Trust and Technology Acceptance Model: An Experimental Investigation Concerning the Idea Contributor's Acceptance of the Organizational Matchmaking Process

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Abstract--**The presence or absence of worthy ideas is often the reason for companies' success or failure on competitive markets. Companies invest a lot of effort into attracting stakeholder such as customers to submit their ideas to them. For this purpose companies use several open innovation channels such as idea contests, open innovation platforms and university partnerships to boost the number and quality of external ideas. After a gold-rush period of open innovation activities, external idea contributors are no longer willing to accept companies' terms and conditions. They compare companies according to how trustworthy a company or an open innovation channel is because they want to ensure that the company does not behave in an opportunistic way. Therefore, the question arises of how companies can enhance their trustworthiness, so that idea contributors are willing to submit high-quality ideas. To answer this question we conducted an experimental setting with three groups of students to understand when idea contributors trust companies' terms and conditions and submit their ideas. The results demonstrate that e.g. a mediator is able to enhance an organization's trustworthiness and therefore increase the willingness of a potential contributor to offer an idea to the selected company.**

I. INTRODUCTION

The presence or absence of worthy ideas is often the reason for companies' success or failure on competitive markets [52]. The use of external resources in R&D - so called open innovation -first used by Chesborough [5], is still a relevant topic for research as well as for business management nowadays [13]. Although companies have worked with external partners (e.g. alliances or business relationships) for years and also have integrated customers into the creative processes [36], open innovation research has increased over the last 10 years. Especially in the last years, the focus on the external partner switching from existing partners such as suppliers or customers to a wider community. Companies have tried to target nearly everybody in society by using social networks and new information technologies such as idea contests, open innovation platforms and university partnerships to boost the quantity and quality of external ideas [53]; [11]. Companies still invest a lot of effort into attracting stakeholder such as customers to submit their ideas to them [16].

However, after a gold-rush period of open innovation activities, external idea contributors are no longer willing to accept just any companies' terms and conditions. They compare companies according to how trustworthy a company or an open innovation channel is because they want to ensure that the company does not behave in an opportunistic way. Cullen et al. [6] and Kauser and Shaw [26] describe the need for trust between cooperating partners. Trust is a relevant and popular research topic in many disciplines-including technology and innovation management ([38]; [21]; for an overview see [62]). Trust leads to information sharing between partners, which creates value in the exchange relationship (e.g. [54]). Next, trust stimulates partners to share deep, tacit knowledge as it increases the quality of the relationship [41] and contributes to the enhancement of relationship productivity [12].

In recent years scholars have paid increasing attention to the integration of trust into the Technology Acceptance Model (TAM). Here, we are able to identify studies in various contexts. While Gefen, Karahanna, and Straub [5] focused on trust issues during online purchase, Wu and Liu [63] conducted a study in the field of online gambling and Suh and Han [51] paid attention to trust in e-banking. The results of these studies differ a lot concerning the effect of trust when trying to get technologies accepted. Hsu and Lin [24] for example were able to demonstrate a positive relationship between attitudes toward blogs, whereas the Heijden, Verhagen, and Creemers [55] study showed no significant relationship between trust and attitude during online purchasing. Chen [4] demonstrated that negative correlations between trust, perceived usefulness and actual usage are also possible.

In contemporary research on trust in organizations, transaction cost economics (TCE) and the relational perspective are dominant perspectives [15]. Scholars such as Deeds and Hill [10] show how TCE and the relational perspective are complementary and should be considered in concert. More specifically, they show that both relation-specific investments (TCE) and the strength of the relationship (relational perspective) can influence the potential for opportunistic behavior, and thereby the level of trust [35]. Building on this, we consider both the TCE and relational perspective to examine the role of trust when submitting external ideas to relatively less-known organizations. The question arises how companies are able to enhance their trustworthiness, so that idea contributors are willing to submit their ideas. To answer this question we conducted an experimental setting with students to understand when idea contributors trust companies' terms and conditions and submit their ideas. Our experiment is based on

the findings of TAM and organizational trust which were also used by Harland and Nienaber [21] who, in their paper on the matchmaking processes between companies and external idea contributors, developed a model that includes a trustworthy intermediary. Because empirical evidence is still lacking, we focus on this model in our study and test if this model is adoptable to the matchmaking process of new ideas between a potential external idea contributor and a company in a comprehensive field experiment.

