The Use of Michael Porter's Generic Strategies in the Romanian Hotel Industry

Ovidiu N. Bordean, Anca I. Borza, Răzvan L. Nistor and Cătălina S. Mitra,

Abstract— Porter's generic strategies remain one of the most widely accepted typology of strategic options for businesses. Using a survey a sample of 69 hotel managers from the Nord-West part of Romania was questioned about their current strategic practices. A factor analysis revealed that hotels are pursuing only two strategies that can be identified as those of Porter. The regression analysis was used in order to test if there are certain practices that correlate with the strategies identified earlier in the study. The ANOVA results indicate between two and five strategic practices were significant for each of the four strategies. The results of the study are important as they support much of the literature and discussions about aligning strategic practices with the chosen strategy.

Index Terms—cost leadership strategy, differentiation strategy, focus strategy, hospitality industry, Romania.

I. INTRODUCTION

The hospitality industry – which includes the restaurant, accommodation, entertainment and transportation businesses [1], [2] is facing fiercely competition. Accordingly, the approaches that the hotels take in making strategic choices need careful consideration if they are to gain or retain competitive advantage.

The literature suggests that two main perspectives shape our understanding of strategy and strategic choices: the industrial organization (I/O) perspective [3], [4] and the resource-based view [5], [6], [7]. As strategic group assessments identified clusters of businesses employing similar strategies, researchers were beginning to categorize similarities within strategic groups across studies. In the past several generic strategies have been developed and utilized as

Manuscript received December 24, 2009. This work was supported in part by the UEFISCU (Executive Unit for Financing Higher Education and Academic Research in Romania) under Grant PN II, IDEI, code ID_488, no. 416/2007.

O. N. Bordean is with the Department of Management, Faculty of Economics and Business Administration, Babes-Bolyai University of Cluj-Napoca, Teodor Mihali Street, no. 58-60, 400591, Romania (corresponding author to provide phone: +40-756-101965; fax: +40-264-412570; e-mail: ovidiu.bordean@ econ.ubbcluj.ro).

A. I. Borza is with the Department of Management, Faculty of Economics and Business Administration, Babes-Bolyai University of Cluj-Napoca, Teodor Mihali Street, no. 58-60, 400591, Romania (e-mail: anca.borza@econ.ubbcluj.ro).

R. L. Nistor is with the Department of Management, Faculty of Economics and Business Administration, Babes-Bolyai University of Cluj-Napoca, Teodor Mihali Street, no. 58-60, 400591, Romania (razvan.nistor@econ.ubbcluj.ro).

C. S. Mitra is with the Department of Management, Faculty of Economics and Business Administration, Babes-Bolyai University of Cluj-Napoca, Teodor Mihali Street, no. 58-60, 400591, Romania (catalina.mitra@econ.ubbcluj.ro) the main basis for identifying strategic groups in industries. Although it is thought that strategic groups are an industry specific phenomenon, many strategic group researchers began to utilize approaches believed to be generalizable across industries, specifically those proposed by Porter [8] and by Miles and Snow [9]. This theoretical extension across industries is important for considering strategy typologies as a conceptual bridge between the I/O and resource-based approaches [10].

Consolidation has been a theme for the last decade with most of the Romanian hotels being state-owned [11]. Romania inherited a great tourist accommodation capacity from the communist period in comparison with other former communist countries from Central and Eastern Europe like Czech Republic, Croatia, Poland or Hungary. After 2001 Romanian tourism industry followed an ascending trend due to an accelerated privatization process (92% of the accommodation facilities have been transformed from state owned to private owned). During this period lots of investments have been made for modernizing the accommodation structures and to increase the volume of the green-field investments.

Within the context of hotel industry from Romania, recent changes have seriously affected industry profitability, forcing hotels to adopt a variety of business strategies. For that reason, we have assumed to find hotels pursuing Porter's generic strategies in both a mutually exclusive manner, as well as in hybrid forms. Although various studies have examined the application of Porter's strategies to different industries [12], [13], [14], [15], [16], [17], no study has examined to what extent the various strategic types are prevalent in the Romanian hotel industry.

This study has its aim to analyze the strategies used in the Romanian hotel industry and to determine if there is any evidence that could link these strategies to the generic strategies developed by Michael Porter [8]. The relevance of the study lies in the fact that it simplifies the complex reality of the hotel industry indentifying the way in which managers make use of the business strategies they implement.

