

Doctoral School of Management
and Business Administration



Thesis

Adam Csepeti:

Environmental Adaptation Patterns in the Hungarian Public
Retail Drug Supply – Testing the Applicability of Miles and
Snow’s Strategic Typology in Regulated Industrial Setting

to Ph.D. dissertation

Supervisor:

Dr. András Bauer, CSc
professor

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Department of Marketing

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1. Introduction

Adaptation to changing environmental conditions plays a decisive role in the life of organisations. In the academic discipline of strategic management it is generally accepted by most researchers that during the period of economic turbulence and intensifying competition *the tool kit of conventional managerial intuition and empirical wisdom become significantly useless* (Lindblom, 1959, Barney, 1986). As a corollary, by lacking a theoretically well-grounded, then successfully implemented strategy, the prosperity of businesses is going to be severely hampered. To achieve their long term effectiveness as well as efficiency objectives, firms increasingly need to develop consistent patterns of adaptive behaviour (Porter, 1980).

Representatives of strategic management discipline have failed for a long time to develop theoretical frameworks capable to classify strategic orientations (SOs) pursued by companies (Doty-Glick, 1994). However, *in the last third of the XXth century several remarkable strategic typologies have been emerged*, amongst of which the taxonomies of Miles and Snow (1980), Mintzberg (1973, 1978, 1979) and Porter (1980) are especially noteworthy. In contrary to Mintzberg's typology characterised by internal orientation as well as Porter's framework rather featured by external, competitor orientation, the taxonomy of Miles and Snow is distinguished by its comprehensive manner, and approaches firms as complex system-entities. Beyond the abovementioned frameworks, further classifications appeared in the strategic literature, the typologies elaborated by Glueck (1976), Hofer (1980), Fayerweather (1981), Ohmae (1982), Miller-Friesen (1983) and Morrison-Roth (1992) are worth mentioning.

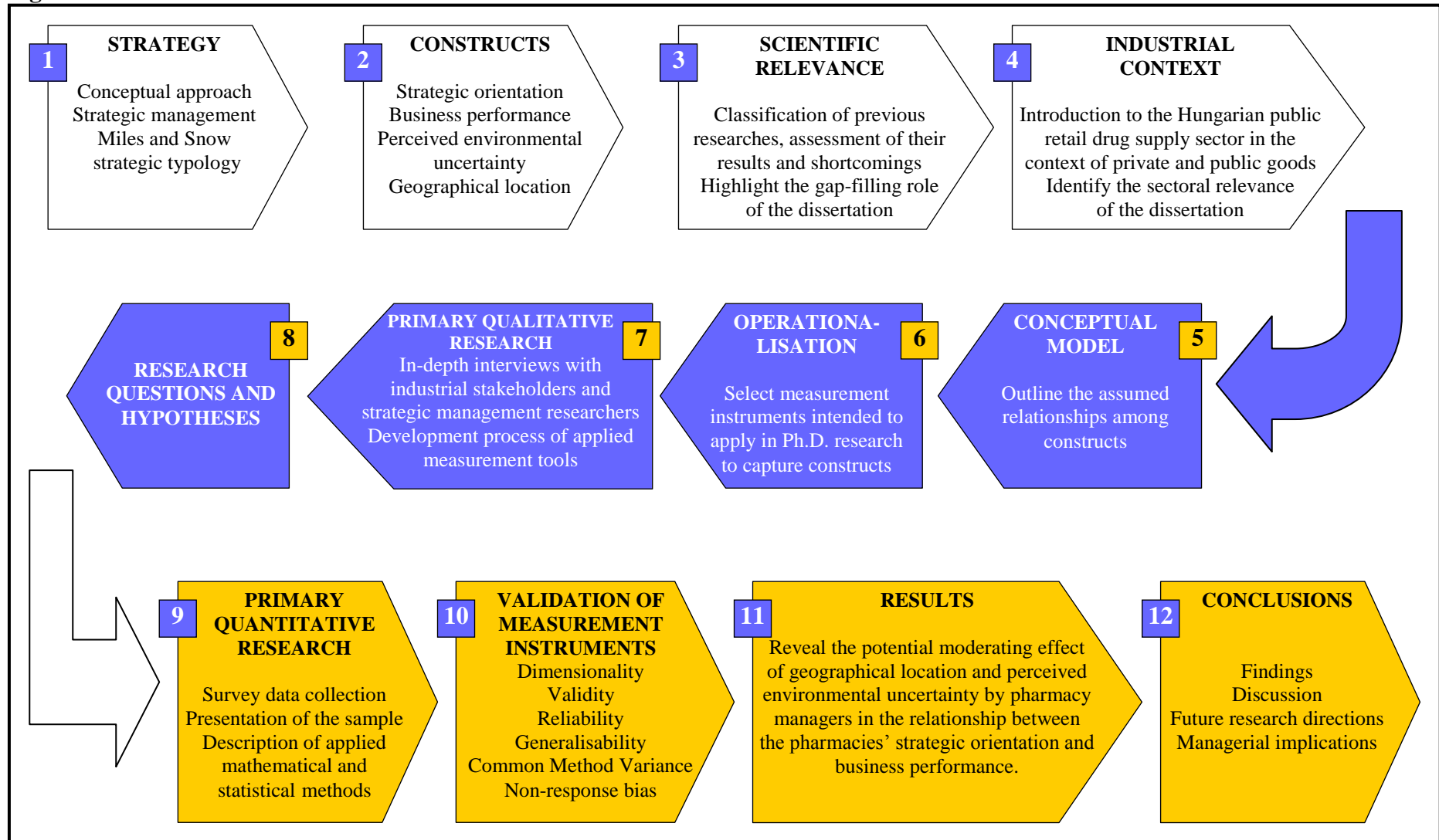
Our doctoral dissertation focuses on one of the most outstanding strategic taxonomy of business economics, the classification that has been developed by Raymond Miles and Charles Snow (1978). *Our empirical research considered explicitly testing the Miles and Snow (M&S) typology* as a priority within a special industrial context – the Hungarian Public Retail Drug Supply (HPRDS) – featured by the unique manifestation of microeconomic characteristics of public as well as private goods. The key content elements and milestones of our Ph.D. research are illustrated in Figure I.

2. Literature review – Conceptualisation of the constructs

The theoretical framework of our Ph.D. thesis, the M&S strategic typology focuses on the environmental adaptation process of organisations. The central construct of the classification – which was elaborated by the professors of UC Berkeley (Miles) and Wharton Business School (Snow) – is the so called adaptive cycle, according to which companies need to come up with adequate solutions for three main problems (Miles-Snow, 1978). For the solution of the *entrepreneurial problem* the organisation should define the products/services it would like to produce/sell and identify the market segments to target (*“product/market domain”*).

By addressing the *engineering problem*, companies should develop a feasible operating system for production and sales of their products/services (Miles et al., 1978). The adaptive cycle's third element is the *administrative problem*, where businesses should form such mechanisms – e.g. (in)formalisation, (de)centralisation, specialisation, control, reward systems – which ensure the seamless running of systems created at the entrepreneurial and engineering stages (Hage-Aiken, 1967).

Figure I: Flowchart of the framework of our Ph.D. research



Source: Figure made by the author

In their early studies the authors discovered *four relatively easy to identify enduring adaptation patterns (strategic orientations – SOs)* by observing the environmental adaptation behaviour of companies operating in the fields of textbook publishing, then food processing, electronics (semi-conductors) and healthcare services (Csepeti, 2010).

The *Prospectors* continuously strive to identify new business opportunities and proactively locate and target new product/customer segments. Unlike the *Prospectors*, *Defenders* with conventional solutions, consider to exploit their narrow and stable product/market segments as a priority. Standing in the middle of the strategic adaptation continuum, *Analysers*, by seeking to create an optimal combination of strengths of *Prospectors* and *Defenders*, both want to ensure cost-efficiency and to leverage the potential lying in product innovation. Contrary to the previous three SOs, *Reactors* are not capable to consciously develop a consistent behavioural pattern, which is crucial for successful environmental adaptation.

Strategic management has always put great emphasis on the exploration of the stochastic relationship between SO and business performance (BP) (Doty et al., 1993), thus after the classification and summary of M&S strategic typology's last 30 years' research, our interest drifted to the thorough secondary analysis of *Prospectors'*, *Analysers'*, *Defenders'* and *Reactors'* BP.

After the review of the market effectiveness, financial efficiency, adaptability and innovativity dimensions of BP (Chakravarthy, 1986, Kaplan-Norton, 1996, Ambler-Clark, 2001) we summarised the empirical observations of the two original propositions of M&S concerning the BP of the SOs: *1) Prospectors, Analysers and Defenders outperform Reactors within any industrial circumstances, 2) Prospectors, Analysers and Defenders can exhibit equally optimal BP if they implement the chosen SO in a consistent manner.*

Summarising the results of empirical studies, we came to the conclusion *that in most industries even with diverse environmental factors being present, Reactors are consistently outperformed* by *Prospectors, Analysers and Defenders*, while the *three viable SOs are able to exhibit optimal BP under any circumstances*. However, *certain SOs' resources and competencies are favored, while others are not by different industrial settings* (Bastian-Muchlisch, 2012, Boyd et al., 2012).

Several environmental and industry-specific variables can affect the relationship between the SO and the BP. We have to point out the degree of volatility, competitive intensity, market, technological and legislative turbulence, the trends of (de)regulation, the environmental shocks and the industry's structure or the different stages of product life cycle (Porter, 1979, Slater-Narver, 1994). Furthermore, such special factors – like the chosen BP indicators, the way of their operationalisation, the time horizon of BP measurement, the ownership structure, geographical location, size of the company, or the participation in horizontal and vertical integrations – can also significantly influence the relationship of SO and BP (Csepeti, 2010).

