Online Gaming to Apply for Jobs –the Impact of Self- and E-Assessment on Staff Recruitment

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Abstract

The process of recruiting employees has changed since the internet entered enterprises. From simply posting job ads and information on the internet to online application forms and holistic e-recruiting system architectures the way of recruiting has changed a lot. With the introduction of virtual worlds and the increasing number of online games this paper is discussing the next step of e-recruiting: online games to apply for jobs. With a single explorative case study the implementation of self- and e-assessment as online games could be explained. Furthermore with an SEM based on the empirical data of a survey with the Fortune 1,000 companies in Germany (response rate 19.1%) evidence for the motivation of companies to use online games can be provided. Perceived quality improvements, perceived cost savings and perceived time savings as well as perceived usefulness and perceived ease of use are the most important drivers for companies intending to use online games in staff recruitment.

1. Introduction

Do you remember the last time you applied for a job? Most of us would have looked for job ads, sent a paper-based application, went to job interview and finally hopefully been employed by the company. However, this classical way of staff recruitment has changed since companies started to use the internet especially e-recruiting. For example Keim and Weitzel analyzed the employer and job seeker behavior on the IT labor market and showed that job ads are mainly posted on the internet, job seekers apply for jobs predominately using online application forms or e-mail and job seekers more and more introduce themselves by storing their resumes in a CV database employers can search in [24]. In 2007

Lee suggested a holistic e-recruiting system architecture and pointed out that recruiting activities are mainly supported by information system and especially by the internet [26].

The next step in the development of the internet was the introduction of virtual worlds. Practitioners as well as researcher are discussing the opportunities virtual worlds might offer to companies and customers. In 2007 the DATA BASE for Advances in Information Systems published a special issue on Virtual Worlds and in 2008 an MISQ call for a special issue of virtual worlds encourages the community to research the opportunities of virtual worlds.

A first approach how virtual worlds can be integrated in a company's recruiting strategy is explained by Laumer et al. [25]. According to Faerber et al. the steps of a recruiting process are employer branding, candidate attraction, applicant tracking, pre- and final selection [17]. Based on this concept a virtual world can be used as an interesting and innovative platform for employer branding to attract potential candidates, to provide information about the company and to generate applications and are therefore part of the long-term candidate attraction phase [25]. For the selection phase Bartram discusses the concept to integrate e-assessments in a virtual world as structured assessments that can be completed online by job seekers and can support the matching between candidates' skills and job requirements [3].

Moreover Griffiths et al. point out that the Internet has become a new medium in which players can play videogames and that the game clientele is very much an adult profile [21]. Other researchers such as Chappell et al. alert that players and ex-

players appear to be 'addicted' [9]. However, as Steinkuehler [35] or Underwood et al. argue that digital technologies have real potential as educational tools, but those technologies are not free of risks [36].

Based on these approaches we will address the following research questions in an organizational setting:

1. *How can online gaming be used to support the selection of candidates during the recruiting process?*
2. *Why do companies want to use online games?*

We will answer these questions by providing a two step approach. At first we will discuss the theoretical and practical background of online games in recruiting by providing results of a literature review of self- and e-assessment as well as an explorative case study with one of the worldwide largest publishing houses. In a second step based on these results we develop and validate a structural equation model (SEM) to discuss influencing factors for companies intending to use self- and e-assessment.

The paper proceeds as follows. In section two the theoretical background of first approaches in self- and e-assessment are discussed explicitly. Section three presents the results of the explorative case study with the publishing house and section four the result of the structural equation model (SEM) analysis. The paper concludes with a discussion of the key findings as well as the limitations and implications.

2. Theoretical background

As a first step the theoretical background of self- and e-assessment is presented. Based on the literature review and the explorative case study our research model is developed.

2.1. Self-assessment in personnel selection

According to Weiss "*Self-assessment is based on the idea that a question and answer procedure can be devised that will help a person appraise and develop his or her knowledge about a particular topic*" [37]. Accordingly results of self assessment should help a participant to appraise and develop himself or herself. In contrast the motivation of Self-Assessment should not be for a person to satisfy others [37].

Self assessment is typically used in the fields of health professions and higher education [38]. Beside these two main operational areas self-assessment can also be found in conjunction with personnel selection[27][20][6][23]. Jones and Fletcher refer to research indications that using Self-Assessments for selection may offer benefits at both organizational and individual levels. For example self-selection may be promoted due to self-assessments by encouraging potential candidates for a job vacancy to think about whether they are really suitable and qualified for the job [23].