This paper is organized in several sections. It starts with a brief review about the strategic management and the role of generic strategies. A description of the research method follows. The next two sections offer the findings obtained along with their discussions and a number of suggestions and implications for hotel managers. Finally, a summary of the main conclusions closes the paper.



II. LITERATURE REVIEW

Porter's generic strategy matrix, which highlights cost leadership, differentiation and focus as the three basic choices for firms, has dominated corporate competitive strategy for the last 30 years [18]. According to this model, a company can choose how it wants to compete, based on the match between its type of competitive advantage and the market target pursued, as the key determinants of choice [19].

Porter's [8], [20] generic strategy typology remains one of the most notable in the strategic management literature [21]. A business can maximize performance either by striving to be the low cost producer in an industry or by differentiating its line of products or services from those of other businesses; either of these two approaches can be accompanied by a focus of organizational efforts on a given segment of the market. Any organization that fails to make a strategic decision to opt for one of these strategies is in danger of being "stuck in the middle". The organization in failing to decide, tries both to be the cost leader and differentiator and achieves neither, and in the process confuses consumers.

A. Cost Leadership Strategy within the Hospitality Industry

A cost leadership strategy is based upon a business organizing and managing its value adding activities so as to be the lowest cost producer of a product (good or service) within an industry. A successful cost leadership strategy is likely to rest upon a number of organizational features. Attainment of a position of cost leadership depends upon the arrangement of value chain activities [22]. The broad scope of cost leaders means that they attempt to serve a large percentage of the total market. Companies pursuing a low-cost strategy will typically employ one or more of the following factors to create their low-cost positions [20]:

- 1) accurate demand forecasting combined with high capacity utilization,
- 2) economies of scale,
- 3) technological advantages,
- 4) outsourcing, or
- 5) learning/experience effects.

Many hoteliers would bristle at the thought that they are pursuing a low-cost leadership strategy. Rather, they envision their firms as pursuing some sort of balance between low-costs and differentiation. Brands like Fairfield Inns, Etap, and Motel 6 do not offer significantly more than the basics. Management in these companies is very good at keeping costs at a minimum. Consequently they can keep prices low and attract a wide segment of the market interested in an inexpensive room [23].

B. Differentiation Strategy within the Hospitality Industry

A differentiation strategy is based upon persuading customers that a product is superior in some way to that offered by competitors. In differentiation strategies, the emphasis is on creating value through uniqueness, as opposed to lowest cost [8], [14], [24], [25], [26]. Uniqueness can be achieved through service innovations, superior service, creative advertising, better supplier relationships leading to better services, or in an almost unlimited number of ways.

The key to success is that customers must be willing to pay

more for the uniqueness of a service than the firm paid to create it. Firms following a differentiation strategy can charge a higher price for their products. The differentiation strategy appeals to a sophisticated or knowledgeable consumer interested in a unique or quality product. The hotel chains of Marriott and Hilton are pursuing a differentiation strategy by providing very high-quality quest experiences that appeal to both business and personal travelers. Currently many hotels are using Wi-Fi as a tool for differentiation.

C. Focus Strategy within the Hospitality Industry

A focus strategy is aimed at a segment of the market for a product rather than at the whole market [8], [14], [27], [25], [26]. Firms pursuing focus strategies have to be able to identify their target market segment and both assess and meet the needs and desires of buyers in that segment better than any other competitor.

Focus strategies can be based on differentiation or lowest cost. There is much debate as to whether or not a company can have a differentiation and low-cost leadership strategy at the same time [28]. It is argued [23] that a focus strategy emphasizing lowest cost is rare in the hotel industry as it is hard to please a particular guest segment without some form of differentiation. One can find many examples of companies in the hotel industry that are following a focus strategy based on the differentiation advantage. For example, Four Seasons focuses on elite consumers with discriminating tastes and the Burj Al Arab hotel, a sail-shaped hotel built on a man-made island is targeted at members of royal families as well as celebrities and wealthy industrialists and visitors.