As far as the industrial context of our dissertation is concerned, during the past decade we have witnessed turbulent environmental shifts in the Hungarian Public Retail Drug Supply (HPRDS). The Act XCVIII of 2006 „on the general regulations of safe and cost-efficient supply and distribution of drugs and medical devices” (Act of Drug Distribution – ADD) fundamentally changed the system-level factors of pharmacies' operation and their management processes. The liberalisation process, which took place between 2006 and 2011 has been succeeded by a strong “ethical restoration” of sectoral restructuring. In the M&S

researches we can also spot a faint, yet noteworthy shift toward the adaptation to the strengthening bureaucratic coordination's numerous measure, and to the discovery of their impact on companies' SO and BP (Ghobadian et al., Andrews et al., 2006, 2009). Therefore in our dissertation's literature review stage, *we put remarkable emphasis on the environment-strategy-performance interdependence.*

In order to choose a consistent SO and to implement it, managers should adequately interpret the changes observable in the internal and external environments (Sharma, 2000), which are generally classified in strategic literature according to the following five criteria: 1) *Simple vs. complex* (Lukas et al., 2001, Tan, 2002, Tan-tan, 2005, Gotteland-Boulé, 2006, Kabadayi et al., 2007), 2) *Stable vs. instable* (Miller, 1988, Venkatraman-Prescott, 1988, Yeung et al., 2013, White et al., 2013), 3) *The rate of changes* (McArthur-Nystrom, 1991, Zahra, 1996, Pelham, 1999, Bechor et al., 2006, Menguc-Auh, 2008), 4) *the stakeholders' hostile or munificent behaviour* (Goll-Rasheed, 1997, Zahra-Bogner, 1999, Davies-Walters, 2004, Nandakumar et al., 2010) and 5) *the quantity and quality of available information* (Aguilar, 1967, Hambrick, 1982, Starbuck-Milliken, 1988, Daft et al., 1988, Newkirk-Lederer, 2006).

Researches examining the interaction between environment and strategy emphasise that *environmental conditions influence companies' SO not in their pure, objective form, rather through managers' filter* (Child, 1972, Buchko, 1994). The subjective perception of external conditions and stakeholders' behaviour can lead to the fact that *managers interpret the same industrial contingencies differently and they respond with alternate strategic approaches* (Hambrick, 1981, Meyer, 1982, Forte et al., 2000, Desarbo et al., 2005). Thus, to shed a light on the more subtle aspects of the relationship among M&S's SOs, BP and the environment *we integrated the Perceived Environmental Uncertainty (PEU) construct into the conceptual model of our research* (Namiki, 1999). By involving PEU – besides the exploration of its potential moderating effect on the relationship between M&S's SOs and BP – we had the opportunity to investigate the strategic management's conflicting “environmental determinism” (Katz-Kahn, 1966, Lawrence-Lorsch, 1967, Snow-Hrebiniak, 1985) and “managerial choice” (Child, 1972, Sharma, 2000, Augier-Teece, 2009) approaches and assess their prevalence in the HPRDS.

According to some implications in the literature, managers of *Defenders perceive environmental conditions as stable*, therefore, similar enterprises rather operate in more predictable industrial settings (Zahra-Pierce, 1990). *Dynamic and variable industrial and operational conditions favour the behavioural features of Prospectors* since their managers consider some momentums of environmental turbulence as business opportunities to seize (Gray et al., 1999, Namiki, 1999). Executives of companies pursuing *Analyser SO* can perceive both stability and dynamism in the operational environment. They might occur in reliable and unpredictable sectors as well, but their *effort aim at a more thorough analysis and prediction of changes in conditions* (Hambrick, 2003, Zinn et al., 2008). The inconsistent *Reactor* enterprises can be present both in stable and variable environments, nonetheless, *their less consistent SO and management features might easily lead to suboptimal BP among predictable, but especially insecure circumstances* (DeSarbo et al., 2005, Meier et al., 2007).

However, in the literature review stage of our Ph.D. thesis we found that *the relationship between the emergence of different SOs and operational environments described with various industry-specific features is less significant and ideal-typical than it was assumed.* The distribution of Prospectors, Analysers, Defenders and Reactors – in contrast to M&S's original

observations – varies very much (McDaniel-Kolari, 1987, Conant et al., 1990, James-Hatten, 1995, Desarbo et al., 2005).

We also emphasised that different environmental contexts favour ideal-typical resources and capabilities of each SO, hence the fit or misalignment of companies' SO and external contingencies might have significant consequences on BP *that changes the strength, the direction and the nature of relationship between SO and BP*. Therefore, we summarised the results of previous scientific articles which analysed the potential moderating effects of environmental conditions in the strategy/performance linkage.

Based on the experiences, we identified those stream of studies, *in which external environmental moderating variables did not have significant influence on the relationship of SO and BP* (Venkatraman-Prescott, 1988, Slater-Narver, 1994, Waldman et al, 2001, Srivivasan, 2011). However, the other group of researches shed light on the *significant impact of these factors* (Zahra, 1996, Zahra-Boegner, 1999, Agbejule, 2005, Bstelier, 2005, Hoque, 2005, Tan-Tan, 2005, Wang et al, 2012, White et al, 2013). *Researches could not make robust conclusions on the moderating effect of environmental factors in the relationship of SO and BP*, hence there are still many open questions and underresearched aspects in the literature. Our thesis intended to contribute to the decrease of these knowledge gaps.

The fourth important theoretical construct of our dissertation is geographical location (GL). In our research on the HPRDS *the influential effect of GL on SO and BP cannot be interpreted within global context but in one given country*, therefore we highlighted the meaning of GL on micro-level business strategy and management. Past researches laid special emphasis on the difference between urban and rural context in various aspects such as SO of companies, operation of functional fields, consumer behaviour and the willingness of managers on cooperation and risk taking etc. (Sun-Wu, 2004, Velayudham, 2007).

The empirical results of trade economics and retail management *shed light on the fact that sales and profitability possibilities of enterprises are mostly determined by the choice of GL and site* (Huff, 1964, Wolinsky, 1983, Ghosh-McLafferty, 1987, Levy-Weitz, 2012). The liberalisation process within the HPRDS between 2006 and 2011 *valorised the role of GL through the significant relief of conditions of pharmacy establishment* (Szabó, 2009). *GL of pharmacies has partly become a factor that can be modified by managers*, hence in our Ph.D. research *we aimed to analyse the moderating effect of GL in the relationship between SO and BP of pharmacies*.

Besides the conceptualisation of theoretical constructs, in the literature review stage of the Ph.D. thesis *we briefly summarised the similarities and differences between the microeconomic features of private and public goods*, nonetheless, we demonstrated with examples *how they appear in the HPRDS and operations of pharmacies*. In the sense of statistics pharmacies are *micro and small enterprises*, therefore, we also collected *what sort of idiosyncratic aspects describe the inherent content and process elements of strategic management of similar organisations* (Jelen, 1995, Gibbons-O'Connor, 2005, Spillan-Parnell, Pittino-Visintin, 2009). We continue our thesis with the introduction of the academic importance of our doctoral research.

3. The scientific relevance of the doctoral dissertation

Our dissertation tested one of the most widely known typologies of strategic management in a regulated industrial environment. According to our best knowledge the M&S classification has not explicitly been examined in Hungary so far (Berács et al., 1995, Hambrick, 2003). Our research sought to eliminate as far as possible the conceptual and methodological deficiencies observed in previous international studies. Therefore *our thesis applied the following novel scientific approaches and methodological solutions* (Csepeti, 2010).

1. We analysed the relevance of the M&S strategic typology among companies operating in *a special sector that can be described by a particular mix of microeconomic characteristics of public and private goods and by strong governmental regulation* (Fiegenbaum-Thomas, 1995, McGahan-Porter, 1997, Andrews et al. 2006, 2009).
2. In the majority of mainstream studies of strategic management, the environment of the examined companies can be characterised by the prevalence of market coordination mechanisms and intense competition (Ghobadian et al., 1998, Boyne-Walker, 2004, Bastian-Muchlish, 2012). The challenge of our thesis is to determine the extent to which the SOs of M&S can be observed among pharmacies and what the BP implications are of pursuing different SOs in the *HPRDS featured by bureaucratic coordination mechanisms and a recently increased, but still limited competitive intensity* (Kornai, 1983).
3. We tested the validity of M&S classification in a special sector of *a country where the operation of firms is less affected by the ideal-typical socio-economic characteristics of Anglo-Saxon business culture* that has been dominant in previous studies (Dyer-Song, 1997, Jusoh-Parnell, 2008, Kabanoff-Brown, 2008, Parnell et al., 2012).
4. We have tested M&S taxonomy *on a market of a relatively small country*, a context which was rarely the case in earlier studies (Pinto-Curto, 2007, Talpová, 2012).
5. *In contrast with the dominance of large corporations in the mainstream research* on the typology of M&S, our dissertation sought to identify the Prospector, Analyser, Defender and Reactor SOs *in the context of micro and small enterprises* and to explore their BP implications (Aragón-Sánchez – Sánchez-Marín, 2006, Ghobadian-O'Reagan, 2005).
6. Despite the difficulties in operationalisation of their identification, *we also integrated pharmacies pursuing Reactor SO into our research* and by providing recommendations based on our empirical conclusions we attempted to push them into the direction of a consistent strategic behavioural pattern (Vorhies-Morgan, 2003, Olson et al., 2005).
7. *In order to ensure a higher degree of validity and reliability we have applied 3 measurement tools* – self-typing paragraph method, multi item scale of Segev, objective indicators – for the classification of pharmacies into SOs (Snow-Hambrick, 1980, Conant et al., 1990, James-Hatten, 1995). *To prove convergent validity in its classical sense, we used statistical tests to evaluate the match between the results obtained by the application of the 3 different extraction techniques.*
8. To increase validity and reliability, *we replaced subjective, managerial BP ratings by objective indicators in our research: sales for market effectiveness and net profit as an indicator of profitability* (Morgan et al., 2004, Hoque, 2005).