Our results show two key aspects. First, we are able to demonstrate that trust plays a key role in TAM when submitting ideas to an organization. Trust relates positively to the attitude towards use, in our case towards submission of the idea, in the TAM. Second, our findings indicate that perceived ease of use shows no influence on attitude or intention to submit an idea any more when trust is included in TAM. Only the influence of perceived ease of use on perceived usefulness can be confirmed. Thus, we question whether organizational trust can reduce the importance of perceived ease of use. Do organizational trust and perceived ease of use work as alternates instead of complements? Thus, we are able to contribute in two different ways to the current research and management findings. First, we contribute to research by advancing the current findings in the literature toward trust and innovation management by including trust as a key aspect in our TAM. Here we are able to contribute to the different findings in the literature dealing with trust and technology acceptance (see [62]). Second, our findings demonstrate that obviously organizational trust reduces the importance of the factor of perceived ease of use of TAM. Therefore, we have to question the relationship between these both factors. Are organizational trust and perceived ease of use substitutes for one another? What does this mean for companies?

Therefore, our findings indicate for business management that first, organizational trust can be seen as an important factor for the intention to submit an idea to an organization. Thus, companies who are interested in external ideas should enhance their trustworthiness. Second, especially when the submitting process is not easy to use, trust might provide an adequate substitute to one another for ease of use in the effort to persuade people to submit their ideas. Therefore, organizational trust is very relevant for companies because the matchmaking process between an external idea contributor and a company can be seen as not easy at all.

II. THEORY

A. Trust

Trust is a key topic in several research areas the last years – as well as in the innovation and technology field (e.g. [37]; [62]. Due to its multiple theoretical backgrounds the measurements and conceptualizations of trust varies a lot (for an overview see Fulmer and Gelfand [15]). However, scholars agree on two key issues concerning trust. First, trust is seen as the willingness to rely on a key partner in whom one has confidence [34]; [31]. Second, trust is defined as an expectation held by an agent that its trading partner will behave in a mutually acceptable manner [44]. Thus, scholars define trust as the willingness of a party (the truster) to be vulnerable to the actions of another party (the trustee) based on the expectation that the trustee will perform a particular action important to the truster, irrespective of the ability to monitor and control the other party [43]. While these key issues concerning trust are seen as general-definition parts of trust, Zaheer and colleagues [64] define specifically trust in organizations, or organizational trust. They state that organizational trust is an expectation that an organizational partner a) can be relied on to fulfil obligations, b) will behave predictably, and c) will behave fairly when negotiating. Thus, the partner will not behave in an opportunistic manner. We adopt the definition by Zaheer and colleagues because of its specific focus on organizational trust. Furthermore, this definition includes both key issues that scholars have defined for trust in general.

Two main theories can be identified when trust is a key issue in research: transaction cost economics theory and the social exchange theory. While the transaction cost economics theory sees trust as a mechanism to reduce transaction costs and risk, the social exchange theory focus on the relational perspective of trust and its antecedents [38]; [15]; [17]. In this study we will include aspects of both theories. While we propose that transaction cost economics theory affects organizational trust when it comes to reducing control costs and perceived risk, social relations theory is needed to understand the antecedents of why people trust organizations.

In this context, when companies act through the use of a third party, an intermediary, scholars no longer not speak of organizational trust. When using third parties, the company communicates through its webpage with the potential idea contributor which leads to the findings of several scholars regarding swift trust [33], but in our analysis a third party as intermediary is involved who helps to enhance the trustworthiness of the organization. In this case trust is built based on third-party structure [47]; [66] which offers a third institutional structure. This specific kind of organizational trust is defined as institution-based trust [40]. Institutional mechanisms are mechanisms such as feedback features and credit-card guarantees, implemented by third parties to support the matchmaking process. These institutional mechanisms create conditions that facilitate the success of the transaction [40]. This structure enhances the perceived safety of contributing an external idea by communicating to the idea's contributor that the company interested in ideas will behave in a benevolent, and confident way. Such third parties [can] thus enhance a company's trustworthiness.

