Acceptance of Digital Sales and Marketing Tools: A Customer Perspective on Intention to Use

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Keywords: Information System Acceptance, Sales Configurators, Customer Perspective.

Abstract: Digital sales and marketing tools are important for the success of modern business-to-business (B2B) companies. While many of these information systems or tools can also be used by the customer, surprisingly little is known about the customer's perception of these tools and the acceptance process itself. This research targets this research gap by developing and testing a structural equation model (PLS-SEM) to investigate customer perceptions and intentions to use digital sales and marketing tools, namely sales configurators. An online questionnaire was developed, and the responses of 113 B2B professionals were analyzed. The results showed that customers' intention to use digital sales and marketing tools was influenced by ease of use and perceived usefulness. Ease of navigation and information quality also played a significant role in the acceptance process of these tools.

1 INTRODUCTION

Digital sales and marketing tools are important for the success of modern business-to-business companies (Hunter & Panagopoulos, 2015; Mahlamäki, Storbacka, Pylkkönen & Ojala, 2020; Maridoss, Milewicz, Lee & Sahaym, 2014; Sheth & Sharma, 2008). One important digital sales and marketing tool category is the sales configurator. These tools are used in the process of providing relevant product information to the buyer. Sales configurators' main purpose is to produce valid configurations of market offerings that fulfill the customer requirements while keeping in mind the interests of the selling company (Trentin, Perin & Forza, 2013; Rogoll & Piller, 2004).

Sales configurators have been studied in terms of their design (Salavador & Forza, 2007), capabilities (Trentin, Perin & Forza, 2013), and the benefits they generate (Trentin, Perin & Forza, 2014). While research on sales configurators, and digital sales and marketing tools in general, has been robust, only a few studies have focused purely on customer perspectives about using such tools. For example, Boujena, Johnston & Merunka (2009) studied the customer benefits of Sales Force automation, while Mahlamäki et al. (2020) studied the perceived usefulness of sales configurators from customer perspective. The previous studies fail to investigate the customer perspectives regarding behavior or behavioral intent on the use of digital tools. The present study, however, focuses on this important research gap and examines customer attitudes towards sales configurator use. More specifically, we define our research question as: What are the antecedents of intention to use regarding sales configurators from the customer perspective.

From a theoretical perspective, this study builds on research on sales configurators by Trentin et al. (2014) and on the technology acceptance model developed by Davis, Bagozzi & Warshaw (1989). To address our research questions, we developed a quantitative study, in which the empirical data consist of online survey data, and tested the hypotheses with a structural equation model developed based on the technology acceptance literature.

The main contribution of this study is the increased knowledge about intention to use and its antecedents regarding sales configurators from the customer perspective. The study also contributes to the technology acceptance literature.

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Mahlamäki, T., Storbacka, K. and Pylkkönen, S.
Acceptance of Digital Sales and Marketing Tools: A Customer Perspective on Intention to Use.
DOI: 10.5220/0012204800003598
In *Proceedings of the 15th International Joint Conference on Knowledge Discovery, Knowledge Engineering and Knowledge Management (IC3K 2023) - Volume 3: KMIS*, pages 224-230
ISBN: 978-989-758-671-2; ISSN: 2184-3228

The paper proceeds as follows. The next section provides a theoretical contextualization and builds towards the research model. Section 3 describes the hypotheses and the research model, followed by explanations of the methods in section 4. The results are presented in section 5. Conclusions are presented in section 6.

2 LITERATURE REVIEW

2.1 Sales Configurators

A sales configurator is a digital tool that is responsible for guiding the user through a service- or product-configuration process (Rogoll & Piller, 2004). Sales configurators may be stand-alone applications or modules of other applications that support translation of needs into sales specifications, as well as translation of sales specifications into the product data necessary to build the product variant requested by the customer (Trentin, Perin & Forza, 2013; Rogoll & Piller, 2004).

The fundamental idea behind the configurator is that it makes the customization of complex products and services as easy for the user as possible. The user should not be able to make invalid configurations, and the system should guide the configuration process so that the end result is a valid product or service that can be delivered by the supplier and the distributor. The configuration rules can be implemented in many ways, but some of the most common methods include the following logic-systems (Felfernig, Hotz, Bagley & Tiihonen, 2014; Sabin & Weigel, 1998):

1. Rule-based systems. In these systems, the system rules have the formation "if condition then consequence." These systems derive solutions in a forward-chaining manner: at each step, the system examines the entire set of rules and considers only the rules it can execute next. The system then selects and executes one of the rules under consideration by performing its action part. As the system rules do not separate directed relationships from actions, knowledge maintenance may become difficult, due to the knowledge of a single entity being spread across multiple rules.