9. *We have examined how PEU has affected the relationship between pharmacies' SO and BP in the HPRDS which undergoes turbulent changes. Our dissertation sought to contribute to the clarification of mixed results previously registered by studies evaluating the effects of potential moderating factors in the stochastic relationship between SO and BP, and to try to minimise knowledge gaps identified in those papers (Venkatraman-Prescott, 1988, Nandakumar et al, 2010, Parnell et al, 2012).*
10. *By using moderated moderation (SEM) it was our methodological priority to highlight the moderating role that GL of pharmacies and PEU by pharmacists simultaneously play in the relationship of SO and BP. By integrating control variables related to pharmacies' socio-demographic and site characteristics we also tested the robustness of the influence that SOs and potential environmental moderating factors have on BP.*
11. *By methodologically „confronting” Contingency Theory (Hofer, 1975) and Managerial Choice approach developed by Child (1972) we have explored whether the observed changes in environmental conditions and stakeholders' behaviour determine SOs of pharmacies (Hrebiniak-Joyce, 1985, Boyd et al., 2012) or rather the conscious strategic choice of pharmacists determines how they perceive changes in the turbulent environment (Sharma-Vredenburg, 1998, Sharma – Aragón-Correa, 2003).*

4. The sector-specific and business policy relevance of the dissertation

The Act XCVIII. of 2006 „On the general regulations and the safe and cost-efficient supply as well as distribution of drugs and medical devices” has resulted in a growing need for managerial tasks such as adjustment of product/service portfolio to changing patient needs and preferences, rationalisation of inventory management, marketing activities and the maintenance of close ties with key stakeholders of drug supply chain. *The majority of pharmacists was lacking business knowledge and managerial competences for the successful accomplishment of the abovementioned tasks* (Feller, 2010, IMS Health, 2012, de Aguiar, 2014). However, in an ideal situation, *the tactical management tasks are originated from a consistent pattern of environmental adaptation* (Inkpen-Choudhury, 1995), that have not yet been attempted to identify with a rigorous statistical methodology, especially in a regulated, domestic sector.

In 2011 the liquidation of the harmful effects of liberalisation and a determined restoration of the ethical model has been launched in the HPRDS. Among government measures aimed at the consolidation of state budget, austerity measures affecting the pharmaceutical budget have played an important role. Over a period of 3 years the so called Széll Kálmán Plan reduced the subsidies on price of publicly financed drugs from 343 billions HUF to 190 billions HUF. As a result of blind bids the share of cheaper, generic products has increased significantly among the publicly subsidized drugs. This meant savings for the state budget, but also resulted in significant losses of income and operational anomalies for the stakeholders of drug supply chain, specifically the pharmacies (Hankó et al., 2014).

The unfavourable change in the macroeconomic environment (2007-2012) resulted in a decrease of purchasing power and stagnation in the demand for drugs. On the other hand, the increase in labour and overhead costs accentuated pharmacies' business difficulties. However, there have been a number of sectoral measures aimed at improving BP of pharmacies (i.e. generic compensation, service fee, solidarity contribution, wholesaler's margin correction).

These measures also tried to reduce differences between pharmacies with high and low turnover.

In spite of the ethical restoration, *due to the increased number of pharmacies by 20% between 2006 and 2011, the HPRDS is still characterised by intense competition.* As a consequence, the success of environmental adaptation of pharmacies and the professional management of micro-level processes are still key issues (Desselle-Zgarrick, 2004, Bodrogi et al., 2012). *By consciously choosing and consistently implementing a SO, pharmacies can influence their BP.* Our Ph.D. thesis has offered the following advantages to pharmacy managers and sectoral policy decision makers:

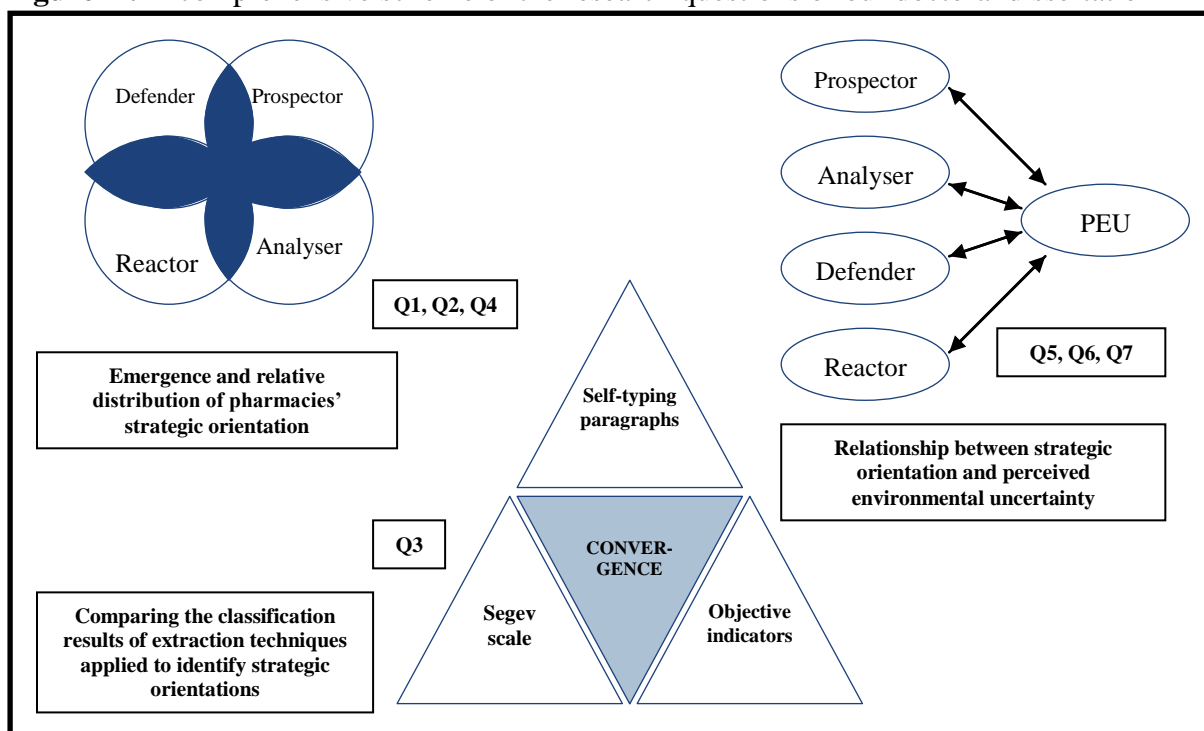
1. We have determined whether *consistent SOs can be observed in the HPRDS, and if yes, how many we can distinguish* (Lindblom, 1959, Mintzberg-McHugh, 1998).
2. By the identification of relevant SOs in the HPRDS, decision makers could get a clear picture of *the differences in terms of strategic level management characteristics between pharmacies* that have developed different environmental adaptation patterns.
3. We revealed to what extent *pharmacies pursuing different SOs find (un)predictable changes in operating conditions and in the behaviour of main stakeholders.* Based on our findings decision makers can seek to optimally modify key environmental factors.
4. Based on the relationship between the M&S's SOs and BP *we formulated managerial implications to highlight strategic level management characteristics that increase BP* within given environmental settings.
5. *Differentiated sectoral policy decisions can be made for pharmacies pursuing different SOs* in order to develop their business knowledge and management competencies.
6. *We shed light on the proportion of variance in BP that can be explained by SOs,* so to the amount of resources that should be allocated to their development and consistent realisation.
7. By revealing the potential moderating effect that PEU and GL play in the relationship between SO and BP *we offered guidelines to show which behavioural characteristics of given SOs contribute to optimal BP in different environmental settings.*
8. Through the integration of control variables concerning pharmacies' socio-, demographic and site characteristics, *the effect of additional factors (beyond SOs) on pharmacies' BP could also be proven or refuted.*

5. General research questions of the doctoral dissertation

In our research questions we were curious about how many of the original SOs of M&S and in what format can we observe in HPRDS that is characterised by bureaucratic coordination mechanisms and limited competitive intensity. *We identified SOs pursued by pharmacies with the application of numerous measurement instruments,* thus by comparing their classification results *we could make valid and reliable conclusions about the presence and relative distribution of Prospector, Analyser, Defender and Reactor pharmacies.*

In our dissertation we have also examined the *interactions of strategy and environment*. By using various methods to quantify the influence of PEU by pharmacists on the choice and development of SOs pursued by pharmacies, as well as the effect of the consciously chosen SO by pharmacists on the perception of changes in environmental conditions and industrial stakeholders' behaviour. We summarised the research questions of our Ph.D. thesis on Figure II. Their concrete wording and our answers which are based on several mathematical-statistical analyses performed in empirical research – due to the length limit of this Thesis and in order to satisfy the need for easier interpretation – can be found in Table I.

Figure II: A comprehensive scheme of the research questions of our doctoral dissertation



Source: Figure made by the author

For the better interpretation of the answers it is important to note that according to exploratory and confirmatory factor analyses (EFA and CFA), conducted at discriminant validity analyses, in the HPRDS *the behavioural characteristics of Defender and Reactor SOs were largely loaded on the same dimension*. In the manifestation of the *Defender/Reactor SO*, which is relevant in HPRDS, the content elements were mostly dominated by the behavioural characteristics of the *Reactor SO*. Hence, research questions pertaining to Defenders were deleted, as long as we evaluated the ones concerning Reactors according to the results we met for the Defender/Reactor SO. Therefore some term (e.g. Deleted) and abbreviations (D/R) listed in the "ANSWER" column in Table I indicate the abovementioned modifications.

