Adoption Of An Online Sales Channel And "Appification" In The Enterprise Application Software Market: A Qualitative Study

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ADOPTION OF AN ONLINE SALES CHANNEL AND “APPIFICATION” IN THE ENTERPRISE APPLICATION SOFTWARE MARKET: A QUALITATIVE STUDY

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Abstract

Pioneered by Apple’s App Store, online sales channels for software applications have acquired a prominent role in the consumer software market. This success has been a catalyst for several vendors of enterprise application software, who opened their own online sales channel alongside traditional ones based on the deployment of intermediaries and sales teams. However, it is disputable whether the online purchase of a software application is as compelling for an organization as it is for an individual consumer, and whether drivers and barriers of channel adoption are the same in these different contexts. Therefore, relying on a qualitative research strategy, we have explored the channel adoption decision made by organizational software buyers to uncover and categorize relevant influencing factors. In particular, solution attributes such as specificity, price, implementation/integration effort, scope, and evaluability appear to play a key role alongside contractual aspects and the existence of an established relationship with the vendor. We have also investigated factors’ interdependences to sketch an online channel adoption model which, on the one hand, may allow practitioners in the enterprise software market to diagnose channel adoption issues and, on the other, may serve as foundation for further multidisciplinary research in this topical area of study.

Keywords: online channel, app store, appification, adoption model.

Authors contributed equally to the publication and are listed alphabetically.
1 Introduction

Online sales channels for software applications (hereafter also abbreviated to “online channel”) have gained a prominent role in consumer software markets and proved a crucial lever for the success of consumer-technology companies such as Apple and Google (Rapaport 2013). In the enterprise application software market (hereafter also abbreviated to “enterprise software”), vendors have in turn opened their own online channels alongside traditional ones based on partner ecosystems or on the deployment of a direct sales force, aiming at the replication of that rampant success. However, it is disputable whether the online purchase of a software application is as compelling for an organizational buyer as it is for an individual consumer, and whether drivers and barriers of channel adoption are the same for both.

For the purpose of this study, we define the “online channel” as a set of organizational and technological means constituting a centralized e-commerce platform serving a software consumer throughout the buying process from information search to purchase and software delivery, without or with minimum and possibly virtual and asynchronous human interaction. Online marketplaces such as the Apple’s App Store or the various Android stores represent the quintessence of such an online channel and can boast a purely automatized software delivery to the purchaser’s system.

In consumer software markets, such an online channel has already proved successful, and, as mentioned above, has shaped competition between and within platforms, taking on a pivotal role in determining the fate of vendors and whole software ecosystems alike (Lynley 2013). However, the situation is different and developments less clear to decipher in the enterprise software market. There, traditional sales channels involving field personnel, salesmen, and intermediaries such as system integrators or value added resellers still play the most important role. The increasing adoption of on-demand software delivery has been affecting this status-quo to some extent (Burkard et al. 2011). We therefore deem the investigation of how organizational buying situations shape the channel adoption decision taken by enterprise software customer an important topic of inquiry.

Formally, we address two research questions. The first is the identification of the relevant organizational buying factors for the adoption of an online channel in the enterprise software market, whereby we aim at building a conceptual categorization and a theoretical model thereof. The second is the inference of a classification of enterprise software solutions based on their suitability for such an online channel. In other (and less formal) words, we elicit drivers and barriers to the adoption of an “app store” by enterprise software customers and then assess the extent of “appification” which different classes of enterprise software solutions may require before being bought online.

We deemed a qualitative research strategy the most suitable for our exploratory endeavor. An online channel for enterprise software namely represents a novel and peculiar socio-technological context for which the applicability of preexisting theories ought to be verified. Moreover, it is as yet unclear which channel designs and technologies might establish themselves in the enterprise software market. Therefore, we opted for an open-ended, nomothetic, and inductive approach by combining a qualitative research strategy with a cross-sectional research design to capture the phenomenon’s general traits at this stage.