Also in the context of personnel selection Caligiuri and Phillips refer to self-assessments as a component of realistic job previews [6]. Thereby a realistic job preview is the provision of both favorable and unfavorable job-related information to job candidates [34] in order to provide them with more realistic perceptions of a job [8]. In combination with self-assessment the provided information aids the applicants in self-selecting in accordance with the desired job [31]. As self assessment is also developed to help a participant to appraise himself and test his qualification for a specific job profile, e-assessment is just used to select a small group of adequate candidates out of a bunch of candidates.

2.2. E-assessment in personnel selection

Most of the literature about e-assessment discusses this topic in the context of e-learning [33][5][18][13]. In this regard e-assessment refers to the use of information and communication technology (ICT) to drive education [33]. In the domain of e-learning, e-assessment is already an issue for several years. For example Connolly classifies online-assessment respectively e-assessment in the second generation e-learning within his new model of distance education, whereas a third generation e-learning already exists in his model [13].

In contrast to that e-assessment is a relatively new topic in the area of selection and recruitment. In this connection Bartram refers to e-assessments as structured assessments that can be completed online by job seekers and that can be shown to be job relevant. Thereby online recruitment could be repositioned as a process of matching the competencies and capabilities of an applicant to the requirements of the job vacancy, and so produce a high quality shortlist [3].

In the next section a case study will be presented explaining the implementation of a self- and e-assessment as a recruiting system within one of the largest publishing houses worldwide. The main focus of the case study is the motivation of the company to implement self- and e-assessment as an online game available to job seekers and people interested in career opportunities.

3. Practical background

In compliance with Eisenhardt the case study uses a research strategy which focuses on understanding the dynamics present within individual settings [16]. Yin additionally emphasizes the real-life-characteristic of these single settings [39].

As we used a single case study approach to answer our research question, we designed the case study following the guidelines of Yin [39]. Hence we started by defining our research design and its components including the initial research question, its proposition(s) and its unit(s) of analysis. Having concluded the definition phase, we selected the company to be considered within the case study in accordance with Eisenhardt [16]. Next we established interview guidelines defining the procedure pursued during the data collection [16] [39].

The interviews were conducted in two stages. First, the context variables were discovered using a semi-structured interview. This was followed about one month later by a fully structured interview. The interviews took place in the company selected and lasted about two hours. Two representatives of the enterprise, who are in charge for the recruiting process and especially the implementation of the self- and e-assessment tool, and two members of our research team were involved. To support our results we have added further documents provided by the company as meeting records and project descriptions. Finally the resulting case study report was released by the participating company.

3.1. Company background

The company selected for this case study will be called *"MAG"* for reasons of anonymity. MAG is one of the largest global publishing houses with more than 14.000 employees in 24 countries. MAG's headquarter is located in Northern Germany.

Despite this size of the enterprise MAG identified difficulties concerning its employer brand. The main

reason for this situation is the weak awareness of the company's name MAG in contrast to a wide range of very well-known products (i.e. journals and newspapers) of MAG. Further on MAG is intensely looking for new employees in the commercial area, but people don't expect a publishing house being an employer for commercial occupations. Additionally it is the aim of MAG to train apprentices to a great extent but unfortunately the job profile of a publisher sales man is hardly known among the potential candidates. Furthermore MAG expected to save time and costs with implementing a system that can be used on the internet and therefore less personal contact at one place is necessary. Addressing these problems MAG decided to introduce the system CyPRESS (Cyber-PreSelectionSystem) within its recruiting process.

3.2. The combination of self-assessment and e-assessment – system basics

MAG is regarding the recruiting process as a two step approach. In the first step the applicants and the company should have the opportunity to get to know each other. Within this step the candidates should get an idea of MAG as their potential employer first of all and apply for a job via the web form on the company's website afterwards.

The second step is the selection of candidates. In this process appropriate applicants are identified among all incoming applications and invited to an online assessment center to appraise their competencies and to collect further information. An assessment center and personal interviews are following as final activities to identify and engage the most appropriate candidate for a vacancy.

Both steps are supported by the online game CyPRESS in order to ensure the personnel selection being as effective as possible. CyPRESS was designed by a software and computer gaming company. It combines the two approaches of self- and e-assessment. The synergy effects resulting from this combination lead to an improvement of the overall short listing process.