Table I: The summary of the answers given to the research questions of our dissertation

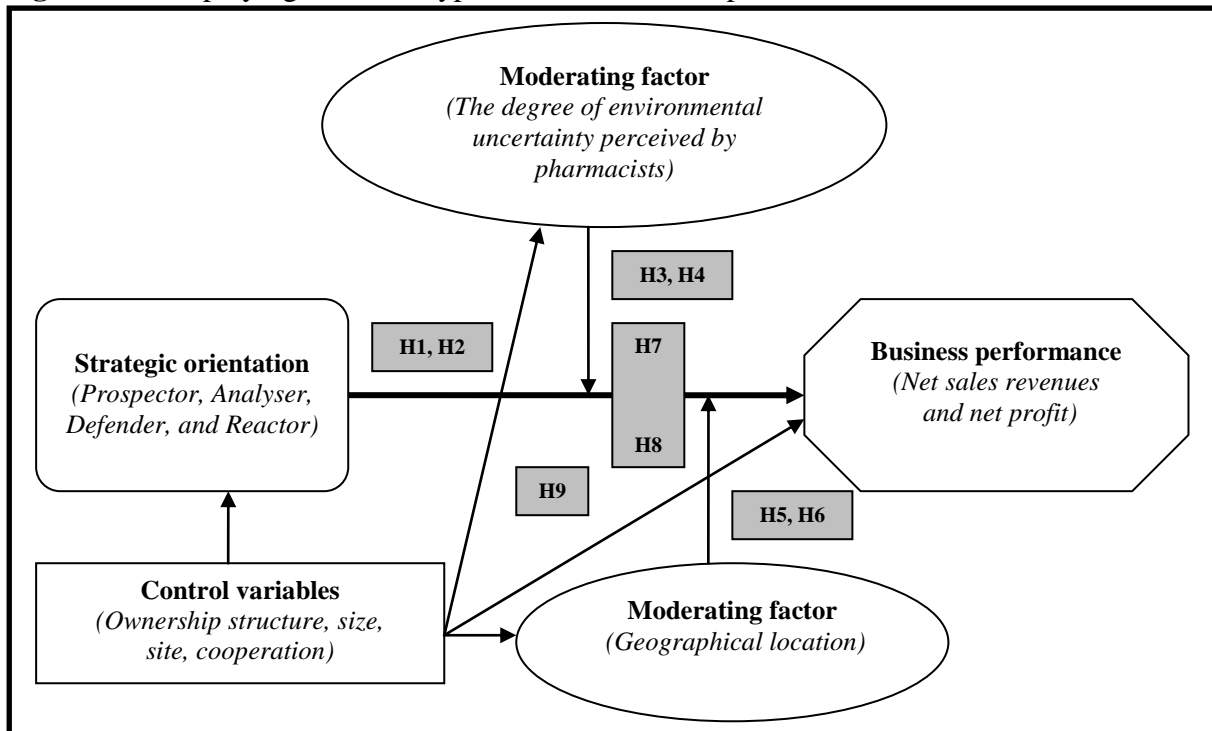
RESEARCH QUESTION		ANSWER
Q1	According to the environmental adaptation behaviour of pharmacies, can we observe all the original SOs of M&S in the HPRDS?	No
Q2	In the HPRDS whether markedly distinguished, pure SOs or hybrid/mix environmental adaptation patterns can be identified?	2 pure and 1 hybrid, rather „mix”
Q3	To what extent the distribution ratios of pharmacies – following Prospector, Defender, Analyser and Reactor SOs identified in the HPRDS – differ based on the classification results of diverse strategy extraction techniques applied in our research?	4 factor: significantly 3 factor: minimally
Q4	To what extent the distribution ratios of pharmacies – pursuing different industry-specific SOs of M&S – differ from each other?	According to both method: D/R(%) $\geq A(\%) \geq P(\%)$
Q4a	Is the distribution ratio of pharmacies following Defender SO exceeded by that of pharmacies pursuing Prospector SO?	Deleted
Q4b	Is the distribution ratio of pharmacies following Analyser SO exceeded by that of pharmacies pursuing Prospector SO?	Paragraphs: No Segev: No
Q4c	Is the distribution ratio of pharmacies following Defender SO exceeded by that of pharmacies pursuing Analyser SO?	Deleted
Q4d	Is the distribution ratio of pharmacies following Analyser and Prospector SOs exceeded by pharmacies pursuing Defender/Reactor SO?	Paragraphs: Prospector Yes, Analyser No Segev: Yes, both
Q5	Does the degree of PEU by pharmacy managers – following different SOs of M&S – differ from each other?	Yes
Q5a	Is the degree of PEU by pharmacists following Analyser SO exceeded by the degree of PEU by pharmacists pursuing Prospector SO?	Yes
Q5b	Is the degree of PEU by pharmacists following Defender SO exceeded by the degree of PEU by pharmacists pursuing Analyser SO?	Deleted
Q5c	Is the degree of PEU by pharmacists following Defender SO exceeded by the degree of PEU by pharmacists pursuing Prospector SO?	Deleted
Q5d	Is the degree of PEU by pharmacists following Prospector and Analyser SOs exceeded by the degree of PEU by pharmacists pursuing Defender/Reactor SO?	No (Analyser: Yes Prospector: No)
Q6	Does the prevalence of different SOs of M&S differ according to groups of pharmacies characterised by high/low levels of PEU?	No
Q6a	In the group of pharmacies characterised by high levels of PEU is the prevalence of Prospector SO greater than in the group featured by low levels of PEU?	No
Q6b	In the group of pharmacies characterised by high levels of PEU is the prevalence of Defender SO lesser than in the group featured by low Levels of PEU?	Deleted
Q6c	In the group of pharmacies characterised by high levels of PEU is the prevalence of Analyser SO lesser than in the group featured by low levels of PEU?	No
Q6d	In the group of pharmacies characterised by high levels of PEU is the prevalence of Defender/Reactor SO greater than in the group featured by low levels of PEU?	No
Q7	Is the degree of influence of SOs followed by pharmacies on PEU exceeded by the effect of PEU by pharmacists exerted on the SOs?	No

Source: Table made by the author

6. Hypotheses of the doctoral research

After the general research questions of the dissertation, we present our hypotheses concerning the direction and strength of the assumed relationships between the constructs as well as the statistical significance of the differences. Beside the sector-specific manifestations of M&S's SOs, in our thesis we paid special attention to examine BP of Prospector, Analyser, Defender and Reactor pharmacies. *Our hypotheses placed great emphasis on identifying factors – such as PEU by pharmacy managers and GL of pharmacies – potentially playing moderating role in the stochastic relationship between SO and BP*, as well as on examining the robustness of the interrelations revealed by multivariate analyses. Figure III shows the hypotheses empirically tested in the conceptual model of our thesis.

Figure III: Displaying research hypotheses in the conceptual model of our Ph.D. thesis



Source: Figure made by the author

Due to length limits and in order to satisfy the need for transparent arrangement, the wording of formulated hypotheses and results of their testing can be found together in Tables II-III. For the interpretation we have to take into consideration that according to EFA and CFA – conducted at the examination of discriminant validity – in the HPRDS the behavioural characteristics of Defender and Reactor SOs were largely loaded on the same factor.

In the manifestation of the Defender/Reactor SO relevant in HPRDS, content elements were mostly dominated by the behavioural characteristics of the Reactor SO. Therefore we deleted our original hypothesis related to Defender SOs, meanwhile we evaluated hypotheses pertained to Reactors in the light of the results of Defender/Reactor SO. *Results of the most important mathematical-statistical methods (regressions and SEM) quantifying the relationship between M&S's SOs and BP can be found in Tables IV-VII.* For easier interpretation we have to stress that the multi item PEU scale of M&S was operationalised as reverse coded ranging from 1 (Totally unpredictable) to 5 (Totally predictable).

Table II: Summarised evaluation of the results of our hypotheses formulated and tested in the doctoral dissertation I.

HYPOTHESES		RESULTS
H1	The strength of the relationship between Prospector, Analyser, Defender SOs and the sales of pharmacies differs from each other	Accepted
H1a	The strength of positive the relationship between Prospector SO and sales of pharmacies exceeds the degree of the positive relationship between Analyser SO and sales of pharmacies	Accepted
H1b	The strength of the positive relationship between Prospector SO and sales of pharmacies exceeds the degree of the positive relationship between Defender SO and sales of pharmacies	Canceled
H1c	The strength of the positive relationship between Analyser SO and sales of pharmacies exceeds the degree of the positive relationship between Defender SO and sales of pharmacies	Canceled
H1d	Following Defender/Reactor SO makes a negative influence on the sales of pharmacies	Accepted
H2	The strength of the relationship between Prospector, Analyser, Defender SOs and the net profit of pharmacies differs from each other	Rejected
H2a	The strength of the positive relationship between Defender SO and the net profit of pharmacies exceeds the degree of the positive relationship between Analyser SO and the net profit of pharmacies	Canceled
H2b	The strength of the positive relationship between Defender SO and the net profit of pharmacies exceeds the degree of the positive relationship between Prospector SO and the net profit of pharmacies	Canceled
H2c	The strength of the positive relationship between Analyser SO and the net profit of pharmacies exceeds the degree of the positive relationship between Prospector SO and the net profit of pharmacies	Rejected
H2d	Following Defender/Reactor SO has a negative effect on the net profit of the pharmacies	Rejected
H3	The PEU moderates the relationship between M&S's SOs and sales of the pharmacies	Rejected
H3a	In parallel to increased degree of PEU the positive relationship between Prospector SO and the sales of the pharmacies becomes stronger	Rejected
H3b	In parallel to increased degree of PEU the positive relationship between Analyser SO and the sales of the pharmacies becomes stronger	Rejected
H3c	In parallel to increased degree of PEU the positive relationship between Defender SO and the sales of the pharmacies becomes stronger	Canceled
H3d	In parallel to increased degree of PEU the negative relationship between Defender/Reactor SO and the sales of the pharmacies strengthens	Rejected
H4	The PEU moderates the relationships between M&S's SOs and net income of the pharmacies	Rejected
H4a	In parallel to increased degree of PEU the positive relationship between Prospector SO and the net profit of pharmacies weakens	Rejected
H4b	In parallel to increased degree of PEU the positive relationship between Analyser SO and the net profit of pharmacies weakens	Rejected
H4c	In parallel to increased degree of PEU the positive relationship between Defender SO and the net profit of pharmacies weakens	Canceled
H4d	In parallel to increased degree of PEU the negative relationship between Defender/Reactor SO and the net profit of pharmacies strengthens	Rejected
H5	The GL of the pharmacies moderates the relationship between the SOs and sales of the pharmacies	Partially accepted
H5a	In urban context the positive relationship between Prospector SO and sales of pharmacies becomes stronger compared to rural areas	Rejected
H5b	In urban context the positive relationship between Defender SO and sales of pharmacies becomes stronger compared to rural areas	Canceled
H5c	In urban context the positive relationship between Analyser SO and sales of pharmacies becomes stronger compared to rural areas	Rejected
H5d	In urban context the negative relationship between Defender/Reactor SO and sales of pharmacies becomes stronger compared to rural areas	Rejected

Source: Table made by the author

Table III: Summarised evaluation of the results of the hypotheses formulated and tested in the doctoral dissertation II.