2. Constraint-based systems. In these systems, each component is defined by a set of properties and a set of ports for connecting to other components. Constraints among components restrict the ways in which various components can be combined to form a valid configuration. As opposed to rules, the order in which constraints are invoked does not matter: one option restricts another, regardless of which one is chosen first.

3. Resource-based systems. The goal of a resource-based system is to find a set of components that bring the overall set of resources to a balanced state, one in which all demands are satisfied. A configuration is acceptable only if the resources that the environment and different components demand are all balanced by the resources that the environment and components can maximally supply.

2.2 Technology Acceptance Model

According to Davis et al. (1989), the technology acceptance model (TAM) is an adaptation of Fishbein and Ajzen's (1975) theory of reasoned action (TRA) model, specifically tailored for modelling user acceptance of information systems. The goal of TAM is "to provide an explanation of the determinants of computer acceptance that is general, capable of explaining user behavior across a broad range of end-user computing technologies and user populations, while at the same time being both parsimonious and theoretically justified" (Davis, Bagozzi & Warshaw, 1989).

TAM is designed to be parsimonious so that it can be readily adapted to various information system contexts: perceived usefulness and perceived ease of use are postulated a priori and are meant to be fairly general determinants of user acceptance (Davis, Bagozzi & Warshaw, 1989).

Although rooted in TRA, TAM closely resembles aspects of social cognitive theory. This is also noted by Davis (1989), according to whom the perceived ease of use construct is similar to Bandura's (1977) concept of self-efficacy, while perceived usefulness is similar Bandura's outcome expectation.

Perceived usefulness items are measurements of behavioral beliefs, which are indirect measures of attitude, according to TRA. Although originally included in the model, the attitude construct did little to help explain the linkages between beliefs and intentions in Davis (1989) and Davis et al. (1989), however, and was dropped from the model. Similar results have been reported by Taylor and Todd (1995), who suggested that the non-significant, indirect link from attitude to behavior may have been due to the fact that TAM allows a direct link from perceived usefulness to intention, which seemed to capture the effect of attitude as well.

TAM has also been further developed since its introduction: Venkatesh and Davis (2000) introduced TAM2, which adds several antecedents to perceived usefulness, while Venkatesh and Bala (2008)

introduced TAM3, which adds antecedents to perceived ease of use. Davis et al. (1992), Venkatesh and Davis (2000), and Venkatesh and Bala (2008) (Venkatesh & Bala, 2008) all demonstrated that the perceived quality of a system's output had a significant effect on its perceived usefulness. Output quality is judged by observing the quality of the intermediate or end products of the system, as defined by Davis, Bagozzi & Warshaw (1992). Therefore, in order for a system to provide work performance benefits for the user, the output of the system should be of high quality.

3 HYPOTHESES AND RESEARCH MODEL

This section presents our research model and hypotheses development. Figure 1 illustrates the overall model.

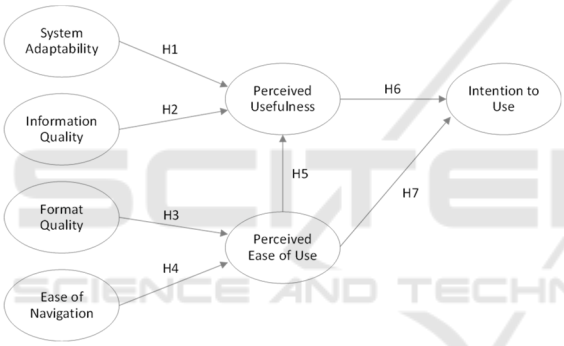

Figure 1: Research constructs and hypotheses.

3.1 Antecedents to Perceived Usefulness

Following Goodhue and Thompson's (1995) conceptualization, information quality and system adaptability constructs relate to the fit between the technology and the task requirements: should the information or functionalities provided by the system be insufficient to the task requirements as judged by the respondent, they should attribute the cause of their own inefficacy to the system's poor fit to the requirements of the task. For example, a sales configurator could be attributed a low task-technology fit when it offers incorrect product information to the user. Specifically, in a sales configurator context, users may find it difficult to trust the information provided by an automated expert system (Tiihonen, Soininen, Männistö & Sulonen, 1996). Moreover, the sales configurator should provide the user with information that is relevant and on the right level of abstraction (Salavador & Forza (2007).