Within the first of the two mentioned steps potential applicants should be encouraged to assess their own appropriateness in regard to the job vacancy (self-assessment). As a result MAG expects more adequate candidates among all incoming applications and therefore an increasing quality. In the second step CyPRESS enables an effective and

efficient pre-selection of the applicants via company-specific tasks in an e-assessment-center.

In summary self-assessment is focusing on communicating information about MAG as an employer to potential applicants. By contrast e-assessment is designed for candidates who already applied for a job and were pre-selected by MAG. These candidates have to participate in several occupational online games (e-assessment), being part of the selection process.

The way self- and e-assessment are implemented within the CyPRESS System is described below.

3.3. Self-assessment - source of information and decision support

The part of CyPRESS supporting self-assessment is integrated in the company website of MAG and accessible for anyone on the internet. Being a component of employer branding the focus of self-assessment is directed to the target group of students and graduates.

Within this self-assessment subsystem of CyPRESS participants are able to obtain information about MAG's trainee program as well as about important departments and job descriptions of the company in an entertaining way. The primary goal is to provide an insight into the multifaceted commercial tasks in a publishing house. The participants have the possibility to find out in an anonymous way if the tasks appeal to them and if this is the career they really want to start.

The self-assessment area is implemented as an online game taking place in virtual world. If one joins the game one takes on the role of an employee of a successful journal. One has to cope with realistic commercial tasks in the following four important departments of a publishing house:
- business development
- editorial office
- sales and distribution/subscription marketing
- advertising department

Real employees of MAG are integrated in the game as avatars (an avatar is a graphical agent representing a real person in a virtual world respectively in a computer game) to copy reality as accurately as possible.

Having performed a task, the participant gets a feedback about her/his abilities directly. However these results are not saved and thus cannot be used in the recruiting process. This information is only meant for potential applicants. Playing this online game you can assess your appropriateness and propensity to start a career at MAG and decide afterwards, if you apply for a job or not.

As an ideal result of the self-assessment, appropriate candidates who did not consider MAG as an employer before realize that working at MAG would be an interesting challenge. On the other hand, candidates who intended to apply for a job at MAG in the past would forbear from doing so, if they imagined a different kind of work. Both scenarios would lead to a better appropriateness of applicants as well as to an enhanced personnel selection.

3.4. E-assessment – effective selection of candidates

In contrast to the self-assessment that aims at presenting MAG as a potential employer, the e-assessment-area of CyPRESS is an integral part of the recruiting process. Personal results of the e-assessment are saved and analyzed and have a direct influence on the probability of success of an application.

The first step in the early phase just after the receipt of the applications is a database-driven personnel pre-selection, realized by CyPRESS. Adjacent the candidates who will be invited to an e-assessment on the CyPRESS platform are selected by HR managers.

The second step is the e-assessment via CyPRESS. Thereby the applicants are confronted with various tasks in the same virtual environment as within the self-assessment part. However this time the focus is not on self-assessment but on the appropriateness of the candidates concerning the prospective professional success from MAG's point of view.

E-assessment tasks of CyPRESS derive from simulative standard methods that were adjusted to the demands of MAG within a multi-level process. The tasks are phrased in an occupational way and embedded in certain gaming situations that are likely to happen in daily work (e.g. analyzing tables, preparing presentations, counterchecking texts, adapting charts or staff planning).

By performing the tasks the applicants are assessed with regard to occupational and firm-specific personality traits in the following domains:

- cognitive ability
- planning ability
- competence in problem solving
- deductive and analytical skills

After the completion of the e-assessment process, the personal results are imported in MAG's candidate management system directly and attached to the other personal data. Hence an access to the database provides an insight into the results of the e-assessment as well as into the remaining applicant data. On the basis of the e-assessment results and the information out of the curricula vitae, MAG decides which applicant will be admitted to the following personal steps of the selection process.

A major advantage of the described proceeding is up to the fact that the shortlisting will be more established due to the collected information. Thus candidates who would usually have been rejected (e.g. because of their biographical data) can still be admitted to the next step of the selection process.

3.5. System acceptance

The acceptance of both, the self-assessment- and the e-assessment part of CyPRESS, has exceeded all of MAG's expectations. As a result of an evaluation carried out by MAG only one out of two hundred participating candidates declared that the amount of effort to cope with this web-based software solution did not pay off. From the applicants point of view the main advantage of CyPRESS is up to a more objective short listing. The reasons for a rejection can be explained on the basis of the e-assessment results. Further on rejected applicants are able to reflect their abilities by a feedback provided by MAG. Due to these advantages and to the realistic virtual environment of CyPRESS, MAG did not have any problems concerning the acceptance of the system by the candidates.