HYPOTHESES		RESULTS
H6	The GL of pharmacies moderates the relationship between the SOs and net profit of pharmacies	Partially accepted
H6a	In urban context the positive relationship between Prospector SO and the net profit of pharmacies is weaker than in rural areas	Accepted
H6b	In rural context the positive relationship between Defender SO and the net profit of pharmacies is stronger than in urban areas	Canceled
H6c	In urban context the positive relationship between Analyser SO and the net profit of pharmacies is weaker than in rural areas	Accepted
H6d	In urban context the negative relationship between Defender/Reactor SO and the net profit of pharmacies is stronger than in rural areas	Rejected
H7	PEU in combination with GL moderates the relationships between M&S's SOs and the sales of pharmacies	Rejected
H7a	In urban context the increasing degree of PEU makes the positive relationship between Prospector SO and the sales of pharmacies stronger than that experienced in rural environment	Rejected
H7b	In urban context the increasing degree of PEU makes the positive relationship between Analyser SO and the sales of pharmacies stronger than that experienced in rural environment	Rejected
H7c	In urban context the increasing degree of PEU makes the positive relationship between Defender SO and the sales of the pharmacies stronger than that experienced in rural environment	Canceled
H7d	In rural context the increasing degree of PEU makes the negative relationship between Defender/Reactor SO and the sales of the pharmacies stronger than that experienced in urban environment	Rejected
H8	PEU in combination with GL moderates the relationships between M&S's SOs and the net profit of pharmacies	Rejected
H8a	In rural context the increasing degree of PEU makes the positive relationship between Prospector SO and the net profit of pharmacies weaker than that experienced in urban environment	Rejected
H8b	In rural context the increasing degree of PEU makes the positive relationship between Analyser SO and the net profit of pharmacies weaker than that experienced in urban environment	Rejected
H8c	In rural context the increasing degree of PEU makes the positive relationship between Defender SO and the net profit of pharmacies weaker than that experienced in urban environment	Canceled
H8d	In rural context the increasing degree of PEU makes the negative relationship between Defender/Reactor SO and the net profit of pharmacies stronger than that experienced in urban environment	Rejected
H9	The interrelations established as a result of the potential moderating influence of the PEU and GL – on the relationship between the SO and BP are robust after controlling for the effect of relevant industry-specific variables	Partially accepted
H9a	The observed relationships between the SOs of Miles and Snow and sales of pharmacies are robust	Partially accepted
H9b	The observed relationships between the SOs of Miles and Snow and net profit of pharmacies are robust	Partially accepted

Source: Table made by the author

Table IV: The moderating effect of perceived environmental uncertainty in the relationship of strategic orientation and business performance

Moderating variable: Perceived environmental uncertainty		Applied mathematical-statistical methods											
Strategic orientation	Business performance	Hierarchical (interaction) moderated regression		Multigroup moderated regression				Interaction moderation (SEM)		Multigroup moderation (SEM)			
				High		Low				High		Low	
		β	Sig.	β	Sig.	β	Sig.	β	Sig.	β	Sig.	β	Sig.
Prospector	Sales	-0,074	0,392	0,375	0,000	0,265	0,007	-0,057	0,448	0,401	0,000	0,248	0,033
Analysér	Sales	0,059	0,498	-0,171	0,074	-0,001	0,994	0,095	0,167	-0,174	0,088	0,021	0,850
Defender/Reactor	Sales	-0,099	0,172	-0,165	0,102	-0,304	0,002	-0,162	0,027	-0,147	0,199	-0,334	0,009
Prospector	Net profit	-0,075	0,424	0,158	0,145	0,036	0,734	-0,034	0,684	0,153	0,201	0,056	0,630
Analysér	Net profit	0,071	0,452	-0,123	0,207	0,086	0,420	0,060	0,442	-0,114	0,282	0,085	0,482
Defender/Reactor	Net profit	0,066	0,399	-0,207	0,066	0,009	0,935	0,045	0,589	-0,241	0,059	0,0012	0,918

Source: Table made by the author**Table V:** The moderating effect of geographical location in the relationship of strategic orientation and business performance

Moderating variable: Geographical location		Applied mathematical-statistical methods											
Strategic orientation	Business performance	Hierarchical (interaction) moderated regression		Multigroup moderated regression				Interaction moderation (SEM)		Multigroup moderation (SEM)			
				Urban		Rural				Urban		Rural	
		β	Sig.	β	Sig.	β	Sig.	β	Sig.	β	Sig.	β	Sig.
Prospector	Sales	-0,039	0,615	0,276	0,004	0,396	0,000	-0,024	0,727	0,279	0,015	0,384	0,002
Analysér	Sales	-0,050	0,515	-0,028	0,773	-0,332	0,001	-0,077	0,244	-0,023	0,845	-0,302	0,013
Defender/Reactor	Sales	-0,016	0,814	-0,160	0,120	-0,290	0,002	-0,053	0,456	-0,134	0,280	-0,325	0,030
Prospector	Net profit	0,010	0,910	0,056	0,574	0,199	0,051	0,026	0,742	0,037	0,741	0,244	0,039
Analysér	Net profit	-0,019	0,822	0,028	0,793	-0,190	0,081	-0,091	0,233	0,079	0,524	-0,271	0,029
Defender/Reactor	Net profit	-0,093	0,237	0,028	0,800	-0,308	0,004	-0,104	0,203	0,006	0,961	-0,342	0,028

Source: Table made by the author

Table VI: Evaluation of the combined moderating effect of perceived environmental uncertainty and geographical location (Sales)

Moderating variable: Perceived environmental uncertainty		Moderating variable: Geographical location Applied mathematical-statistical methods							
Strategic orientation	Business performance	Moderated moderation (SEM)				Moderated moderation (SEM) by integrating relevant, industry-specific control variables			
		Urban		Rural		Urban		Rural	
		β	Sig.	B	Sig.	β	Sig.	β	Sig.
Prospector	Sales	0,311	0,002	0,342	0,000	0,262	0,010	0,204	0,049
Prospector*PEU	Sales	-0,023	0,814	-0,214	0,055	-0,030	0,761	-0,205	0,052
Defender/Reactor	Sales	-0,158	0,143	-0,304	0,002	-0,219	0,043	-0,232	0,017
Defender/Reactor*PEU	Sales	-0,188	0,085	-0,153	0,222	-0,196	0,073	-0,101	0,391
Analysers	Sales	-0,082	0,439	-0,180	0,081	-0,089	0,389	-0,130	0,089
Analysers*PEU	Sales	0,124	0,253	0,125	0,241	0,080	0,450	0,162	0,080

Source: Table made by the author**Table VII:** Evaluation of the combined moderating effect of perceived environmental uncertainty and geographical location (Net profit)

Moderating variable: Perceived environmental uncertainty		Moderating variable: Geographical location Applied mathematical-statistical methods							
Strategic orientation	Business performance	Moderated moderation (SEM)				Moderated moderation (SEM) by integrating relevant, industry-specific control variables			
		Urban		Rural		Urban		Rural	
		β	Sig.	β	Sig.	β	Sig.	β	Sig.
Prospector	Net profit	0,020	0,857	0,174	0,100	-0,066	0,561	0,051	0,631
Prospector*PEU	Net profit	0,017	0,876	-0,260	0,024	-0,023	0,826	-0,274	0,009
Defender/Reactor	Net profit	0,004	0,974	-0,298	0,003	-0,045	0,696	-0,276	0,005
Defender/Reactor*PEU	Net profit	0,131	0,277	0,069	0,592	0,156	0,182	0,074	0,532
Analysers	Net profit	0,007	0,955	-0,166	0,120	0,037	0,743	-0,157	0,121
Analysers*PEU	Net profit	-0,017	0,884	0,193	0,078	-0,006	0,959	0,230	0,022

Source: Table made by the author

7. Operationalisation of theoretical constructs examined in Ph.D. research

The applied measurement instruments for the operationalisation of the 4 major theoretical constructs of our dissertation – M&S's SOs, BP, PEU, GL – are summarised in Table VIII.

Table VIII: The operationalisation of theoretical constructs examined in empirical research

Construct	Measurement methods	Measurement scale	Indicators and units of measurement
Miles and Snow's Strategic Orientation	Self-typing paragraph method	Nominal	A) Prospector, B) Defender, C) Analyser, D) Reactor
	Multi-item scale of Segev (1987) (4 dimensions, 29 items)	Metric	1-5 points Likert-scale (not at all suits...absolutely suits to the environmental adaptation behaviour of the pharmacy)
	Method of objective indicators	Ratio	1) Rx., OTC and other products in Sales (%) 2) Rx., OTC and others (%) in absolute gross margin 3) Average amount of stock from Rx., OTC, others (day) 4) Pharmacist and lifestyle-related services (piece) 5) Revenue from pharmacist and lifestyle-related services
Business Performance	Objective, indicator of accounting performance	Ratio	Market effectiveness: Net sales revenues (million HUF)
	Objective, indicator of accounting performance	Ratio	Financial efficiency: Net profit (after tax) (million HUF)
Perceived Environmental Uncertainty	Miles and Snow's perceived environmental uncertainty multi-item scale (1978) (7 dimensions, 45 items)	Metric	1-5 points Likert-scale (completely unpredictable...completely predictable: the behaviour of wholesalers, producers, patients, competitor pharmacies, regulatory authorities, HCP and changes in financial conditions)
Geographical Location	Harmonisation of the settlement registers of Hungarian Central Statistical Office (HCSO) and the Hungarian Chamber of Pharmacists (HCP)	Ordinal	Based on population size: 1) Budapest, 2) city, where more than 50 thousand people live, 3) city where 10-50 thousand people live, 4) township with 5-10 thousand people 5) settlement with less than 5 thousand people

Source: Table made by the author

It can be pointed out that *we intended to identify the M&S's SOs by using 3 different extraction methods* in our research in order to provide greater levels of validity and reliability. Therefore we had a chance to analyse the convergent validity of measurement methods and their outcomes in its classical scientific sense, which is rare even in international researches. It is also important to note that both the Segev scale (1987) that was applied to identify the M&S's SOs, and the scale developed by M&S, which was applied to operationalise the degree of PEU of pharmacists, can be considered as methodologically well-grounded, multi-item approaches with confirmatory factor structure, *which have already been referred in previous international researches*. Thus, these could be integrated into structural equation models (SEM) aiming at approaching the relationship between latent constructs and manifest variables in a more sophisticated manner.

