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Gamified Feedback in Electronic Negotiation Training

Marlene Meyer
University of Hohenheim, marlene.meyer@uni-hohenheim.de

Andreas Schmid
University of Hohenheim, a_schmid@uni-hohenheim.de

Philipp Melzer
University of Hohenheim, melzer@uni-hohenheim.de

Mareike Schoop
University of Hohenheim, schoop@uni-hohenheim.de

GAMIFIED FEEDBACK IN ELECTRONIC NEGOTIATION TRAINING

Marlene Meyer[1,2], Andreas Schmid[1], Philipp Melzer[1], Mareike Schoop[1]
1 Information Systems Group 1,
University of Hohenheim,
70599 Stuttgart, Germany
{marlene.meyer, a_schmid, melzer, schoop}@uni-hohenheim.de
2 Graduate School,
Hochschule Esslingen – University of Applied Sciences
73732 Esslingen, Germany
marlene.meyer@hs-esslingen.de

Abstract

Negotiations are a relevant and highly complex business skill. Therefore, extensive training is required to become a good negotiator. Such training is offered by universities for their students and by companies for their employees. The present paper designs gamified feedback features in electronic negotiation training and evaluates their potential and their effects. Following a design science research method, feedback mechanisms in electronic negotiation training are derived from literature. An assessment regarding their relevance for e-negotiation training shows a preparation quiz, set and track goals and expert reviews to be the most useful gamified feedback mechanisms. Dedicated mock-ups implementing these feedback mechanisms are designed and evaluated in semi-structured interviews showing their capability to improve relevant negotiation skills, as well as motivation and competence of the learners. Out of the three mock-ups, the interviewees prefer the feedback mechanisms "expert review" and "set and track goals"; both mechanisms provide a competence-confirming learning experience and an autonomous learning experience.

Keywords: Feedback, Experiential Learning, Motivation, Gamification, Electronic Negotiation Training, Negotiation Skills, Negotiation Support System, Design Science Research

1.0 Introduction

Negotiations are essential for carrying out all forms of business transactions and are defined as a "key decision-making approach used to reach consensus whenever a person, organisation or another entity cannot achieve its goals unilaterally. [They, therefore,] appear in a multitude of forms, take place in very different situations and are influenced by ethical, cultural and social circumstances" (Kersten *et al.*, 2003, p. 312). At a digitalised workplace, negotiations are mostly conducted electronically, ranging from simple email (Schoop *et al.*, 2008) exchanges to dedicated negotiation support systems (NSSs) offering support for negotiation communication, decision making, document management, and/or conflict management (Schoop, 2010).

As negotiations are a complex activity requiring profound knowledge of negotiation theory, concepts, and applications, negotiation training (be they part of university curricula or company training) are essential (Lewicki *et al.*, 2010, 2015). NSSs are also used to train negotiation skills explicitly focusing on electronic aspects (Köszegi and Kersten, 2003; Melzer *et al.*, 2012). Such negotiation training predominantly implements experiential learning (i.e. learning by experience) (Melzer, 2018; Kolb and Kolb, 2005) comprising of the steps of active testing, concrete experience, reflective observation, and abstract conceptualisation performed in a cycle. To facilitate reflective observation and abstract conceptualisation – and thus support learning – NSSs need to provide constructive feedback to the user about the negotiation (Schmid and Schoop, 2019). Feedback can be defined as "the information provided by an agent regarding someone's performance or understanding" (Hattie and Timperley, 2007, p. 81). Its effects can be either positive or negative and concern a wide range of aspects, amongst them learner motivation and engagement (Schmid and Schoop, 2019).

The research goal of the present study is to design gamified feedback mechanisms in electronic negotiation training to improve the learning process. The following research questions will be addressed:

- (1) Which feedback mechanisms are available and relevant in NSSs?
- (2) Which feedback mechanisms are useful for e-negotiation training participants?
- (3) How should the feedback be presented to facilitate motivation?