III. RESEARCH METHODOLOGY

The data for this study have been collected between October 2008 and November 2008. The sample was chosen from *The Guide of the Romanian Hotels* edited by Romanian Tourism Authority which works under the direct supervision of the Ministry of Tourism. The primary research question of the study is to determine the strategies used by the Romanian hotels and to investigate if there is any link between these strategies and Porter's typology. Given the gap in the literature on this perspective, this study intended to address the proposed hypotheses as follows:

H₁: Firms acting in the hotel industry from Romania are pursuing Porter's strategies.

 H_2 : There are certain strategic practices that are correlated to the strategies of the Romanian hotels.

In order to address the questions of the study we have adapted an instrument developed and tested in previous research [16], [17], [19], [29]. We have used a set of twenty-six questions regarding various strategic practices in order to operationalize Porter's generic strategies. Respondents were asked to determine how frequently their firm uses the various strategic practices. Five-point Likert scales were designed so respondents could provide quantifiable information on how extensively their organizations used each of these practices.

The questionnaire was administrated to the managers of the hotels situated in the six cities that form the North-Western Development Region of Romania. It was determined that respondents must hold top management position in the hotels in order to have adequate organizational knowledge to accurately complete the questionnaire. Usable responses included 69 questionnaires retrieved from the hotels in the six cities. The majority of the respondents (73,91%) had been working for the hotel for more than one year, while 39,13% of the respondents declared that they were involved in the hospitality industry for more than five years. The sample included senior managers (93%), front-line managers (4%), and marketing managers (3%).

IV. DISCUSSIONS AND FINDINGS

In order to test Hypotheses 1, the 26 strategy practices were subject to a factor analysis to test whether the items naturally grouped into any of Porter's [8], [20] generic strategies. Using SPSS principal component analysis with a Varimax rotation and Kaizer normalization, a four factor solution emerged explaining 56,35% of the variance.

Items loading at 0,40 or greater were included in the resulting four factors. Three of the original 26 items did not load strongly onto a single factor and were excluded from further analysis, leaving 23 strategic practices. The items and factor loadings are summarized in Table 1. The resulting four factors were then further interpreted for their meaning. Based on the items comprising the factors, two factors represent Porter generic strategies: differentiation strategy and focus differentiation strategy. The cost-leadership and focus on cost strategies were not represented. Two alternative strategies also emerged from the factor analysis: the former was identified to be a so-called "Training Strategy" and the latter was a "Hybrid Strategy". In conclusion we may affirm that Hypotheses 1 was partially supported. The firms in the Romanian hotel industry are following at least two of Porter's generic strategies.

The differentiation strategy was found to be one of Porter's strategies that the Romanian hotels are following. In the case of the Romanian hotel market it is believed that differentiation can be the result of a strong marketing campaign designed to strengthen the unique characteristics of the products/services within the mind of the consumers. Four out of nine of the strategic practices that load onto this factor are related to the marketing activities and to brand identification. The name and the brand are strong differentiation elements within such a strategy [30], [31]. The Romanian hotels surveyed in this study concentrate on offering unique products and services as they are interested at any time in developing a broad range of new products/services.

The hotels in the Romanian market are pursuing a *focus differentiation strategy* as they try to offer specialty products and services for their clients. The Romanian hotels involved in a focus differentiation strategy are producing products and services for the high price market segments. This is a strategy followed specially by those hotels that target the business people in their market.

Another strategy that resulted from the factor analysis is the training strategy which does not appear within the generic strategies developed by Michael Porter. Within the service sector it is of utterly importance the interaction between the client and employee, as this is the case of the hotel industry where customer's satisfaction is influenced by the behavior of the employees. That is one of the reasons for which the Romanian hotel managers put a great emphasis to the extensive training of both front-office and back-office personnel.

We entitled the fourth strategy that resulted from the factor analysis *the hybrid strategy* as it has no connection with Porter's typology of strategies. It is pursued by those hotels which envision a decrease of the distribution costs and those that renounce to the unprofitable clients. This strategy has no attributes of the cost-leadership strategy and as Harrison and Enz [23] pointed out, the cost-leadership strategy is not followed by any firm in the hotel industry.

For testing Hypotheses 2 we have performed a regression analysis to see if there are practices that are stronger related to the four strategies identifies *a priori* in the study. The ANOVA results indicate between 2 and 5 strategic practices were significant for each of the four generic strategies and explained from 91% (r^2 =0.914 for the differentiation strategy) to 61% (r^2 =0.605 for the hybrid strategy) of the variance. The regression results for the practices that were significant for each type of strategy are summarized in Table 2. The strategies are marked with a *. Thus, for those practices Sig. < 0.05, showing that β corresponds to a strong correlation between the two variables. In conclusion, Hypotheses 2 is supported.