3.6. Impact on recruiting

First, the entire explained steps (self-assessment, web application form, candidate management system and e-Assessment) enable a fast and efficient pre-selection of personnel as expected by MAG. Thereby the additional information about the applicants collected within the e-assessment lead to a higher efficiency of the following personal steps of the selection process.

Second, a strong employer brand was established as a result of the firm-individual design of the self-assessment, the web application form and the e-assessment. Today MAG is identified as an innovative media company. Also MAG was able to address new target groups and to enhance its awareness level.

Finally the quality of the applications could be improved clearly since the startup of the self-assessment part of CyPRESS. The applications are more purposeful, and most of the applicants have a clear image of MAG as an employer and of the work that would be interesting for them.

The objectives of the self- and e-assessment system implementation project were to increase the quality of candidates applying and to increase the quality of available information about candidates. With realizing these increasing numbers MAG was able to streamline its recruiting process. For example a first decision wheatear a candidate is invited to a job interview can be based on broader information then before the implementation of the self- and e-assessment system and only a few candidates have to be invited to identify the favored one. Therefore the candidate can be employed for less money and in shorter time then before the implementation of the system. These perceived and finally realized savings were the motivation of the responsible HR-manager to implement a self- and e-assessment system as an online game within the recruiting process of the company.

In summary the introduction of CyPRESS was successful all down the line. MAG's expectations were all exceeded. Currently MAG is working on a modification of the individual test procedures within the e-assessment-Part to be able to gain even more detailed information about the candidates.

4. Structural Equation Model

The results of the single case study provided by section three indicates that the intention to use self- and e-assessment is mainly motivated by the perceived cost and time savings as well as the increasing quality of candidates apply for jobs. In this section we will test these specific results in a more general setting. We therefore develop a SEM based on several popular models in technology acceptance research as TAM (Technology Acceptance Model) [14], MATH (Model of Adoption of Technology in

Households) [4] and the UTAUT (Unified Theory of Acceptance and Use of Technology) [36].

4.1. Research model

TAM introduces Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) as two major influencing factors for the intention to use an information system. Research of the last 20 years has provided evidence for PEOU and PU influencing intention. We use the TAM due to its particular suitability to examine the acceptance of a new innovative information system (e.g. [15] [28] and [29]). We used the terms of PEOU und PU to further examine the acceptance of assessment center in an organizational context.

The MATH model examines the use of an information system through different forms of belief; attitudinal beliefs, normative beliefs and control beliefs. As the attitudinal and normative beliefs represent the individual users' experiences, hedonic and social outcomes, the control beliefs describe the perceived value of using the system in form of cost savings. Therefore we extracted the control beliefs and integrate them in our research model as perceived cost and time savings.

Observing the technology acceptance in an organizational context a frequent cited model is the UTAUT [36]. In order to provide significant relationships between the behavioral intention to use a system and its related antecedents few moderators were integrated in the research model. (e.g. age, gender, income). To observe in addition to perceived cost and time savings potential quality improvements we integrated the factors of performance and effort expectancy:

H1: Perceived Usefulness has a positive effect on the intention to use self-/e-assessment.

H2a: Perceived Ease of Use has a positive effect on Intention to use self-/e-assessment.

H2b: Perceived Ease of Use has a positive effect on Perceived Usefulness.

H3: Perceived Quality Improvements has a positive effect on Perceived Usefulness

H4: Perceived Cost Savings have a positive effect on Perceived Usefulness

H5: Perceived Time Savings have a positive effect on Perceived Usefulness

Figure 1 illustrates the operationalization of the described hypotheses in our research model.
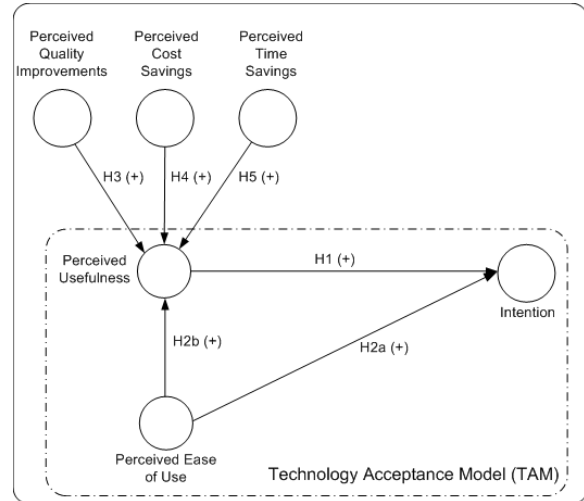

Figure 1: E-assessment adoption model

4.2. Research design

We used a paper-based questionnaire to empirically test our hypotheses. Our research model has been operationalized and transferred into a structural equation model (SEM). We analyzed the SEM with the Partial Least Squares (PLS) approach [2][10]. For the calculation of our results we used SmartPLS. The level of significance for support or rejection of hypotheses were chosen as p=0.001.