The context (RQ 1) in which game elements are integrated and its users' needs (RQ 2 & RQ 3) (Morschheuser *et al.*, 2018) need to be considered. The research process (cf. Figure 1) is based on the design science paradigm approach (Hevner *et al.*, 2004). A literature review on negotiation training and feedback mechanisms is carried out in IS and negotiation literature, structured by the negotiation process. The results of this literature review provide kernel theories as the foundations for the design process. Different design alternatives are then conceptualised with the intention to support the user's learning process during the different negotiation stages. To guide the design process and reduce the amount of design alternatives, a survey is conducted with users of an NSS evaluating potential feedback mechanisms with regards to usefulness and intended negotiation skills, thus leading to the final list of meta-requirements. Finally,

three feedback mechanisms are designed in the form of interactive mock-ups and evaluated regarding usability, usefulness, and learner motivation using qualitative interviews. Going through two design-evaluation cycles, the quantitative evaluation aims to filter the design alternatives and provide first insights into their effects, while the qualitative evaluation aims to provide rich and holistic feedback regarding the implemented mock-ups.

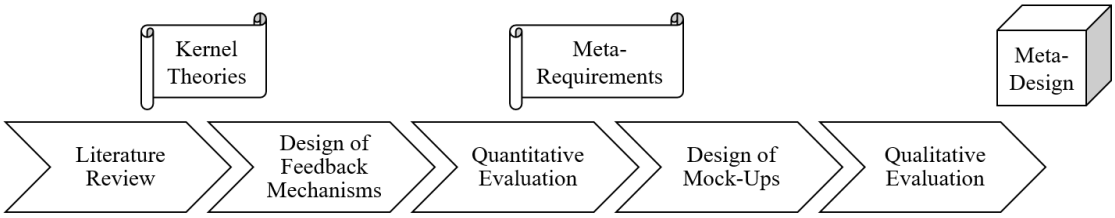

Figure 1. Research Process

2.0 Theoretical Background

The following section presents the results of the literature review, providing the theoretical foundations to investigate feedback mechanisms in electronic negotiation training.

2.1 Negotiation Training – Learning Methods, Process, and Goals

The literature review shows no predominant training method for negotiation training, e.g. (Melzer *et al.*, 2012; Sebenius, 2007). Instead, there is a plethora of different approaches revolving around the concept of experiential learning. The twofold nature of learning to negotiate, involving theory and practice, is often met by a trial and error approach, exposing the learners to unfamiliar situations in role-plays, simulations, negotiation exercises, and virtual tutorials (Susskind and Corburn, 2000; Roloff *et al.*, 2008; Lewicki *et al.*, 2010; Melzer, 2018). Subprocesses are highlighted in the literature e.g. revealing new information (Nadler *et al.*, 2003), facilitating abstract conceptualisation in principle-based learning (Nadler *et al.*, 2003), and reflection (Köszegi and Kersten, 2003).

In order to define feedback mechanisms for negotiation training, negotiation process models provide interesting insights. Depending on the current state of a negotiation, specific tasks are relevant requiring different forms of feedback. A widely-renowned process model for electronic negotiations is depicted in Figure 2 (Kersten, 1997).

Negotiations start with the consensual selection of an arena specifying where the negotiation takes place (i.e. physical or virtual location) and how the negotiators communicate (e.g. communication mode, third party involvement etc.). In the second phase, the negotiators agree on the issues and underlying terminology whilst the third phase focuses on exploring the field, i.e. individual goal analysis and specification. Phases one to three are often subsumed as negotiation preparation. Phase four and five comprise the actual negotiation. Whilst phase four includes the clash of conflicting individual goals, re-specification and identification of common goals to achieve compromise, phase five focuses on the joint decision-making process eventually leading to a consensual agreement. This final phase also includes the evaluation of the negotiation outcome with regards to potential inefficiencies and reflection of the negotiation process also known as post-settlement phase.

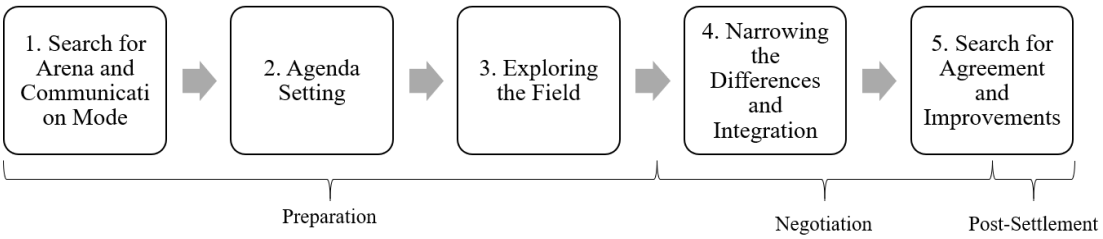

Figure 2. Negotiation Process adapted from (Kersten, 1997)

