Performance Measurement of Mobile Marketing in Multi-Channel Environments

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Abstract

The burst of the e-bubble largely affected the expectations towards and the willingness to invest in mobile initiatives. Recently, the interest for mobile business and mobile commerce both in academia and in the practice field have risen again. This time, business managers request detailed and reliable reporting about the benefits of such initiatives for the justification of the investment though. A prominent example for such mobile initiatives is mobile marketing, where the pervasiveness and personalization features of mobile technologies such as cellular are taken advantage of. Typically these mobile marketing initiatives are embedded in a multi-channel management. Current management accounting instruments do not provide sufficient information about the performance of the different channels. Particularly new and innovative channels such as mobile marketing are required to prove their efficiency and thus need such instruments. This paper proposes a model for performance measurement in multi-channel environments, particularly taking into account the mobile channels. The model is evaluated in a real-world case study.

1. Introduction

In the late 1990's, at the peak of the e-commerce boom, great expectations were geared towards the next level of internet-based commerce: mobile commerce (e.g. [1]). With the burst of the e-commerce bubble, m-commerce also failed to meet those expectations, a prominent example is the Wireless Application Protocol (WAP) ([2]).

Recently, mobile business (*MB*) and mobile commerce (*MC*) have begun to re-emerge as a promising field (e.g. [3]). Businesses do question the effectiveness of their (mobile) activities and investments and their compliance with the corporate strategy a lot stricter than before ([4]). Thus, investments in *MB* and *MC* are often embedded in more general approaches and have to be justified with common accounting methods.

In particular, in the field of customer relationship management (*CRM*) many companies follow a multi-channel strategy and offer customers a variety of interaction channels. *MC* is often implemented as an additional channel within a multi channel management (*MCM*). Mobile marketing (*MM*) is one application in such a scenario and is used to create contacts with potential customers, usually called leads. These leads are often picked up in other channels such as call centers, branches or independent agents. This is particularly common in financial service providers such as banks and insurances (e.g. [5]).

Our goal in this paper is to construct a model for the management accounting and performance measurement of marketing channels such as mobile marketing in multi-channel environments. In particular, this model will be focusing on financial services as an application field. The evaluation of the proposed model will be done in a case study at a health insurance provider.

1.1. Research Methodology and Structure

Since the research goal is the construction of a new model, we follow the approach of design science as described in [6]. "Design science […] creates and evaluates IT artifacts intended to solve identified organizational problems." "In the design-science paradigm, knowledge and understanding of a problem domain and its solution are achieved in the building and application of the designed artifact. […] Such artifacts are not exempt from natural laws or behavioral theories. To the contrary, their creation relies on existing kernel theories that are applied, tested, modified, and extended through the experience, creativity, intuition, and problem solving capabilities of the researcher." ([6]).

Following [6], we begin with the description of the problem space (i.e. the environment in which the identified problem exists) as well as the knowledge base used in the design process (i.e. the set of established constructs, theories and methods the new

model will be based upon). Section two describes the concepts of CRM, MCM, MB and MM as the problem space and gives an overview of the most relevant existing management accounting theories and methods in this field as the knowledge base. Section three first describes the requirements of performance in multi-channel environments and discusses the previously introduced management accounting methods. Subsequently, the proposed model is introduced and explained. Section four describes the evaluation of the proposed model's utility in the solving the problem. This is done, in conformity with [6], by applying the proposed model in a real-world case at a health insurance provider. Finally, in section 5 we derive conclusions of our research and point out future research directions.

2. Background

2.1. Customer Relationship Management and Multi-Channel Management

Following [7], we define Customer Relationship Management (*CRM*) as an interactive process that achieves an optimum balance between corporate investments and the satisfaction of customer needs to generate the maximum profit. A classification and description of business processes in the CRM field can be found in ([8]). In this paper we will focus on the CRM delivery processes, in particular campaign management and sales management.

All CRM delivery processes require interaction and communication between companies and customers, which typically happens via multiple channels and media. The coordination and management of this channel mix is often referred to as Multi-Channel Management (*MCM*)([9]). In particular, [10] points out the necessity to manage channels due to their potential of competition and cannibalization among each other.

From the companies point of view channels are organizational units such as a field service organization or a call center ([11], p.3). These can be distinguished from access media such as telephone, PC or PDA (personal digital assistant). This logical separation leads to two areas of MCM:

- *Interaction management* deals with the question which means of communication provides the best possible support for several customer processes
- *Channel management* is concerned with the internal design and the coordination of multiple channels

Both areas are linked together, since one goal of the design and coordination of channels is to guide each interaction into that channel, which is suited best for it (e.g. because of best quality or lowest price of interaction).

