A Mobile Multi-Supplier Sales Information System for Micro-sized Commercial Agencies

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Abstract: Micro-sized commercial agencies face a poor electronic and mobile sales support. Most of the sales information systems are built for the usage within larger-sized companies. Problems particularly appear when processes of multiple suppliers have to be integrated into the sales processes of the commercial agencies. The paper addresses the issue of process optimization in form of a mobile multi-supplier sales information system for micro-sized commercial agencies. Two major areas of improvements can be realized: Firstly, by an optimized business process integration of multiple SME suppliers and their sales representatives in micro-sized commercial agencies (internal supplier oriented sales processes), and secondly, by an increased mobility in connection with an optimization of sales processes outside of the office infrastructure (external customer oriented sales processes). The paper examines the common processes in commercial agencies and derives relevant processes as well as the appropriate IT-support in form of use cases. The relevant processes and the use cases depend strongly on certain key parameters of a commercial agency's business relationships with its suppliers. Therefore, the paper introduces a branch independent concept for the sales cockpit with the focus on selected sales scenarios, relevant business processes, and derived use cases depending on selected key parameters. By funding the research project M3V, the German Ministry of Economics and Technology aims to create a secure, mobile, multi-supplier sales information system as a service for micro-sized commercial agencies.

Keywords: sales information system, mobile application, business process integration, software-as-a-service

1. Introduction

In the research project M3V (www.m3v-projekt.de), a survey has been conducted in 2007 among 53 micro-sized commercial agencies in the southern part of Germany. It has shown a poor electronic support of their sales processes [1]. 10 percent of them have no E-Mail support, 20 percent no office software, 45 percent no electronic contact administration or customer relationship management software (CRM), and 70 percent no electronic bookkeeping. The contact between the commercial agencies and their sales representatives is based on phone calls and paper-based document exchange.

The requirements for a new sales information system for those commercial agencies are supposed to be as followed [2]:

- One sales cockpit, if required with the differentiation of back office and mobile cockpit, for the micro-sized commercial agencies instead of many different sales portals of each supplier or no IT support at all,
- Exchange of sales information between the commercial agencies and their suppliers by strongly integrated suppliers' processes and systems into one sales system,

- Mobile access to the sales information to support the processes in which interactions with customers occur,
- Reduced IT-administration in comparison to the initial situation,
- Appropriate business model for offering the sales information system as a service for micro-sized commercial agencies [3].

On one hand, the current CRM-systems which are used by the suppliers are mostly developed for one sales organisation and its sales force which has the disadvantage that the commercial agencies need to work with different sales systems for each of their suppliers [4] and often results in a lack of a mobile sales support in front of the customers.

On the other hand the current CRM-systems which are used by the micro-sized commercial agencies do not support the sales processes across organizations and thus do not feature a strong integration of the suppliers' processes and systems. Therefore, they lack up-to-date as well as mobile sales information.

2. Objectives

The overall objective of the research, which is described in the paper, is the development of a concept for sales information system which supports and automates relevant sales processes of micro-sized commercial agencies. The concept is branch independent.
The three main sub objectives are:
- The identification of relevant processes of micro-sized commercial agencies,
- The examination of optimization potentials in each process with a strong focus on integration and mobility aspects,
- The development of a scenario with various commercial agencies for the sales cockpit which supports branch independently the optimization of their sales processes.

3. Methodology

In order to achieve a branch independent solution, several expert interviews and workshops have been conducted. The experts have been retailers, sales agents and sales representatives for food, clothing, facility management, chemicals, packaging, electronic components and devices. Additionally, in order to improve the suppliers' perspective on the topic, some interviews with suppliers have been done who sell via micro-sized sales organisations. The results have been further examined by a survey among commercial agencies in Southern Germany. The survey is not statistically representative. However, it shows first interesting trends in the research questions examined.

The focus of the research has been the identification of relevant business processes of commercial agencies and their potential for optimization and electronic support. The results of the examination form the basis for the concept development of the sales information system for micro-sized commercial agencies which includes the sales IT-platform, the back office and the mobile sales cockpit. The concept has been evaluated by target users.