Electronic negotiation training often take place with a pre-defined arena and agenda (Köszegi and Kersten, 2003; Melzer, 2018). In this case, negotiation preparation can be supported by summarising and structuring relevant information about the involved parties, their relationships, the negotiation context as well as the negotiation protocol. Later in the negotiation preparation, support may be provided by a structured display of individual interest and positions, potential alternatives in the decision-making process as well as future trade-offs (Fisher *et al.*, 1991). NSSs also facilitate the specification of reservation levels (i.e. worst cases) and aspiration levels (i.e. best cases) per issue and offer (Delaney *et al.*, 1997). During the actual negotiation phase, NSSs support rational decision-making (e.g. using expected utility theory (Kersten and Noronha, 1999; Schoop, 2010)) and provide utility measurements to evaluate offers and outcomes on an individual and joint level. It is important to provide means for the comparison of the prepared plans to actual negotiation events to facilitate reflective

value creation instead of value claiming. After the negotiation is concluded, full information from both negotiation parties may be used to evaluate the negotiation and its outcome from an individual as well as joint perspective.

Negotiation Skills	Description	References
Adaptivity	Adapting e.g. negotiation strategies during the negotiation through improved understanding of the negotiation partner.	ElShenawy (2010)
Ambitiousness	Being able to predict and implement high negotiation performance.	Sharma *et al.* (2018)
Aware of Negotiation Power	Capabilities of negotiators to increase the probability of achieving their objectives.	Lewicki *et al.* (2010)
Communicativeness	Sharing information to the counterpart by concrete terms to decrease confusion and misinterpretation.	Lewicki *et al.* (2015)
Confidence	Anticipating as many issues as possible for the negotiation and therefore being well informed.	Lewicki *et al.* (2015)
Conscientiousness	Acting organized, responsible and achievement-oriented.	Lewicki *et al.* (2010)
Effectiveness	Identify, prioritise, set and achieve objectives stated in negotiation preparation.	Lewicki *et al.* (2010)
Empathic	The ability of building on self-awareness, understanding the feelings of others and taking their views into account in formulating messages.	Lewicki *et al.* (2015)
Pragmatic	The ability of understanding various meanings of syntax, semantics, and communication style, with regards to the intention of additional, subsurface or shrouded information.	Lewicki *et al.* (2010)
Preparedness	Achieving an understanding of goals and interests of oneself and the negotiation partner.	Lewicki *et al.* (2010)
Problem-Orientation	Focusing on the problem rather than on the solution.	(Billikopf, 2003)
Rationality	The ability to reduce irrationality and avoid decision biases.	Lewicki *et al.* (2010)
Reliability	Describing and following a plan of action for a specific time period. After the time period the plan of action is evaluated to include potential changes.	Fiske and Clark (1996)
Strategic	The ability to plan effectively and to set goals.	Lewicki *et al.* (2010)
Understanding	The ability to use good questions to obtain counterpart's position and to paraphrase their position in own language.	Lewicki *et al.* (2010)
Visionary	An idealized goal that first will be discussed and later will be tested with regards to the implementation could look like.	Lewicki *et al.* (2010)

Table 1. Negotiation Skills

Finally, the literature review focused on an investigation of learning goals in negotiation training. Such learning goals can be expressed in the form of negotiation skills, describing relevant knowledge, skills, and abilities to become an expert negotiator. E-negotiations require the relevant skills for face-to-face negotiations, plus an understanding of how and for which task to use the e-negotiation system. Kersten *et al.*, 2003; Lewicki *et al.* (2010, 2015) provide a comprehensive discussion on negotiation skills. Table 1 provides an overview of those skills referring to further literature.

2.2 Motivating Feedback in Electronic Negotiation Training

E-learning success is conditioned by providing motivating feedback. Motivation can be defined as an agent's sense of being moved to do a certain thing. Self-Determination Theory (SDT) distinguishes three different types of motivation, namely amotivation, extrinsic motivation and intrinsic motivation. An amotivated individual is not inclined to perform an activity at all. If an individual is extrinsically motivated, they perform an activity to achieve a separable outcome such as getting a reward. Intrinsic motivation is defined as performing an activity for its inherent satisfaction, manifested by a completely self-determined behaviour (Deci and Ryan, 2012).