B. Technology Acceptance

Technology adoption and use in organizations is often a central challenge to information systems - in research as well

as in business management. Although great advantages can be identified in hardware and software capabilities nowadays, the acceptance and the use of these technologies are still problematic. While organizations invest a lot of money and effort in new technologies, a lot of managers still do not see the [expected resulting] productivity enhancement. One major reason for this seems to be the reduced use, in many organizations, of installed systems [49]. The user's acceptance of information technology needs further research. Significant progress has been made, over the last decade, concerning employees' acceptance of new technologies inside the organization, but the acceptance from people outside the organization of new technologies used by the organization is still a major challenge. However, the technology acceptance model [8]; [9] makes substantial theoretical and empirical support to address this challenge. This model compares favorably with alternative models such as the theories of reasoned action (TRA) and of planned behavior (TPH) [57]. The technology acceptance model theorizes that an individual's behavioral intention to use a new technology or system is based on two different beliefs: the perceived usefulness and the perceived ease of used. While the perceived usefulness can be defined as the extent to which a person believes that using the new technology will improve his or her performance (e.g. job performance), perceived ease of use describes the extent to which a person believes that using the new technology or system will be free of effort.

Several meta-analyses have demonstrated that the technology acceptance model is a valid and powerful model. Lederer and colleagues [28] for example proofed the predictability of the model for different technologies in analyzing more than fifteen studies over a period of 10 years (from 1989 to 1999). They looked on the relations between perceived ease of use, perceived usefulness, attitude toward use, and use of information technologies and were able to say that the model shows a high level of predictability. King and He [27] analyzed eighty-eight different published studies that had used the technology acceptance model and were able to confirm that the model can be used in a wide variety of contexts. Based on those findings, we are convinced of the technology acceptance model's robustness and have adopted this model for our study.

C. Role of Intermediaries in innovation management

Over the last 20 years the role of the intermediary in innovation and technology research has emerged from a number of individual sources to become its own distinct research field [23]. Howells [23] identified different fields of interest regarding the role of intermediaries over the last years: the two areas of interest for this study are a) the literature concerning technology transfer and diffusion, b) the more general innovation management literature.

The field of diffusion and technology was the first area in which intermediaries became a subject of interest (e.g. [42]). Rogers [42] for example identified the ability of third parties to affect the speed of the adoption of new products and the diffusion of new services in society. Mantel and Rosegger [30] identified further roles that third parties in the diffusion process are able to play, such as decision-making support when it comes to whether or not to adopt a product or service, or how to evaluate the new technology once it is on the market. Further research in this area can be seen in the studies by Watkins and Horley [60] and Shohert and Pervezer [48] who also underlined the relevance of intermediaries in the process of diffusing new technologies. Regarding Shohert and Pervezer's [48] work, it's clear that the intermediaries acquired a more participative role in the diffusion process, e.g. contractual skills in knowledge processes.

In the innovation management field the role of intermediaries is analyzed from a more organizational perspective. That means that the focus is on the intermediaries' activities in the technology diffusion process. Intermediaries can be seen as organizations. Hargadon and Sutton demonstrated in their [20] study the way brokers, for example, facilitate the knowledge process between organizations and industries. Regional institutions were analyzed by McEvily and Zaheer [32]. They pointed out that intermediaries are very supportive of organizations without a rich network and with few organizational ties. This finding can also be seen in the study by Hargadon and Sutton [20]. They came to the conclusion that intermediaries are able to support the diffusion process in two ways: a) by identifying suitable partners to make deals between the organizations and to transfer technology between them, and b) by selecting partners in the supply chain to make components for technology. Technology exploitation can be supported by an intermediary- as Seaton and Cordey-Hayes [46] were able to show in their study, reviewing a number of projects dealing with technology transfer.

Finally, we can say that, regarding these two fields of third parties (intermediaries), intermediaries are defined as organizations or systems that support the technology transfer process or diffusion process (for an overview of studies that define intermediaries as organizations too, see [23]).

