THESISES OF THE DOCTORAL (PhD) DISSERTATION

THE CRITICAL POINTS AND SUCCESS FACTORS FOR SALES AND MARKETING INTEGRATION

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1. BACKGROUND, OBJECTIVES AND PRESENTATION OF THE RESEARCH HYPOTHESES

1.1. Introduction

Through my work and professional experience, I have been able to gain insight into the marketing and sales departments of many international companies. I worked for most of these companies as a marketing manager and was responsible for many European countries. It would not have been possible to provide and coordinate these customers seamlessly without working together with the sales department. Thus, it became very important for me to investigate ways in which the efficiency of these classes can be optimized and stabilized on a long-term and permanent basis. Thus, in my current work, I aimed to identify the elements that affect the operation of this connection, their impact on integration, and the deeper exploration of interface problems. Based on my research results, I can prioritize identified solution points that are of high international value and provide opportunities for other companies to increase their performance and improve their marketing and sales collaboration.

We spend most of our lives working, which is why it is important to address the potentials of conflict in employment relationships and the means by which they can all be addressed. Marketing and sales departments play a central role within companies and can be considered almost the only revenue-generating business. Due to the importance of this, it is in the interest of all companies that these functional areas work together in optimally coordinated strategies and in a coordinated manner. Future-oriented strategic coordination of these departments is essential for successful business management. Maintaining the competitiveness of firms also requires a strong operational implementation through the creation of concrete functional and instrumental measures. There can be a number of interface problems between marketing and sales, the failure of which to be addressed by management can make the work of both areas counterproductive, which can consequently negatively affect the success of the company (Haase, 2006). The performance of marketing and sales departments is highly dependent on the other class — reciprocal interdependence (Dewsnap & Jobber, 2000) — which may involve a number of conflict potentials. This can be the existence of unclearly defined roles and responsibilities, or even the lack of information exchange, common corporate goal, culture (Piercy, 2002).

According to Lamasheva (2004), two important elements for optimal integration are the definition of the common goals of the parties and the results to be achieved. According to Klumpp (2000), due to interdependence, the separation of tasks is essential for coordinated collaboration. Therefore, there is a need for organizational mechanisms on the part of corporate management, such as the coordination of regular information exchange, which allows for the necessary coordination between the two departments, thus having a positive effect on the effectiveness of their relationship (Dawes et al., 2001). While there is a regular exchange of information, activities and resources are allocated, thus providing an opportunity to increase and complement each other's capacity to achieve multiple benefits and goals. However, all of this requires trust, commitment, and fairness between the two classes (Bititci et al., 2004). Preserving competitiveness is one of the goals to be achieved by enterprises, where cooperation and competition, or their intertwining, cooperation as a tool must be present (Raab, 2010).

A close and clear relationship between the SM departments, especially their leaders is extremely important in the strategic development of the firm (Strahle, Spiro & Acito, 1996; Ahsan, 2018). Since both SM have turnover-related tasks, there will be interactions and interdependencies between them. It is these dependencies that make the cooperation of the two departments so interesting and rather instable (Haase, 2006; Dewsnap & Jobber, 2002; Johnson, Matthes & Friend, 2017). As research evidence demonstrates, the relationship of SM departments is not smoothly integrated in most companies (Beverland, Steel & Dapiran, 2006; Homburg & Jensen, 2007; Madhani, 2015). There are a number of interface issues between sales and marketing (Kotler et al., 2006; Malshe, Friend, Al-Khatib, Al-Habib & Al-Torkistani, 2017b), which, if not resolved, will put the organisation at risk of making the work of both departments counterproductive and inefficient, thus negatively affecting the performance of the organisation (Haase, 2006; Moncrief, 2017).

Cooperation is one of the most important strategic tools for development, the inspirations behind which can be very heterogeneous (Blomqvist et al., 2005). Unequal resource allocation can lead to confrontations (Bakacsi, 2001), which has been articulated in the literature as an perceived conflict of interest (Smith et al., 2004). Due to the existence of different goals, which may arise from the structure of the organization, there is a rather

emphatic and manageable area of conflict, according to which the marketing and sales department have different concepts and approaches, so they do not have a specific definition of competencies (Vahs, 2012; Brockhoff, 1989; Specht, 1995). While marketing has long-term, lasting and product-oriented ideas, sales have tendentious short-term and consumer-oriented ideas. These different perceptions then lead to the next state of whether the buyer or the product enjoys priority (Krafft, 1995).

Business activities are often characterised by optimisation - i.e. an attempt to achieve satisfaction - rather than maximisation. In order to accomplish this, it is essential that in the decision making process the manager is in the know about capacity and strategy, and has previous experiences to build on (Cornaggia et al., 2017). In the operation of an organisation, innovation has a key role, which means a constant alertness to meet and satisfy customer needs by providing services. SM departments are amongst the key elements of the general algorithm of the innovation process. Examining this process along the innovation chain makes it clear that the starting point (marketing) and the end point (sales) of the chain is the market per se. Thus, taking the most relevant measures is the responsibility of the SM departments (Keszey & Biemans, 2016). A smooth cooperation between these departments is largely affected by organisational and cultural corporate factors and it is crucial for the successful operation of the organisation - i.e. it serves as a foundation for a positive market response to the given product or service (Snyder et al., 2016).

In the business world, competition means monopolising value, whereas cooperation means a collective act of adding value (Snow, 2015). Lamasheva (2004) argues that the two elements that are essential for cooperation are common goals and clearly defined targets. Bargeron et al. (2015) stress the importance of trust between departments as well as dedication, fairness along with regular information exchange and a division of activities and resources in order to mutually enhance each other’s capacities and maximise results. Staying competitive is one of the objectives of all enterprises, where competition and cooperation need to go hand-in-hand (Snow, 2015).

The relationship of the two departments has various interface challenges and conflicts which can be due to unclear roles and responsibilities as well as the lack of information exchange, common corporate goals or corporate culture (Razmerita et al., 2016). Klumpp

(2000) believes that the cooperation between the two departments requires a division of tasks and the coordination of all relevant organisational mechanisms such as regular information exchange, which, in turn, will boost the effectiveness of their relationship by creating a permanent dialogue (Harmon, 2019). Discrepancies between SM can also be due to differences in their ways of implementing the corporate strategy, as marketing tends to focus on long-term strategic goals, whereas sales typically use sales techniques that generate short-term profit (West et al., 2015).

Another possible source of conflict might arise from the fact that different nationality employees might embrace different preferences and priorities concerning cooperation. The question of nationality as an influencing factor of corporate efficiency and interdepartmental cooperation has been examined earlier in various contexts (Rosenauer et al., 2016).

Out of all the processes contributing to profitability in commpanies, a smooth cooperation between these two departments is key (Krush, Malsche, Al-Khatib, Al.Jomaih & Katoua, 2015). Thus, what management needs to do is build trust and efficient cooperation between these departments, relying on information and know-how from sales and incorporate it into strategic marketing decisions in order to promote product development and competitiveness.

Therefore, it can be said that the cooperation of the two departments is extremely important in the life of companies, and if an optimal integration is present, it has the opportunity to survive in a competitive society. The exploration of conflict potentials, which are well known in the literature, and searching for their possible solution keys, the proper application of which plays an essential role in the coordination of the two areas, are the central topics of my research.

1.2. Main aims of the research

Research effort invested in the topic of the dissertation is warranted by several factors.

1. Although there has been research done in connection with employee nationality as a factor influencing interdepartmental cooperation, no research has so far attempted to analyse it in the context of SM cooperation. The present work is an attempt to partly fill this gap. Also, as the lack of efficient cooperation between SM can undermine

overall efficiency at the corporate level, revealing latent mechanisms between groups of variables affecting SM cooperation can provide information of potential managerial relevance.

2. The reason why it is definitely worth doing research into this direction is the fact that while there is rich literature on how PLS (Partial Least Square) path modelling can be utilised in the context of sales or in the context of marketing separately, its possible merrits in the examination of SM cooperation has not been demonstrated yet.

   My research aims to show, via PLS modelling, how the evaluation and relationship of pre-selected factors influencing SM cooperation differ and overlap in the case of Hungarian and foreign workers of six international companies, respectively to explore how the cooperation between sales and marketing (SM) in pharmaceutical (PMC) and non-pharmaceutical (NPMC) manufacturing companies is affected by selected indicators.
3. In addition the present work aims to give a short introduction into the possibilities offered by Voyant Tools to quantitatively explore qualitative data on the Sales-Marketing Interface (SMI).