2.2. Mobile Buiness and Mobile Marketing

Technological advancements in mobile communications enable new ways of doing business ([12]), often referred to as "mobile business" (*MB*) or "mobile commerce" (*MC*). While [13] does not distinguish between the two but rather use the term "mobile commerce", [14] and [15] define "mobile business" as the application of mobile technologies to improve or extend business processes and open new market segments and distinguish it from "mobile commerce". The latter is rather a subordinate field of *MB*, focusing on the handling of transactions. We follow the more general understanding of [14] and [15] and concentrate on the application of mobile technologies to support customer-oriented business processes.

Particularly, we focus on the application of mobile technologies in the context of *MCM*, where mobile networks and devices are one channel among others, such as the World Wide Web (WWW), call centers, branch offices and independent agents. One prominent example is mobile marketing (*MM*), i.e. the application of *MB* technologies in marketing processes. *MM* takes advantage of the pervasiveness of mobile devices and the typically very personal nature of communication using those devices (as perceived by their owners) ([16], [5]).

2.3. Managerial Accounting Instruments

In order to direct the customer interaction into the most efficient channels, it is of crucial importance to have an analytical instrument which gives insight to the cost and effectiveness characteristics of the different channels. The field of managerial accounting has provided multiple approaches and theories which aim at providing such information to managers ([17], p. 4-7). Usually the information is condensed into operating figures to ease interpretation by management. Generally, an organization is divided into several units and each unit is accounted for its costs and its effectiveness. In multi-channel sales organizations these units often coincide with the channels. Typically, effectiveness is classified in three categories ([18]): *direct effects* such as contract closures and associated revenue generated in a unit, *spill-over effects* such as additional revenue caused by one unit but realized in another and *corporate effects* such as a gain in reputation or awareness for a brand.

For cost accounting there are multiple approaches to define and classify costs. The following approaches are

broadly applied in practice or have particular relevance in the problem space analyzed here:

- *Absorption Costing (AC)* (also referred to as *Standard Costing*), based on Harrington Emerson and G. Charter Harrison (see [19]), "deducts manufacturing costs from sales to compute a gross margin and deducts non-manufacturing costs to measure profit" ([17], p. 247).
- *Contribution Margin Analysis (CMA)* ([20], [21]) "deducts variable costs from sales to compute a contribution margin and deducts fixed costs to measure profit" ([17], p. 246).
- *Activity-Based Costing (ABC)* ([22], [23]) focuses on activities and processes in organizations instead of products or organization units and accounts the fix as well as variable costs to identified activities.

To analyze market interactions and structures *Transaction Costs Economics (TCE)* ([24], [25]) are a useful framework. *TCE* are at the intersection of business organization theory and economics and follow the approach of the New Institutional Economics. *TCE* take into account that relying on market mechanisms also causes costs and maps these costs to different stages of a market transaction ([26], pp. 67).

3. A Model for Performance Measurement of Mobile Marketing in Multi-Channel Environments

3.1. Requirements of Performance Measurement in Multi-Channel Environments

Management accounting in multi-channel environments has the purpose of creating transparency about which channels fulfill their communication purpose most effectively and to create transparency about the associated costs of each channel. In particular, the effectiveness of channels can be measured by counting the contracts closed in a certain channel, but also softer figures have to be taken into account, such as the economic value of the acquired customers (e.g. young, healthy customers are typically more valuable for a health insurance provider) or the brand image. To account for the flexibility of choice the customers have in a multi-channel environment, a proper accounting of effects to all involved channels is also crucial. This is especially important for mobile and electronic channels for two reasons. Firstly, mobile channels usually cannot support all transaction stages, e.g. due to necessity of manual signatures for contracts. Hence, mobile channels hardly produce direct effects. Secondly, due to failures such as WAP ([2]) mobile

initiatives are evaluated more skeptically than activities of traditional channels.

Similarly, the (fix as well as variable) costs must be accounted properly to each channel, a requirement typically hard to fulfil for general fix costs such as costs for buildings and infrastructure. The resulting figures should be aggregated enough to allow for an easy analysis by management but still allow for a multi-dimensional drill down, e.g. analysis of effectiveness of marketing campaigns in terms of fit of acquired customers into the strategic target group or analysis of side-effects among the different channels (cannibalization as well as spill-over effects).