D. Theoretical model

These three research areas have to be taken into account when testing the following matchmaking process, developed by Harland and Nienaber [21]. This matchmaking process involves the findings of the innovation management field, especially concerning the technology acceptance model; and the trust research field, especially regarding the findings due to trust in online systems and the intermediary research regarding third parties which makes sure that both sides are confident.

The following table gives an overview of the model:

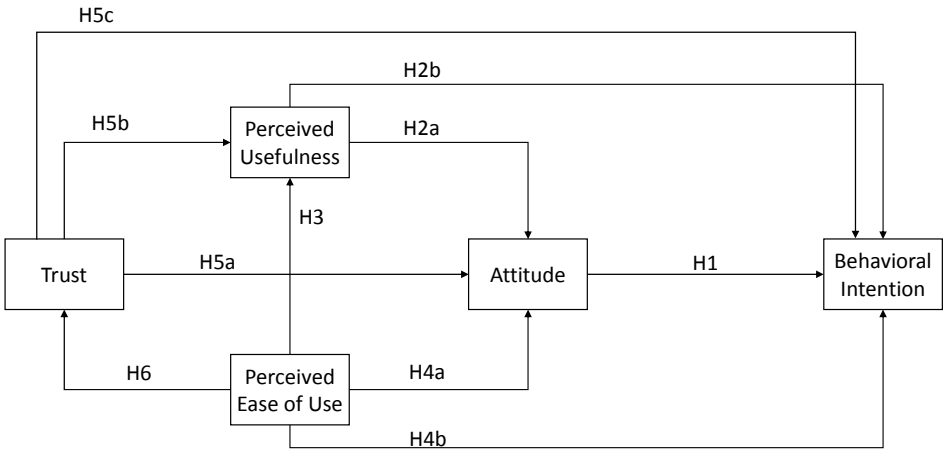

Figure 1: Trust / TAM model

III. HYPOTHESES

A. Technology acceptance model

The main variable of interest to a company that wants to aquire new ideas from outside is consumers behavior - specifically the willingness of consumers to transact with a company that is interested in external ideas through the web - and thus to submit his or her idea to the company. In this study we define behavioral intention as the intention of the external contributor of an idea to engage with a company - specifically to submit an idea to the company, thus trusting that the company will behave in a fair and honest way. We assume that the more positive the attitude of external idea contributors, the greater the likelihood that they will intend to submit an idea. Due to the robustness of the TAM and the numerous studies that have already proven its relevance for the factor 'intention to use', influenced by the factor 'attitude', we assume a positive relationship between attitude and intention to use (see the meta-analyses e.g. [62] [45]).

H1: Attitude is positively related to intention to use.

Perceived usefulness is the perception that a given technology will help a user achieve his or her work goals. Within the context of adopting and using a new technology in the workplace, Venkatesh, Morris, and Ackerman [58] provide evidence that the most important determinant of an employee's attitude toward adopting and using a new technology is his or her perception of the usefulness of the technology (perceived usefulness), typically explaining 30-35% of the variance observed in behavioral intent. People are much more likely to adopt a system that they believe will help them. Thus, external idea contributors are more likely to adopt a matchmaking model, if it is offered on the web site of a company that they believe will support them.

H2: Perceived usefulness is positively related to a) the attitude and b) the intention to use.

Perceived ease of use refers to the user's belief that the technology in question, here the offered matchmaking process, is difficult to use or to understand. Specifically, it is the evaluation of the degree to which using the technology is free of effort [8]. If a given piece of technology or system is overly complex or otherwise difficult to understand or use, it is not likely to be used when an alternative method exists. Thus, these difficult-to-use technologies are judged by the operator, here the external idea contributor, to be less useful under its voluntary conditions. The submission process, or exchange of an idea between the external idea contributor and the company, can be seen as voluntary, and we therefore assume that the perception of ease use to has a positive effect on perceived usefulness (hypothesis 3).

H3: Perception of ease of use relates positively to perceived usefulness.

Furthermore, there is evidence that perceived ease of use also directly affects attitude and intent to use. Easy-to-use technologies are more likely to be used than those that are difficult to use, regardless of how useful they are perceived to be. For this reason, we assume a direct, positive effect of perceived ease of use on attitude (hypothesis H4a) and on intention to use (hypothesis (H4b).