8. Applied research methodology

In our doctoral dissertation we used *primary and secondary* research methodologies in order to identify strategic behavioural patterns in HPRDS and to discover the BP implications of the M&S's SOs. The particular *qualitative and quantitative* research techniques, their objectives and schedules are demonstrated in Table IX below.

The review of international and domestic literature contributed to the *elaboration of the conceptual model of our research*, and was focused on the detailed description of the environmental adaptation typology of M&S and its BP implications. Besides we put great emphasis *on the introduction of PEU and GL constructs, just as on their relationship to companies' SO and BP*. The classical economic sources – in accordance with the operational mechanisms of HPRDS examined in the thesis – served for the comparison of *microeconomic features of public and private goods*, just as to summarise the idiosyncratic manifestation of *strategic management processes in micro-, small- and medium sized enterprises*.

In the primary qualitative research section of the dissertation, *we organised expert interviews with officials of key stakeholder groups in HPRDS*. After more than 30 consultations, besides the sector-specific objectives, the *finalisation of the conceptual model* emerged, as well as we *pretested the validity, reliability, dimensionality, and made sure the "industrial" fit of measurement instruments* intended to use in the quantitative survey.

During the quantitative section of our empirical research, *data collection has been delivered by survey inquiry* with the support of the president of the Hungarian Chamber of Pharmacists (HCF) and its regional leaders. The *sampling frame* consisted of all pharmacies operating in the capital and in other 4 counties of Hungary. *The census-like data collection* was organised in Budapest, moreover in Baranya, BAZ, Pest and Vas counties. The questionnaires were *distributed by post* to approximately 1000 pharmacy managers. After reminder mails and telephone calls, all in all *207 completed questionnaires* – featured by high quality data, thus applicable in multivariate analysis – have been returned, which means *a 22% response rate*.

Knowing the structure of domestic public pharmacies, we have to ascertain, *that the criteria of representativity were not completely met in our research*. This was already determined by the sampling frame, but the chosen counties according to their socio-demographic and sector-specific characteristics, demonstrate quite well the structural peculiarities of total pharmacy population. Our sample was representative in terms of settlement structure, BP, and corporate legal form, whereas it was not according to ownership structure and the participation in horizontal and vertical cooperation forms.

Table IX: Overview of the main sections of the doctoral research, their objectives and applied methodologies

	Research methodology	Objectives of the research	Sources	Schedule
SECONDARY	Literature review	Circumscription of the construct of strategy and introduction to the development of strategic management	International and domestic academic journals and economic textbooks	September 2009 – November 2011
		Review of the strategic typology developed by Miles and Snow		March 2011 – October 2012
		The approach of business performance in the strategic management discipline		
		Conceptualisation of PEU and GL and the introduction of their relationship to BP and SO		
		The micro-economic and strategic characteristics of private and public goods		
		Recognition of ongoing economic and legal processes of HPRDS and exploration of actual pharmacy management challenges	Industry-specific press (e.g. Pharmacists' News)	March 2011 – March 2015
PRIMARY	Qualitative expert interviews	Perception of changes in the trends and environment of HPRDS	cca. 30 interviews (pharmacists, wholesalers, producers, patients, pharmacy visitors, representatives of advocacies, NHIF officials, physicians, private health funds, nursing homes etc.)	September 2010 – June 2011
		Getting deep acquaintance with the key sectoral stakeholders and their interests		
		Acquirement of the linguistic peculiarities of pharmacists' profession		
		Revealing the strategic behaviour, operation mechanisms and management processes of pharmacies, as well as the detailed exploration of influential factors on pharmacies' BP		
		Finalisation of the conceptual model of our doctoral research		
		Pretesting the validity, reliability, dimensionality and finalisation of the measurement instruments applied in survey research	Pharmacy managers, representatives of HCP, strategic management researchers and English-Hungarian economic translators	July 2011– November 2011
				March 2012 – September 2012
				October – December 2014
		Ex-post discussion of the results, consequences and limitations of the dissertation		
	Survey data collection	Identification of the observable SOs in HPRDS	207 responses of pharmacy managers from Budapest and Pest, Baranya, BAZ, Vas counties	October 2012 – June 2013
		Evaluation of the convergent validity of applied strategy extraction methods		
		Definition of the relative distribution of M&S's SOs identified in HPRDS		
		The examination of contingency theory's „environmental determinism” and John Child's „managerial choice” approaches in the context of interactions between SO and PEU		
		Quantification of the stochastic relationship between M&S's SOs and BP		
		Revealing the potential moderating effects of PEU and GL in the relationship between SO and BP		
		Evaluation of the robustness of the identified interrelations between SO and BP		

Source: Table made by the author

To answer research questions concerning the sector-specific manifestation of M&S's SOs and the interaction of strategy and environment, *we applied numerous mathematical-statistical methods*. Similarly, *in order to provide greater levels of validity and reliability* we tested our hypotheses aiming at revealing the potential moderating role of PEU and GL in the relationship of SO and BP *by using methodological tools* that are summarised in Table X.

Table X: Multivariate techniques applied to test our research questions and hypotheses

Question/ Hypothesis	Applied mathematical-statistical methodologies
Q1	Self-typing paragraphs and objective indicators method, exploratory (EFA) and confirmatory factor analyses (CFA) of the multi-item Segev scale
Q2	Exploratory factor analysis (EFA), confirmatory factor analysis (CFA), ANOVA, post-hoc paired comparisons by Tukey-, Scheffe- and Bonferroni-tests
Q3	Crosstabs, McNemar-tests
Q4	Paired sampled t-tests
Q5	Crosstabs, correlations, ANOVA, structural equation modeling (SEM)
Q6	Crosstabs, correlations, ANOVA
Q7	Crosstabs, correlations, ANOVA, SEM
H1	ANOVA, hierarchical interaction and multigroup moderated regression, SEM
H2	ANOVA, hierarchical interaction and multigroup moderated regression, SEM
H3	Hierarchical interaction and multigroup moderated regression, multigroup and interaction moderation (SEM)
H4	Hierarchical interaction and multigroup moderated regressions, multigroup and interaction moderations (SEM)
H5	Hierarchical interaction and multigroup moderated regressions, multigroup and interaction moderations (SEM)
H6	Hierarchical interaction and multigroup moderated regressions, multigroup and interaction moderations (SEM)
H7	Moderated moderation (SEM)
H8	Moderated moderation (SEM)
H9	Moderated moderation (SEM) by integrating control variables pertaining to socio-demographic factors and characteristics of the site of pharmacies

Source: Table made by the author

The results obtained by performing multivariate analyses, the main scientific and sector-specific findings as well as the limitations and managerial implications of our dissertation, all have been confirmed *by conducting several post-hoc expert consultations with pharmacy managers and representatives of the HCF*. Because the criteria of representativity in our research have only been partially met, we formulated our conclusions *in a prudent manner by stressing the relevant generalisability and interpretation concerns*.

9. Results, findings and conclusions

1. Our dissertation revealed, *that the 4 original strategic behavioural pattern of M&S cannot be observed in the HPRDS* featured by specific industrial contingencies. According to the EFA and CFA analyses performed at the evaluation of discriminant validity, the behavioural characteristics of Defender and Reactor SOs were loaded into the same factor. Thus, *by the identification of the Defender/Reactor „mix” – beside Prospectors and Analysers – 3 SOs have been observed in the environmental adaptation of pharmacies*.
2. Based on the EFA and CFA structures the *Defender/Reactor SO cannot be considered as a distinct, separate, organic behavioural pattern, but more as a simple „mix” of the Defenders and the Reactors*. This SO – according to the scrutiny of the pharmacists' answers – is dominated by the inconsistent behavioural features of Reactors.

3. *In the HPRDS the identified 2 „pure” and 1 „mix” SOs markedly disserve from each other.* According to the post-hoc Tukey, Scheffe and Bonferroni tests, the behavioural characteristics of Prospectors, Analysers and Defender/Reactors significantly differ.
4. *There was a minimal gap between the results of the two successfully applied strategy extraction techniques – the multi-item Segev scale and the self-typing paragraph method.* Pharmacies identified as Prospectors, Analysers and Defender/Reactors had almost the same classification after the comparison of results of two different techniques. The ratio of pharmacies classified into same SO by the two methods was over 75%. Thus, the *convergent validity of measurement tools was confirmed* in its classical interpretation, too.
5. *In spite of the intensified competition, the relative majority of pharmacies in the HPRDS were identified as Defender/Reactor* which is considered as an inconsistent SO, exhibiting suboptimal BP. *Defender/Reactors are followed by the Analysers*, whilst the well performing *Prospectors* – who proactively seek business opportunities in turbulent legislative changes and expand their product/service portfolio – *are in a relative minority*.
6. *Pharmacists pursuing different SOs, have perceived different levels of uncertainty in environmental circumstances and in the behaviour of key industrial stakeholders.* Analysers perceived the alteration of environmental circumstances and the behaviour of stakeholders of drug supply chain significantly more predictable, than Prospectors and Defender/Reactors, between of which no substantial difference was noticed.
7. *We identified no difference between the groups with low and high PEU in regard of the emergence of Prospector, Analyser and Defender/Reactor SOs.* Similarly when the prevalence of Prospectors, Analysers and Defenders/Reactors was studied by association tests *among groups of pharmacists perceived low and high EU, there was no significant difference in the distribution of the SOs either.*
8. *The pharmacy managers’ conscious choice of SO imposed a stronger influence on the degree of PEU, than the extent of strictly regulated industrial factors determined the possibilities of pharmacies in selecting and following SOs.* (Figure VI illustrates the applied structural model to examine this research question.)
9. *Sales of the pharmacies following the observed Prospector, Analyser and Defender/Reactor SOs in the HPRDS are significantly different.* Sales of pharmacies pursuing Prospector SO have exceeded the turnover of Analysers and Defender/Reactors (Figure IV illustrates the structural model applied to test this hypothesis.)
10. *The profitability of pharmacies pursuing Prospector, Analyser and Defender/Reactor SOs did not differ significantly.* Although the net profit of Prospectors slightly exceeded the profitability of Analysers and Defender/Reactors, this gap did not prove to be significant.
11. *In terms of effectiveness Prospectors and Analysers surpassed significantly the BP of pharmacies having inconsistent Defender/Reactor SO, but this difference proved to be insignificant in profitability.* Thus, *the 1. recommendation of M&S on BP has by and large been realised.* Regarding the BP differences between viable SOs we can state that the sales of Prospectors exceeded significantly the turnover of Analysers. Considering net profit Prospectors had only an insignificant edge on Analysers, *so the 2. recommendation*

of M&S on BP – which proposed that the consistent SOs perform equally well – cannot be verified based on our research experiences.