Our empirical results show that attributes of software solutions, such as specificity, price, implementation/integration effort, scope, and evaluability play a key role in the organizational decision-making on online channel adoption. Besides, contractual aspects and the existence of an already established relationship with the vendor exert an influence on the adoption decision which is fully understood only by taking into account factor interdependencies. In addition, an analysis of enterprise software products and services through the lenses of our adoption model indicates that, at present, the portfolio of enterprise software vendors is not fully compatible with an online channel to the same degree software applications in the consumer market are.
Our findings contribute to multiple streams of research at the crossroad between Information Systems Research (ISR) and Marketing Science. From an ISR perspective, an online channel is the pivot of today’s software ecosystems and a pillar of the “app economy”. Moreover, the technology adoption process by organizations in the enterprise market is a less explored topic. From a marketing point of view, we supplement the empirical research on organizational buying behaviors – where software buying is a rare occurrence – and contribute to the more extensive literature on online channel adoption (which, however, mainly neglects enterprise markets in favor of consumer markets). Therefore, we repute our inquiry academically relevant and able to spur further inter-disciplinary developments among scholars in the above-mentioned fields.

On the one hand, our results may allow vendors to design more effective means of digital sales in the enterprise software market and to diagnose hindering factors for the adoption of e-commerce platforms by organizations. On the other hand, they allow them to understand the interdependence between sales channels and product characteristics, and thus to ascertain which portfolio items should be offered online. Through our study, practitioners can have a glimpse into the complex organizational decision-making processes involved in channel selection and software purchase.

This work is organized as follows. We first review the multidisciplinary literature relevant to the topic (section 2). Subsequently, we present our research methodology and data (section 3). Next, the main empirical results are illustrated (section 4) and then discussed in light of previous studies (section 5.1). Validity and limitations of our research endeavor (section 5.2), and the managerial recommendations (section 5.3) which may be derived from it are mentioned before we conclude (section 6).

2 Related work

Enterprise software acquisition through an online channel has – to the best of our knowledge – not been academically investigated so far. However, relevant contributions for the understanding of this phenomenon can be found in Industrial Marketing and in ISR. The online channel itself can be seen as an information technology (IT) innovation and, therefore, IT adoption is a relevant field of research. Venkatesh et al. (2003) comprehensively analyzed the most important available technology acceptance theories to define a Unified Theory of Acceptance and Use of Technology (UTAUT). Most of the examined models, like the technology acceptance model (TAM; (F. D. Davis 1989)), the theory of planned behavior (TPB; Ajzen 1991), and the UTAUT itself focus on the individual, i.e., on the single user’s acceptance of IT. The process of buying enterprise application software is, however, conducted by multiple interacting individuals in different roles and should be analyzed at an organizational level. The theory of the diffusion of innovation (DOI) by Rogers (1995) tackles the process of adoption of innovations by social systems and can be applied to organizational domains. Though Rogers provides a generic framework of factors influencing the adoption of the innovation, the universality of the DOI is also its biggest disadvantage – in our case it does not recognize the peculiar technological context. This statement is supported by Lyytinen & Damsgaard (2001) who came to a similar conclusion when applying DOI to the adoption of EDI technology. Finally, the technology-organization-environment framework (TOE) by Tornatzky and Fleischer (1990) states that a company’s innovation adoption decisions are influenced by the technological, organizational and environmental context. The TOE model has been widely applied within ISR (Baker 2012), however, as Baker points out, most researchers who applied the model did identify their own unique factors within the three contexts of technology, organization and environment, those specific to their object of investigation.

From an Industrial Marketing point of view, software procurement is a particular instance of organizational buying. Robinson et al. (1967) devised a comprehensive framework to identify organizational buying situations based on three dimensions (newness of the problem, information requirements, and consideration of alternatives) and introduced three “buying classes” or specific patterns of purchase behavior: new task, modified rebuy, and straight rebuy. The model by Webster and Wind (1972) differentiates four variables influencing the buying decision process: individual, social, organizational, and environmental. The buying process is carried out by a so-called ‘buying
center’ – the set of all the individuals from the buying organization taking on a role in the decision (e.g., influencer, gatekeeper, and approver). Based on those seminal publications, many authors have investigated factors of influence in the organizational buying process. Sheth (1973) distinguishes individual, environmental, and group-organizational aspects while the influence of organizational actors is the focus of the analysis by Ronchetto et al. (1989). An extensive literature review on the topic by Johnston and Lewin (1996) ascertained that the characteristics of the purchase, organization, group, participants, process, seller, and information are the most investigated constructs among the determinants of organizational buying behavior. Recent publications have analyzed the change of buying center structures between different situations and phases (Järvi & Munnukka 2009).