If the relevant points are mapped (Figure 1), which can also be called critical points of contact, integration structure development between the two departments can begin. Figure 1 illustrates this possible process. The interfaces between marketing and sales are the result of the division of workflow, which involves splitting a complete process into sub-tasks within the two areas. They also provide possible test dimensions that may shed light on the critical interfaces, their location and condition. One of the important tasks of my research is the structural exploration of these critical interfaces, the identification of the development areas necessary for the realization of integration and the possible ones.

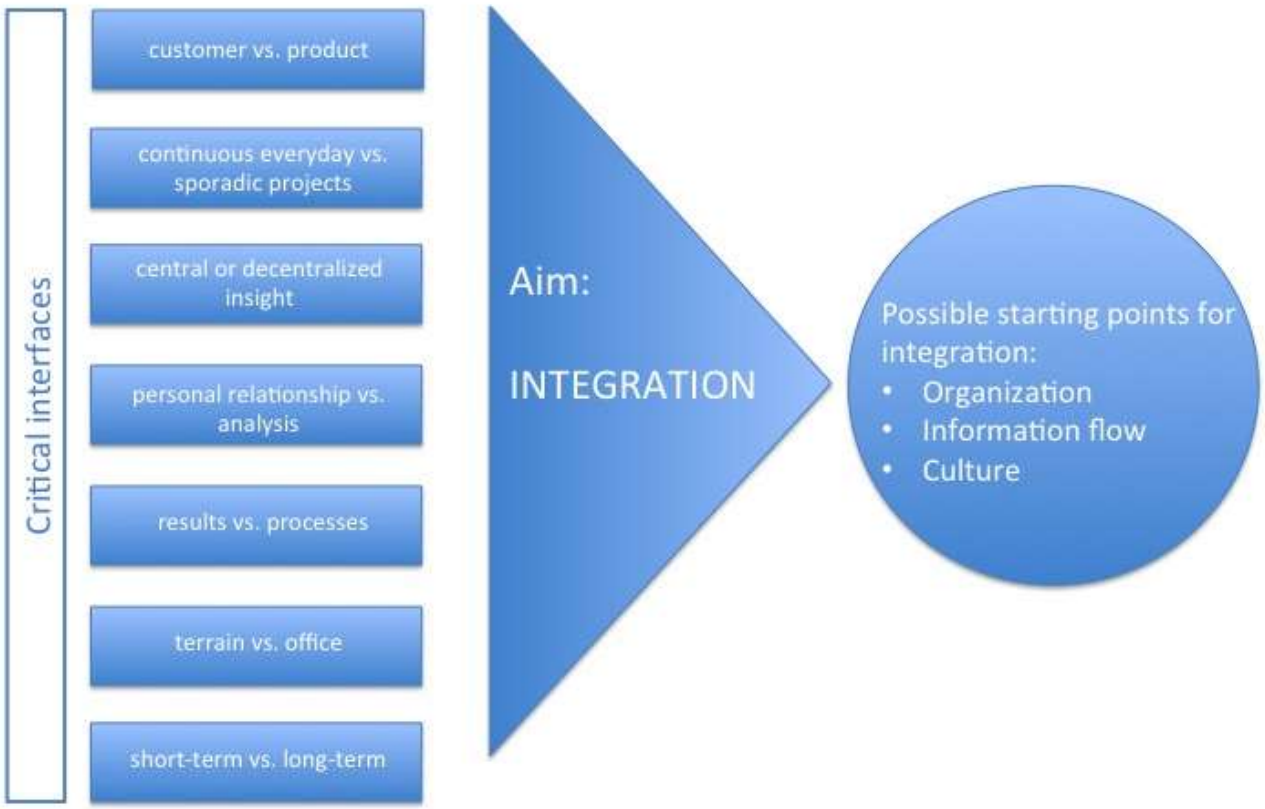

Figure 1: Study dimensions and integration areas of critical interfaces

Source: Own editing, based on Rouziès et al. (2005)

From my personal experience as a salesman and a marketing professional, I can say that regular peer-to-peer information sharing, multiple joint interdisciplinary meetings, and a well-defined corporate vision actually contribute positively to the coordination and integration of marketing and sales. Clarifying responsibilities and communicating leadership culture play a strategic role in improving reconciliation processes. All of this strengthens the employee's sense of belonging, paving the way for mutual trust. All this was supported by the literature and the results of my research.

1.3. Chosen Methodology

1.3.1. Qualtitative analysis: PLS Modelling

PLS path modelling is a second generation SEM (Structural Equation Modelling) approach that can be efficiently used if normality of the data cannot be assumed and the sample size is relatively small and the measurement level of the data is ordinal

(Tenenhaus, Vinzi, Chatelin & Lauro, 2005; Wong, 2013; Henseler, 2018). PLS is widely used in marketing research (Hair, Ringle & Sarstedt, 2012). As Hair et al. point out "Researchers especially appreciate SEM's ability to assess latent variables at the observation level (outer or measurement model) and test relationships between latent variables on the theoretical level (inner or structural model)." (Hair et al., 2012, p. 414).

The choice of variables (V) in the measuring instrument and subsequently in the constructs (blocks) was made based on what earlier SM (Sales and Marketing) literature consider key factors in determining the success of SM cooperation. Owing to the lack of an available and adequate measuring instruments in the SM literature a compact but adequate rating scale as measuring instrument was developed.

Peer-reviewed literature on how the optimisation of the SM interface is different in PMC (pharmaceutical manufacturing companies) and NPMC (non-pharmaceutical manufacturing companies) is virtually non-existent. Even recently published books (Lidstone & MacLennan, 2017; Holden, 2018) on pharmaceutical marketing do not analyse the importance of SM interface optimisation. Also, while there is an abundance of literature on the utilization of PLS path modelling in the sales or marketing context in general (O'Cass, Ngo, & Siahtiri, 2015; Swaim, Maloni, Bower & Mello, 2016; Abu Farha & Elbanna, 2018) and for PMC in general (Azizi, Ghytasivand & Fakharmanesh, 2012; Kohan, Rafie & Hosseini, 2014), application of this SEM technique for SM optimization of PMC is not available either.

PLS-PM (Partial Least Square-Path Modelling) is gaining increasing popularity in scientific research (Hair et al., 2016). In contrast to CB-SEM (Covariance Based-Structural Equation Modelling), which is best applied in confirmatory studies, PLS-PM is the ideal choice when the study is exploratory in nature and the variables are ordinal and categorical (Schuberth et al., 2018) and non-normally distributed (Sarstedt et al., 2016). PLS-PM groups questions under the same topic into blocks, and then examines the paths and links between these blocks in terms of correlation and regression as well as their strength. The model is exploratory, so it is able to identify irrelevant links. The path model creates a common latent variable from the observed factors in each block (external factor model or measurement model) based on their correlations. Regression links between the latent variables are explored by the internal structural model.

1.3.2. Quantitative analysis: Using Voyant Tools

Quantitative analysis of qualitative data (Young, 1981), other than word clouds, is extremely scarce in marketing research and not frequently used in other social sciences either (Bernard & Ryan, 1998). On the one hand, it is understandable, as the transformation of a coherent text, which is a complex, multi-layered information source with contextualised meaning, into smaller meaning units necessarily entails some loss of information (Krippendorff, 2018). It might be tempting to think that qualitative analysis of qualitative data does not result in information loss, however, as Bernard aptly points out. Quantitative analysis involves reducing people (as observed directly or through their texts) to numbers, while qualitative analysis involves reducing people to words (Bernard, 1996: page 10). Voyant Tools is a web-based, free, open source text analysis software package that offers versatile and sophisticated text manipulation capabilities useful for both the beginner and advanced humanities scholar (Welsh, 2014; Uboldi & Caviglia, 2015; Bradley, 2018; Miller, 2018). It has already been used as a quantitative text analysis tool in several peer-reviewed articles (Steiner, Agosti, Sweetnam, Hillemann, Orio, Ponchia et al., 2014; Clouder & King, 2015; Williams, Inversini, Buhalis & Ferdinand, 2015; Zahedzadeh, 2017). Data visualisation in social sciences research is an under-researched area (Uboldi & Caviglia, 2015).