The approach and the description of the results are according to the meta model of Business Engineering of Österle [5] which was then further developed to PROMET in order to describe business cases. The meta model consists of three levels, i.e. strategy, process, and system level. Each level provides different elements to describe an IT solution.

4. Initial Situation

For the concrete business case of micro-sized commercial agencies the following elements have been identified to describe the initial situation.

4.1 Strategic Level

The work of sales representatives is based on a legal framework, which defines their rights and duties. However, other aspects also strongly influence their work and thus the IT-support. Table 1 illustrates the main strategic aspects that are relevant for sales representative of micro-sized commercial agencies.

Table 1: Strategic Background of Commercial Agencies

Strategic Aspect	Origin	Right/Duty
Right for representing multiple suppliers	legal	right
Non-competition clause for sales representatives	implicitly legal	duty
Commission claim	legal	right
Comprehensive reporting of the suppliers of all bookings leading to commissions	legal	right
Duty for endeavour and reporting of the sales representatives	legal	duty
Strong strategy of differentiation towards other competitors	business	-
Carefully selected product range	business	-

4.2 Process Level

During the research, 27 processes have been identified which support the sales phases of a commercial agency, i.e. communication and information, consulting, sales, order processing, and after sales and support (see Figure 1).

Commercial agencies take different roles which influence the business processes between them and their suppliers. The main roles are sales agent, sales representative, and retailer (explanation see Table 2). Very often a commercial agency has got different roles with even one supplier. Thus, depending on the role of the agency, the processes need to be combined and supported by the sales cockpit accordingly. The different roles and their influence on the processes are shown in Figure 1. Next to the role there are other key parameters that influence the processes (see tables 4 and 5).

Table 2: Different Roles of Commercial Agencies

Role	Explanation	Type of Contracting
Sales agent	The service of a sales agent is to bring two parties together which are willing to contract.	None
Sales representative	The sales representative is able to contract in the name of the representing supplier.	Representation of supplier also in terms of contracting
Retailer	The retailer contracts in his own name for his organisation.	Power of contracting in his own name

Each of the 27 processes has been examined in terms of frequency, personal effort, weaknesses, future mobile importance and potential for improvement. The examination results can be seen in Figure 1 with the aspects of optimization potential (combines frequency and personal effort of processes), mobile importance, and mobile potential.

When having a closer look to the optimization potential it becomes obvious that the sales cockpit should support the integrative processes between commercial agencies and their suppliers, i.e. providing reports of customer meetings to suppliers, clarification of customer requests with suppliers, matching payments for commissions with suppliers, and matching status of business transactions with suppliers. The (multimedia) introduction of products and the support of the product selection are processes in front of the customers that are also badly supported by current IT-systems.

The processes with a high mobility importance for the commercial agencies are often processes which are conducted in interaction with customers, i.e. providing product information to customers, (multimedia) introduction of products, supporting the product selection, clarification of customer requests with suppliers, checking status of customers'

business transactions, administration of contacts, and preparation of a customer meeting (see also [6]). However, processes of the sales phases communication and information, consulting, and order processing show potential for improving mobility. Especially, the product selection process can be supported better.

❶ Communication and Information

	Sales agent	Sales repr.	Retailer	Opt. potential	Mob. importance	Mob. potential
Prepare customer meetings	●	●	●	●	●●	●
Provide product information to customers	●	●	●	●	●●	●
Provide reports of customer meetings to suppliers	●	●	-	●●	●	○

❷ Consulting

	Sales agent	Sales repr.	Retailer	Opt. potential	Mob. importance	Mob. potential
Introduce products	●	●	●	●●	●●	●
Provide product samples	●	●	●	●	●	●
Support product selection	●	●	●	●●	●●	●●
Configure a complex product	●	●	●	●	●	●
Develop a customer-specific product	●	●	●	●	●	●

❸ Sales

	Sales agent	Sales repr.	Retailer	Opt. potential	Mob. importance	Mob. potential
Clarify customer request with suppliers	●	●	●	●●	●●	●
Receive customer Request for Quotation (RFQ)	●	●	●	●	●	○
Forward customer RFQ to suppliers	●	-	-	●	●	○
Create quotation	-	●	●	●	●	○
Receive and processe order	-	○	●	●	●	○
Receive and forward order to suppliers	●	○	-	●	●	○
Create and send receipts to customers	-	○	●	○	○	○
Receive order changes	●	●	●	○	●	●
Order products at supplier for the own stock	-	○	●	○	○	○
Receive receipts of suppliers for products on stock	-	○	●	●	○	○
Match payments for commissions with suppliers	●	●	-	●●	●	●