A further relevant stream of research is the one focusing on organizational software acquisitions. Based on Webster and Wind (1972), Verville and Halington (2002) classify the influences with regard to Enterprise Resource Planning (ERP) software acquisitions into environmental (e.g., technological, cultural), organizational (e.g., project management approach), group/interpersonal, and individual (e.g., acquisition team’s composition, individual leadership). In a second study, Verville and Halington (2003) model the ERP acquisition process with the phases planning, information search, selection, evaluation, choice, and negotiation. Whereas Loebbecke (2010) identifies information-related drivers (i.e., customer references, expert network recommendations, and demonstration team presentations) and feature-related ones (i.e., price performance, functionality, sales team service) impacting the business-to-business software purchase decision, Palanisamy et al. (2010) discover five factors influencing the enterprise software acquisition process: enterprise-systems strategy and performance, business process re-engineering and adaptability, management commitment and users’ buy-in, single vendor solution, and consultants, team-location, and vendor’s financing.

3 Research methodology and data

We have opted for an open-ended, nomothetic, and inductive research approach by combining a qualitative research strategy with a cross-sectional research design. A cross-sectional study relying on qualitative interviews and qualitative content analysis is a typical form of such a combination (Bryman & Bell 2007, p.71). A simplified sequential representation of our research process is illustrated in Figure 1. We have employed semi-structured interviews as means of primary data collection. On the one hand, they provided a common terminology and a shared understanding of the sales channel, the involved buying-process phases, and the various products and services to be taken into account. On the other hand, each interviewee was thus free to enrich the discussion with elements of enthusiasm or concern peculiar to his/her profile and organizational environment. Designing the interview guide required some preliminary deductive categorization of the concepts to be addressed.

Repeated coding iterations of the interviews’ transcripts were at the core of our methodology. In particular, we have employed the following first-cycle coding methods (Saldaña 2009, pp 45-101): attribute coding (to annotate the interviewee’s profile and that of his/her organization), structural coding (to index the different macro-parts constituting an interview), descriptive coding (to index relevant text passages, with subcoding when necessary), values coding (to label the participants’

![Figure 1. Simplified sequential representation of the research process](image-url)
attitudes and values). Second-cycle coding methods applied to portion of text coded previously were magnitude coding (applied in different ways to formalize aspects such as the marginal impact of a change in previously identified decision criteria, or to enable counting – cf. below) and evaluation coding (to denote participants’ judgments and evaluative comments). Simultaneous coding was employed throughout as well, i.e., multiple codes and coding methods could be applied to the same portion of text. Three researchers coded the same interview in parallel and compared coding decisions until a common codebook was finalized. Subsequently, different interviews were randomly assigned to the researchers and independently coded.

Notwithstanding the importance of the coding act itself as an analytical process, codes and quotations (viz., coded text passages) were employed as input for further analysis steps, often triangulating interpretation and counting (i.e., the process of assigning numbers to non-numerical data; Hannah & Lautsch 2010). Descriptive and values codes were categorized to produce a coding hierarchy, and, as our research progressed, we developed code dimensions, that is, properties of a code representable on a continuum, such as frequency or intensity (Gibbs 2007, p. 76). Quotations were systematically retrieved to fill qualitative summary table for case-by-case comparisons. Different forms of counting were applied to quotations and codes. Proximity analysis – the analysis of the spatial relations between quotations – was the most prominent form thereof and allowed us to discover relevant patterns of code co-occurrence. Please note that, since we have employed non-random sampling, frequency counts presented throughout this work are not accompanied by any indicator of statistical significance.