Via the analysis of data on marketing sales interface (SMI), the present work demonstrates how Voyant Tools can be used to quantitatively analyse qualitative data. Even though the optimization of the SMI is obviously a crucially important challenge, the SMI is a seriously under researched area within business research and the application of quantitative techniques to qualitative data in connection with SMI has not been researched at all. I also aimed to briefly present the possibilities provided by Voyant Tools for the quantitative analysis of qualitative data for the SMI.

1.4. Research hypotheses

1.4.1. Nationality differences affecting the cooperation of SM: PLS Modelling of data from six international companies

In order to optimize the SM cooperation in an international company with both Hungarian and other nationality employees it has to be examined whether they evaluate various

factors bearing upon the SM relationship differently. Based on factors considered important for the harmonisation of SM cooperation in the literature I pre-selected variables 12 variables that can have a potentially significant impact on SM cooperation and formulated my research questions and hypotheses based on their hypothesized interactions. We formulated the following research questions and hypotheses:

Q1: How does information exhange affect SM cooperation?

H1: The more regular and frequent information exchange between SM is, the more cooperation there is between the two departments.

Q2: How does coordination and the definition of roles and responsibilities affect SM cooperation?

H2: The better the SM coordination is (more frequent common meetings, training sessions, common goals) and the clearer roles and responsibilities are defined, the better the SM will be.

Q3: How does corporate vision and its communication affect SM cooperation?

H3: The clearer the company's vision is defined and communicated, and the better the company's general communication is, the more efficient the SM cooperation will be.

Q4: How does information exchange affect SM cooperation?

H4: Information exchange in any shape or form has a positive and equal effect on the coordination of SM.

Q5: Do information exchange, coordination and corporate vision have a combine effect on SM cooperation?

H5: Information exchange, coordination and corporate vision as elements of the company's management culture also have a combined effect on the cooperation between SM.

Q6: Which of the three elements in Q5 have the biggest impact on SM c ooperation?

H6: Of all aspects of management culture, coordination has the most significant role in improving cooperation.

Q7: What impact do conflicts between SM have on SM cooperation?

H7: The more frequently conflicts between the two departments occur, the less cooperation there will be between them, and conflicts have a direct negative effect on cooperation.

Q8: How does corporate vision and its communication affect information exchange between SM?

H8: The clearer the corporate vision is defined and communicated, and the better the company's general communication is, the better the information exchange between SM will be.

The above hypotheses will be tested separately for Hungarian and foreign employees of our sample to see how nationality differences might affect factors determining the efficient cooperation of SM. Figure 2. summarizes the hypotheses and depicts the variables in blocks.

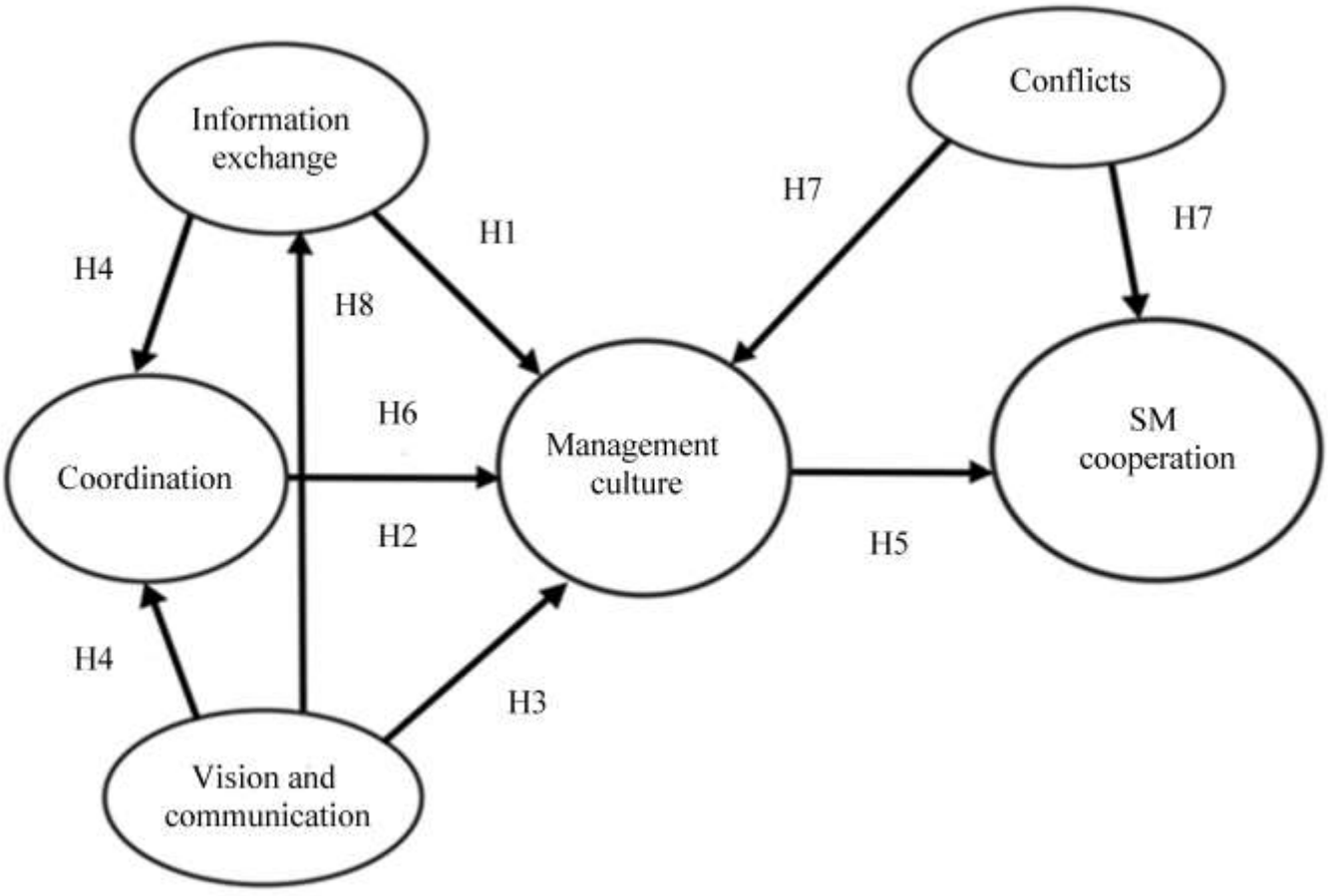

Figure 2: Research modell

Source: Own editing

1.4.2. PLS Modelling of factors affecting the cooperation between sales and marketing in pharmaceutical and non-pharmaceutical manufacturing firms

During the investigation of PMC and NPMC manufacturing companies my research attempts to find answers to the following research questions:

1. How does information exchange affect SM cooperation in PMC and NPMC?
2. How does coordination (common meetings, training sessions, goals and clearly defined responsibilities) between SM affect SM cooperation in PMC and NPMC?
3. How does the company vision and its communication affect SM cooperation in PMC and NPMC?
4. How does management culture (information exchange, coordination, vision) affect SM cooperation in PMC and NPMC?
5. How do conflicts between SM affect SM cooperation in PMC and NPMC?
6. How does a shared perception of the ideal customer affect SM cooperation in PMC and NPMC?

1.4.3. Using Voyant Tools to investigate the sales-marketing interface (SMI)

During the quantitative analysis I have analysed six manufacturing companies. Answers to three open-ended questions were visualised in various ways using the online toolset of Voyant Tools. Respondents had to answer the following three questions:

1. Please describe your daily tasks in a few sentences.
2. What are the tasks of the other (sales or marketing) department?
3. How is sales-marketing cooperation managed in your company?

2. PRECEDENTS AND APPLIED METHODS

2.1. Nationality differences affecting the cooperation of SM: PLS Modelling of data from six international companies

2.1.1. Sampling procedure

Six international (Austrian, Hungarian, German, English) companies were involved in the research. As the present study is exploratory in nature, a sample of convenience was considered appropriate. Out of the six companies one is a hardware company, three are pharmaceutical companies and two are manufacturers of medical instruments. Online self-reported questionnaire was used to gather information. The original Hungarian questionnaire was translated into English and German to make it easier for the respondents of different nationalities to interpret the questions. The link was sent out by the HR managers of the six companies to the marketing and sales departments employees as well as the members of the general management in a letter of invitation which contained a brief explanation of the aim of the research and information about its full anonymity. The invitation letter was delivered to 530 potential respondents on 1 August 2018 and the questionnaire was closed on 1 September 2018. Respondents had the possibility to pause their completion of the questionnaire and return to it later during this one month period. The questionnaire included both open-ended and closed-ended questions, however, with the help of PLS-PM to reveal non-normally distributed ordinal data, only answers to closed-ended questions were analyzed and interpreted. Answers to questions 1.3, 1.4, 1.5, 1.9a-i and 2.2 provided the input data for the statistical analyses and model building. The English version of the questionnaire can be found in the Appendices section of the dissertation.