❹ Order Processing

	Sales agent	Sales repr.	Retailer	Opt. potential	Mob. importance	Mob. potential
Send ordered products to customers	-	○	●	○	○	○
Check status for business transactions	●	●	●	●	●●	●
Match status of business transactions with suppliers	●	●	●	●●	●	●

❺ After Sales and Support

	Sales agent	Sales repr.	Retailer	Opt. potential	Mob. importance	Mob. potential
Process reclamations	●	●	●	●	●	○

	Sales agent	Sales repr.	Retailer	Opt. potential	Mob. importance	Mob. potential
Administrate IT-systems	●	●	●	○	●	●
Administrate contacts	●	●	●	●●	●●	●
Administrate appointments	●	●	●	●	●	○

Figure 1: Relevant Business Processes for the Sales Information System

(roles: "-" = process not relevant, "○" = partially relevant process, "●" = relevant process; optimization/mobile potential and mobile importance: "○" = none or low potential/importance, "●" = middle potential/importance, "●●" = high potential/importance)

The sales information system should be able to improve the identified processes. The main weaknesses of the current processes are:

- High manual effort for the sales representatives for maintaining information (integration problem, e.g. orders entered at the suppliers' side),
- Lack of up-to-date information (integration problem, e.g. turn-over which is relevant for the commission of a sales representative, status of transactions),
- Problems of not having the required information at the right place (mobility problem, e.g. product information, information of transactions in front of the customers).

4.3 System Level

Some of the commercial agencies use IT-systems, e.g. ERP and CRM solutions. However, the solutions are characterised by:

- A high usage of single IT-systems without considering a holistic and integrative approach,

- Little IT-knowledge within the commercial agencies despite many of them administrate their IT-systems themselves.

Therefore, the aim of the cockpit and the underlying sales information system is to support the integration of the relevant IT-solutions of the suppliers in order to achieve up-to-date information for each of the sales processes as well as to provide the required information on mobile devices.

5. Concept of the Sales Information System

From the information gathered in the interviews and workshops with commercial agencies and suppliers, a suitable IT-infrastructure, 27 relevant processes, and the corresponding IT-functionality in form of use cases were derived. Figure 2 provides an overview over the key players, systems, and interfaces of the ideal sales information system which consists of two main parts:

- A sales IT-platform which mainly integrates the systems of suppliers and commercial agencies and assures the provision of up-to-date sales information,