H4: Perceived ease of use is positively related to a) the attitude and b) the intention to use.

B. Organizational trust and TAM

Scholars often propose trust as an important factor influencing the different facets of the TAM: perceived ease of use, perceived usefulness, attention and behavioral intention [62]. Prior empirical studies incorporate trust into TAM in several ways. Results support trust as an antecedent of ease of use [39], of usefulness [7]; [39], of attitude [3]; [51], and of behavioral intention [18]; [39]; [51]. Dahlberg et al. [7] develop the trust-enhanced technology acceptance model and assert that the model provides a better explanation of consumer technology adoption than the basic TAM.

A lot of findings concerning the relevance of trust in the TAM can be found in the context of e-commerce, which is quite important for this study because a company that is

interested in ideas communicates to the idea contributor via the internet. Thus, the company webpage is the main communication tool for the first contact with the external idea contributor. However, we do not talk about initial trust here, due to the inclusion of the third party.

The webpage has to offer significant signals to persuade external idea contributors that they can trust a specific company as far as submitting their idea to that company. The importance of specific signals has been proven several times, based on the findings of the signaling theory. This theory which is well known in the field of marketing, underlines the relevance of signals to trigger specific behaviors, usually from the customers. Here, the matchmaking process which is explained in its different steps, requirements and tasks can be seen as a signal. Based on the given information due to that matchmaking concept, the external idea contributor decides whether or not to trust that company. Whether or not an external idea contributor trusts a company depends on several factors. First is whether the contributor has the feeling that this company is competent to work with the idea successfully—which means the company will be able a) to manage the submission process in an adequate way and b) to use the idea to develop a new successful product. In keeping with the economic cost theory, trust is therefore also able to reduce the perceived risk that the contributor feels when submitting an idea to a relatively unknown company. Furthermore, following the findings of the social exchange theory, the external idea contributor has to be convinced about the benevolence and integrity of the company itself and its behavior. Therefore, the contributor has to be convinced that the company has his or her wellbeing in mind when making decisions and behaves in a confident and thus, confident way.

Especially in online contexts, trust is seen as an indicator for a feeling that the company is safe. Scholars describe this feeling as a subjective guarantee that the company that communicated via the internet (web page) will behave in a benevolent and confident way. This behavior is expressed when the company behaves in the way as promised, puts the customer's perspective and well-being into account when making decisions, and takes care of their customers (social exchange theory). This behavior enhances the likelihood that the idea contributor will gain the expected benefits which are promised on the web site. The web site itself is the way that a company that is interested in ideas communicates with the external idea contributor. Therefore, it is very important that a company communicate in a trustworthy manner with the potential external idea contributor, so that the contributor is convinced that the company has his best interests in mind. If the external contributor does not trust the company, he will not submit his idea to that company, or the exchange process of the idea might have negative consequences such as reduced usefulness [18]. Therefore, the company has to be trustworthy, so that the external idea contributor's attitude changes such that he or she wants to submit the idea to that specific company. Based on affective as well as cognitive elements of trust we assume that trust in the organization can influence the contributor's attitude positively. Thus, we say:
H5a: Trust is positively related to attitude.

Trust is seen as an antecedent which is able to increase perceived usefulness. The institution-based trust which Pavlou and Gefen [40] also focus on, enhances the idea that trust is very much important for the perceived usefulness of a product or system. People, who trust intermediaries, are convinced that products or services that are recommended by intermediaries are useful. Thus, here we see the transfer of trust from the intermediary to the company. Because of the customers' or in this analysis the external idea contributors' trust in the intermediaries, external idea contributors trust the organization which is a potential company to submit an idea to. As long as the intermediary recommends the submission process of a company - for example, external idea contributors trust them - they are convinced of the usefulness of the process. Pavlou and Gefen [40] could support this in his study on information systems. He demonstrates that trust enhances the perceived usefulness of such an information system. Thus, we assume:
H5b: Trust is positively related to perceived usefulness.

Furthermore, Trust is also positively related both to the behavioral intention to adopt a system such as the matchmaking model and to the attitude toward this model. Several findings have proven this connection [18]; [65]; [29]; [61]. However, the findings vary a lot concerning the context they are conducted. Slediginowski and Kulviwat [50] for example showed in their study that trust increases the intention to use an information system.