Counting and interpretation were combined depending on the specific research question. We sometimes exploited a triangulation approach by addressing the same research question with both techniques in parallel (what is sometimes called “corroborative counting”, as in Hannah & Lautsch 2010). However, the researchers’ interpretative tasks (such as the perusal of qualitative tables) always preceded counting to avoid that the results of the latter may influence the researchers’ judgments involved in the former. In other contexts, counting was used to select a subset of cases for further interpretative tasks. Selection was based on the number of occurrences or co-occurrences of certain codes (an example with regard to the interdependence of adoption factors is detailed in section 4 below). We believe this to be an exemplary use of numbers to ensure that interpretations are grounded in the data and not just the result of “cherry-picking” data to support them (see Maxwell 2010 for a thorough discussion on the role of numbers in qualitative research), since the participants’ views on complex topics can be faithfully interpreted only if sufficient textual material is available.

Finally, all along the research process, memos tracked methodological and conceptual developments: methodological notes focused on coding issues; theoretical notes recorded the emergence of relevant variables and their interrelationships. Most analytical tasks were performed with the (precious) support of a Computer Aided Qualitative Data Analysis Software.

3.1 Sample design

We have employed a non-probability sample-design and relied on a combination of convenience sampling and snowball sampling, that is, the researchers’ own networks of professional relationships as employees of a globally-operating enterprise application software vendor (from now on, simply “ESV”) were exploited to find suitable candidates. Potential interviewees were namely identified by the researchers directly among their acquaintances, or indirectly inquiring for further contacts. Suitable candidates were subsequently approached via e-mail and telephone. The four initial interviews were conducted with sales executives from the ESV, the following twelve with managers from a highly diversified set of organizational contexts (in terms of area of responsibility, company size, and industry), mostly at the middle and top management level. All declared themselves familiar with organizational software purchases. Therefore, they represent a relevant sample for our research. From a geographical point of view, all of the interviewees were German but from international organizations. A governmental agency was also part of the study.
3.2 Interview design

A tentative set of questions was assembled drawing from the relevant literature and a first version of the interview guide was tested at the renowned ICT trade fair CeBIT (March 2012) with four software customers and six software providers. This allowed us to determine the questions’ most effective order and phrasing before conducting the actual interviews. A revised version of the interview guide was discussed with an ESV high-ranked sales executive to gather further feedback and obtain appropriate contacts for candidate interviewees within the ESV sales organization. Thereafter, the interview guide was only subject to minor adjustments in wording.

In its final form after this test phase, the interview consisted of four sections. The first one comprised an ice-breaking round of presentations and introductory questions on the interviewee’s familiarity with online purchasing of software, both in the private and professional spheres. The second part dealt with the buying decision process and investigated the possibility of relying solely on an online channel to complete it. The third section explored the factors influencing the channel decision. In the concluding part, the interviewee was prompted to think of any overlooked aspect he/she had deemed worth including in the discussion. The two central blocks regularly amounted to about two thirds of the interview time. Interviews were scheduled in 60 minutes slots between March and September 2012. Seven were conducted face to face and the other nine telephonically. To support the discussion we employed visual representations of the buying process and of the product portfolio. The participants were preliminary made aware of the study’s goals (including the publication of a scientific contribution) and guaranteed of the anonymous treatment of any personal and organizational reference. All conversations took place in German – the mother tongue of every participant.

4 Empirical analysis

4.1 Adoption factors and adoption model

In this section we report the empirical results obtained analyzing the transcripts of the semi-structured interviews. We first describe how the factors influencing the online channel adoption decision have emerged from the data through coding and case by case comparison. We then delineate how coding, proximity analysis and counting have given some hints on the relationships between the identified variables and allowed us to sketch a conceptual model. Finally, we provide a high-level classification of enterprise software products and services based on their suitability for digital sales, grounded on how the interviewees judged their characteristics in the light of online sales.

A tentative list of factors influencing the channel adoption decision was devised drawing from the relevant literature. However, it was explicitly discussed with interviewees only in the interview’s last section to let additional decision criteria emerge. The final list of factors is reported in Table 1 and comprises three categories of attributes (column A): those characterizing the purchased software solution, those inherent in the buying organization, and those reflecting the peculiarity of the transaction with the channel provider in a given setting. All factors are deeply grounded in the data, as showed by the frequency counts of how many participants judged the factor a relevant one in the channel adoption decision (column D). Using proximity analysis, it was also possible to determine how many participants mentioned a factor without being explicitly prompted by an interviewer’s question (the numbers in brackets in column D). The fact that more than half of the participants autonomously mentioned most of the factors is another proof that the list is grounded in the data and accurately reflects the interviewees’ perspective.