Technically, the model should also be easy to implement and to be supported by IT. The complexity of data collection is expected to be high, thus a reasonable amount of automation in data collection is necessary. A lack of automation would most likely also affect the data quality negatively. Integration into CRM tools is also desirable to allow for the use of the resulting figures in analytical CRM to realize a closed knowledge loop as proposed in [8].

3.2. Discussion of Existing Managerial Accounting Instruments

Typical criticism towards the *AC* approach is that fix costs are accounted to the production units and thus changing production volume distorts the figures. Also, not all costs in an organization can be uniquely accounted to a single unit. Such general costs have to be accounted proportionally to multiple units, using a key. These keys often can't properly represent the cost structure, are assigned more or less arbitrary and hence fudge the information given to management.

The *CMA* approach introduced the idea of relative general costs, which accounts for the fact, that depending on the separation of units certain costs can be general or unit specific. E.g. if the units are product lines, costs for sales channels which sell all products are general costs and have to be keyed to all products, while if the units are sales channels these costs are specific costs for each unit. If the units are broken down to a detailed level, they can be aggregated in multiple ways and thus be used for a multi-dimensional analysis. The involved complexity calls for IS support in the data collection as well as in the aggregation and analysis. Criticism against the *CMA* approach often focuses on the negligence of fixed costs, which leads to too low pricing. Since especially in the insurance industry the product prices are rarely based on accounting figures but on complex statistical models, this only applies in limited ways to the context analyzed here. Another issue is the complexity of *CMA* implementation and the disputability of the assignment

of the classification into general and unit specific costs. Since unit managers know that *CMA* is used to measure profitability, they try to move costs into higher aggregation levels.

The *ABC* approach tries to reach a proper accounting of general costs to organizational units by associating the costs with processes and activities conducted by these units. This allows a better accounting in process intensive industries such as insurance where customer service is a major cost driver, but manufacturing costs are hard to define. Issues of *ABC* systems implementation include the general costs in support and administrative processes and the complexity of cost measurement in activities. Costs for activities can be measured e.g. by observation of employees performing those activities which requires high efforts and also might distort the results due to different employee behavior under observation.

TCE does not originate in accounting, but in economics and describes the costs associated with the usage of market mechanisms. Particularly in marketing, the focus on market processes and the proposed classification into transaction stages can be a valuable instrument. [26] (p. 67) suggest the transaction stages as described in table 1. The *TCE* approach also allows to account for cost savings or convenience improvements on the customers' side and to give credit to the channel which caused the improvement.

Table 1: Transaction stages ([26], p. 67)

Stage	Examples for associated costs
initiation	identification of transaction partners, e.g. marketing (on the vendor's side) and product search and comparison (on consumers' side)
negotiation	consulting and administrative costs for contract closure
settlement	costs for service delivery and management of the exchange of goods
monitoring	monitoring of quality and timeliness of transaction execution
adjustment	modification of contracts according to changes in requirements

All these approaches have potential to address certain elements of the previously outlined requirements; each by itself falls short though. Thus a combination of the approaches should be considered.

3.3. A Proposed Combined Model

The proposed model targets the following benefits, in compliance with the previously defined requirements:

- Functional segmentation of accounting along the channels of a multi-channel marketing and sales organization,
- Detailed break-down of marketing and sales activities into multiple channels and multiple transaction stages,

- Accounting of relative specific costs to the appropriate units,
- Accounting of general costs according to process-based principles,
- Derivation of operational figures including contribution margins and reflecting influences from non-accounting measures and
- Multi-dimensional analysis of results with IT support.

The proposed model first divides the problem space along two dimensions: First, the goal is to compare different channels, thus they are units of analysis. Second, TCE suggests dividing a transaction into separate stages, which in an MCM environment can be each carried out using a different channel. This leads to a matrix of channels and transaction stages. Then a contribution margin is calculated for each field in the matrix applying CMA. To assess the costs which occur at a particular transaction stage and in a particular channel, an ABC approach is used. Each activity in each channel is associated to a transaction stage according to the definitions in TCE. ABC provides multiple methods to measure or estimate costs, such as self-logging, relative values, pre-determined time standards, etc. Figure 1 visualizes this model.
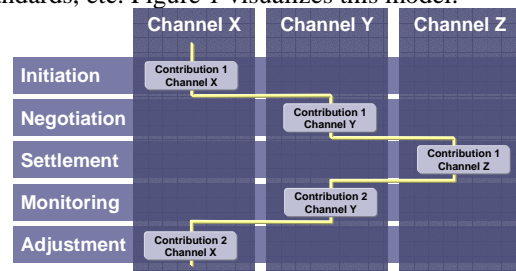

Figure 1: The Proposed Model

This approach allows reflecting the channel of choice in each stage and activity for each customer or lead. The yield that a customer produces can be properly accounted to each involved channel according to its contribution in the process. Hence, mobile channels which only contribute via spill-over effects are represented more properly. Equally costs which occurred during the transaction can be accounted properly to each customer, each channel and each transaction stage. Table 2 visualizes the proposed accounting model. It is to be applied to each channel.