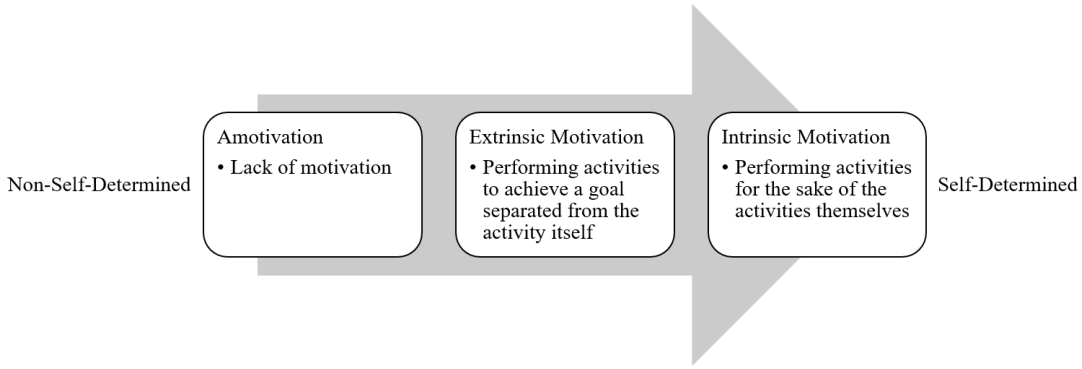

Figure 3. Types of Motivation (Ryan and Deci, 2000a)

According to SDT, intrinsic motivation can be facilitated by satisfying an individual's three basic psychological needs. These needs are autonomy, competence and social relatedness (Ryan and Deci, 2000b). Autonomy can be fostered by letting an actor determine the action they perform. Competence requires an individual to perceive themselves being competent to perform the action. Finally, relatedness suggests that individuals require a secure social environment or feel connected with others (Ryan and Deci, 2000b).

SDT raises several implications for the education domain. First, the provision of tangible rewards have an undermining effect on intrinsic motivation, as the action becomes less self-determined (Deci *et al.*, 2001). Similarly, controlling approaches including e.g. deadlines, directives or imposed goals show negative effects on intrinsic motivation. Constructive feedback or optimal challenges can be conducive to feelings of competence, whereas negative feedback undermines individual's perceived competence (Ryan and Deci, 2000b).

One recent approach in IS and education to provide motivating feedback is gamification, which is defined as the use of game design elements in a non-game context (Deterding *et al.*, 2011). The key concept of gamification is to enhance an existing non-game context like an IS with game elements, while not transforming the context or IS into a fully-fledged game (Deterding *et al.*, 2011). Potential game elements for an IS include e.g. points, badges, leaderboards, levels, progress bars, and avatars (Schöbel and Janson, 2018).

Gamification research often adopts SDT to explain the effects of game elements (Seaborn and Fels, 2015; Xi and Hamari, 2019). These elements are expected to – at least partially – fulfil the three basic psychological needs. Several game design elements such as badges and leaderboards motivate learners by their game-like appeal, provide feedback to the learners' actions and facilitate their perceived competence (Sailer *et al.*, 2017). Furthermore, learning also includes making mistakes. When gamification includes rapid feedback cycles, learners will perceive failure as an essential part of learning and experiment until they succeed (Lee and Hammer, 2011).

Gamification research in education reports mixed, but predominantly positive effects on learners' motivation, engagement and learning outcomes (Majuri *et al.*, 2018; Sailer and Homner, 2019; Dichev and Dicheva, 2017). In the domain of e-negotiations, several game elements are already inherently present, e.g. utility measurement scores or challenges (Schmid and Schoop, 2018). Including game elements with feedback on user actions is seen as a promising solution to improve participants' motivation and learning in e-negotiation training (Schmid and Schoop, 2019). Therefore, we will consider including game elements for the feedback mechanisms described in the following section.