An assessment of the factors’ impact on the adoption of the online channel was performed using both qualitative tables and proximity analysis, and is reported in column E of Table 1: “barrier” and “driver” identify the direct effect – respectively negative and positive – of one incremental unit of the factor on online channel adoption. For most factors, more than half of the participants expressed a clear tendency, and this is not a surprising result for attributes such as the solution price level or
evaluability, or the involved agents’ reputation and trustworthiness. However, results were not always as unambiguous as the frequency counts would let imagine. The existence of a solid relationship with the provider is a case in point. Although a positive direct experience with the provider may increase the attractiveness of the provider’s online channel, personal relationships developed in that context (e.g., the presence of a dedicated sales account manager) are seen as a preferred means of communication and information gathering, and as a possibility for negotiating better prices and terms, thus actually hindering the adoption of the online channel. In a related matter, mixed results were evident in the judgments on contracts’ standardization. While a standardization and simplification of contracts is seen as a prerequisite for completing online transactions independently of an offline channel, some interviewees contrarily stated that individually negotiated terms and conditions (for example, agreed volume-discounts) should be taken into account in online transactions, since, in the presence of standard contracts, traditional offline channels would be preferred.

<table>
<thead>
<tr>
<th>Category</th>
<th>Factor</th>
<th>Description</th>
<th>Groundedness*</th>
<th>Impact on online adoption†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solution attributes</td>
<td>Criticality</td>
<td>Importance of the supported business processes for the organization</td>
<td>11 (11)</td>
<td>barrier (11)</td>
</tr>
<tr>
<td></td>
<td>Evaluability</td>
<td>Extent and easiness to evaluate the solution relying on the online channel’s capabilities</td>
<td>12 (11)</td>
<td>driver (12)</td>
</tr>
<tr>
<td></td>
<td>Implementation/integration effort</td>
<td>Effort (in terms of time and financial investments) needed to have the application wholly implemented and integrated with pre-existent systems</td>
<td>16 (8)</td>
<td>barrier (14)</td>
</tr>
<tr>
<td></td>
<td>On-demand delivery</td>
<td>Possibility to deliver the application on-demand</td>
<td>11 (9)</td>
<td>barrier (11)</td>
</tr>
<tr>
<td></td>
<td>Price level</td>
<td>Price of the purchased application</td>
<td>10 (5)</td>
<td>driver (10)</td>
</tr>
<tr>
<td></td>
<td>Scope</td>
<td>Breadth and depth of the supported functionalities.</td>
<td>14 (10)</td>
<td>barrier (14)</td>
</tr>
<tr>
<td></td>
<td>Specificity / customization</td>
<td>The degree to which the functionalities are peculiar to a specific organizational domain or need to be adapted to it</td>
<td>13 (8)</td>
<td>barrier (13)</td>
</tr>
<tr>
<td></td>
<td>Number of end-users</td>
<td>End-users to which the application is delivered</td>
<td>10 (8)</td>
<td>barrier (6)</td>
</tr>
<tr>
<td>Customer attributes</td>
<td>Innovativeness</td>
<td>Customer’s attitude towards innovation and technology</td>
<td>3 (3)</td>
<td>driver (2)</td>
</tr>
<tr>
<td></td>
<td>IT competences</td>
<td>Availability of in-house IT know-how and personnel</td>
<td>11 (5)</td>
<td>driver (7)</td>
</tr>
<tr>
<td></td>
<td>IT control over the</td>
<td>Level of control exerted by the IT personnel on software purchase decisions</td>
<td>12 (10)</td>
<td>barrier (10)</td>
</tr>
<tr>
<td></td>
<td>software buying process</td>
<td>Past experience with a similar channel</td>
<td>5 (5)</td>
<td>driver (5)</td>
</tr>
<tr>
<td></td>
<td>Prior experience with the</td>
<td>Past experience with a similar solution</td>
<td>9 (9)</td>
<td>driver (9)</td>
</tr>
<tr>
<td></td>
<td>solution</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Involved agents’ reputation</td>
<td>Reputation and trustworthiness of the involved agents (vendor, channel provider, etc.)</td>
<td>7 (7)</td>
<td>driver (7)</td>
</tr>
<tr>
<td>Transaction attributes</td>
<td>Buying center size</td>
<td>Number of people playing a role in the software purchase decision</td>
<td>12 (10)</td>
<td>barrier (10)</td>
</tr>
<tr>
<td></td>
<td>Prior experience and</td>
<td>Past experience and pre-existent relationships with the channel provider</td>
<td>11 (11)</td>
<td>driver (7)</td>
</tr>
<tr>
<td></td>
<td>relationship with the</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>provider</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contracts standardization</td>
<td>Level of standardization of the contracts formalizing the software purchase</td>
<td>9 (9)</td>
<td>mixed results (4</td>
</tr>
<tr>
<td></td>
<td>Environmental legal barriers</td>
<td>Breadth and depth of legal requirements to be fulfilled in the software purchase</td>
<td>7 (6)</td>
<td>barrier (5)</td>
</tr>
</tbody>
</table>