2.1.2. Methods

Questions in the questionnaire were grouped in the following blocks: information exchange (Questions 1.9c, 1.9h), coordination (Questions 1.9b, 1.9d, 1.9e, 1.9g), vision and communication (Questions 1.3, 1.4, 1.5), conflicts (Question 1.9f), cooperation (Questions 1.9a, 1.9i). The model also includes a superblock called management culture. This block included information exchange, coordination and vision and communication.

The reason behind the creation of the superblock was the fact that we wanted to examine the effects of coordination, information exchange and vision on the sales-marketing cooperation as a combined set of factors as well, rather than just as individual factors. Respondents were asked to rate the 12 items, presented in table 3, on a scale of 1 to 5 to reflect their perception of the extent to which the individual factors are present in the subject company. The 5-point Likert type scale, a type of psychometric response scale in which responders specify their level of agreement to a statement typically in five points: (1) Not At All; (2) Of Little Importance; (3) Of Average Importance; (4) Very Important; (5) Yes Completely. The formulated research questions and hypotheses: see point 4.1.

I created a Latent Variable Partial Least Squares Path Model (LVPLSM) based on the blocks of questions in our questionnaire. In path modelling /LVPLSM/ (Wold, 1975; Tenenhaus et al., 2005; Rigdon, 2016) questions under the same topic are grouped into blocks, and then the paths and links between these blocks in terms of correlation and regression as well as their strength are examined. The model is exploratory, thus it is suitable for eliminating insignificant links. The path model creates a common latent variable from the observed factors (input variables) in each block (external factor model or measurement model) based on their correlations. The internal structural model explores regression links between the latent variables. I applied the GoF (Goodness of Fit) indicator to measure the goodness of the model. This indicator is calculated via geometrical average as the average R2 value of the regression estimates of the average variance (AVE) explained by the blocks and the internal structural model. The AVE indicator needs to be above 0.4-0.5 (Chin, 1998). In terms of R2 values, 0.02; 0.15 and 0.35 are considered low, medium and high reference values, respectively (Cohen, 1988). In terms of GOF, reference values, 0.10; 0.25 and 0.36 are considered as unacceptable, acceptable and good model fit, respectively (Wetzels et al., 2009). In the interpretation of latent variables, I can only include those items in the block that have a correlation coefficient of above 0.5. We applied the Fornell and Larcker criterion to measure the discrimination potential of the model (Fornell and Larcker, 1981). As per Fornell and Larcker's criterion (1981), the individual latent variables should explain more of the items in their own block than all the other latent variables. Thus, the Fornell and Larcker test shows whether or not the different blocks are sufficiently separated from one another. For the estimation of the LVPLS model

I used Version 0.4.9 of the PLSPM (Tools for Partial Least Squares Path Modeling) package of the 3.4.4. “Someone-to-lean-on” version of the R statistics software.

I applied the Spearman rank correlation to explore the correlations between factors on the ordinal scale level. The Spearman correlation measures the X and Y runs and takes values between -1 and 1 (Spiegel and Stephens, 2008).

A concordance test was carried out in order to establish the level of agreement between various groups of respondents with regard to the ranking of specific factors, i.e. how unanimous the ranking was. In the concordance test I considered two types of group creating factors (yes/no questions, field of work) and calculated Kendall’s concordance coefficient (Kendall & Babington Smith, 1939).

In the case of multiple choice questions, a table is presented to show the proportions of respondents marking each individual option as well the percentages of each answer option against the total number of answers.

2.2. PLS Modelling of factors affecting the cooperation between sales and marketing in pharmaceutical and non-pharmaceutical manufacturing firms

2.2.1. Sampling procedure

My research population was made up of sales, marketing and management staff of 16 PMC and 31 NPMC. Out of the 16 PMC 7 were big companies (number of employees ≥ 250) and 9 medium-sized companies (50 ≤ number of employees ≤ 250). Out of the 31 NPMC 14 were big companies (number of employees ≥ 250) and 17 medium-sized companies (50 ≤ number of employees ≤ 250). 427 of the 1033 questionnaires were returned (PMC=147; NPMC=280), which is a response rate of 41%. 6 questionnaires contained so many missing data that they were excluded from the statistical analysis, which was carried out using 421 completed questionnaires. Table 1 shows the percentage distribution of respondents by departments and company type.

Table 1: Percentage distribution of respondents by departments and company type

Type of company	Marketing	Sales	Management
Pharmaceutical companies	42%	44%	14%
Non-pharmaceutical companies	17%	57%	26%
Entire sample	28%	51%	21%

Source: Own editing

Table 2: Variables used for PLS path modelling

Vision (V1)	The company management has a clear vision for the future
Communication of the vision (V2)	The management communicates the company vision efficiently
SM communication (V3)	The communication between SM in general is very good
Information exchange (V4)	Information exchange between SM departments is optimal
Common IT, CRM (V5)	The inter-divisional IT platform (CRM system) greatly helps information exchange
Common training sessions (V6)	SM staff members have regular common training sessions
Common goals for SM (V7)	SM departments share a common goal they both work for
Common Meetings for SM (V8)	There are regular common meetings for SM staffs
Roles & responsibilities (V9)	SM have clearly defined areas of responsibilities
Ideal customer (V10)	SM share a mutual perception of the ideal customer
Conflicts (V11)	Conflict negatively affect SM cooperation

Source: Own editing

Table 2 contains the 11 statements that respondents had to rate on a 5-point Likert scale (1= totally disagree, 5=totally agree). The answers to these statements provided the basis of PLS modelling. In the questionnaire respondents were also asked what areas they would want to change the most, in order to improve cooperation. The complete questionnaire can be found in the appendices section of the dissertation.

2.2.2. Methods

Questions were grouped in the following blocks: (1.) information exchange (V4, V8), (2.) coordination (V5, V6, V7, V9), (3.) vision (V1, V2) and communication (V3), (4.) conflicts (V11), (5.) shared perception of ideal customer (V10).

In developing my measuring instrument two main considerations were given the biggest importance. Firstly, an instrument was needed that has an adequate number of variables to serve as a basis for PLS path modelling (Hair, Ringle, & Sarstedt, 2011), but is short enough to ensure the highest possible response rate. Secondly, these eleven variables were chosen as we considered them, based on our findings after consulting the literature, to be key factors in determining the cooperation between SM.

In earlier literature on SM cooperation and integration two rating scales have been used. One is a three-item scale developed by Hult, Ketchen and Slater (2002) focusing on shared vision of SM and a twenty-item scale suggested by Kotler et al. (2006). While I incorporated some of the ideas (e.g. shared vision, common training programmes) I considered these two scales inadequate to measure the five blocks of questions detailed earlier. My research attempts to find answers to the research questions (see point 1.4.2.).

For the PLS Modelling, the LVPLSM method described above was used.

The Spearman rank correlation was applied to explore the correlations between factors on the ordinal scale level.

The Chi square test was applied to the proportions of the areas employees would like to change in each department.

In the case of multiple choice questions, a table is presented below to show the proportions of respondents marking each individual option as well the percentages of each answer option against the total number of answers.

2.3. Using Voyant Tools to investigate the sales-marketing interface

2.3.1. Sampling procedure

As it is an exploratory study a sample of convenience was used. Six different manufacturing companies (number of employees ≥ 250) were involved in the data collection process. The main criterion of qualifying into the research was the presence of a separate sales and marketing department within the company. Data collection was conducted via a self-reported online questionnaire, which contained three open-ended questions. The link to the questionnaire was emailed to the Human Resources managers of the six companies and was forwarded to the SM employees by them. The date was gathered during a two-week period in March 2019. Out of the 352 questionnaires sent out to potential respondents we received 124 fully completed ones that served as the basis for our analysis. 75 of them were marketing employees and 49 sales employees. As there were Hungarian, Austrian and German companies involved the questionnaires were distributed in three languages (German, Hungarian, English). As the first step in processing the data the returned questionnaires filled out in German or Hungarian were translated by a qualified translator into English. Respondents had to answer three questions: see point 4.3.