Starting point for the calculation is the channel-specific premium yield. The proper calculation of this figure requires a tracking of the channel used by each lead from the first contact on, ideally including the marketing campaign the lead came from. Each channel can then be accredited proportional to its contribution to a contract closure. Similarly, the claims paid to the customers have to be accounted in the same proportionality to each channel. Subsequently, the

costs in the channel associated with the different transaction stages are deducted and a separate contribution margin is calculated after each stage.

Table 2: Proposed accounting model

Accounting Item	TCE mapping	Marketing/ sales mapping
Premium yield - Debtor losses		
= *Earnings*	*(Earnings)**	
- Claims		
= *Contribution margin I*	*(Production)**	*Non-Sales*
- Direct initiation costs - Channel-specific costs in lead generation		
= *Contribution margin II*	*Initiation*	*Marketing*
- Direct negotiation costs - Channel-specific costs in consulting		
= *Contribution margin III*	*Negotiation*	*Sales*
- Direct settlement costs - Channel-specific costs in settlement		
= *Contribution margin IV*	*Settlement*	*Back-Office*
- Management costs		
= *Contribution margin V*	*Monitoring*	*Channel management*
- General channel-specific costs		
= *Contribution margin VI*		*Contribution margin per channel*
- General marketing & sales costs		
= *Contribution margin VII*		*Contribution margin marketing & sales*

*Earnings and Production are not transaction stages, but map on a similar level here.

The different contribution margins at each transaction stage reflect the effectiveness of the channel. Founding the calculation on channel-specific yields and deducting the channel-specific claims incorporates the economic value of customers acquired by each channel in the model. This is reflected in contribution margin I. Each subsequent contribution margin reflects the channel's (financial) effectiveness at each stage. Spill-over effects are implicitly incorporated by reflecting the hand-over of customer processes between channels at different transaction stages. Thus, e.g. the spill-over effect as produced by a lead generated by one channel but closing a contract using another is taken into account by breaking up the yields according to the channels' involvement in the different stages of the transaction.

According to the defined primary goal of creating transparency within the multi-channel management for marketing and sales, general marketing and sales costs which are channel independent are omitted in the model. Keys for the association of these costs to channels would likely be rather arbitrary than indicating effectiveness. These costs would need to be included in the model to gain relevance for corporate reporting.

4. Evaluation of the Proposed Model with a Health Insurance Provider

The evaluation of the proposed model, as required by [6], has been using the criteria of utility, quality and efficacy (according to [6]). As evaluation instrument we used a case study, as suggested by [6].

As the application scenario, we had the opportunity to cooperate with one of our corporate research partners, a large health insurance provider in Switzerland. For confidentiality reasons, we will refer to it as SwissHealth in the following. SwissHealth pursues a multi-brand strategy to address different target groups individually. We'll call these brands SwissHealth, SwissFit, WomanHealth and EasyHealth to reflect the brands' target groups.

- *SwissHealth* – the oldest brand, associated in the market with tradition, reliability and high customer service,
- *SwissFit* – focuses on young customers, pursues an innovative image and offers extremely low premiums,
- *WomanHealth* – focuses on the particular needs of female customers and
- *EasyHealth* – is exclusively available via electronic channels.

The offered channels are independent sales agents, branch offices, a call center, a web-based online platform and recently a mobile marketing initiative. Initiated by the Head of E-Channels as an experiment for the SwissFit brand only, the mobile marketing campaign is challenged to prove it's efficiency as compared to other channels in order to be implemented in the whole group.

For management purposes, the marketing and sales unit is subdivided into one division for each channel, plus general units across all channels for sales support and sales management. Internal reporting, in contrast, only views the branches and the call-center as sales channels, since technically only these can close a contract due to the necessity of manual signatures on contracts. As a consequence, the figures delivered by internal reporting offered little help for MCM in marketing and sales. To solve this dilemma, the proposed model has been introduced.