* Frequency counts of the interviewees qualifying the factor as relevant for the channel adoption decision. In brackets the number of participants who mentioned the factor without being explicitly prompted by the interviewer.
† Frequency counts of the interviewees explicitly qualifying the factor as driver or barrier of online channel adoption.

Table 1. Factors influencing the online channel adoption decision

However, the online channel adoption decision is more complex and encompasses interdependencies between the individual factors, which we have tried to uncover to sketch a more thorough adoption model. We have investigated the relationships between individual decision criteria further, as they had
been expressed by the interviewees. This is an exemplary part of our research where counting was used to feed the interpretative work and not to corroborate it. We performed proximity analysis to obtain co-occurrence frequencies of all possible factor-pairs combinations and used these to select candidate pairs about which we had enough data (in terms of quotations) to express a qualitative assessment. There were 101 factor co-occurrences appearing at least once in our data. We employed a threshold of four co-occurrences, that is, we selected factor-pairs for which quotations coded with one factor code overlapped to some extent with the quotations coded with the other factor code at least four times. We selected this threshold both to produce a manageable set of candidate relationships (37) and to ensure that we had enough qualitative material to faithfully interpret the interviewee’s opinion.

Figure 2 illustrates the overall adoption model that has resulted by considering both the direct and indirect effects emerging from our data analysis. The diagram depicts a causal model with directed links illustrating cause and effect (Kirkwood 1998). Each single node represents a factor, with incoming edges from all other related factors. The links are further characterized as positive (“+”) or negative (“-”). A causal link from one factor A to another factor B is positive if a change in A produces a change in B in the same direction. It is negative if a change in A produces a change in B in the opposite direction. In the following paragraph we will briefly discuss only the main aspects of the model.

Some factors relationships are not surprising: an increase in solution scope will likely increase the number of end-users served, on the contrary an increase in specificity will likely reduce it. In turn, the number of users will likely impact the total solution price (pricing models in the enterprise market are...
usually per-seat). In-house IT competences are viewed as a proxy for familiarity with online channels and platforms. More interestingly, maturing experience with the online channel is likely to reduce the IT personnel’s weight in the software procurement process just as the level of integration and implementation effort is likely to increase it. Mitigating effects on the price as a barrier to adoption are exerted by prior experiences with channel or channel provider. Contract standardization appears once more an interesting case, since it is negatively impacted by three other factors: a pre-existent relationship with the provider (as hinted at above as well), the buying center size (determining the number of diverse requirements to be addressed in the contract terms), and the price level (increasing the need for direct off-line negotiations). Factor categories are also highlighted to appreciate how solution attributes impact transaction and customer attributes without being affected by them. This is one of our most important findings: solution attributes are at the root of adoption influences, and changing these attributes will in turn have a broad effect on the adoption, both directly and indirectly.