2.3.2. Methods

Via the analysis of data on SMI, the present work demonstrates how Voyant Tools can be used to quantitatively analyse qualitative data. For limitations of space most method demonstrations are performed on the third question, as it is the main focus of the analysis. As my work contained only three questions and the number of completed questionnaires is small too, it was possible to compare the results of quantitative analysis carried out with the help of tools of Voyant and see how accurate quantitative results are. Obviously, Voyant Tools is especially useful with large textual data sets when content analysis methods are extremely time-consuming. Out of the twenty-four different text analysis tools this paper attempts to demonstrate the use of four:

- Cyrrus Tool

It is a word cloud creation tool which positions the most frequent words centrally and in the biggest size in the cloud. It is possible to exclude words using the „Stop word„ function or specify the maximum number of words to be fetched from the corpus.

- Correlation Tool

It allows the researcher to check which words tend to occur together within the text. Negative correlations signal words with an inverse occurrence pattern. In order to be able to perform Pearson correlation calculations the text is divided into segments. The software examines how many times words appear in the various segments and the resulting numerical serves as the basis of the correlations. The significance level for each pair of words is also provided. Pearson correlation is typically applied with assumptions of normal distribution. However, several studies demonstrated that the Pearson correlation is robust enough to tolerate the violation of the above-mentioned typical assumption (Havlicek & Peterson, 1976; Fowler, 1987). Still, the results should be interpreted with caution.

- Topics Tool

This tool uses a rather sophisticated algorithm called latent Dirichlet allocation (LDA). It is a topic model which assumes that words in the text belong to latent topics. It also assumes that there is a relatively small set of topics with a relatively small set of words used frequently by the topic. With the help of this tool term clusters and their distribution can be discovered. It is possible to set the number of topics to optimise modelling for.

- Scatter Plot Tool

This is probably the most sophisticated tool among the text analysis tools of Voyant. The analysis functions of this tool include Principle component analysis, Correspondence analysis, document similarity check and t-SNE analysis. All four cluster plotting analyses uses algorithms that creates a 2 (or 3) dimensional representation of the data in a multidimensional space. The number of dimensions and the number of clusters to be created can be set by the analyst. Out of the four types of plotting methods t-SNE is discussed in this paper. t-SNE (t-Distributed Stochastic Neighbour Embedding) is a award-winning method that can be applied especially well to high dimensional data sets such as

qualitative textual data (Van Der Maaten & Hinton, 2008; Van Der Maaten, 2014). Cao and Wang define the method as follows, "t-SNE tries to preserve local neighbourhood structure from high dimensional space in low dimensional space by converting pairwise distances to pairwise joint distributions, and optimize low dimensional embedding to match the high and low dimensional joint distributions." (Cao & Wang, 2017: page 1.)

There is a tuneable function of t-SNE in Voyant, the level of perplexity (0-100) which largely determines, what cluster model is plotted. If the data is very dense perplexity close to 100 might be the most suitable but with lower density data lower levels of perplexity will yield the best results, that is the most accurately identified clusters. The algorithm behind perplexity examines the "local" and "global" aspects of the data set, that is, it tries to determine the number of closest neighbours of each word (data points) or expressed differently, it can be "measure of the effective number of neighbours" (Van Der Maaten & Hinton, 2008: page 2582).

3. RESULTS

3.1. Nationality differences

3.1.1. Results of the model created for Hungarian employees

Assessment of the hypotheses for Hungarian employees is as follows:

- Information exchange (H1), coordination (H2), a clear corporate vision (H3), management culture (H5) have a positive effect on the relationship of the two departments: the regression coefficients are significant. The results show that a clearly communicated and implemented corporate vision and regular information exchange (H4) have a positive effect on the coordination of the SM departments. Information exchange explains 80% of the variance of coordination, whereas vision and communication made up 20%, i.e. the two factors have a different effect on coordination.
- Model estimates suggest that information exchange (H6) is the most important factor of corporate culture explaining 56% of variance, followed by coordination that affects cooperation through management culture and explains 24% of variance.
- The regression coefficient of conflicts proved significant, thus based on these results H7 is confirmed, conflicts have a negative effect on the cooperation of the two departments.
- The regression coefficient of a clearly communicated and implemented corporate vision is significant, so based on these results H8 is confirmed, a clearly communicated and implemented corporate vision boosts information exchange between SM.

3.1.2. Results of the model created for foreign employees

Assessment of the hypotheses for foreign employees is as follows:

- Information exchange (H1) and corporate vision (H3) have no significant effect on the relationship of the two departments: the regression coefficients are insignificant.
- Based on these results, coordination (H2) has a positive effect on the relationship of the two departments, as the regression coefficient for coordination is significant.

- The results show that a clearly communicated and implemented corporate vision and regular information exchange (H4) have a positive effect on the coordination of the SM departments. Information exchange explains 50% of the variance of coordination, whereas vision and communication made up 32%, i.e. the two factors have a different effect on coordination.
- Not all three factors (H5) have a positive effect on the cooperation between the two departments, only coordination does. Based on these results H5 is rejected, management culture has no significant positive effect on the cooperation of the two departments.
- Model estimates suggest coordination is the most important factor of corporate culture explaining 84% of variance, followed by information exchange explaining 24% of variance. Based on these results H6 is confirmed, of all aspects of management culture, coordination has the most significant role in improving cooperation.
- The regression coefficient of conflicts proved significant. Conflicts have an indirect negative effect on cooperation through information exchange and coordination. Based on these results H7 is partly confirmed, conflicts have an indirect negative effect on the cooperation of the two departments.
- Based on these results H8 is rejected, a clearly communicated and implemented corporate vision has no significant effect on information exchange between SM.

3.2. Differences in PMC and NPMC

'Cooperation between sales and marketing' was the first result variable in the model that was directly affected by the elements of management culture (information exchange, clear corporate vision, coordination). Model estimates suggest that coordination is the most important factor of corporate culture, with an effect of 44%, followed by information exchange that affects cooperation through management culture at 38%. The regression coefficient of management culture is 0.777 with regards to cooperation. Within management culture, a significant regression parameter was estimated for information

exchange, coordination and clear corporate vision. The regression coefficient of conflicts was -0.136 (t=-4.10; p<0.001, SE=0.033) with regards to management culture.

Table 3: Key statistics of the LVPLS model for PMC

Latent variable	*R^2*	*RHO*	*AVE*	*1*	*2*	*3*	*4*	*5*
Vision (1)	*c.b.c*	*0.852*	*0.574*	*0.758*	*<0.001*	*0.010*	*0.192*	*0.006*
Coordination (2)	*0.605*	*0.851*	*0.542*	*0.620*	*0.736*	*<0.001*	*0.987*	*<0.000*
Information exchange (3)	*0.145*	*0.732*	*0.472*	*0.383*	*0.671*	*0.650*	*0.249*	*<0.000*
Conflicts (4)	*c.b.c*	*c.b.c*	*n.a.*	*0.200*	*-0.003*	*-0.178*	*c.b.c*	*0.238*
Cooperation (5)	*0.619*	*0.867*	*0.660*	*0.406*	*0.735*	*0.643*	*-0.182*	*0.812*

c.b.c=cannot be calculated

Source: Own editing

External measurement models also provide important information. Rather strong correlations were found between the most important factor ’coordination’ and the items in the block. Coordination is most strongly affected by common meetings and clear roles and responsibilities. Latent variables ’vision’ and ’communication’ are most strongly linked to corporate communication and the definition of the vision itself. Latent variable ’sales and marketing cooperation’ obviously has the strongest correlation with the efficiency of cooperation. A rather weak, non-significant correlation was found between CRM and information exchange. In comparison, the analysis and the research model was applied to NPMC as well, however, model estimates revealed a difference as compared to the PMC model, since the key factor affecting cooperation through the management culture was not coordination but information exchange (57%).