- Back office and mobile sales cockpits which are user interfaces for the commercial agencies to access the stored sales information of the sales information system with mobile and back office IT-devices and -systems.
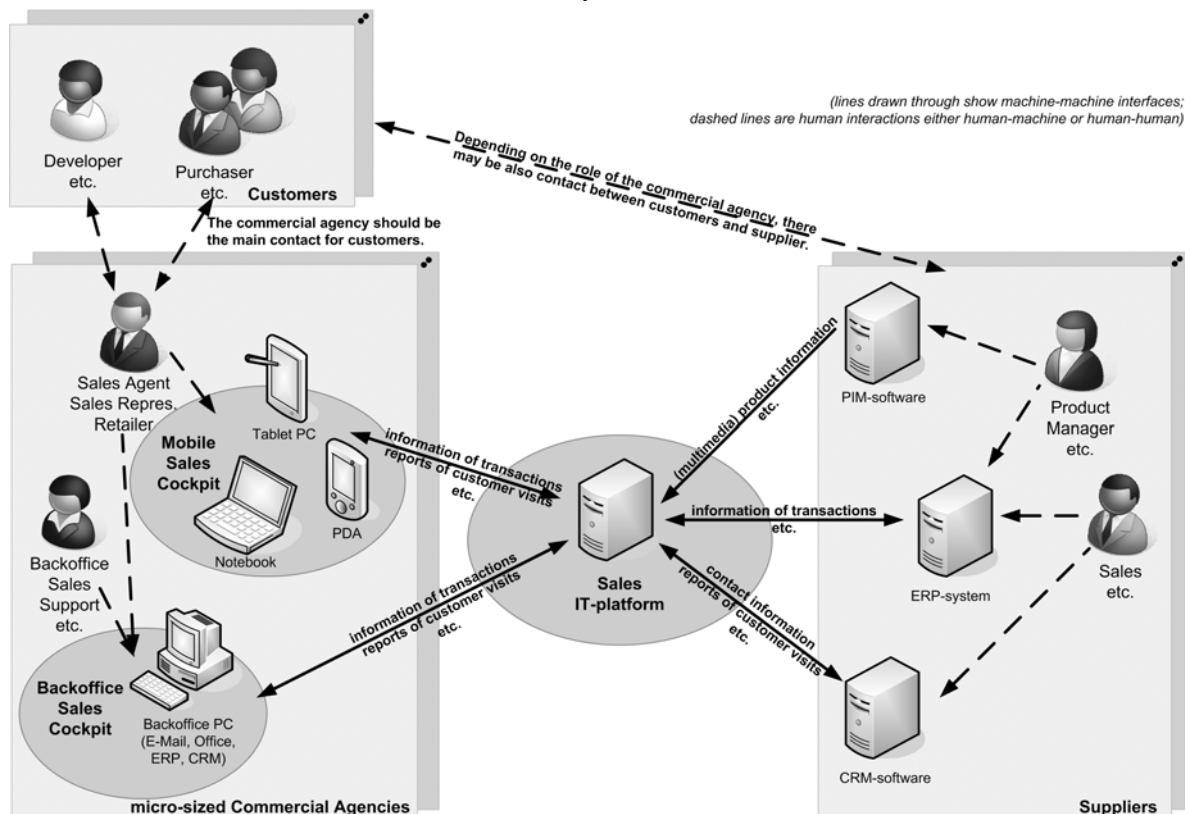

Figure 2: Overview of Key Players, Systems, and Interfaces

The sales information system provides a complete set of functions for supporting most sales processes. Depending on the IT-infrastructure, the specific needs, and requirements of

a commercial agency, the set of functions can be adapted. In order to support the work processes of the commercial agencies efficiently, the set of functions contains the use cases shown in Table 3. The use cases are documented by applying the UML notation. With the description of the use cases the main functions of the IT-platform from the viewpoint of commercial agencies are specified [7]. Additional use cases may be required by the suppliers if the integration of the suppliers' backend systems is not realizable. In this case, the platform needs to provide certain functions to replaces the information exchange with the backend systems.

Table 3: Relevant Processes and Use Cases

Processes	Activities in each process which is the basis for deriving the use cases
Prepare customer meeting	Collect relevant information for customer meeting, configure the structure of the information export
Introduce product	Search products, retrieve and present multimedia product information (e.g. videos)
Provide product information to customer	Search products, retrieve product information (e.g. handbooks, datasheets), send product information to customer
Provide product sample	Create and send request for product sample, gather customer's feedback after checking the product sample, retrieve information of a request for product sample
Support the product selection	Search products, retrieve product information, put products into shopping cart, create a request for quotation/order from shopping cart
Configure a complex product (if necessary with the customer)	Configure a complex product, save/administrate a product configuration, create a request for quotation/order from product configuration
Develop a customer-specific product	Create project, handle project correspondence, handle project documents
Clarify customer request with supplier	Handle correspondence for customer requests
Receive customer request for quotations	Receive and enter a customer's request for quotation
Forward customer requests for quotations to supplier	Forward a customer's request for quotation to supplier
Create quotations	Create a quotation, send a quotation to a customer
Receive and process order	Create an order, handle an order, send an order to a supplier
Provide reports of customer meetings to suppliers	Create a report of a customer meeting, handle a report of a customer meeting (e.g. process the open tasks), send report of a customer meeting to a supplier
Create and send receipts to customer	Create a receipt, print a receipt
Receive order changes	Enter order changes, send order changes to a supplier
Send receipts from a supplier to a customer	Print receipt
Match payments for commissions with suppliers	Retrieve amount of payments for commissions
Check status information of business transactions	Retrieve status information of business transactions (list), retrieve detailed information of business transactions
Synchronise electronic documents with a supplier	Administrate electronic documents (i.e. requests for quotations, quotations, orders, order acknowledgements, receipts, reclamations)
Process reclamation	Create a reclamation, check a reclamation, send a reclamation to a supplier
Administrate IT-systems	Administrate employee accounts, configure integration of systems, adjust use cases to commercial agency, import product information, insert product information
Administrate contacts	Administrate contacts, manage leads, administrate correspondence
Administrate appointments	Administrate appointments