Thus, we can state that the relationship between trust and TAM is very broadly discussed (for an overview see also [62]), but due to the varying findings it is clear that people do not simply trust a web site or a web provider as the communication tool for a company, and they do not trust the company at all when trying to make the decision whether or not to submit an idea. Following Hoffmann, Novak, and Peralta's [22], findings, they simple do not want to engage in a relationship where their money and personal information is involved. Thus, we assume: *H5c: Trust is positively related to intention to use.*

At the same time, perceived ease of use usually influences trust positively because perceived ease of use supports the customer's impression of the company in its initial adoption of its service and motivates the external idea contributor to submit his or her idea to this company. Similarily Gefen et al. [18] demonstrated that the perceived ease of use increases the customers' intention to build up long-term and sustainable buyer-seller relationships, thus enhances the commitment toward the relationship. Following this argumentation, we think:
H6: Perceived ease of use is positively related to trust.

IV. METHOD

A. Sample

Students are generally reported as less trusting than non-students due to the different socio-economic background [19]. On the other hand, students are also found to be more trusting of online applications because they are more familiar with IT than non-students [14]. However, we follow the meta-analytical results of [56] who analyze the influence of trust in context of the TAM in student and non-student, so called commercial settings. The authors demonstrated that no significant differences can be identified when comparing student and commercial setting in this research field (TAM and trust). Thus, we assume that our results based on this student sample are generalizable. Additionally, we test for several control variables to test potential contextual influences. These different results together with the education and creativity make students an interesting target group for matchmaking research. Therefore 60 students (participants of an innovation management course in a Master program at TU Dresden and PhD students) were asked to take part in this survey. For this the participants had at least basic knowledge of innovation-related issues. 61.7% had German nationality, 15% were Czech, and among the remainder there were nationalities such as Polish, Kazakh, Brazilian and Russian. 65% of the students were under 26 years of age. All students were from the Master program, so they had had at least a 7-semester experience at universities. 24 of them had already had 10 or more semesters. Almost 60% of the students were female.

B. Measurements

The experiment itself was conducted in 4 steps with all the students in one lecture hall. First, the students were asked to fill out a questionnaire with general questions about their attitude toward trust and innovation. In the next step, an introduction of the model was given by one of the authors, in which the students were asked to put themselves in the position of an idea contributor challenged by the option to transfer his idea (half of them had a service idea, the others had a product idea). The students took the opportunity to ask some questions. In the next step, the students filled out a questionnaire to measure the following variables:

Perceived Ease of Use. Perceived Ease of Use refers to the degree to which the use of a technology is free of effort [8]. Eight questions were used to measure the amount of mental energy that is required to use the system and the degree of difficulty involved in understanding the technology. They were adapted from the perceived ease of use scale developed by Davis, Bagozzi, and Warshaw [9]. The questions in the current study were modified to apply specifically to the matchmaking process. Two examples from this scale are "It is difficult to use the model" or "I am confused when I use the model". The reliability for the modified scale was $\alpha = 0.815$.

Perceived Usefulness. Perceived Usefulness is the perception that this given matchmaking model supports the external idea contributor in submitting his or her idea and achieving his targets, e.g. benefit. The four-question Perceived Usefulness measure that was developed by Davis [8] and has been used extensively (e.g. [59]) was modified slightly for this study ($\alpha = 0.952$) .

Attitude. Concerning attitude we adopted the semantically differential scale suggested by Aijzen and Fishbein [2] and Davis [8]. Five items were of interest regarding our model. All items considered the use of the specific matchmaking process (seen in Harland and Nienaber [21]): good-bad; wise-foolish; favorable-unfavorable; beneficial-harmful; positive-negative. Everything was asked on a three-point scale with a neutral value in the middle. This scale has a reliability coefficient of $\alpha = .963$ in our sample.