Table 4: Key statistics of the LVPLS model for NPMC

Latent variable	*R2*	*RHO*	*AVE*	*1*	*2*	*3*	*4*	*5*
Vision (1)	*c.b.c*	*0.861*	*0.600*	*0.775*	*<0.001*	*<0.001*	*0.149*	*<0.001*
Coordination (2)	*0.703*	*0.885*	*0.597*	*0.369*	*0.773*	*<0.001*	*0.041*	*<0.001*
Information exchange (3)	*0.367*	*0.825*	*0.678*	*0.367*	*0.684*	*0.823*	*<0.001*	*<0.001*
Conflicts (4)	*c.b.c*	*c.b.c*	*c.b.c*	*0.039*	*0.078*	*0.259*	*c.b.c*	*<0.001*
Cooperation (5)	*0.741*	*0.860*	*0.667*	*0.308*	*0.706*	*0.688*	*0.217*	*0.817*

c.b.c=cannot be calculated

Source: Own editing

Correlation of conflict and information exchange was significant ($p<0.01$). The two main regressions of the model were the estimation of coordination based on information exchange and vision ((R2=0.703) and the estimation of cooperation based on the other latent variables (R2=0.741). As R2 values are high the explanatory power of the model can be considered high too. The regression coefficient of management culture is 0.802 with regard to cooperation. Within management culture, a significant regression parameter was estimated for both information exchange and coordination, as well as clear corporate vision. My results have revealed further differences with regard to clearly communicated and implemented corporate vision. This factor did not contribute to the better coordination and integration of the sales and marketing departments since it explained only 15% of the variance of coordination, whereas information exchange made up 85%. Similarly to PMC, however, a clearly communicated and implemented corporate vision encourages information exchange between sales and marketing. However, this impact is much stronger in NPMC than in the pharmaceutical ones. Further significant differences were seen in the case of conflicts, which showed no significant negative effects.

The comparison of the external measurement models reveals only one significant difference between pharmaceutical and non-pharmaceutical companies. Common goals have the most important impact on coordination in non-pharmaceutical companies, whereas in the pharmaceutical company common meetings are the key factor.

3.3. Results of the quantitative analysis

The tf-idf (term frequency-inverse document frequency) weighting method was used for the analysis. It is an option that can be set by the analyst besides the other two methods “raw frequencies” and “relative frequencies”. It is a method that determines how important a word is to a document and is largely dependent on how often a word appears in a document. As there is only one document in my case, the algorithm divides the corpus into 10 segments and examines word frequencies in each segment. As it was noted earlier t-NSE is an award-winning method and the cluster plots that it is able to create can encourage jumping to conclusions that might not at all be sound. There are several reasons for this, for example the factors are the level of perplexity and the number of iteration.

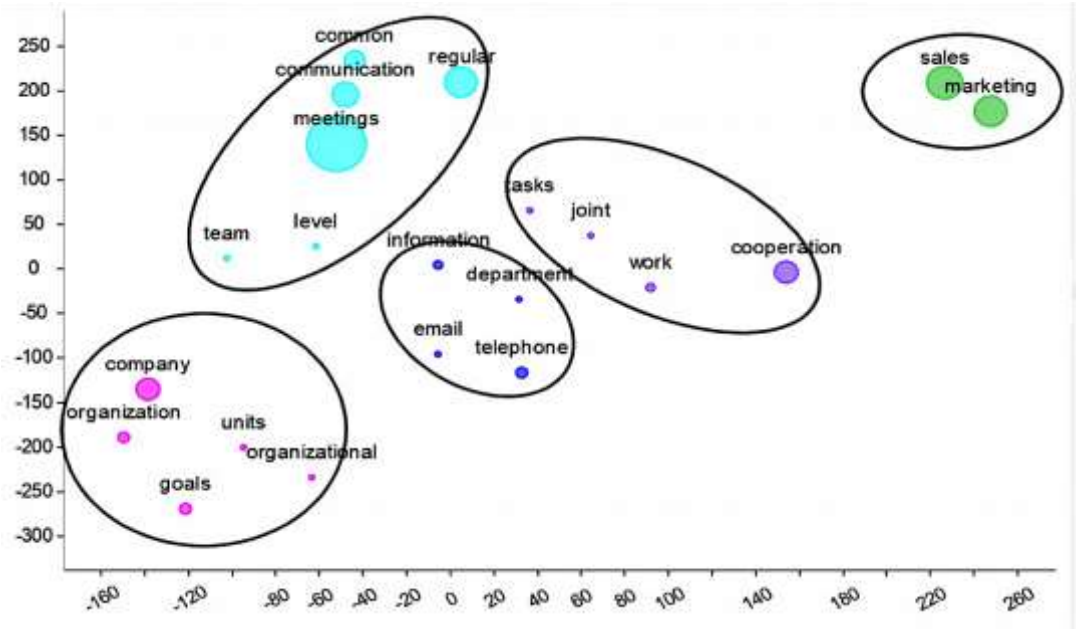

Figure 3: t-SNE generated clusters for the answers to Question 3, 900 iterations

Source: Own editing

900 iterations yielded the best result with the clusters being the tightest (Figure 3). The colours reflect data points (words in this case) that belong to the same cluster, while the size of the points is proportionate to the relative frequency of words. SM seems to be strongly related, which might be attributable to the nature of the question. There is a clearly detectable cluster that is about communication.

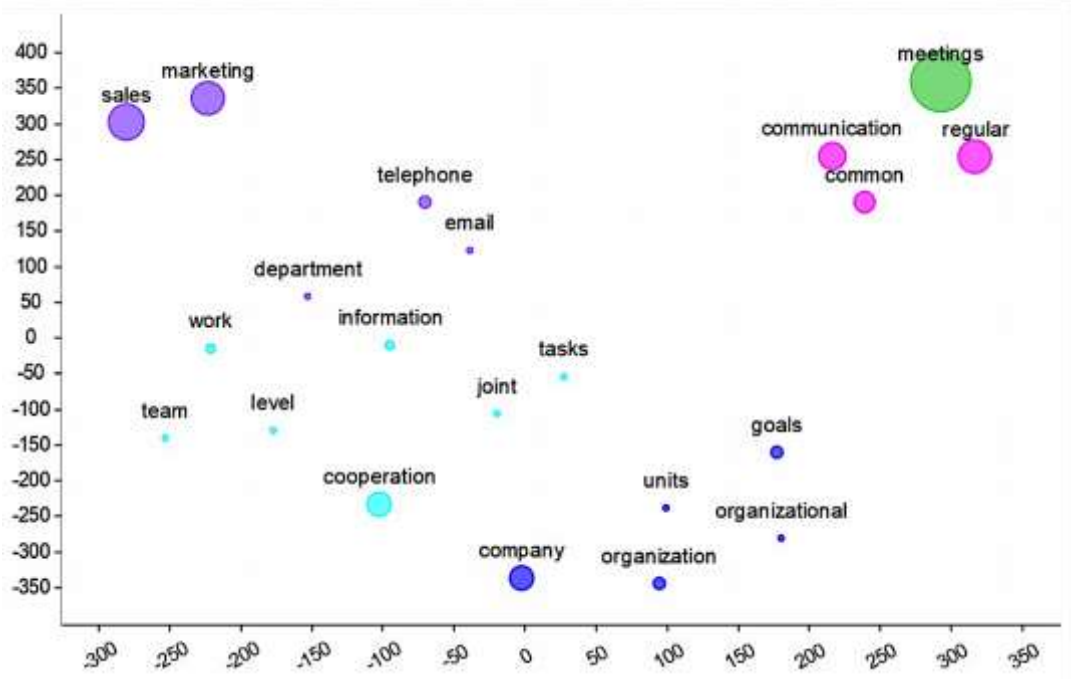

Figure 4: t-SNE generated clusters for the answers to Question 3, 5000 iterations

Source: Own editing

In Figure 4 (see figure 4) there is a separate cluster that contains the most important information sharing methods in the two departments (telephone, email). Points marked in lilac signal the importance of joint tasks and work as well as cooperation between SM departments. It is interesting that there is a “corporate level” cluster with terms such as “company”, “organisation”, “goals” which highlights the significance of how corporate goals and vision can influence the efficiency of SM.