What practices or tactics have the most significant impact on the strategies pursued by the Romanian hoteliers? In H_2 , the authors assert there are specific practices which differentiate the effectiveness of each strategy. In the discussion below, the critical strategic practices associated with each generic strategy are summarized followed by implications for both practitioners and academicians.

For the differentiation strategy, there have been four strategic practices that showed significant correlation between them and the strategy. This type of strategy is one the four strategies defined by Michael Porter and the hotels that pursue this strategy struggle to differentiate through the products and the services they launch on the market but also through a high quality of these products and services. This makes sense as a firm in the hotel industry sector must constantly update the quality of the products and services that it offers to its customers.

The significant strategic practices for the focus differentiation strategy include providing specialty products and services, building a positive reputation within the industry, producing products/services for high price markets and extensive training of marketing personnel. While the hotels pursuing the differentiation strategy were trying to build a high market share, the hotels that follow a focus differentiation strategy were more into concentrating on a narrow segment of the market by trying to address a specific customer segment formed by those people interested in specialty products and services and who are not price sensitive.



International Journal of Trade, Economics and Finance, Vol. 1, No. 2, August, 2010 2010-023X

TABLE 1: FACTOR ANALYSIS OF ROMANIAN HOTELS STRATEGIES

Strategic practices	Differentiation strategy*	Focus differentiation strategy*	Training strategy**	Hybrid strategy**
Developing brand identification	0,699			
Refining existing products/services	0,620			
Developing a broad range of new products/services	0,747			
Forecasting new market growth				
Forecasting existing market growth	0,526			
Controlling the quality of products/services	0,554			
Improving operational efficiency	0,661			
Partnering with suppliers	0,519			
Utilizing advertising	0,699			
Extensive training of marketing personnel	0,613			
Building a positive reputation within the industry		0,847		
Providing specialty products/services		0,814		
Producing products/services for high price markets		0,642		
Intensive training of marketing personnel		0,708		
Targeting a specific market				
Building high market share		0,728		
Providing outstanding customer service		0,542		
Intense supervision of front-line personnel			0,482	
Extensive training of front-line personnel			0,728	
Extensive training of back-line personnel			0,845	
Innovation in marketing technology and methods			0,850	
Dropping unprofitable clients			0,823	
Minimizing distribution costs				0,610
-				0,675
				0,791

Notes: * corresponds to Porter's generic strategies

** new strategies identified in the Romanian hotel industry

Differentiation strategy	Focus differentiation strategy	Training strategy	Hybrid strategy
Developing brand identification Refining existing products/services Developing a broad range of new products/services* Forecasting new market growth Forecasting existing market growth* Controlling the quality of products/services* Improving operational efficiency Partnering with suppliers* Utilizing advertising*	Extensive training of marketing personnel* Building a positive reputation within the industry* Providing specialty products/services* Producing products/services for high price markets* Intensive training of marketing personnel Targeting a specific market	Building high market share Providing outstanding customer service* Intense supervision of front-line personnel* Extensive training of front-line personnel* Extensive training of back-line personnel*	Innovation in marketing technology and methods* Dropping unprofitable clients* Minimizing distribution costs

TABLE 2: REGRESSION RESULTS

Notes: *β significant at the <0.05 level

For the training strategy – the first strategy identified to be followed by the Romanian hoteliers that does not correspond to Michael Porter's typology – there have been four strategic practices that resulted from the regression analysis and which showed higher implication for this type of strategy: providing outstanding customer service, intense supervision of front-line personnel and extensive training for both front-line and back-line personnel. For the hotels that took part in the study these practices are of great importance as the role of the hotel employees is crucial for offering a qualitative service to the customers.

The hybrid strategy – the second strategy that does not correspond to Porter's typology – was found to be influenced by two strategic practices: innovation in marketing technology and dropping unprofitable clients. The hotels pursuing the hybrid strategy are aware of the benefits that the marketing innovation and new technologies may offer them as they attempt to sustain their strategy by the use of the Internet and e-commerce (the web-site have a double function: presentation and communication with the customer on the one hand and on-line booking and on-line selling on the other hand). A certain path has been identified that corresponds to the intention of the hotels to increase their efficiency as they drop those unprofitable clients. It is obvious that these hotels will do their best to lower down the costs and maximize the profits by focusing on corporate clients rather than on retail clients. This should no surprise if we take into consideration the market segment that these hotels are addressing which formed basically of business men and women.