Intention to Use. Due to the difficulty of simulating actual behavior in an experimental setting, we measure behavioral intentions instead as numerous studies have already done—e.g. [1]; [25]; [57]; [58]. This decision is also confirmed by the results of Schepers and Wetzels [45] and Venkatesh and Davis [56] who demonstrated a strong correlation between behavioral intention and the actual behavior. Intention to use a technology or here the given matchmaking model, communicated on the organization's web site, is typically measured using items developed by Davis [8]. As with the experience scale, the internal consistency calculation of this scale is $\alpha = 0.718$.

Trust. Trust is measured according to Zaheer and colleagues [64]. Here, we adopted the four questions of their measurement model. The questions deal with the trustworthiness of the partner, its style of communication as well as its benevolent behavior in that the partner behaves as promised. Furthermore a not opportunistic behavior is related to trust ($\alpha = -.0.215$).

C. Analysis

The variables are identified by confirmatory factor analyses. Therefore the items were reduced in two steps: First, by fulfilling the Kaiser-Meyer-Olkin measure (min. 0.5) on the diagonal of the Anti-Image-Correlation-Matrix. Second, by setting a minimum communality per item for each factor analysis. Then we evaluated a stepwise OLS regression analyses to test the model described in Fig. 1. For each regression we checked the adjusted R-squared, the significance of the whole regression equation as well as significance of each dependent variable.

Due to a limited sample size (N=60) control variables (type of idea, sex, age, experience) are tested one by one with the total model of 5 variables.

V. RESULTS

The results of the factor analyses are shown in appendix. The Correlations, means and standard deviations for the model variables are displayed in Table 1.

TABLE 1: DESCRIPTIVE STATISTICS AND CORRELATIONS

		Mean	s.d.	N	1	2	3	4
1.	Attitude	0.00	1.00	60				
2.	Perceived Ease of Use	0.01	0.97	54	0.156			
3.	Perceived Usefulness	0.02	1.09	42	0.743**	0.363*		
4.	Trust	0.11	1.03	33	0.293	-0.143	-0.039	
5.	Behavioral Intention	0.00	1.00	48	0.708**	0.076	0.793**	0.261

Note: N = 60; *Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed)

In the next step we tested the hypotheses through a series of regression analyses (s. Table 2). With the first regression we couldn't confirm H6. The perceived ease of use contributes to the usefulness of the matchmaking process (H3), but the influence on trust (H6) and attitude (H4a) is not significant and influence on the behavioral intention is of low significance (H4b).

Trust relates to the attitude (H5a) and the behavioral intention (H5c), but not to perceived usefulness (H5b). So the behavioral intention is mainly influenced by usefulness (H2b), but also by trust (H5c) and attitude (H1) (R^2=0.557, F=19.573). So we see that usefulness has a dominant influence on attitude (β=0.597; $p < 0.001$) and behavioral intention (β=0.524; $p < 0.001$) but the influence of trust on both is significant (β=0.257 and β=0.202; $p < 0.01$), too.

As described before, due to a limited sample size (N=60) control variables (type of idea, sex, age, experience) are tested one by one. The results are not significant.

VI. DISCUSSION

Our results show main two findings for the innovation and technology management field concerning matchmaking processes when companies try to profit from external idea contributors. First, we were able to demonstrate that trust plays a pivotal role when companies try to profit from external idea contributors. We adopted the TAM for our matchmaking process model including trust as a key factor and showed that our findings are in line with prior empirical studies which incorporate trust into TAM in several ways (e.g. [6]; [3]; [51]; [18]; for an overview [62]). However, our findings might be slightly different because we could confirm a positive relationship only between trust and attitude while all other relations between trust and usefulness, ease of use or intention are not significant. While Pavlou [39] and Dahleberg and colleagues [7] for example were able to show a significant and positive relationship between trust and the perceived usefulness, Chen and Tan [3] and Suh and Han [51] demonstrated in their studies a positive correlation between trust and attitude. Finally, we can see positive influence of trust on intention in the findings of Gefen, Karahanna and Straub [18], and Pavlou [39]. However, at least we are able to demonstrate that trust has a strong positive influence on attitude. We think this relation is the most obvious one because trust includes several affective and cognitive elements.