4.2 Stylized product classification and appification

Since the market for enterprise software encompasses a wide range of products and services, we devised a stylized product portfolio to be used as a common reference during the interviews. Core Solutions are applications such as ERP, Customer Relationship Management, or Supply Chain Management. On-Top Solutions are software products which complement Core Solutions and support additional functionalities, business-processes, and front-ends (such as mobile clients, add-ons or reports). Usage Enhancements are non-executable, post-purchase goods affecting the solution agreement without modifying its code base (e.g., user licenses, usage contingences, and service-level-agreements). IT Services are human-performed activities related to the technologic facets of the solution (e.g., implementation, data migration, training, etc.).

We have employed triangulation to analyze our product classification in the light of channel adoption. On the one hand, we have qualitatively assessed solution types along the previously identified solution attributes (e.g., Core Solutions associated with high criticality; cf. Table 2), obtaining profiles which could be fed into our adoption model to determine an overall tendency. On the other hand, we have evaluated the interviewees’ own judgments of the items’ suitability for the online channel (cf. Table 3). The outcomes of both methods corroborate each other: Core Solutions’ attributes are less suitable than On-Top Solutions and Usage Enhancements for online purchases. Uncertainty remains for IT Services where no final statement could be made. This could be explained by the large variety of IT Services the interviewees referred to, ranging from large implementation projects to small training sessions.

<table>
<thead>
<tr>
<th>Portfolio items</th>
<th>Solution Factors</th>
<th>Core Sol.</th>
<th>On-Top Sol.</th>
<th>IT Services</th>
<th>Usage Enhancements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criticality</td>
<td>high</td>
<td>low (-)</td>
<td>(+) mid/high</td>
<td>(-) Low</td>
<td>(+)</td>
</tr>
<tr>
<td>OnDemand (OD) / OnPremise (OP)</td>
<td>OP / OD</td>
<td>OP / OD</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Evaluability</td>
<td>low (-)</td>
<td>high (+)</td>
<td>low (-)</td>
<td>High (+)</td>
<td></td>
</tr>
<tr>
<td>Integr./impl. effort</td>
<td>high (-)</td>
<td>mid</td>
<td>N/A</td>
<td>Low (+)</td>
<td></td>
</tr>
<tr>
<td>Price level</td>
<td>high (-)</td>
<td>low/mid (+)</td>
<td>high (-)</td>
<td>low/mid (+)</td>
<td></td>
</tr>
<tr>
<td>Scope</td>
<td>high (-)</td>
<td>low (+)</td>
<td>low (+)</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Specificity / customization</td>
<td>high (-)</td>
<td>high (-)</td>
<td>high (-)</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Number of users</td>
<td>high (-)</td>
<td>mid</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Overall tendency</td>
<td>(-)</td>
<td>(+)</td>
<td>(-)</td>
<td>(+)</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Portfolio items ratings against solution attributes and impact on online channel adoption

Because of their characteristics, On-Top Solutions could also be qualified as “appified” solutions. This neologism recalls the distinguishing characteristics of today’s mobile software applications, so-called “apps”. The process of applying these characteristics to other software domains or even non-software contexts (for example, media and automotive) is referred to as “appification” (Hay 2010), and we believe that the appification trend will also impact Core Solutions in the near future.
<table>
<thead>
<tr>
<th>Judgment</th>
<th>Core Solutions</th>
<th>On-Top Solutions</th>
<th>IT Services</th>
<th>Usage Enhancem.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive (p)</td>
<td>4</td>
<td>11</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Negative (n)</td>
<td>9</td>
<td>1</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Unclear (u)</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>8</td>
</tr>
</tbody>
</table>

Table 3: Interviewees’ judgments on the suitability of the channel for the different portfolio items

5 Discussion of results

5.1 Comparison with other theoretical models

When comparing our results with the buyclass model (Robinson et al. 1967), some of the factors we have elicited (“experience with provider”, “experience with solution”) identify the buyclass while other factors (evaluability, integration/implementation effort as well as customization need) are determined by it. Our stylized product portfolio can be partly mapped to the canonical three buyclasses. Purchase of Usage Enhancements will mostly be classified as a “straight rebuy” while the acquisition of On-Top Solutions or IT Services can relate to either the “new task” or “modified rebuy” buyclasses. However, in contrast with the buyclass model, we find that the characteristics of the purchased product or service need to be considered to explain software buying situations thoroughly.

