



## How Cannibalistic Are Brick-and-Mortar Stores: A Study of the Internet Company mymuesli

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## **Abstract**

In practice, internet companies have increasingly started to offer their products through own physical stores. This development has not been yet fully taken into account in the business management and marketing research. Only few studies analyze the effect of multichannel strategies from the internet companies' point of view. The present paper aims to shed further light on this topic by projecting the state of research in multichannel management onto a practical example of the internet company mymuesli. The results of the study demonstrate that there are only negligible cannibalization effects. Together with available research findings, these results emphasize that the introduction of a brick-and-mortar store could be a promising strategy option for an internet company.

*Keywords: multichanneling, synthetic matching, online retailing*

*Track: Retailing*

## 1 Introduction

Numerous companies focus on the opportunities of multichannel strategies. Previous research could demonstrate the benefits for companies by integrating virtual and physical sales channels (e.g. Avery et al., 2012; Pauwels & Neslin, 2008). In the coming years, the comparatively greatest sales growth potential will even be attributed to the multichannel retail - i.e. the revenues realized by the interplay of online and physical retail (Accenture & GfK, 2010). A multichannel strategy is however not solely beneficial for companies. Kollman et al. (2012) argue for instance that customers are provoked to switch to the internet channel by a high level of convenience orientation rather than risk aversion and service orientation. Bialogorsky and Naik (2003) found additionally small but not significant cannibalization effects of the internet on the brick-and-mortar retail. Similar results were found by Deleersnyder et al. (2002) who observed cannibalization effects in nine cases whereas 58 instances showed no suchlike effects of statistical relevance. It is furthermore striking that most scientific contributions focus on the introduction of the internet as an additional sales channel. Yet in practice, there are meanwhile increasingly many retailers started as internet companies, which supplement their online sale channel with own physical stores. The present paper aims to increase the existing knowledge by projecting the state of research in multichannel management onto a practical example of an internet company.

The study is divided into the following sections. In section 2, a literature overview will be given and hypotheses are derived from the scholarly literature. In section 3, the methodical approach will be explained. In section 4, the findings are shown and subsequently discussed in section 5. The need for research will be generated from the limitations in section 6.

## 2 Derivation of the Research Questions

The focus of the present study will be placed on the effect of the multichannel strategy upon the customer value in terms of monetary units from a market-oriented view. Hence, customer value comprises the effective customer acquisition in form customer retention and customer development (Neslin et al., 2006) as well as of quantity of new customers and sales per new customer (e.g. Kumar & Petersen, 2005).

Previous research indicates that multichanneling behavior improves customer retention and profitability (Kumar et al., 2007), results in more sales revenues, greater share of wallet, higher past customer value, and an increased likelihood to a repeated purchases in the future (Kumar & Venkatesan, 2005; Myers, Pickersgill, & Metre, 2004; Neslin & Shaker, 2009). Pauwels and Neslin (2008) examine the introduction of physical stores as a supplement to already existing direct channels and argue that there should be a large synergy potential over the long run. Similar conclusions are drawn by Avery et al. (2012) who see possible short-term cannibalization effects toward the brick-and-mortar-stores and long-term sales growth. With respect to new customers, it can be assumed that the physical store serves as an acquisition motor for the internet shop in the long run (Avery et al., 2012), due to superior product testing possibilities, personal service, the multi-sensory shopping experience, the lower purchase risk, the nonexistent delivery charges, and the strong brand perception (Montoya-Weiss et al., 2003).