4. THE MAIN CONCLUSIONS OF THE DISSERTATION

4.1. Finding of the research for domestic and foreign employees

Based on the results it is obvious that Hungarian employees of the SM departments in the examined international companies evaluate some of the twelve selected factors affecting the relationship of SM in a significantly different way than their foreign colleagues. As it is apparent from the ranking of elements to be improved in the future and also from the model for Hungarian SM personnel, Hungarian SM employees place a higher emphasis on the importance of information exchange in determining the quality of SM cooperation than their foreign colleagues. Further research is needed to identify the exact causes of this. Hypothetically it is suggested that the confidence of Hungarian employees using English or German as a common language of communication as well as the general level of self-confidence, self-efficacy and ability to work independently in an international corporate environment, might be potential background determinants. This latter three potential factors might also have to do with the fact that market capitalism has been around for thirty years in Hungary and the strong presence of international (multinational) companies is characteristic of the last twenty years only. This short history of international corporate culture in Hungary might also explain the striking difference between the importance Hungarian and Foreign SM employees attribute to shared targets for the two departments and the marked difference in the evaluation of the importance of clearly defined roles and responsibilities. For Hungarians, the more clearly defined common goals there are, and the clearer SM roles and responsibilities are defined, the stronger the coordination and cooperation will be between SM. The models also suggest that, while efficient cooperation for Hungarian SM staff definitely requires a common understanding of what the ideal customer is like, foreign SM staff does not consider this as a significant factor at all. For Hungarians the stronger the shared idea of the ideal customer between SM, the better the cooperation of the two departments will be. Again, the underlying factor behind this difference might lie in the fact that Hungarians have had a relatively short period of market-cantered socialization whereas their colleagues of long developed market societies can view this issue as something completely obvious for both departments. The considerable negative correlations between information exchange, CRM and common meetings in the case of foreign employees signal that the malfunction of these areas is

more likely to cause conflict than in the case of Hungarian staff where the three areas are also negatively correlated with conflicts but to a much lesser extent. The explanation of this might lie in the previously mentioned difference between long-established market societies (Austria, Germany, England) and young ones like Hungary. Foreign employees of these societies are, in their home countries, probably more accustomed to efficient information exchange, IT systems or meetings than their Hungarian colleagues are in Hungary.

On the similarities side, it has to be noted that both Hungarian and foreign SM staff consider common meetings and training sessions as well as a common IT platform for the two departments important factors of efficient interdepartmental coordination and cooperation. In a fast changing global business environment gaining up-to-date knowledge and information is increasingly important, thus the shared emphasis on these factors. The clear definition and communication of a corporate vision positively affects the quality of SM cooperation through having a direct influence on the quality of coordination for both Hungarian and foreign staff. In the models the twelve variables affect cooperation through latent variables (factors). It calls attention to the importance of optimizing certain functions in a holistic way, taking into account the various elements that affect the efficiency and quality of SM cooperation in groups and as a whole, not only individually.

The managerial implications of the results can be manifold, however, caution is warranted as there are several limitations that restrict the generalisability of our results. These limitations include convenience sampling with a relatively small number of companies involved in the research. Based on the correlations of the twelve variables, it is apparent that in the case of the Hungarian sample the number of significant and stronger correlations is much higher. However, it has to be treated with caution as only less then one third of the sample were foreign employees. Also, my survey did not have questions to filter out various forms of biases. I decided not to include more questions because I had expected the willingness to complete the questionnaire will fall considerably with length and time requirements. The study is exploratory in nature and with this in mind there are a few implications that can safely be stated.

Even though the sample was restricted, the results seem to support earlier research establishing a strong connection between efficient functioning of international companies and the in-depth knowledge of how cultural differences such as nationality-related factors can influence company processes.

Future research in this area might focus on identifying the exact causes of the differences of how employees of various nationalities and cultural background evaluate factors of efficient interdepartmental cooperation. Also, it might be worth testing the PLS-PM modelling technique on larger, preferably representative samples including various nationalities.

4.2. Finding of the research for PMC and NPMC

Based on the above results from the comparison of PMC and NPMC manufacturing firms, my initial research questions provide the following answers:

1. How does information exchange affect SM cooperation in PMC and NPMC?

Information exchange proved to be an important component of management culture, and hence an important factor affecting SM cooperation in both PMC (R2%=38) and NPMC (R2%=57), the latter being more emphatic. Results suggest that in NPMC improving the quality of information exchange is likely to enhance SM cooperation considerably more than in PMC. The more than 20% difference in explained variance is attributable to the effect IT (e.g. CRM) as a component of information exchange has, in PMC (r=0,101) and NPMC (r=0,678). PMC are subject to various GxP regulations (Wingate, 2016) which are not applicable in the case of NPMC. Validation protocols, including the validation of (e.g. CRM) systems, are extremely strict in PMC (Wingate, 2016; Elser & Richmond, 2018). Based on this, my results are counter-intuitive and need further investigation.

2. How does coordination (common meetings, training sessions, goals and clearly defined responsibilities) between SM affect SM cooperation in PMC and NPMC?

The marked difference in the variance coordination explains in management culture (PMC, R2%=44; NPMC, R2%=25) might be the result of the strict protocols in PMC mentioned above. It seems that in PMC the improvement of coordination is more likely to result in improved SM cooperation than in NPMC. Clearly defined roles and

responsibilities are equally important elements of good coordination in both types of companies, however, in PMC it is common meetings, while in NPMC it is common goals that have the strongest correlation with coordination. Marking clearly defined roles and responsibilities as high priority to effective coordination runs counter to the practice of B2B companies where responsibilities of SM are overlaping, amorphous and emergent (Biemans & Makovec Brenčič , 2007; Biemans et al., 2010).

3. How does the company vision and its communication affect SM cooperation in PMC and NPMC?

Corporate vision and its communication has a very moderate effect on management culture and through this on SM cooperation in both PMC (R2%=16) and NPMC (R2%=18). What holds true on the company level (Madu, 2013; Tomek et al., 2016; Balmer, 2017) does not seem to be too relevant in an interdepartmental context for the SM relationship. Identifying the exact causes of this require further investigation that is beyond the scope of this study.

4. How does management culture (information exchange, coordination, vision) affect SM cooperation in PMC and NPMC?

The ’marketing and sales cooperation’ factor is significantly affected by the elements of the management culture (information exchange, clear corporate vision, coordination). The proportion of variance explained in the two models by management culture expressed by the coefficient of determination or R squared is outstanding (PMC, R2=0,619; MPMC, R2=0,741). Our hypothetical belief in the marked combined effect of the three variables seems to have been proved right. This finding calls attention to the importance of examining various factors affecting certain corporate functions not only in isolation, but also in groups where latent mechanisms might create either positive or negative synergies (Birkie, 2016).

5. How do conflicts between SM affect SM cooperation in PMC and NPMC?

Conflicts do not have any considerable effect on SM cooperation (PCM, R2%=2; NPMC, p=0.298) in either type of companies. Once again our findings do not seem to support earlier research emphasizing the importance of reducing conflicts to raise corporate competitiveness. Reasons for this might be many, convenience sampling being one

possible cause for the discrepancy between earlier literature and our results. As Henry (2009) pointed out in an empirical study, a large part of the organizational conflicts arise because of interpersonal disagreement and resource scarcity within the company. He also emphasized, based on his results, that conflicts can have various positive effects as well. It might be the case that in the 47 companies surveyed personal disagreement or resource scarcity is not a significant source of conflicts. At the same time the positive effects of conflicts might counter the negative effects to a higher degree than in other researches. There might be effective conflict management mechanisms in the examined companies which considerably reduce the potentially negative effects of conflicts and amplifies their positive effects (Longe, 2015; Awan & Saeed, 2017).

6. How does a shared perception of the ideal customer affect SM cooperation in PMC and NPMC?

The shared perception of the ideal customer significantly and almost perfectly equally (PMC, beta=0,568; NPMC, beta=0,584) affect the SM cooperation in PMC and NPMC. While it seems quite obvious that SM departments cannot cooperate efficiently if their perception of what is in the centre of all SM efforts, that is, of the customer, is significantly different. There is no earlier research to rely on in discussing this finding. However, based on our findings and extending on what was said in the literature review section of the paper, it might be stated that as the examined SM departments use a common CRM platform they have access to the same customer segmenting and profiling information, which greatly help to form a sharred perception of the customers. As customer-centricity is increasingly important in corporate life in general (Ulaga, 2018) and in the pharmaceutical industry specifically (Panigrahi, Aware & Patil, 2018), the explanation might lie in PMC and NPMC devoting considerable attention to profiling customers and sharing these perceptions within the organization to enhance consistency in delivering value.

