yes: Qualitative & quantitative business strategy targets |
| | Organizational Context, Resources and Politics | Yes: "Leading employer"; "Contribute to communities" |
| | Training / Communication | No |
| | Performance Evaluation / Surveillance and Measuring | Yes: Periodical tracking of quantitative targets |
| | Internal Audit | No |
| | Leadership and Management Review | Yes: "Leading financial force", "Leadership" |
| | Processing | Yes: "Exceed customer expectations" |

*Source: Own representation based on DQS UL Management Systems solutions, Kefer & Pichler (2013)*

**4.3 Analysis of Hypothesis 3: MMS (and especially changes of MMS) do have an influence on the KPI "VAIC"**

As there are indications that business strategies and management systems are interconnected the introduced model in chapter 3.1 needs to be analyzed regarding their impact on Knowledge Management and respective KPIs such as VAIC. The research of Kompalla et Al. (2016) already points to a correlation of business strategies and knowledge management. This section of the paper focuses on management systems and examines the connection to the Value Added intellectual capital.

Within the Automotive industry the authors observed 4 general phases of management system implementations within the last 20 years. In order to consider the complete timespan of all four MMS implementations starting from 1997, one specific automotive manufacturer has been chosen. The selection has been obtained due to data availability (VAIC values could be derived for the whole timespan from 1997 to 2014 and the MMS introduction timespans could be identified), the size of the company (more than 1 million cars sold

per year and therefore a big sized manufacturer) and the spread of the company (global sales activities). In general the introductions of management systems indicate at least a loose correlation to the VAIC values depending on the respective phases. As the Management Systems have not been implemented within the whole company instantly there is a time span for MMS implementations of approx. 4 to 5 years (see figure 7). Within the four phases of MMS (from 1995 up to 2015) there is a slow increase of VAIC values with respect to the total time span excluding the introduction of ISO 14001, which shows a slight but relatively constant decrease (with a correlation coefficient of - 0,9). Especially within the time span of the introduction of ISO 9001 and 50001 the VAIC value showed a very constant increase with a correlation coefficients of 0,65 and 0,47. During the recertification phase the correlation coefficient is very low (0,13) but especially external effects lead to a big drop of the VAIC value. These observations provide indications that there are much stronger correlations to further external factor with respect to the VAIC value. E.g. in 2009 during the financial crisis the VAIC value dropped from 2,3 to 1,7 (which is roughly 25 %).

In conclusion the hypothesis 3 cannot be fully confirmed. But analogue to the scientific information in chapter 2.2 the analysis indicates that Management systems do have an influence on the Value added intellectual capital to a certain extent. But respective Management systems do show a different degree of correlation. Additionally Kompalla et al. provided evidence that VAIC values and further KPIs such as operating margin as well as sales increases do correlate to a certain degree. Consequently this means that management systems (and business strategies) do play an important role within enterprises as they have a significant influence on the knowledge management flow and major KPIs. Nevertheless the analysis also demonstrates that there are further external and economic factors that show a higher correlation to the VAIC value than the management system itself.

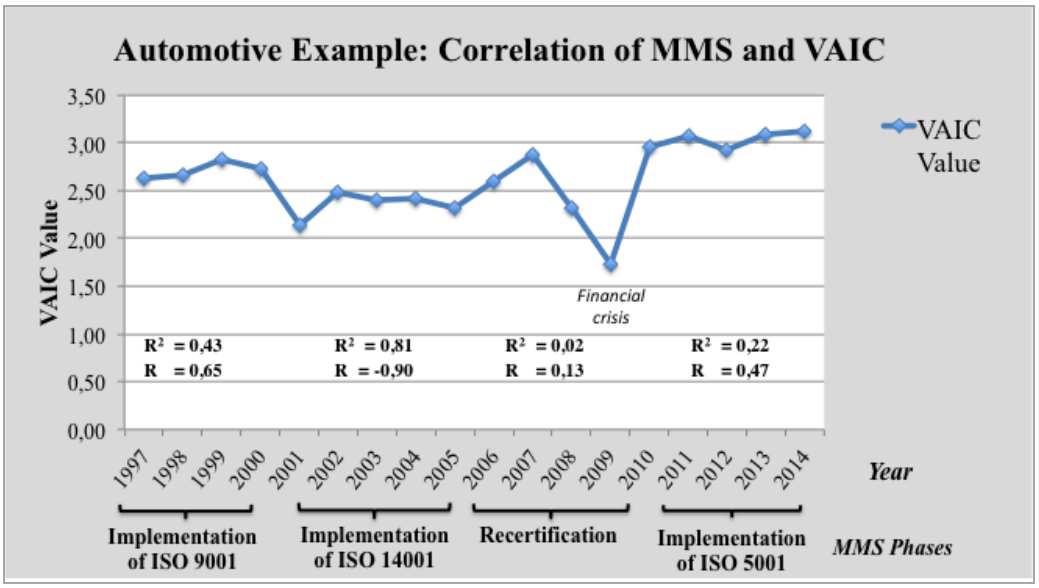


**Figure 6 - Correlation of Management Systems and VAIC [Data source: own elaboration based on annual reports]**

## V. CONCLUSION

Based on the research results there are indications that the proposed model in chapter 3.1 does match with the situation of automotive OEMs. Defined strategies are the basis for strategic implementations, which result in operational activities. The research based on hypothesis one regarding the implementation dates of Management systems and business strategies provides hints that they are interconnected. The second hypothesis indicates evidence that Management Systems and Business strategies do have a high degree of overlapping content, which further shows hints of the interconnection. The results regarding hypothesis 3 empirically indicate an effect of internal reorganizations and the introduction of management systems (starting an agile approach, introducing management systems, TQM etc.) on the outcome of the VAIC value, even though this indication is only small.

But, as the research results are based on officially announced information regarding qualitative and quantitative targets, internal data could differ from these information and could lead to a different outcome. There is also the limitation that the introduction of MMS has no clear date in most manufacturing companies since these companies have many different production sites in different countries. Mostly MMS were introduced step by step over the years depending on the size, culture and state of law in the regions. This makes it difficult

to find any real connection between strategies and the introduction of MMS. Further research could focus on internal information from the past in order to verify if publicly available data is matching with internal plans and if more detailed information lead to the same research results as stated in this paper. Moreover, additional research papers need to verify the hypothesis within more branches and industries. Additionally there are indications, which point to a dependency of certain KPIs on various variables (external factors such as financial crisis in 2009 affecting the VAIC value more than Business strategies or Management Systems could compensate). Therefore a multivariate analysis needs to be performed. Future research should therefore assess that topic from a different perspective by analysing the connection between business strategies and operational specialities including MMS in more depths.

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