Each construct in our research model is represented by a set of indicators. We measured all reflective indicators on a 7-point Likert scale using scales from "strongly agree" to "strongly disagree". Table 1 below presents the operationalization of our constructs in the field of self- and e-assessment. The original survey was written in German; hence, items from the questionnaire described in the following have been translated. The indicators where designed following Davis [14].

PEOU-1	The use of self-/e-assessment is understandable.
PEOU-2	Self-/e-assessments are easy to use.
PU-1	Self-/e-assessment will simplify candidate selection.
PU-2	Self-/e-assessment will increase effectivity of candidate selection.
PU-3	Self-/e-assessment is useful in candidate selection.
PQI-1	Self-/e-assessment enables better collection and evaluation of candidates' skills
PQI-2	Self-/e-assessment increases candidates' information quality
PCS-1	Self-/e-assessment reduces cost of candidate selection.
PCS-2	There is a suitable solution of self-/e-assessment systems.
PTI-1	Self-/e-assessment streamlines selection of candidates.
PTI-2	Self-/e-assessment decreases the time-to-hire.
INT-1	We will use self-/e-assessment in the future.
INT-2	We plan to use self-/e-assessment in the future.
INT-3	We intend to use self-/e-assessment in the future.

Table 1: Operationalization of constructs

4.3. Model validation

In 2007, our questionnaire was sent to HR managers in charge of Fortune 1,000 companies in Germany. Overall, 191 usable questionnaires were returned out of a total sample of 1,000 (response rate 19.1 %).

4.3.1. Measurement model

The quality of the reflective measurement model is determined by (1) content validity (2) indicator reliability, (3) construct reliability and (4) discriminant validity [1]

Content validity describes the degree to which the results measured represent the content-semantic element of the construct [30]. A condition for content validity evaluation is a very precise definition of the content of the constructs beforehand. During our case study research the constructs were discussed in detail with several experts in the Human Resource department of the global operating publishing house (see section 3), to ensure the content validity of our constructs [12]. Furthermore the constructs were evaluated by the Human Resources experts of a job portal that operates on a worldwide scale.

Indicator reliability In the model tested, all loadings are significant at the $p=0.001$ level and are above the recommended 0.7 parameter value [7]. All indicator loadings under 0.4 parameter value were excluded beforehand [22]. Significance tests were conducted using the bootstrap routine with 500 samples [11]. The indicator loadings are summarized in Table 3.

Construct reliability demands that indicators which are related to the same construct should have a close correlation to each other[19]. Construct reliability was tested using composite reliability (CR) and average variance extracted (AVE). The estimated values were above the recommended thresholds of 0.7 for CR and 0.5 for AVE [2]. Table 2 provides an overview of CR and AVE in our measurement model and shows that all measures are over the recommended levels.

	AVE	CR	Mean	S.ER	S.D.
INT	0.9367	0.978	3.707	.199	2.762
PCS	0.6036	0.7522	3.256	.109	1.265
PQI	0.7668	0.8679	3.907	.104	1.188
PTS	0.7971	0.8871	3.475	.129	1.432
PEOU	0.8241	0.9035	4.208	.109	1.249
PU	0.829	0.9356	3.492	.112	1.277

Table 2: Descriptive Statistics, AVE and CR

Discriminant validity can be evaluated by considering the cross-loadings. The loadings of our reflective indicators are higher for the corresponding constructs than for any other (see Table 3). Additionally, the square root of the AVE for each construct is higher than the correlations between the single constructs (Table 4). Therefore, the discriminant validity of the latent variables is high [19] [22].