As the three variables of the internal models are determined by the eleven input variables of the external model, it can be stated that the with the exclusion of conflict the SM cooperation is largely determined by information exchange, coordination, vision and communication and a shared perception of the ideal customer. PLS path modelling is an invaluable SEM technique to uncover latent mechanism in non-normally distributed

ordinal level data. There are some obvious limitations of our research that restrict the generalisability of the results. Convenience sampling was used with a small number of PMC and NPMC. The questionnaire did not include any questions to rule out various response bias effects. In order to keep the response rate high a very short questionnaire was employed. In spite of these limitations, my study that comparing the SM interface of various types of companies, a seriously under-researched area at the moment, can yield results of not only theoretical, but practical significance. As the study was exploratory with a limited number of participants, managerial implications at this point cannot be stated with confidence.

4.3. Finding of the research using voyant-tools

These voyant-tools might be valuable for professional and academic purposes for different reasons. In academic settings, where time constraints are not as pressing as in the business world they might serve as means of preliminary analysis prior to more conservative and traditional methods of qualitative data analysis such as directed text analysis or grounded theory techniques. In business settings where being time-effective directly impacts cost-effectiveness these tools can be invaluable to save time and energy. It is especially true in the case of large data sets such as thousands of pages of comments from a corporate page. The tools that this paper presented vary in degree of sophistication and explanatory power. The Cyrrus tool or the Correlation tool can reveal limited interactions whithin the answers. The Topics tool provides a higher level of intimacy with the text as besides frequencies ranking is also taken into account. The t-SNE tool provides the highest level of sophistication and the deepest analytical possibilities revealing how groups of terms are related to each other. The tools used also highlight the importance of joint tasks and work, as well as collaboration between MS departments, as well as the importance of how corporate goals and vision can affect the effectiveness of MS.

5. NEW AND NOVEL RESULTS OF THESIS

This work had two objectives. On the one hand, in an exploratory fashion, it intended to examine how Hungarian and foreign employees of the SM departments of international companies differ in evaluating important factors determining in a large part the quality of cooperation between SM, further to examine how the selected factors affect SM cooperation in PMC and NPMC to highlight differences and similarities in these both manufacturing firm types. Further research might attempt to uncover causes of the differences between PMC and NPMC. Findings that run counter to earlier research or seem counterintuitive, such as the insignificant effect of conflicts and the weak effect of corporate vision, are especially intriguing and worth further investigation.

On several levels of statistical analysis ranging from descriptive methods of comparing mean values of variables to the complex modelling technique of PLS-PM it was demonstrated that besides the numerous similarities in how Hungarian and foreign as well as PMC and NPMC employees evaluate these factors, there were considerable differences too. On the other hand, it has also been shown that complex modelling techniques such as PLS-PM can reveal underlying mechanisms which are not inferable from descriptive statistics or correlation tables. To the best of our knowledge nationality differences as they affect SM has not been examined before. As the use of PLS-PM for the optimization of SM interface has not been used either our study definitely adds value to existing literature.

As Soltani, Ahmed, Ying-Liao and Anosike (2014) point out qualitative methodologies in oparations management has been gaining significance in recent decades especially for fileds like interfacing. One such interface challenge is the SM interface which the present paper uses as an example fpr the demonstration of the possibilities Voyant Tools can offer. Qualitative methods resulting in large textual data sets in the operations management paradigm include in-depth interviews, anthropological studies, participant observations, case studies or etnographies. As operations management is increasingly dependent on Big Data analytics (Choi, Wallace & Wang, 2018; Guha & Kumar, 2018) like data mining, Voyant Tools can serve as useful and valuable supplementary technique. Integrating qualitative and quantitative analysis techniques in the analysis of qualitative data can result in a more solid foundation to build research conclusions on. Voyant-Tools offers an

impressive array of tools to visualise the results of quantitatively analysed qualitative data. Visualisation tools might tempt the researcher to read suppositions into the data that do not reflect the true relationships of meaning units existing in the data set. As textual data is a coherent system of meaning units, care must be taken with interpreting results especially because there is a danger that quantitative analysis of qualitative data necessarily leads to considerable loss of information. However, these quantitative methods can be invaluable tools of preliminary analysis and hypothesis adjustment. Their results should always be checked against the traditional content analysis techniques which are more sensitive to the complex structure of semantic units. These quantitative techniques are to help early exploration of textual data. As there is virtually no earlier literature on how quantitative data visualisation techniques can be used in marketing research, especially in the analysis of the SMI, utilisation possibilities of Voyant Tools and other quantitative data analysis and visualisation software for handling qualitative data is definitely a worthwhile area for further research.

6. PRACTICAL APPLICABILITY OF THE RESULTS

The marketing and sales department plays a critical role in keeping up with the market. The two divisions are of paramount importance for launching and marketing products and services. Accordingly, the leader has a significant influence on the success of the organization from both departments. The effectiveness and quality of working together is a decisive factor that has been negatively impacted by personal, organizational and information deficits, as well as conflicts. Thus, the task of this work was to standardize the points of contact and to explore possible solution keys between the two departments, taking into account the harmonious tasks of employee relations.

Not only the most important factors in the management of interfaces, but also the facilitation steps, which include both strategic and organizational responsibilities, have been identified. From the analysis of the questions raised, it can be concluded that regular exchange of information (in any form), more common and interdisciplinary meetings, a clear communication and lively corporate vision contribute positively to the coordination and integration of marketing and sales department, influence. Thus, management's mission is to create a corporate vision as a comprehensive and clearly communicated leadership culture for everyone and thereby enhance the employee's sense of belonging. The employer should support every coordination effort for both departments. Improving the coordination processes in both areas, marketing and sales, has a strategically significant role, as is clearly segregating and assigning the responsibilities of the different departments.

Based on all this, it is very important that the corporate profit, which is very important for the employer, is based on the success of integrating these classes, which can be successfully achieved by optimally managing the factors presented in the thesis.

7. LIST OF PUBLICATIONS RELATED OF THE DISSERTATION

1. **HETÉNYI G.** - LENGYEL A. - SZILASI M. - SZŰCS E. (2019): Nationality differences affecting the cooperation of SM: PLS modelling of data from six international companies. Selye e-studies. 10 (2), 46-63.
2. **HETÉNYI G.** - LENGYEL A. - SZILASI M. (2019): Quantitative Analysis of Qualitative Data: Using Voyant Tools to Investigate the Sales-Marketing Interface. J. Indus. Engin. Manag. 12 (3), 73-89.
3. **HETÉNYI G.** - LENGYEL A. - SZILASI M. (2019): PLS Modelling of factors affecting the cooperation between sales and marketing in pharmaceutical and non-pharmaceutical manufacturing firms. Market-Tržište. 31 (2), 227-247.
4. **HETÉNYI G.** - LENGYEL A. - SZILASI M. (2019): A konfliktuspotenciálok elemzésének jelentősége a marketing és az értékesítés integrációjában. Int. J. Eng. Manag. Sci. 4 (3), 41-59.

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List of publications related to the dissertation

Hungarian scientific articles in Hungarian journals (1)

1. **Hetényi, G.**, Lengyel, A., Szilasi, M.: A konfliktuspotenciálok elemzésének jelentősége a marketing és az értékesítés integrációjában.
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Foreign language scientific articles in international journals (3)

2. **Hetényi, G.**, Lengyel, A., Szilasi, M., Szűcs, E.: Nationality differences affecting the cooperation of SM: PLS modelling of data from six international companies.
   Selye e-studies. 10 (2), 46-63, 2019. EISSN: 1338-1598.
3. **Hetényi, G.**, Lengyel, A., Szilasi, M.: PLS modelling of factors affecting the cooperation between sales and marketing in pharmaceutical and non-pharmaceutical manufacturing firms.
   Market-Tržište. 31 (2), 227-247, 2019. ISSN: 0353-4790.
   DOI: https://doi.org/10.22598/mt/2019.31.2.227
4. **Hetényi, G.**, Lengyel, A., Szilasi, M.: Quantitative Analysis of Qualitative Data: Using Voyant Tools to Investigate the Sales-Marketing Interface.
   J. Indus. Engin. Manag. 12 (3), 73-89, 2019. ISSN: 2013-8423.
   DOI: http://dx.doi.org/10.3926/jiem.2929

The Candidate's publication data submitted to the iDEa Tudóstér have been validated by DEENK on the basis of the Journal Citation Report (Impact Factor) database.

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