As mentioned above the functionality of the sales information system needs to be adapted according to certain prerequisites. For the suppliers' integration the parameters which are shown in need to be clarified.

For example, a sales agent does neither create any quotations nor process any orders. A sales representative without a stock usually does not order products for his stock or send products directly to the customers. This way, the key parameters stock and role have influence on the processes mentioned above.

Table 4: Key Parameters Which May Be Different for Each Supplier

Key Parameters	Characteristics				
Role	Sales Agency	Sales Representative	Retailer		
Types of Products sold	Standard Products	Configurable Products	Individual Products		
Systemintegration	none	ERP	CRM	PIM	...
Stock	yes	no			
direct Customer Contact	yes	no			

Table 5 shows some important key parameters that need to be defined once for the commercial agency. They influence mainly the processes which are done among them and their customers, e.g. the processes are influenced by the possibility of using a mobile device in front of a customer and thus may have real time information, i.e. about stock, delivery time, and status of business transactions.

Key Parameters	Characteristics				
Mobile Devices in front of Customers	yes	no			
Mobile Device	Fullscreen	Smallscreen			
Connectivity of mobile Device	offline	online			
Mobile Output Devices	Screen	Printer	Audio	Fax	...
Systemintegration	none	ERP	CRM	...	

Table 5: Key Parameters Provided Once by the Commercial Agency

The use cases of some selected processes have been implemented in a software prototype based on Java, the Grails framework and .NET for the mobile client [2]. The prototype has been the basis for the concept evaluation by key users.

6. Business Benefits

The evaluation by the key users shows benefits of the sales information system in terms of time/effort reduction, cost savings as well as turnover increase in comparison to the initial situation. The main benefits when looking at reducing time/effort and saving costs are:
- Less manual work in terms of reviewing and filing of paper-based documents, e.g. requests for quotations, orders, and reclamations,
- Mobile fulfilment of documentation activities and thus a reduction in revision of customer meetings and talks,
- A strong concentration on core competencies of commercial agencies, e.g. reduction in IT-administration by applying the Software-as-a-Service approach (SaaS).

The main benefits when evaluating the sales information system in terms of turn-over increase are:

- A high availability of up-to-date sales information and thus a good basis for providing relevant sales information to customers, e.g. information about products and status of transactions,
- A location-independent information provision even in front of customers, e.g. in customer meetings,
- An increase in information transparency due to tracking of transactional information in the sales information system,
- A better information quality as a result of less media breaks when electronically exchanging information.

7.   Conclusions and Future Work

A very crucial aspect of the sales information system for micro-sized commercial agencies has been a high adaptability of the sales cockpit to the needs of the sales people so that they get quickly used and accustomed to the application. The adaptation is carried out on the basis of the identified relevant sales processes and their influencing key parameters.

The main benefit of the mobile multi-supplier sales information system is the broad electronic support of the relevant sales processes with a strong focus on the needs of commercial agencies which profit of constantly up-to-date sales information from highly integrated (multiple) suppliers and their systems and a location-independent usage of the application even when interacting with customers. A high adaptability of the IT-platform is needed in order to increase the acceptance by the customers. However, next to the issue of acceptance there are other crucial issues to be solved to run the IT-platform as SaaS successfully, e.g. security, availability, usability, and integration.

The next activities strongly focus on the development of a business model which complements the functional and technical requirements by the business requirements of micro-sized commercial agencies and addresses the above-mentioned issues. Here, the aim is to run the system as a service in an economic way and simultaneously provide an appropriate support to the users which features a high acceptance.

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