12. *The PEU by pharmacy managers – apart from one or two exceptional cases (e.g. profitability of Prospectors in rural and sales of Defenders in urban context) – did not moderate the relationship between the SO of pharmacies and their BP.*
13. *We experienced mixed results in connection with the potential moderating influence of GL on the relationship between the M&S SOs and BP of pharmacies.* According to interaction techniques GL does not have a moderating effect in the relationship of pharmacies' SO and their BP, while according to multigroup methods it does so. It is discernible, that the *effect of the prevalence of Prospector, Analyser and Defender/Reactor SOs on BP strengthens in rural context characterised by less favorable demand conditions.*
14. *The majority of the revealed interrelations remained robust after controlling for variables originally having a significant effect on the effectiveness and profitability of pharmacies.* The influence of pharmacies' SOs on BP has not been “oppressed” by such sector-specific and socio-demographic features (e.g. space of total area, number of colleagues) and variables pertaining to pharmacies' sites (e.g. number of passers-by in front of the pharmacy, proximity of medical service institutes and retail stores), which had substantive additional effect on pharmacies' BP. (Figure V illustrates the moderated moderation structural model applied to test this hypothesis.)
15. The prevalence of M&S SOs themselves – depending on the specialties of different methodological techniques – explained the variance of pharmacies' sales to 16.5-23.5%. By the integration of the PEU it did not rise significantly (17.6-30.2%), at low levels of PEU it was 19.3-21%, at high PEU context it was ranging from 24.4 to 26%. By integrating GL and examining its combined effect with PEU 13.1-31.8% of the variance experienced in the turnover of pharmacies can be explained by the M&S SOs. This was about 13.1-22.59% in cities and rose to 31.08% in rural areas. Our models, which incorporated socio-demographic factors and variables pertaining to site, explained 30.6-48% of the variance of sales as a function of rural or urban context. *Thus, SOs of M&S can be considered as useful proxy variables in the explanation of the pharmacies' sales.*
16. M&S SOs themselves explained only 3-4.4% of the variance experienced in net profit of pharmacies. According to interaction techniques it hardly increased up to 5.4-6.5% by taking into account the PEU, but multigroup methods revealed that it can be even 12-14% in a context characterised by high PEU, while in case of a low PEU setting it is approximately only 1%. By integrating GL and examining its combined effect with PEU, M&S SOs explained the variance in profitability of pharmacies only to 0.5-6.3% in cities, but in rural areas to 15.5-27%. By incorporating further socio-demographic factors and variables pertaining to site, the explaining power of our model, forecasting net profit of pharmacies increased up to max. 18.6% in urban, while up to 40.7% in rural areas. *So, the SOs of M&S did not prove to be adequate proxy variables of pharmacies' profitability.*

10. Discussion and future research directions

Researchers started to focus on the “blending” of behavioural characteristics of M&S’s SOs over the last few years (DeSarbo et al., 2006, 2009, DeSarbo-Grewal, 2008, Helmig et al., 2014). The development of multivariate methods made it possible *to avoid classifying pharmacies into ideal-typical SOs artificially created by academics, but to reveal more realistic environmental adaptation patterns* (Hambrick, 2003). This led to our conclusion that micro and small enterprises operating in HPRDS – which is characterised by bureaucratic coordination mechanisms – develop conscious adaptation patterns, though only three SOs instead of four and not pure, but mixed ones.

As previous researches have not truly gone beyond the identification of mixed adaptation patterns (Pinto-Curto, 2007, Kabanoff-Brown, 2008) *our thesis is novel in examining also the content elements, the causes of mixing and its consequences on BP*. We made a distinction between the simple “mixture” of behavioural characteristics and their “organic” connections. We have shown that *1) in the factor structure of Defender/Reactor SO the Reactor aspects are dominant and 2) their mixture does not form an organic hybrid adaptation pattern*.

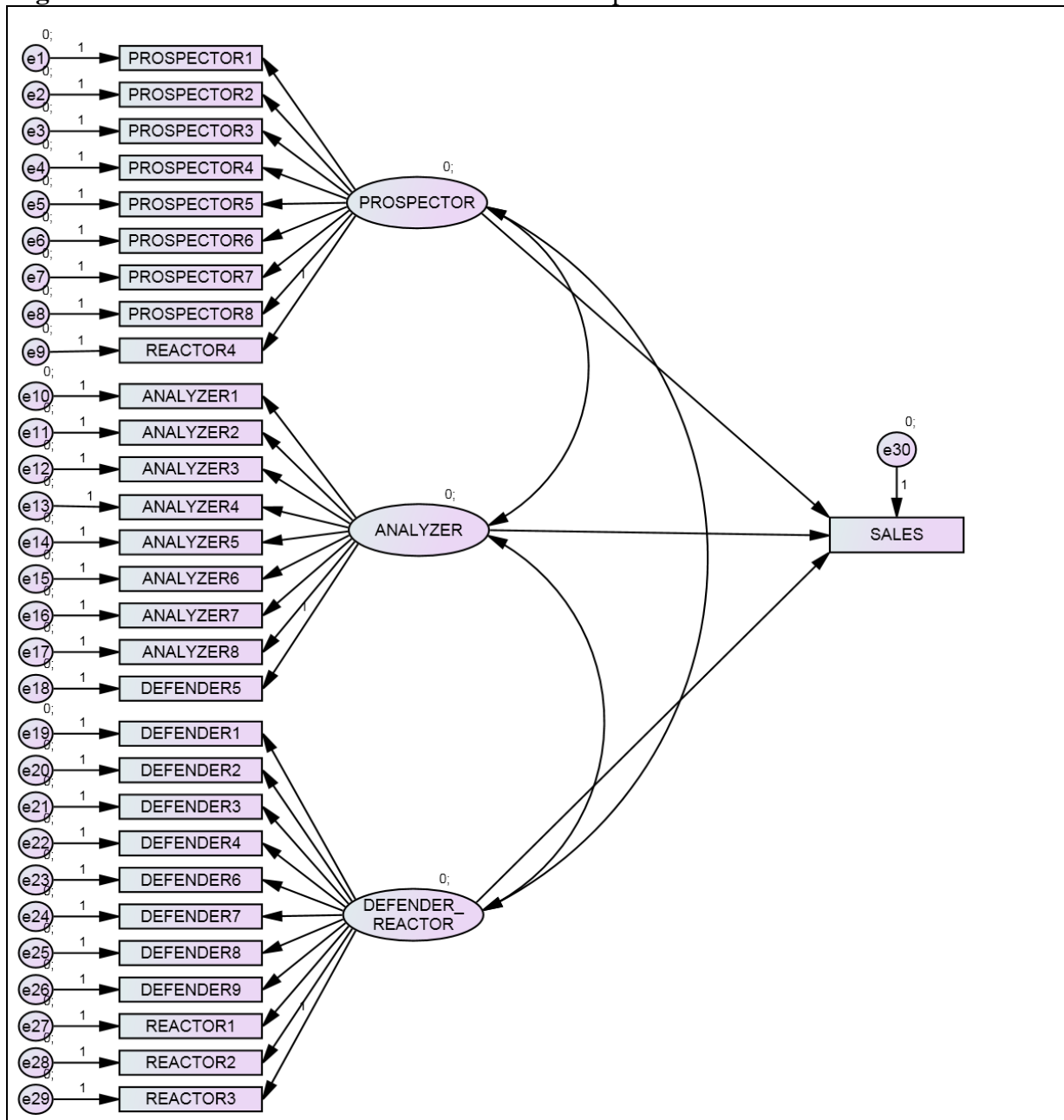
It is assumed earlier Reactor pharmacies initiated a strategic change process due to intense competition but these initiatives are still in an early stage today. Since Defender pharmacies are closest to Reactor ones, it makes logical sense that Reactors have taken steps to develop a “Defender-like” SO. However, the BP of Prospectors and Analysers exceeded the BP of Defenders/Reactors, thus *it is predicted the latter will also pay more attention to develop less “retractive” SOs*. Development of the necessary management skills and pharmacist competencies represent a promising research area and sector-specific challenge.

The conscious strategic choice of pharmacy managers had a stronger effect on the perception of the environmental conditions than the determination of Contingency Theory influenced the development of their SO. An idealistic explanation may be that the need for developing a SO that is consistent with the location, resources and capabilities of the pharmacy have been recognised (e.g. due to large variations in BP) (Barney, 1986, Augier-Teece, 2009). Following different SOs, *pharmacists are likely to perceive differently the changes within environmental conditions as fitting their strategies better, thus confirming their own decisions* (Di Benedetto-Song, 2003, DeSarbo et al., 2005, Song et al, 2007).

Our thesis revealed that consciously chosen and consistently implemented SOs can contribute significantly more to the BP of pharmacies operating in rural environments than in cities. Therefore, the negative effects of less favourable demand conditions can be appropriately compensated. Contrary to our assumptions, possible managerial “laziness” resulting from the reduction of PEU – apart from a few examples – did not erode the BP of pharmacies. Similarly, *we did not observe a significant relationship between PEU and BP*; thus the scientific assumption that managers tend to judge environmental conditions based on current BP of their firm did not apply (Daft et al., 1988, Sharma, 2000).