Given the already existing findings from multichannel practices in general and from additional physical distribution stores to existing direct channels, it can be assumed that the introduction of physical stores does not lead to a cannibalization effect. Therefore, the following hypothesis is posed:

*H1: The introduction of new physical stores does not exert a cannibalization effect on the number of new customer orders in the internet shop.*

Due to the complementarity of the channels, part of the existing customers is expected to switch channels entirely or at least partly to minimize or eliminate delivery costs or waiting time (Gehrt & Yan, 2004). The introduction of the physical store can also lead to research shopping. Customers who completed the full purchasing process on the internet are now able to split the information and the purchasing phase among the channels (Neslin et al., 2006). The findings of Deleersnyder et al. (2002) indicate however that the implementation of an internet sales channel does not lead to negative consequences for existing stores. This has also been confirmed by the study of Biyalogorsky und Naik (2003) who have come to similar conclusions and have not identified cannibalization effects. Therefore, it can be assumed that in reverse order of the channel usage no cannibalization of the primary sales channel with respect to the number of orders of existing customers is taking place.

*H2: The introduction of new physical stores does not exert a cannibalization effect on the number of existing customer orders in the internet shop.*

Complementary characteristics of the physical channel (Montoya-Weiss et al., 2003) could be considered more important than the availability effect, (Neslin et al., 2006) and subsequently lead to channel substitution and a cannibalization effect. Deleersnyder et al. (2002) draw however attention to the customer group differences when implementing internet sales channels to existing stores. A cannibalization of one channel by another therefore appears less of a concern because the customer groups are too diverse. In this study, it is presumed that no cannibalization of the internet shop would take place.

*H3: The introduction of new physical stores does not exert a short-term cannibalization effect on the sales revenues realized in the internet shop.*

### **3 Methodical Approach**

#### *3.1 Research Subject - The Case Study mymuesli*

The internet company mymuesli is chosen as a research subject. mymuesli seems particularly well suited for the research purposes of this study due to the company's strong investments in multichannel activities and therewith its transformation into a multichannel retailer. mymuesli went online in April 2007 as a pure internet retailer for „custom-mixed muesli“. On the company's internet site customers are able to mix numerous ingredients and order their own cereals. mymuesli products are available to customers in Germany, Austria, Switzerland, the Netherlands and England and can be bought in over 1000 branches of food retailers and 16 mymuesli-owned stores. For the evaluation of the multichannel strategy in the context of the present study, two of the first mymuesli Stores (Munich & Regensburg) will be taken into consideration. The analysis of the multichannel strategy impact is subsequently based on evaluation of the transaction data provided by the internet company mymuesli.

#### *3.2 Data set and research design*

To study the effect of the physical store opening on the internet channel, the following transaction data of 77 big cities in Germany - including Munich & Regensburg - has been evaluated: (1) sales revenue (SALES) generated by the customers of the respective city, (2) the number of new customer orders (NEW) per city, and (3) the number of existing customer orders (EXIST) per city. The period of observation encompasses four years - from 2009 to 2012. The daily data (SALES, NEW, EXIST) collected over the period of four years has been aggregated on a monthly basis so that 48 evident periods is available for further analysis. The focus of the observations has been placed on the early mymuesli store openings in Munich and Regensburg as the data base before and after the implementation of the physical stores exceeds those of other locations. As control variables, socio-economic parameters from the standard literature

have been adopted. Thus, besides the absolute population number per city (POP), also the retail sales per city (RETSALES) have been used as a sales figure. These figures display the turnover generated by the local retail in comparison to the national average (index = 100). The number of food retail branches (FOOD) to run mymuesli products in the respective city has been added as a further control variable. Their number could have the same effect on sales as the introduction of an own physical store.

Regarding the research design, different approaches are suggested in literature to examine the effect of the physical store openings on the internet channel. As the ideal scenario of two identical cities with and without the implementation of a physical store does not exist and cannot be directly observed, the so-called fixed-effect (FE) estimator is considered, i.e.:

$$\tau = Y_{i,t_1}^T - Y_{i,t_0}^C$$

where  $y$  is the outcome,  $i$  is the city,  $t_0$  is the time prior the intervention and T and C are the treatment and the control groups. A difference-in-differences (DiD) approach has been chosen by comparing the development of the outcome in the treatment group with the control group before and after the intervention and by controlling simultaneously for the endogeneity of causative, systemic shocks (Abadie, Diamond, & Hainmueller, 2010, Cameron & Trivedi, 2005). In the present case, the implicit assumption of the DiD model - according to which the sales revenues in the treatment and the control group would have developed identically without the opening of the physical stores - is declined by the too strong heterogeneity of the two cities. Therefore, the approach of stochastic twins as alternative option for the affected cities in the treatment group (Munich & Regensburg) is chosen. Due to the small size and the high heterogeneity of the data set from the 77 cities, the synthetic matching method proposed by Abadie et al. (2010) is adopted whereby the demand of a contrafactual (synthetically created) city is estimated by a convex combination of several cities from the control group. As far as possible, this should not be different from Munich and Regensburg prior to the intervention in terms of the dependent variables and covariates. The socio-economic parameters described above (POP, FOOD, RETSALES) are included as control variables. The influence of the variables population level and retail sales on the endogenous demand variables (NEW, EXIST, SALES) is always significant and positive. It appears that the retail sales and the population level of the city have a positive impact on the demand variables. These correlations are always significant on  $p < 0.01$ . To estimate the non-observable outcome  $Y_{i,t_0}^C$  (see formular) the participants in the control group have been weighted ( $w_j^*$ ) with the help of an iterative algorithm.

$$\min: |Y_{i,t_0}^T - \sum_{j=i+1}^{J+1} (w_j^* Y_{j,t_0}^C)|$$

$$\min: |X_{i,t_0}^T - \sum_{j=i+1}^{J+1} (w_j^* X_{j,t_0}^C)|$$

The advantage of this quasi-experimental research design is that external effects such as an annual and a seasonal sales fluctuation, a general slump, or the growth of the internet penetration can be taken into account. Other influences, which might have an effect on the sales revenues besides the physical store openings have been considered in form of the control variables (Avery et al., 2012).

## 4 Findings

For Munich, a good twin can be found despite the fact that it is largely not synthetically produced. Prior the store opening, Berlin clearly resembles Munich so much that it is weighted 100% regarding revenues and existing customer orders. In the case of new customer orders, Hamburg has been incorporated by a very low share (0.7%) in the synthetic control group. The convex combination for the control group in Regensburg constitutes the number of new customer orders in the four cities of Heidelberg (48%), Wuerzburg (30%), Karlsruhe (16%) and Mainz (6%). For the existing customer orders, the cities of Munich (29%), Trier (61%) and Wuerzburg (10%) are taken into consideration.

In the following, the treatment effect in a pooled (i.e. Regensburg and Munich) OLS-model using FE is estimated. The dependent variable here is selected to be the difference in the logarithmic demand variables between the two affected cities and their control cities. An OLS regression implies a normal distribution. To ensure this, the dependent variable is logarithmized (Bertrand, Duflo, & Mullainathan, 2004). In the case of new customer orders, the physical store opening could prove to have a positive short-term impact. However, the significance is insufficient so that it cannot be clearly demonstrated that the introduction of physical stores does not have a short-term cannibalization effect on the new customer orders. In terms of revenues and existing customer orders a negative trend between the affected cities and their synthetic twins can be observed (see Table 1). As no statistical significance is evident, the hypotheses 2 and 3 can be confirmed. In the short term, the results of the pooled OLS-model using FE indicate the general absence of significant cannibalization effects with respect to existing customer orders and sales revenues. Overall, no cannibalization effects are apparent over the short-run.

As possible trends in Regensburg and Munich may behave opposite and get lost in the overall analysis, for every city (or difference) a further time series regression is estimated. The findings in Table 1 show a negative development of the sales volumes following the opening of *mymuesli* store in Munich. In the light of the above, it can be concluded that the development of these parameters would have been significantly better without the introduction of the company store. The percentage change in the difference to the comparison city equals -12% with a significance on  $p < 0.05$ . Also the relative change in the difference of the existing customer orders in Munich is at -23% considerable and decreasing, with a significance level of 1%. In comparison to the synthetic control city following the introduction of the physical store, the difference in sales revenues in the internet shop from the orders of the Munich customers dropped by almost 24% over the short run, with a significance level of 1%. Thus, the hypothesis 1 is declined with regard to Munich. The postulated relationship in hypothesis 2 and 3 also could not be observed. At least in the short term, it appears for Munich that the opening of the store has a cannibalization effect.