	PEOU	PU	PQI	PCS	PTS	INT
PEOU-1	0.935	0.377	0.540	0.212	0.168	0.525
PEOU-2	0.879	0.256	0.297	0.256	0.176	0.406
PU-1	0.266	0.891	0.574	0.624	0.731	0.421
PU-2	0.329	0.955	0.644	0.634	0.690	0.437
PU-3	0.377	0.884	0.660	0.620	0.551	0.523
PQI-1	0.573	0.659	0.902	0.364	0.490	0.555
PQI-2	0.234	0.537	0.848	0.321	0.498	0.328
PCS-1	0.178	0.578	0.304	0.819	0.625	0.264
PCS-2	0.220	0.487	0.308	0.732	0.314	0.441
PTI-1	0.110	0.677	0.401	0.658	0.905	0.292
PTI-2	0.233	0.609	0.614	0.437	0.881	0.300
INT-1	0.570	0.521	0.546	0.418	0.341	0.969
INT-2	0.480	0.508	0.484	0.466	0.345	0.975
INT-3	0.449	0.432	0.460	0.398	0.267	0.959

Table 3: Cross loadings

	INT	PCS	PQI	PTS	PEOU	PU
INT	0.9678					
PCS	0.442	0.7769				
PQI	0.516	0.393	0.8757			
PTS	0.331	0.620	0.562	0.8928		
PEOU	0.521	0.253	0.479	0.188	0.9078	
PU	0.507	0.688	0.688	0.721	0.357	0.9105

Table 4: Discriminant validity
Note: Square root of AVE on diagonal

4.3.2. Structural Model

After the measurement model specification, we analyze the structural model. The squared multiple correlations (R^2) express the significance of the four endogenous variables. The corresponding t-values show the level of significance using the magnitude of the standardized parameter estimates between constructs. The path coefficients in the research model are significant as shown in Figure 2.

The explanatory power of the R^2 is classified by Chin[10]. A substantial expressiveness for the research model could be estimated by an R^2 over 0.67. An average effect stands for R^2-values between 0.67 and 0.34. The explanatory power is weak for an R^2 between 0.34 and 0.19 and overall not relevant for R^2-values under 0.19 [10].
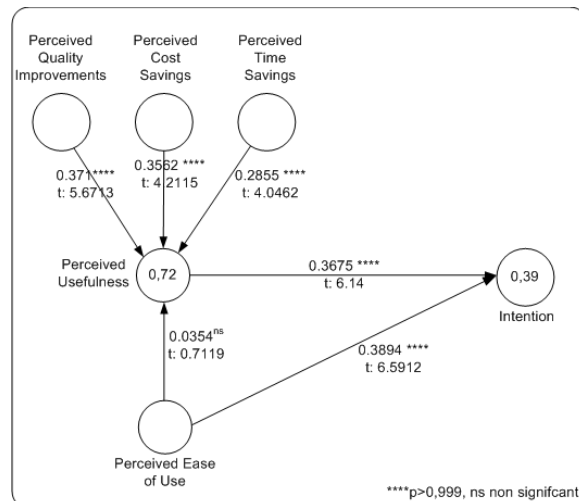

Figure 2: Structural model validation

Therefore R^2 of our research model for the intention to use self- and e-assessment can be categorized as substantial expressive for perceived usefulness and as an average effect for intention.

4.4. Results

The results of our empirical research based on our explorative case study is that the intention to use self- and e-assessments can be explained by Davis [14] perceived usefulness and perceived ease of use. Furthermore antecedents of perceived usefulness are perceived quality improvements, perceived cost savings and perceived time savings derived of the MATH Model [4] as well as the [36]. Statistical support can be provided for all the hypothesized relations between constructs except of perceived ease of use on perceived usefulness.

5. Limitations

As with any work in a new field of research relevant literature about self- and e-assessments to build on is almost nonexistent. Unfortunately the operationalization of "perceived cost and time savings" as well as "perceived quality improvements" in this paper could consequently not build on earlier work too much so we had to derive them of the MATH model [4] as well as the UTAUT [36].

As with any empirical field study, this work has limitations. It is important to note that we have build an explorative model to examine the acceptance of self- and e-assessments. As this study provides support for a significant influence of PU and PEOU

on the intention to use self- and e-assessment center as well as the influence of PQI, PCS and PTS on PU it might represent a single example for a specific economy, country or cultural region . There might be differences for the intention of different informnation systems with different settings. Future research should discuss this issue more detailed.

Furthermore our questionnaire was just answered by large-scale corporations in Germany. So our results might not be directly transferred to small and medium-sized enterprises.

In addition, as we collected our data from participants at the same time using the same survey our results may be affected by common method variance [32].