Iivari and Koskela (1987) defined system adaptability as the degree to which the system adapts to changes in task requirements. The better the functionalities of the sales configurator can adapt to the different steps of the configuration task – that is, selecting components, determining parameter values for the components, designing the layout, determining component connections, checking for completeness and consistency of the configuration, etc. – in different conditions and situations, the more useful the configuration task is. Thus, we present the following hypotheses:

H1: A positive relationship exists between system adaptability and perceived usefulness

Venkatesh and Davis (2000) argue that, given a choice set containing multiple systems, one would be inclined to choose the system that delivers the highest output quality. Indeed Calisir et al., (2014), Davis et al. (1992), Seddon and Kiew (1996), Venkatesh and Davis (2000), and Venkatesh and Bala (2008) all found a statistically significant relationship between output or information quality and perceived usefulness. Hence, we posit:

H2: A positive relationship exists between information quality and perceived usefulness

3.2 Antecedents to Perceived Ease of Use

Similarly to Mahlamäki et al. (2020), we identified format quality and ease of navigation as antecedents to perceived ease of use. Format quality refers to the user-interface design, which determines how easy or difficult the system is to interact with. Interaction is easy when the information provided by the system is structured in visual hierarchies, information is consistent, use of the system does not require memorization but is based on recognition, and so on. (Johnson, 2010) Thus, the degree of format quality provided by the system affects how easy the system is to use (Tiihonen et al., 1996; Bailey & Pearson, 1983; Wixom & Todd, 2005).

H3: A positive relationship exists between format quality and perceived ease of use

Similarly, the degree to which the system's user interface is easy to navigate should affect how easy it

is to interact with (Aladwani & Palvia, 2002; Palmer, 2002). Thus, ease of navigation is hypothesized to affect perceived ease of use.

H4: A positive relationship exists between ease of navigation and perceived ease of use

3.3 Relationships Between Intention to Use, Perceived Usefulness, and Perceived Ease of Use

Following the Venkatesh and Bala (2008) TAM3 model, we hypothesize that intention to use is affected by both perceived ease of use and perceived usefulness. In addition, we hypothesize that perceived ease of use has an effect on perceived usefulness.

H5: A positive relationship exists between perceived ease of use and perceived usefulness

H6: A positive relationship exists between perceived usefulness and intention to use

H7: A positive relationship exists between perceived ease of use and intention to use

4 RESEARCH METHODOLOGY

To explore customer perceptions of sales configurators, we developed a model based on existing literature and designed an online questionnaire that we administered to Finnish industrial distributor companies.

4.1 Online Questionnaire Context and Sample

To empirically validate the model, an online questionnaire was created that targeted Finnish B2B distributors. First, the names and contact information of Finnish industrial distributor companies were obtained from Statistics Finland, a governmental statistical agency. We randomly phoned 630 of those companies to identify the most relevant responder. We then contacted the identified responders and determined their willingness to participate in our research. Of the 342 representatives who indicated their willingness to respond, 152 eventually responded. Of the 152 responses, 39 were removed from the final data set because they either provided answers that were too brief, did now answer the relevant questions, or used repetitive answer patterns. The data-cleaning process resulted in 113 responses that could be used in the analysis.

4.2 Measures

The information quality scale was adapted from Seddon and Kiew (1996) and Kankanhalli, Tan and Wei (2005). Format quality and system adaptability scales were both developed based on Bailey and Pearson (1983), Wixom and Todd (2005), and Iivari and Koskela (1987). The ease of navigation scale was developed based on Aladwani and Palvia (2002), Palmer (2002), and Yang, Zhou and Zhou, (2005). The perceived usefulness scale was adapted from Davis (1989), which was shortened from six to four items. The intention to use scale was adapted from Ajzen (2002). All the measurement items in the above scales utilized a seven-point Likert scale.

5 RESULTS

The model's predictive ability was estimated with the partial least squares (PLS) method. The reason for choosing PLS-based structural equation method (SEM) over the more conventional covariance-based SEM was the relatively low sample size at hand and the robustness of the PLS-SEM method (Hair, Sarstedt, Ringle, and Mena, 2012).

We follow the typical two-stage approach, where the measurement model is first assessed for reliability and validity and then the structural model is assessed (Hulland, 1999).

5.1 Measurement Model

The reliability of the measurement model was assessed with Cronbach's alpha and composite reliability. All Cronbach alphas were above .90. Similarly, the composite reliability levels were above .90, while the recommended level is .70 (Hulland, 1999). To evaluate convergent validity, the average variance extracted (AVE) was analyzed. The lowest AVE value was .69, which is well above the suggested .50 level (Henseler, Ringle, and Sinkovics, 2009). Table 1 presents the correlation analysis of the constructs.

Table 2 shows the Cronbach alphas, composite reliabilities, AVEs, and numbers of items used. In addition, the discriminant validity was assessed with the Fornell-Larcker criterion (Fornell & Larcker, 1981). Finally, the level of multi-collinearity was assessed with the variance inflation factor (VIF). The

largest VIF value was 2.18, which is well below the suggested level of 5 (Hair, Risher, Sarstedt and Ringle, 2018).

Table 1: Correlation analysis.