As the target of our research not only was to understand the buying situation for enterprise application software, but also how the buying situation impacts the adoption of an online channel, we have compared our results with the TOE-Framework (Tornatzky et al. 1990). Our attribute categories partially map to the TOE-framework’s contexts: customer attributes can largely be compared with TOE’s organizational context; solution attributes have minor overlaps with the TOE’s technology context; transaction attributes are only slightly related with TOE’s environmental context. Although the TOE-framework might explain parts of the adoption process, in our case it neglects the specifics which are relevant to enterprise software purchases over an online channel. These findings are in line with Baker’s (2012) conclusions: the general framework has proven valid, but unique factors peculiar to the specific context studied are necessary to model adoption.

5.2 Validity and limitations

A number of limitations may be mentioned with regard to this explorative research endeavor. With regard to the sketched adoption model, it was not possible to discriminate between direct and indirect impacts, that is, we could not find any sound methodology to assign weights to the two, or to drop a direct relationship in favor of an indirect one. Further, it was not possible to assign statistically significant weights to the adoption factors due to our non-random sampling design. The product classification we have employed could be questioned for lack of details if compared with the variety of products and services exchanged in the enterprise software market. Yet, a more detailed representation of a portfolio would require a change in methodology as well. All in all, we believe the study suffers of limitations inherent in the organizational context in which it was conducted and in the qualitative research strategy. These limitations could be addressed with a more focused interview guide, with an alternative sample-design, or complementing the qualitative with a quantitative research strategy.

We took validity aspects into consideration during both the design and execution of our research. The interview guide was iteratively tested and discussed with subject-matter experts. Transcripts were produced by researchers’ assistants familiar with the discussed themes, the employed terminology, and native speaker of the German language. During the coding phase we constantly compared the use of codes and compiled a codebook with the definition and utilization rules for all codes and coding methods. The interdependence between different research techniques was also taken into account: purely qualitative analysis tasks strictly preceded counting whenever possible to let the researchers’
theoretical sensitivity unaffected during interpretative acts. From the point of view of theoretical saturation, although we formally did not employ a Grounded Theory design, we scheduled interviews with sales executives first to get a broad view of the topic before addressing more peculiar settings.

5.3 Management implications and recommendations

Our results may be utilized by IT practitioners who are either trying to establish an online channel in the enterprise market or developing applications and services to be sold through it. Our findings suggest that organizational buyers are more or less inclined to use an online channel depending on the solution’s characteristics, own traits, and transactional aspects. Therefore, our recommendations can be clustered accordingly. Solution attributes have a determinant impact, in particular, scope, specificity, integration/implementation effort, price level and type of delivery. The solution provider should consider these aspects already during the product definition and engineering phases, or select a suitable subset of the overall product portfolio for the online channel. A second adoption lever would be to target market segments where the customers’ characteristics are favorable to online channel adoption. A variant of this strategy could be to actively influence factors such as the experience with the channel and solutions by distributing free products or services. A third lever would be to reduce the complexity and barriers inherent in the B2B transaction: for example offering standardized contracts to customers in the middle segment of the market and frame-agreements to those in the enterprise one.

6 Conclusion

In our research, we have qualitatively investigated organizational adoption of an online channel for enterprise software applications. We have identified and categorized drivers and barriers influencing the adoption and provided a model encompassing factor interdependences. Furthermore, we have contributed insights into a peculiar set of product characteristics often referred to as “appified”. Practitioners could derive tangible recommendation to improve online sales of enterprise software. Scholars in this area might be interested in verifying or extending our findings with different qualitative or quantitative approaches. The whole study reflects the characteristics of today’s “app stores” and e-commerce technologies. Therefore, it could be taken as a foundation to evaluate new e-commerce technologies to cope with the identified complexities. An analysis of the coexistence of online and offline channels in a multi-channel-system may be another interesting outgrowth. As a closing remark, we believe that an online channel has the potential to revolutionize how enterprise software is being evaluated, purchased and ultimately consumed, to the benefit of customers and vendors alike.

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References