2.3 Conceptualising Feedback Mechanisms for Electronic Negotiation Training

In summary, the literature review shows that face-to-face as well as electronic negotiation training predominantly follow an experiential learning method. Furthermore, NSSs are utilised as learning environments for virtual negotiation role-plays with software agents and human negotiation partners. In this context, feedback on the learning behaviour plays a pivotal role in the learning process affecting learner motivation. Gamification research and first applications in the domain of electronic negotiation training provide model feedback mechanisms, which might be extended in the present study. From a domain-oriented perspective, feedback mechanisms are bound to the underlying negotiation processes and targeted negotiation skills to be learned. Therefore, this study aims to conceptualise concrete feedback mechanisms or electronic negotiation training as the basis for further investigation.

Table 2 lists these feedback mechanisms referring to their respective negotiation phases and skill contributions. (1) Targeting the preparation phase, a *preparation quiz* can provide additional feedback to the learners. In single or multiple-choice questions basic facts about the negotiation (e.g. negotiation parties, issues, individual goals) can be tested for. Feedback is provided about how many questions have been answered correctly, providing the opportunity to re-do the quiz to improve negotiation preparation and rational behaviour. Negotiators who act consistently with the given case act more reliable and visionary. Targeting the negotiation phases several feedback mechanisms are possible. (2) Contrasting the goals defined in the preparation phase to the actual negotiation behaviour, feedback can be provided by a mechanism enabling the negotiators to *set and track goals* regarding the quality of negotiation outcomes, offers or single issues. Feedback can be provided by a continuous tracking of these goals during the negotiation promoting reflection and highlighting compromising behaviour. (3) Apart from outcome-related feedback, feedback regarding the negotiation schedule is possible by a mechanism enabling the negotiators to set individual reminders or deadlines to structure their negotiation behaviour. (4) Recommending trade-offs in the negotiation, feedback can be provided by a mechanism providing the possibility to tag negotiation issues with e.g. case-related or strategy-related information. Such structured information might be useful to plan operative negotiation behaviour implementing specific strategies and aim for concrete trade-offs. (5) Focusing on the negotiation communication, dynamic communication support can be provided by analysing the exchanged messages with regards to underlying emotions, strategic stances visible in

the language used. Such feedback could be used aiming towards a reflective goal (i.e. applied to own messages) as well as an analytic goal (applied to messages of the negotiation partner). Finally, the post-settlement phase primarily aims towards reflective evaluation of the concluded negotiation. Feedback mechanisms include (6) peer feedback (i.e. by other negotiators) respectively (7) expert feedback (i.e. by the trainer or an expert). The training negotiation would be shared with the peer/expert asking for a review according to specific guiding questions. When finished, the review will be provided to the negotiator to facilitate reflection and a change of perspective.

No.	Feedback Mechanism	Negotiation Process Phase	Anticipated Skill Contribution
1	Preparation Quiz	Preparation (1 - 3)	Reliability, Preparedness, Rationality, Visionary
2	Set and Track Goals	Negotiation (4 - 5)	Pragmatic, Strategic, Conscientiousness, Problem Orientation
3	Set Reminders	Negotiation (4 - 5)	Reliability, Strategic, Pragmatic, Ambitiousness
4	Recommended Trade-Offs	Negotiation (4 - 5)	Strategic, Preparedness, Adaptivity, Rationality
5	Dynamic Communication Support	Negotiation (4 - 5)	Empathic, Understanding, Strategic, Aware of Negotiation Power
6	Peer review	Post-Settlement (6)	Confidence, Empathic, Communicativeness, Goal Orientation
7	Expert review	Post-Settlement (6)	Confidence, Empathic, Communicativeness, Goal Orientation

Table 2. Feedback Mechanisms in NSSs

3.0 A Quantitative Survey on User Requirements Regarding Feedback in E-Negotiation Training

To evaluate these feedback mechanisms, which have been conceptualised based on the literature review, a quantitative survey is conducted with users of an NSS.

3.1 Data Collection

The survey is conducted in the context of a university course for business and information systems students at two European universities. In the courses, the NSS Negoisst (Schoop, 2010) is employed to train negotiations and apply the acquired knowledge in a negotiation simulation.