V. CONCLUSION

The research undertaken by the authors shows interesting results for executives, top-level managers and directors. For the managers of those hotels that are using one of the generic strategies this study has revealed several practices that better help to understand the strategy. Managers may not focus entirely on a single set of strategic practices that form a generic strategy. Instead, they may find it useful and efficient to rely on every practice that characterizes a strategy. Managers must be as creative as possible when it comes about developing strategies as innovation can help to sustain a competitive advantage over a longer period of time.

We consider of utterly importance that the hotel managers should focus on the strategic practices that this research has identified to define their chosen strategy. The conceptualization of this practices may ease the formulation, implementation and the control of the strategy envisioned by the hotel managers. As strategy is an innovative process, the tactics and practices on which the strategy is based on must be entirely communicated to the employees of the hotels for sustaining a so called "training strategy".

The study can be improved in the future by focusing on some of its limitations. Researchers may find it interesting to extend the sample of respondents to a much broader one and include hotels from other parts of the country mainly from the seaside and mountain resorts to have a perspective over the different approaches in strategy within the hotel industry in Romania.

Moreover, researchers are encouraged to develop a series of case studies with several hotels and allowing researchers to interview managers concerning the strategic practices utilized by their hotels for a better understanding of the how these practices could aid managers in their daily activities.

References

- B. Brotherton, "Towards a definitive view of the nature of hospitality and hospitality management, International Journal of Contemporary Hospitality Management, Vol. 11, No. 4, 1999, pp. 165-173.
- [2] A.C. King, "What is hospitality?" International Journal of Hospitality Management, Vol. 14(3/4), 1995, pp. 219-234.
- [3] J.S. Bain, Industrial Organization (2nd ed.). New York: Wiley, 1968.
- [4] E.S. Mason, "Price and production policies of large-scale enterprises, American Economic Review, Vol. 29, 1999, pp. 61-74.
- [5] M.A. Peteraf, "The cornerstones of competitive advantage: a resource-based view, Strategic Management Journal, Vol. 14, No. 3, 1993, pp. 179-91.
- [6] R. Feurer, and K. Chaharbaghi, "Strategy development: past, present and future", Training for Quality, Volume 5, No. 2, 1997.
- [7] J. Robins, and M. Wiersema, "A resource-based approach to the multibusiness firm: empirical analysis of portfolio interrelationships and corporate financial performance", Strategic Management Journal, Vol. 16, 1995.
- [8] M. Porter, Competitive Strategy, Free Press. New York. NY, 1980.
- [9] R.E. Miles and C.C. Snow, Organizational strategy, structure and process, Stanford University Press, 2003.
- [10] J.A. Parnell, and L. Hershey, "The strategy-performance relationship revisited: the blessing and curse of the combination strategy", The International Journal of Commerce and Management, Vol. 15, No. 1, 2005, pp. 17-33.