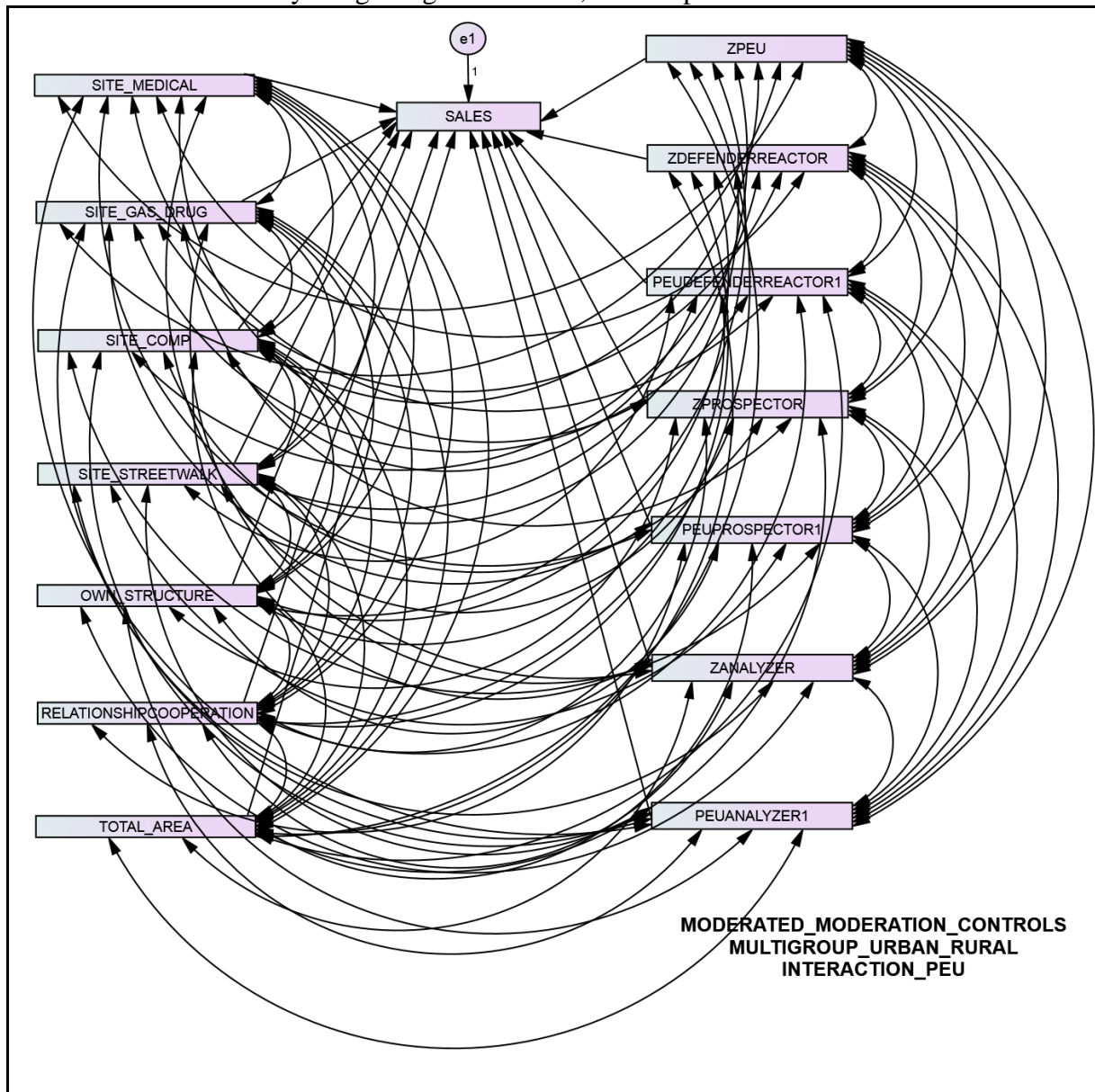
Despite our expectations, participation of pharmacies in horizontal and/or vertical cooperations did not influence their BP. The examination of strategic behavioural patterns in similar cooperation forms could be a promising and gap-filling research area, especially around the degree of con(di)vergence in SOs pursued by the “headquarter” and participating pharmacies, and its BP implications as well.

Figure IV: The effect of SOs of M&S on the sales of pharmacies



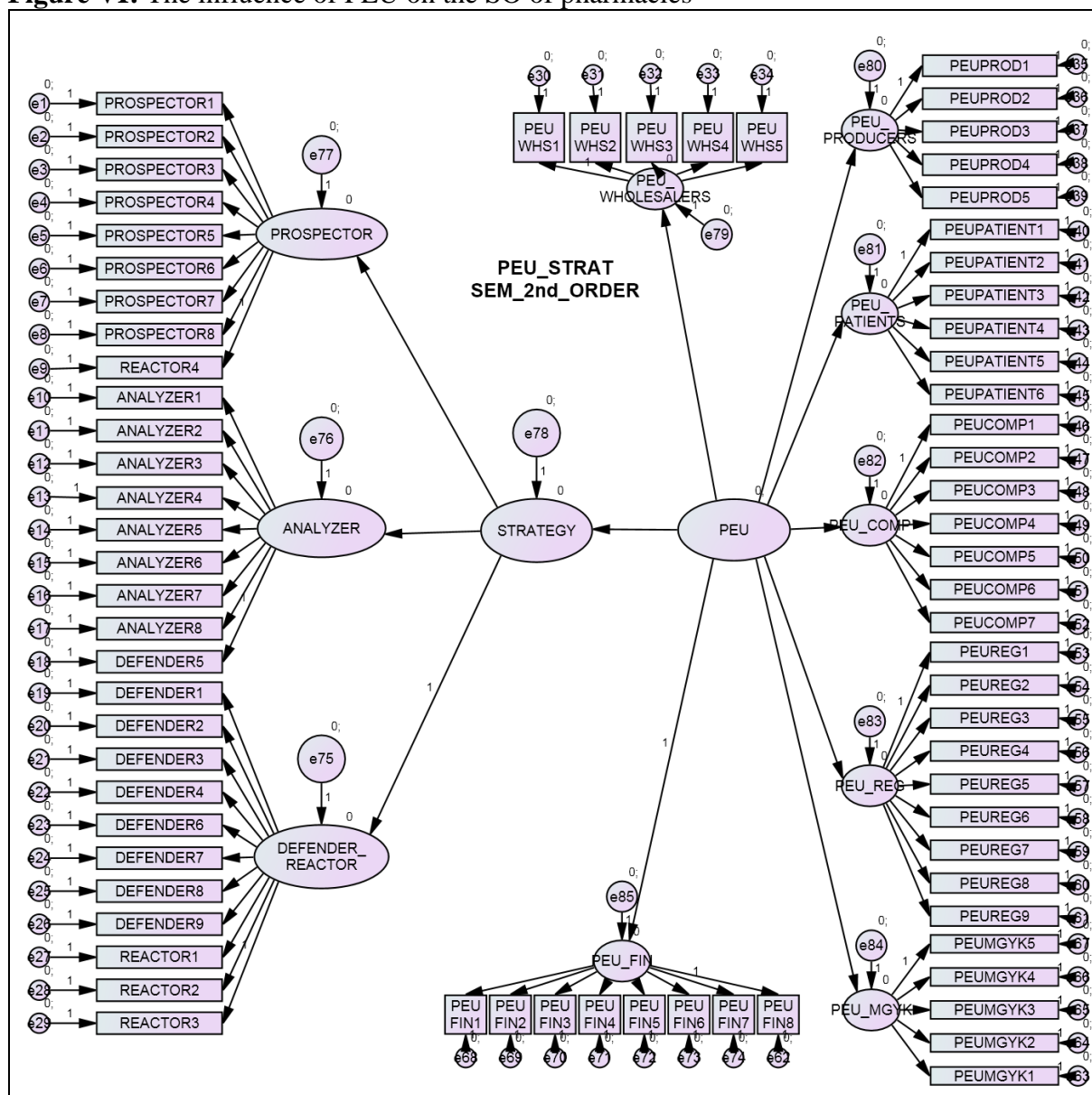
Source: Figure (AMOS) made by the author

Figure V: Revealing the combined moderating effect of PEU and GL in the relationship between SOs and sales by integrating the relevant, sector-specific control variables



Source: Figure (AMOS) made by the author

Source: Figure (SEM) made by the author



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12. Publications and conference attendances on the topic of the Ph.D. thesis

Publications:

- Csepeti Ádám (2010), A Miles és Snow-féle stratégiai tipológia kutatási kérdései, *Vezetéstudomány*, XLI. Évf., 11. Szám, November, 15-30 old.
- Csepeti Ádám (2011), A Miles és Snow-féle alkalmazkodási tipológia teljesítményvonatkozásai, *Gazdaság és Társadalom*, III. Évf., Különszám, 140-168. old.
- Csepeti Ádám (2012), A Miles és Snow-féle alkalmazkodási tipológia teljesítményvonatkozásai, *Marketing és Menedzsment*, XLVI. Évf., 3. Szám, 4-21. old.
- Csepeti Ádám (2014a), A gyógyszerárak gazdálkodásáról – I. rész, *Gyógyszerészi Hírlap*, XXV. Évf., 1. Szám, 16-19. old.
- Csepeti Ádám (2014b), A gyógyszerárak gazdálkodásáról – II. rész, *Gyógyszerészi Hírlap*, XXV. Évf., 2. Szám, 12-16. old.

Conferences:

Strategic Behaviour in the Hungarian Pharmacy Market – Testing the Applicability of the Miles and Snow Strategic Typology in Regulated Industrial Environment, European Marketing Academy (EMAC), Regional Conference, Belgrade, 2012

Strategic Orientation and Performance Implications in the Hungarian Drug Retail Sector, European Institute for Advanced Studies in Management, EIASM EDEN Doctoral Seminar on Dissertation Writing, ISM University, Vilnius, 2011

Research Approaches of the Miles and Snow Strategic Typology, 6th. International Conference of Young Researchers, University of Szent István, Gödöllő, 2010

A Miles és Snow-féle stratégiai tipológia kutatási kérdései, Marketing Oktatók Klubja 16. Országos Konferenciája, Budapesti Kommunikációs és Üzleti Főiskola, 2010

A Miles és Snow-féle stratégiai alkalmazkodási tipológia teljesítményvonatkozásai, Hitel, Világ, Stádium Konferencia, Nyugat- Magyarországi Egyetem, Közgazdaságtudományi Kar, Sopron, 2010