The web-based Negoisst system enables asynchronous exchange of negotiation messages including textual content as well as a structured negotiation agenda comprising the issues at the table. The system supports the negotiators with regards to decision-making, communication, and document management (Schoop, 2010). Furthermore, Negoisst provides training facilities using a software agent to simulate negotiations and provide simple feedback regarding the offer exchange and an evaluation of the negotiation outcome (Melzer *et al.*, 2012). The participants had the choice of a presence-based negotiation training and a gamified negotiation training (Schmid and Schoop, 2019). The following gamified elements were implemented in the system: levels, points, stories, badges, and leaderboards.

The survey was conducted directly after the completion of the negotiation training. Thus, the participants had first-hand experience with the NSS. The survey assessed user requirements regarding the conceptualised feedback mechanisms, with regards to perceived usefulness and perceived contribution on improving the selected negotiation skills. Intending a detailed requirements specification for different user groups, an analysis of motivation, competence and their impact on the requirements was included in the survey. Overall, 158 students participated in the negotiation simulation. A final sample of 123 participants completed the training and filled in the survey. 60 participants performed the gamified training, 63 performed the non-gamified training.

3.2 Results

In order to determine the perceived usefulness of the feedback mechanisms, all participants were asked to rank the feedback mechanisms from 1 (highest usefulness) to 7 (lowest usefulness). Table 3 presents the ranking and *expert reviews*, *set and track goals*, and the *preparation quiz* to be ranked highest with a considerable gap to the remaining mechanisms. Participants using the gamified or non-gamified Negoisst system rank the feedback mechanisms slightly differently but without any significant differences.

Rank	Feedback Mechanism	Mean Rank (SD)	Gamified Rank (SD)	Non-gamified Rank (SD)
1	Expert Review	3.28 (2.10)	3.48 (2.16)	3.08 (2.04)
2	Set and Track Goals	3.39 (1.66)	3.32 (1.58)	3.46 (1.75)
3	Preparation Quiz	3.42 (2.07)	3.57 (2.19)	3.29 (2.03)
4	Dynamic Communication Support	4.03 (1.65)	3.90 (1.72)	4.16 (1.58)
5	Recommended Trade-Offs	4.39 (1.83)	4.18 (1.86)	4.59 (1.78)
6	Set Reminders	4.50 (1.98)	4.50 (2.00)	4.49 (1.98)
7	Peer Review	4.99 (2.04)	5.05 (2.01)	4.94 (2.08)
		N=123	N=60	N=63

Table 3. Ranking of Feedback Mechanisms according to Usefulness

In addition, participants had to decide which negotiation skills would be most likely improved by each of the feedback mechanisms. The replies were given on a seven-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). The goal of this measurement was to control whether the theoretically derived skill contributions, could be confirmed by the participants. Table 4 depicts the top 3 feedback mechanisms and their expected skill contributions. Whilst the skillset assigned to the *preparation quiz* resulted in neutral answers on average, the skills assigned to the other two feedback mechanisms are in accordance with the theory, having – on average – slight agreement. Empathy of the *expert review* is evaluated critically.

Preparation Quiz		Set and Track Goals		Expert Review	
Skill	Mean (SD)	Skill	Mean (SD)	Skill	Mean (SD)
Preparedness	5.67 (1.07)	Strategic Orientation	5.79 (0.99)	Confidence	5.94 (1.13)
Reliability	4.89 (1.16)	Problem Orientation	5.27 (1.16)	Goal Orientation	5.76 (1.18)
Rationality	4.61 (1.18)	Conscientiousness	5.08 (1.11)	Communicativeness	5.37 (1.25)
Visionary	4.50 (1.21)	Pragmatic Orientation	5.02 (1.15)	Empathy	4.97 (1.34)

Table 4. Mean Contribution of Feedback Mechanisms to Negotiation Skills

4.0 Designing Feedback Mechanisms as Mock-Ups for Negoisst

Mock-ups for the top three feedback mechanisms were created combining the results of the literature review with the results of the quantitative survey. The designs are described in detail in the following sections.

4.1 Preparation Quiz

The *preparation quiz* includes various types of question, e.g. multiple-choice, single-choice and ranking questions. Answers and detailed explanations are provided after finishing a question providing immediate feedback to the user. Once completed, basic statistics for the quiz are displayed as a pie chart (cf. Figure 4) including a call to action to repeat the quiz if the amount of correct answers is below a certain threshold.