In Regensburg, on the contrary, no significant cannibalization effects can be found, which is in line with hypotheses 1, 2 and 3. Even a positive development in the number of new customers can be observed while the treatment coefficient and the t-values in terms of all three sales parameters remain insignificant.

## 5 Discussions and Managerial Implications

The results of this study indicate that the introduction of a brick-and-mortar store could be a promising strategy option for an internet company. In theory and corporate practice frequently assumed cannibalization effects (from internet to brick and mortar store) could not (pooled OLS Modell) or could to a lesser extent (for Munich) be proved. Thus, internet companies see no or only marginal short-term disadvantage. In the long run however, positive

effects are expected with respect to the share of wallet (Kumar & Venkatesan, 2005) and customer value (Myers, Pickersgill, & Metre, 2004). In addition, further positive long term effects are expected due to the facilitated acquisition of new customers through the opening of a new physical store (Avery et al., 2012), offering multi-sensorial shopping experience to new and existing customers (Montoya-Weiss et al., 2003) and satisfying different (situational) purchasing motives through the additional channel offering (Sharma & Mehrotra, 2007). Positive effects are also expected in terms of perceived customer value, customer satisfaction and loyalty (Zhang et al., 2010).

**Table 1: Sales, New- and Existing Customer Orders in the Internet-Shop**

Variables	POOLED (Regensburg and Munich)			MUNICH			REGENSBURG		
	(1) NEW	(2) EXIST	(3) SALES	(4) NEW	(5) EXIST	(6) SALES	(7) NEW	(9) EXIST	(10) SALES
TREAT	0,082096107 (0.205)	-0,175518026 (0.299)	-0,1730409 (0.272)	-0,121** (0.0498)	-0,230*** (0.0616)	-0,236*** (0.0620)	0,073 (0.105)	-0,077 (0.151)	-0,048 (0.139)
Constant	0,982553975 (0.0400)	1,099768827 (0.0585)	1,07497779 (0.0532)	1,005 (0.0216)	0,974*** (19.23)	1,138*** (1,431)	1,000 (0.0576)	1,004 (5.290)	1,009 (230.8)
Observations	96	96	96	48	48	48	48	48	48
R-squared	0.003	0.009	0.010	0.127	0.332	0.353	0.006	0.000	0.088

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Overall, the present study demonstrates the opportunities for the management of internet companies to optimize the customer value by the strategic implementation of physical stores without or little significant cannibalization effects on the internet channel. As the discussed case study on mymuesli showed, an own retail strategy including an implemented physical store to act as a brand billboard – what companies like Apple, Nike or adidas have adopted for years – can be a meaningful strategic option for the management of internet companies.

## 6 Opportunities for Future Research

The present study includes the data set of only one internet retailer and follows therewith an existing empirical stream of scientific literature in multichannel literature (Avery et al., 2012; Biyalogorsky & Naik 2003; Pauwels & Neslin 2009). Nevertheless, the empirical results should be handled with caution when transferring to other settings. Bearing in mind, there are further factors, which can affect customer behaviour towards the likelihood to switch channels in a multichannel system such as channel-category associations and geodemographics (Inman, Venkatesh & Ferraro, 2004), future research could examine how different kinds of stores (club store, grocery store, etc) and brands (premium brands vs. budget brand) affect the buying behavior and the acquisition of new customers. Following Inman et al. (2004), the interaction of channels exert also an influence on customer behavior and the likelihood to switch channels. Analyzing the effect of different interaction constellations could be another possibility to improve the elaboration of a multichannel strategy.

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