Constructs	IU	PU	PEU	SA	IQ	FQ	EN
Intention to Use (IU)	1.00						
Perceived Usefulness (PU)	0.60	1.00					
Perceived Ease of Use (PEU)	0.36	0.23	1.00				
System Adaptability (SA)	0.27	0.33	0.41	1.00			
Information Quality (IQ)	0.28	0.40	0.36	0.66	1.00		
Format Quality (FQ)	0.31	0.19	0.59	0.48	0.43	1.00	
Ease of Navigation (EN)	0.21	0.19	0.65	0.52	0.41	0.74	1.00

Table 2: Reliability, Average Variance Extracted, and the number of items.

Constructs	AVE	Composite reliability	Cronbach's alpha	Number of Indicators
Intention to Use	0.87	0.97	0.95	4
Perceived Usefulness	0.87	0.96	0.95	4
Perceived Ease of Use	0.74	0.95	0.94	7
System Adaptability	0.79	0.94	0.91	4
Information Quality	0.69	0.95	0.94	8
Format Quality	0.86	0.96	0.94	4
Ease of Navigation	0.95	0.98	0.97	3

5.2 Structural Model

The path model was assessed with R-square statistics, path coefficients, p-values, variance explained, and SRMR. Figure 2 presents the path coefficients, variances explained, and the significance levels based on p-values. The SRMR for the model was .066 and the R-squares ranged from 1.71 to 4.55.

5.3 Hypotheses

Next, we tested the hypotheses based on the results of the analysis. Hypothesis 1 postulated that system adaptability has a positive effect on perceived usefulness. We did not find evidence supporting the hypothesis (β = .106, p = .451). This result contradicts previous research (Venkatesh & Bala, 2008). By contrast, hypothesis 2 was supported by the current research (β = .299, p = .012) and the previous literature (Venkatesh & Bala, 2008).

Hypotheses 3 and 4 were supported. Format quality was found to have a positive relationship with perceived ease of use (β = .243, p = .030) and ease of navigation with perceived ease of use (β = .476, p = .000). These results indicate that ease of navigation had a more significant relationship than format quality. The results were in line with previous research (Mahlamäki et al, 2020).

Surprisingly, hypothesis 5 was rejected, with no evidence found on the relationship between perceived ease of use and perceived usefulness (β = .076, p = .503). This result contradicts the TAM3 model (Venkatesh & Bala, 2008).

Hypotheses 6 and 7, which were also based on the TAM3 (Venkatesh & Bala, 2008), were supported. Perceived usefulness had a significant relationship with intention to use (β = .545, p = .000). Another significant relationship was found between perceived ease of use and intention to use (β = .233, p = .003). Table 3 summarizes the hypotheses, relationships, path coefficients, t-values, and p-values.

Table 3: Hypotheses.

Hypothesis	Relationship	Path co-efficient	T-statistic	p-value	Finding
H1	SA -> PU	.11	.754	.451	Not supported
H2	IQ -> PU	.30	2.500	.012	Supported
H3	FQ -> PEU	.24	2.170	.030	Supported
H4	EN -> PEU	.48	3.984	.000	Supported
H5	PEU -> PU	.08	.670	.503	Not supported
H6	PU -> IU	.55	5.463	.000	Supported
H7	PEU -> IU	.23	2.947	.003	Supported

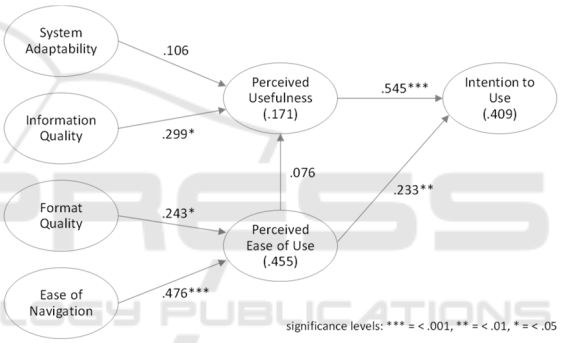

Figure 2: Results.

6 CONCLUSIONS

Many industrial companies are developing marketing and sales tools that can be utilized on several levels of their value chain; therefore, it is increasingly important to understand the adoption process of these tools from the perspectives of the different parties in the value chain (e.g., supplier or customer).

This position paper presents the preliminary results regarding intention to use and its antecedents regarding sales configurators from a customer perspective. The results aligned with the TAM3 model (Venkatesh & Davis, 2000; Venkatesh & Bala, 2008) regarding the relationship between perceived usefulness and intention to use and between ease of use and intention to use. Unlike the TAM3, we did not find a relationship between ease of use and perceived usefulness. Information quality was found to have a strong relationship with perceived

usefulness, while system adaptability played no significant role in determining perceived usefulness. As in Mahlamäki et al.'s (2020) model, format quality and ease of navigation were statistically linked with perceived ease of use.

In the following steps this position paper is developed especially regarding literature review and discussion of the findings. Future research agenda and limitations are also to be introduced.

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