- [11] A. Borza. and O.N. Bordean, Implementation of SWOT analysis in Romanian hotel industry, International Scientific Conference: An Enterprise Odyssey: Tourism – Governance and Entrepreneurship. Cavtat. Croatia. June 11-14 July, 2008.
- [12] P. Autry, and D. Thomas, "Competitive strategy in the hospital industry, Health Care Management Review, 1986, Vol. 11, No. 7, pp. 7-14.
- [13] K. Kumar, R. Subramanian, and Ch. Yauger, "Pure versus hybrid: performance implications of Porter's generic strategies", Health Care Management Review, 1997, Vol. 22, No. 4, pp. 47-60.
- [14] S. Hlavacka, L. Bacharova, V. Rusnakova, and R. Wagner, Performance implications of Porter's generic strategies in Slovak hospitals, Journal of Management in Medicine, 2001, Vol. 15, No. 1, pp. 44-66.
- [15] T.L. Powers, and W. Hahn, "Critical competitive methods, generic strategies, and firm performance", The International Journal of Bank Marketing, 2004, Vol. 22, No. 1, pp. 43-64.
- [16] R.S. Allen, and M.M. Helms, "Linking strategic practices and organizational performance to Porter's generic strategies", Business Process Management Journal, 2006, Vol. 12, No. 4, pp. 433-454.
- [17] R.S. Allen, M.M. Helms, M.B. Takeda, C.S. White, "Porter's Generic strategies: an exploratory study of their use in Japan", Journal of Business Strategies, 2007, Vol. 24, No. 1, pp. 69-91.
- [18] M. Pretorius, "When Porter's generic strategies are not enough: complementary strategies for turnaround situations", Journal of Business Strategy, 2008, Vol. 29, No. 6, pp. 19-28.
- [19] O. Akan, R.S. Allen, M.M. Helms, and S.A. Spralls, III., "Critical tactics for implementing Porter's generic strategies", Journal of Business Strategy, 2006, Vol. 27, No. 1, pp. 43-53.
- [20] M.E. Porter, Competitive advantage: creating and sustaining superior performance, New York: Free Press, 1985.
- [21] J.A. Parnell, "Generic strategies after two decades: a reconceptualization of competitive strategy", Management Decision, 2006, Vol. 44, No. 8, pp. 1139-1154.
- [22] N. Evans, D. Campbell, G. Stonehouse, Strategic Management for Travel and Tourism, Elsevier. Butterworth-Heineman. Oxforf. UK, 2006.
- [23] J.S. Harrison and C.A. Enz, Hospitality strategic management Concepts and Cases, John Wiley and Sons, New Jersey, 2005.
- [24] L. Hyatt, "A simple guide to strategy", Nursing Homes, 2001, Vol. 50, No. 1, pp. 12-23.
- [25] C. Bauer, and J. Colgan, "Planning for electronic commerce strategy: an explanatory study from the financial services sector", Logistics Information Management, 2001, Vol. 14, No. (1/2), pp. 24-32.
- [26] L. Cross, "Strategy drives marketing success", Graphic Arts Monthly, 1999, Vol. 71, No. 2, pp. 96-106.
- [27] S. Davidson, "Seizing the competitive advantage", Community Banker. 2001, Vol. 10, No. 8, pp. 32-47.
- [28] M.M. Helms, D. Clay, and W. Peter, "Competitive strategies and business performance: evidence from the adhesives and sealants industry", Management Decision, 1997, Vol. 35, No. 9, pp. 689-703.
- [29] B. Parker, and M.M. Helms, "Generic strategies and firm performance in a declining industry", Management International Review, 1992, Vol. 32, No. 1, pp. 23-29.
- [30] A.A. Bailey, "Non-fulfillment of promotional deals: the impact of gender and company reputation on consumers' perceptions and attitudes", Journal of Retailing and Consumer Services, 2005, Vol. 12, No. 4.
- [31] W.-M. Ou, R. Abratt, and P. Dion, "The influence of corporate reputation on store patronage", Journal of Retailing and Consumer Service, 2006, Vol. 13, No. 3.

Ovidiu N. Bordean was born on the 26th of April 1981 in Baia Mare, Maramures County, Romania. He has graduated Babes Bolyai University of Cluj-Napoca, Faculty of Economics and Business Administration in 2004 and also The French Romanian Management Institute, Cluj-Napoca, Institut Universitaire Professionnalisé, Clermont Ferrand, France in 2003. In 2005 he graduated the Master Program entitled "Marketing and Management Strategies and Politics in Economic Enterprises". He earned his PhD from Babes Bolyai University of Cluj-Napoca, Romania with a doctoral thesis entitled "*Managerial strategies of tourism companies*" in 2009.

He works as an **Assistant Professor** at the Management Department of the Faculty of Economics and Business Administration in Cluj-Napoca, Romania. He was involved in several specialization courses at Our Lady of



International Journal of Trade, Economics and Finance, Vol. 1, No. 2, August, 2010 2010-023X

the Lake University, School of Business and Leadership, San Antonio, Texas, USA and Ecole Supérieure de Commerce, Grenoble, France during 2008. He has published so far three books as co-author and has more than 15 articles published in International Journals and Conference Proceedings from all over the world. His research interests are strategic management, hospitality industry, entrepreneurship and purchasing management.

Mr. Bordean has been a member of the International Association of Computer Science and Information Technology since 2009.