First, the units of analysis were to be defined. The selected units were aligned with the channels: *Direct Marketing (DM)* – outbound call centre activities, *E-*

Marketing (EM) – web-based activities, *M-Marketing (MM)* – activities using *MB*, *Branch Offices (BO)* – activities in local offices *Key Account Management (KAM)* – targeting corporate customers, *Independent Agents (IA)* – activities of external agents and *Inbound Call Center (ICC)* – following leads generated by the other channels.

Secondly, the basis for the cost model was laid out. Relevant processes in the marketing and sales were identified, primarily processes describing the path of a customer from lead acquisition through contract closure according to the transaction stages and with defined switching points with all available channels at the point (e.g. for contract closure only *BO* and *ICC* are available to retail customers). As such most costs for marketing and sales activities could be associated as direct costs to the respective channel and transaction stage. Since the call center provides services to the *DM* channel and acts as an independent channel for inbound calls, here the activity-based costing was used to classify costs as service to *DM* or as service to *ICC*.

The following adjustments have then been made to the proposed model to fit SwissHealth's environment: General costs for building infrastructure have not been incorporated into the model, since these are considered as fix costs and can't be influenced by MCM. An additional deduction was made prior to the calculation of contribution margin I, reflecting the compensation payment between health insurance providers to balance different risk bases for the standard health plan. An average contribution margin I was used across products, even this distorts the effectiveness. Exact data could not be pulled out of the corporate data warehouse in time, but generally is available. For the calculation of the figures in the evaluation stage, an Excel spreadsheet was used, importing data from reporting sources or entering them manually, e.g. from the CRM system.

Figures calculated for each channel using the proposed model include *Contribution to Production* – the contribution rate to acquired contracts, *Appointment Ratio* – appointments over generated leads, *Lead Ratio* – contract closures over generated leads, *Costs per Closure* – average costs per closed contract and *Penetration* – leads over customer base (as reported by market research).

Results for MCM included, that the anticipated cost efficiency of *MM* is actually not reached due to low volume on the channel and thus large effects of channel-specific fixed costs. The anticipated higher effectiveness of *MM* as reaching the target group more precisely could be confirmed, while the higher economic value of these customers could not be confirmed due to the average contribution margin I

neglecting different claim levels in different channels. The lead ratio, the appointment ratio and the penetration of *MM* were significantly higher than in other channels, leading to the conclusion that the effectiveness of *MM* in the initiation stage is higher than that of other channels. Also, it turned out, that the price for a lead as billed to independent agents was not covering the internal costs for generating the lead. Currently SwissHealth views this low price as differentiator against competitors, but the gap between typical market prices and SwissHealth's price still leaves room. The non-monetary effect of the low price on the perception of SwissHealth by the independent agents is to be researched and then to be taken into account as well, of course. As a consequence, SwissHealth's management decided to extend the *MM* campaign across all brands and to a larger geographic region. It is expected that the performance is increased since the ratio of fixed costs will be lowered. Also, *MM* is now considered a first choice channel for the initiation stage of transactions.

The utility of the model is perceived as high by the SwissHealth management, since assumptions could be confirmed or rejected and unanticipated effects could be discovered. The quality of the model is generally assessed as good, the lack of information about the filed claims per channel leading to the use of an average contribution margin I impacted the quality though. This reinforces the requirement of tight IT integration of the model. The efficacy could not fully be evaluated, since in the available time frame no derived management measures could be launched or even analyzed in terms of effectiveness. The gained insights in the efficiency structures promise to allow for a more efficient multi-channel management though.

5. Conclusions and Further Research

The environment of SwissHealth serves as a good example for the necessity of a multi-dimensional performance measurement tool in CRM. In order to manage sales and marketing units towards usage of channels such as mobile marketing where they are most efficient requires a detailed internal reporting. Existing management accounting approaches do not offer sufficient instruments for this task, but provide a solid basis for the design of a new model.

The model as proposed in this paper addresses the multi-dimensional needs of performance measurement in multi-channel environments, in which mobile marketing typically is embedded. The application of the model in a case study revealed interesting misperceptions of the marketing and sales management (such as the cost efficiency of mobile marketing),

confirmed other assumptions and pointed out completely new aspects as well.

Limited applicability of the model for external accounting (due to non-compliance with legal requirements) is explicitly accepted, since the instrument is meant to be used for internal accounting only. Lack of design and flexibility for other mobile initiatives in other business areas than marketing and sales are anticipated by the authors, more detailed requirements in other business areas need to be collected and incorporated into the model in future research. Also, soft factors such as customer satisfaction still have to be taken into account separately or have to be associated with "virtual" costs or earnings, which is generally seen as rather arbitrary.

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