Due to the fact that external idea contributors are no longer willing to accept any kind of companies' terms and conditions, we are able to show what factor seems to be decisive when it comes to profiting from external idea contributors. It is the company's trustworthiness which needs attention in the future. Cullen et al. [6] and Kauser and Shaw [26] have described the requirement for trust between cooperating partners. We state that it is also needed between external idea contributors and an interested company. That means companies do have to pay a lot of attention to their own trustworthiness, otherwise potential external idea contributors will not trust them.

Second - and this might be the most important finding of our study - is the reduced importance of perceived ease of use when including trust in the TAM. While all other relations between the typical factors in the TAM can be confirmed, this finding is new. While former scholars who also included trust in the TAM usually gave evidence for a positive relationship between trust and perceived ease of use (e.g. [39]), we cannot confirm this. Furthermore, both the usually positive correlations between perceived ease of use and attitude and the intention to behave such as to submit an idea can no longer be confirmed. There is no significant influence anymore. Only the relationship between perceived ease of use

TABLE 2: REGRESSION

	Independent variables				Dependent variable	Adjusted R-squared	F	Sig.
	EaseofUse	Trust	Usefulness	Attitude				
1. Regression	n.s.				Trust	-0.010	0.397	0.531
2. Regression	0.336**	n.s.			Usefulness	0.088	3,847	0.027
3. Regression	n.s.	0.257*	0.597***		Attitute	0.425	15.540	0.000
4. Regression	-0.115	0.202*	0.524***	0.284*	Intention	0.557	19.573	0.000

* $p < .05$; ** $p < .01$; *** $p < .001$; n.s. $p > .10$

and perceived usefulness is positive and significant as it is proven often times in the literature [62]. This finding is surprising and important at the same time, because that means that when trust plays a key role, the perceived ease of use is not that important any more - at least in the context of matchmaking processes between companies and external idea contributors. Following this finding, we can assume that the more complex a product or process is, e.g. the process of submitting an idea, the more important is trust, because when people trust, they do not care so much about the ease of using a specific submission process. Thus, a process can be very complicated, but as long as trust is involved, external idea contributors will submit their ideas. Especially in the field of matchmaking processes or open innovation this finding plays an enormous role.

We also can see evidence for our finding in the banking sector. Here, complicated pay systems such as PayPal for example, do not frighten or scare people. Customers favor such systems because they believe that these systems are confident and they trust them. Therefore we assume that a complicated matchmaking process—as is the case when involving an intermediary—is not frightening. It helps people to trust that the given organization will behave in a benevolent and confident way.

A. Implications for research and business management

Based on our findings, we are able to contribute to current research as well as to business management. First, we contribute to research by advancing the current findings in the literature on trust and innovation and technology management by including trust as a key aspect in the TAM in the context of matchmaking processes. We were able to demonstrate that the idea of the trust-enhancing technology-acceptance model [7] can be also adopted for matchmaking processes between a company and an external idea contributor. Second, our findings show that trust is able to reduce the importance of the factor perceived ease of use of the TAM. While in the original model of TAM the factor ease of use plays a pivotal role, this is not the case anymore when trust is involved in the context of matchmaking process. Therefore, we assume that trust might be able to substitute the relevance of ease of use because people trust. This finding allows us to say that our findings do have a worthy influence for business management.

Our findings contribute to business management in two ways. First, trust can be seen as an important factor for the intention to submit an idea to an organization. This means, companies nowadays should pay a lot of attention toward their trustworthiness. As long as people do not trust them, they would not submit any idea and thus, companies are not able to profit from potential external idea contributors. Second, companies should not avoid to establish complex but safe submission systems for external ideas. The perceived ease of use is not that important anymore, when external idea contributors trust them. The banking industry can be seen as a role model. External idea contributors are not scared by complex matchmaking processes such as in this model when including an intermediary, they prefer such processes because they seem to be integer and confident.

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APPENDIX FACTOR ANALYSIS

	Items in questionaire	Items with MSA > 0.5	Communality criteria	Items after communality selection	Final KMO	Factors
Attitude	5	5	0.85	5	0.790	1
Perceived Ease of Use	8	8	0.55	4	0.815	1
Perceived Usefulness	8	8	0.65	7	0.840	1
Trust	5	3	0.55	2	0.5	1
Behavioral Intention	3	3	0.9	2	0.5	1