6. Conclusion

Self-assessment and e-assessment as online games in staff recruiting are a valuable solution for companies to support on the one side their employer branding activities and on the other side the selection of the favored candidate. The case study of our papers shows that companies can generate more qualified applications and concurrently save time and money. Based on these findings our empirical research with 191 of the Top-1000 companies of Germany provide statistical evidence that perceived quality improvements, perceived cost savings and perceived time savings are the main reasons beside perceived usefulness and ease of use why companies intend to use self- and e-assessment in their recruiting processes.

References

[1] Bagozzi, R. P., "The Role of Measurement in Theory Construction and Hypothesis Testing: Toward a Holistic Model", in: Conceptual and Theoretical Developments in Marketing, O.C. Ferrell, S.W. Brown and C.W. Lamb (eds.), Chicago, pp. 15-32, 1979
[2] Bagozzi, R. P., and Yi, Y., "On the Evaluation of Structural Equation Models", Journal of the Academy of Marketing Science (16), pp 74-94, 1988
[3] Bartram, D., "Testing on the Internet: Issues, Challenges and Opportunities in the field of Occupational Assessments", in: D. Bartram, and R.K. Hambleton (eds), Computer-Based Testing and the Internet: Issues and Advances, John Wiley & Sons, Ltd., Chichester, England, 2006.
[4] Brown, S. A. and Venkatesh, V., "Model of Adoption of Technology in Households: A Baseline Model Test and Extension Incorporating Household Life Cycle", MIS Quarterly (29:3), pp.399-426, 2005
[5] Buzzetto-More, N.A., and Alade, A.J., "Best Practices in e-Assessment", Journal of Information Technology Education, 2006, Vol. 5, pp. 251-269.
[6] Caligiuri, P.M., and Phillips, J.M., "An application of self-assessment realistic job previews to expatriate assignments", The International Journal of Human Resource Management, 2003, Vol. 14, No. 7, pp. 1102-1116.
[7] Carmines, E. G., & Zeller R. A. (1979). Reliability and Validity Assessment. Beverly Hills, CA: Sage Publications.
[8] Cascio, W.F., Applied Psychology in Human Resource Management, Prentice Hall, Englewood, Cliffs, NJ, 1998.
[9] Chappell, D., Eatough, V., Davies, M.N.O. and Griffiths, M., "EverQuest – It's Just a Comupter Game Right? An Interpretative Phenomenological Analysis of Online Gaming Addicition", International Journal of Mental Health and Addiction, Vol. 4, No. 3, pp. 205-216
[10] Chin, W. W., "The Partial Least Squares Approach to Structural Equation Modelling", in: Modern methods for business research, G.A. Marcoluides (ed.), Lawrence Erlbaum Associates, London, pp. 295-336, 1998
[11] Chin, W. W., "Frequently Asked Questions – Partial Least Squares & PLS-Graph", 2000
[12] Churchill, J. R., and Gilbert, A., "A Paradigm for Developing Better Measures of Marketing Constructs," Journal of Marketing Research 15 (2), pp. 77-94, 1979
[13] Connolly, T., and Stansfield, M., "Using Games-Based eLearning Technologies in Overcoming Difficulties in Teaching Information Systems", Journal of International Technology Education, 2006, Vol. 5, pp. 459-476.
[14] Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use and User Acceptance of Information Technology. MIS Quarterly, 13:3, pp. 319-339.
[15]Doll, W.J., A. Hendrickson, and X. Deng "Using Davis's Perceived Usefulness and Ease-of-use Instruments for Decision Making: A Confirmatory and Multigroup Invariance Analysis" Decision Sciences 29(4), 1998, pp. 839-869.
[16] Eisenhardt, K. M. (1989) Building Theories from Case Study Research, Academy of Management Review, 14, 4, 532-550.
[17] Faerber, F., Keim, T., and Weitzel, T., "An Automated Recommendation Approach to Personnel Selection"
In: Proceedings of the 2003 Americas Conference on Information Systems; Tampa
[18] Feng, M., Heffernan, N.T., and Koedinger, K.R., "Addressing the Testing Challenge with a Web-Based E-Assessment System that Tutors as it Assesses", Proceedings of the 15th international conference on World Wide Web, Edinburgh, Scotland, 2006, pp. 307-316.
[19] Fornell, C., and Larcker, D. F., "Evaluating Structural Equitation Models with Unobservable Variables and Measurement Errors", Journal of Marketing Research, 18, pp. 39-50, 1981
[20] George, D.I., and Smith, M.C., "An Empirical Comparison of Self-Assessment and Organizational Assessment in Personnel Selection", Public Personnel Management, 1990, Vol. 19, No. 2, pp. 175-190.

[21] Griffiths, M.D., Davies, M.N.O., and Chappell, D., "Breaking the Stereotype: The Case of Online Gaming", CyberPsychology & Behavior. January 1, 2003, Vol 6, No. 1, pp. 81-91

[22] Hulland, J., "Use of Partial Least Squares (PLS)", in: Strategic Management Research: A Review of Four Recent Studies. Strategic Management Journal, 20 (4), pp. 195-204, 1999

[23] Jones L., and Fletcher, C., "Self-assessment in a selection situation: An evaluation of different measurement approaches", Journal of Occupational and Organizational Psychology, 2002, Vol. 75, pp. 145-161.

[24] Keim, T. and Weitzel, T., "Strategies for Hiring IT Professionals: An Empirical Analysis of Employer and Job Seeker Behavior on the IT Labor market", In: Proceedings of the 2006 Americas Conference on Information Systems (AMCIS); Acapulco, Mexico

[25] Laumer, S., Eckhardt, A., and Weitzel, T. "Recruiting IT Professionals in a Virtual World", In: Proceedings of the 12th Pacific Asia Conference on Information Systems (PACIS 2008); Suzhou, China

[26] Lee, I., "The Architecture for a Next-Generation Holistic E-Recruiting System", Communications of the ACM, Vol. 50, No. 7, 81-85, 2007

[27] Levine, E.L., Flory, A., and Ash, R.A., "Self-assessment in personnel selection", Journal of Applied Psychology, 1977, Vol. 62, No. 4, pp. 428-435.

[28] Malhotra, Y., and Galletta, D. F. "Extending the Technology Acceptance Model to Account for Social Influence Theoretical Bases and Empirical Validation" Proceedings of the 32nd Hawaii International Conference on System Sciences.

[29] Lou, H., Luo, W., and Strong D. (2000) "Perceived Critical Mass Effect on Groupware Acceptance" European Journal of Information Systems 9(2), pp.91-103.

[30] Nunnally, J. C., and Bernstein, I. H., "Psychometric Theory", (3rd ed.) McGraw-Hill, New York, 1994

[31] Phillips, J.M., "Effects of Realistic Job Previews on Multiple Organizational Outcomes: A Meta-Analysis", Academy of Management Journal, 1998, Vol. 41, No. 6, pp. 673-690.

[32] Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y. & Podsakoff, N. P. (2003). Common Method Bias in Behavioral Research: A Critical Review of the Literature and Recommended Remedies. Journal of Applied Psychology, Vol. 88, No. 5, pp. 879-903.

[33] Ridgway, J., McCusker, S., and Pead, D. "Literature Review of e-Assessment", Nesta Future Lab, Bristol, UK, 2004.

[34] Rynes, S.L., Recruitment, "Job Choice, and Post-Hire Consequences", in: M.D. Dunnette, and L.M. Hough (eds), Handbook of Industrial and Organizational Psychology, Consulting Psychologists Press, Palo Alto, CA, 1991.

[35] Steinkuehler, C.A., "Learning in massively multiplayer online games", Proceedings of the 6th international conference on Learning sciences, Santa Monica, California, 2004

[36] Underwood, J.D.M., Banyard, P.E. and Davies, M.N.O., "Students in digital worlds: Lost in Sin City or reaching Treasure Island?", BJEP Monograph Series II,

Number 5 - Learning through Digital Technologies, Volume 1, Number 1, 1 July 2007 , pp. 83-99

[36] Venkatesh, V., Morris, M.G. und Ackermann, P.L. (2000), "A Longitudinal Field Investigation of Gender Differences in Individual Technology Adoption Decision-Making Processes", Organizational Behavior and Human Decision Processes, Vol. 83, Nr. 1, S. 33-60

[37] Weiss, E. A., "Self-Assessment", Communications of the ACM, 1990, Vol. 33, No. 11, pp. 110-132.

[38] Ward, M., Gruppen, L., and Regehr, G., "Measuring Self-assessment: Current State of the Art", Advances in Health Sciences Education, 2002, Vol. 7, pp. 63-80.

[39] Yin, R. K. (2003) Case Study Research: Design and Methods, Sage Publications, Inc., Thousand Oaks, London, New Dehli.