If most of the questions have been answered correctly and it can be concluded that the participant has understood the content, a badge is granted improving the feeling of competence.

The feature aims at improving knowledge about the negotiation case study or general negotiation theory. Thus, role-specific analysis of a negotiation is possible. The user can learn through information revelation and subsequent self-reflection. Game elements such as points counting correct answers, visual performance feedback in a chart diagram, and badges are used to contribute to the need for competence (Sailer *et al.*, 2013; Sailer *et al.*, 2017). All in all, the gamified design focuses on enjoyment and ease of use.

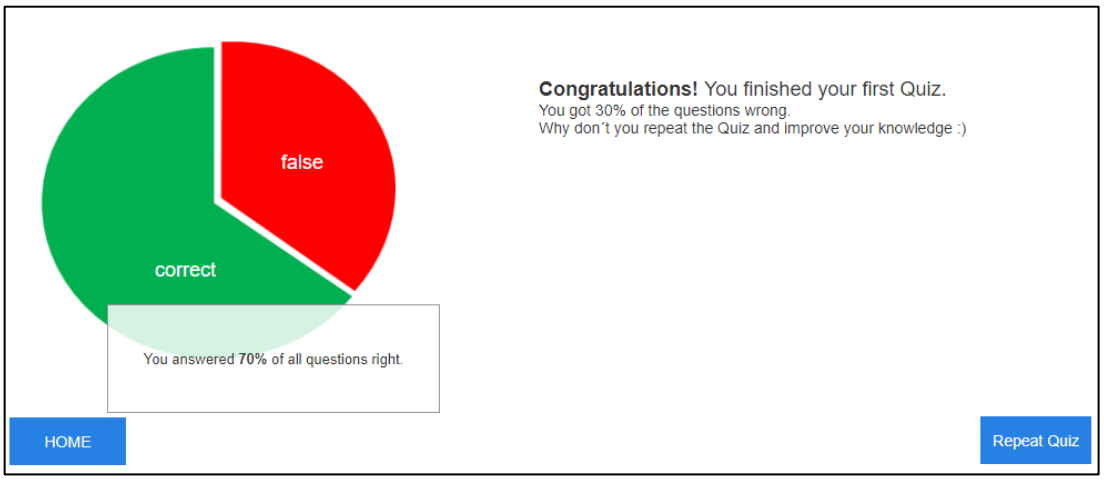

Figure 4. Results Overview of the Preparation Quiz

4.2 Set and Track Goals

This feature connects the preparation and negotiation phases. The goals are set in the preparation phase. A tracking and adjustment of goals is enabled during the negotiation phase. Feedback is conditioned by the specification of goals through the user. Setting values for joint utility and contract imbalance as well as issue specific values related to

aspiration and reservation level is enabled. All issue values are summed up automatically to a global aspiration and reservation level for the user.

During the negotiation phase, all user actions are evaluated based on a comparison between actual and targeted goals (cf. Figure 5). A progress bar indicates how much of the set goals has been already achieved using red (value below reservation level), orange (value below aspiration level), and green colour (value at aspiration level). In addition, a history graph records the negotiation history by showing the utility development based on actual offers (cf. Figure 6). The implemented graph in Negoisst, has been extended with two lines displaying the aspiration level and reservation level.

The agenda, providing an overview over all negotiation issues, shows coloured thumbs indicating whether the specific sub goals are currently met or not. If the issue settings in the counteroffer reach the set reservation level or aspiration level, the participant will receive a badge. Having finished the negotiation, the set goals for the joint utility value and contract imbalance are shown to the user for reflection purposes. The *set and track goals* feature follows the method of experiential learning promoting the negotiators to reflect their own behaviour through dynamically indicating goal-achievement. Furthermore, it enables the negotiators to adjust their goals in the process, adhering to changes in the negotiation.

The most important gamification feature included in this feedback mechanism is the possibility to set own goals. Allowing users to set their own goals makes their experiences more meaningful, strengthening individual identification with the negotiation goals (Nicholson, 2012). In contrast to following imposed goals, setting own goals facilitates feelings of autonomy and increases intrinsic motivation (Ryan and Deci, 2000b). Additionally, the progress bar and the coloured thumbs provide constructive feedback and may facilitate perceived competence.

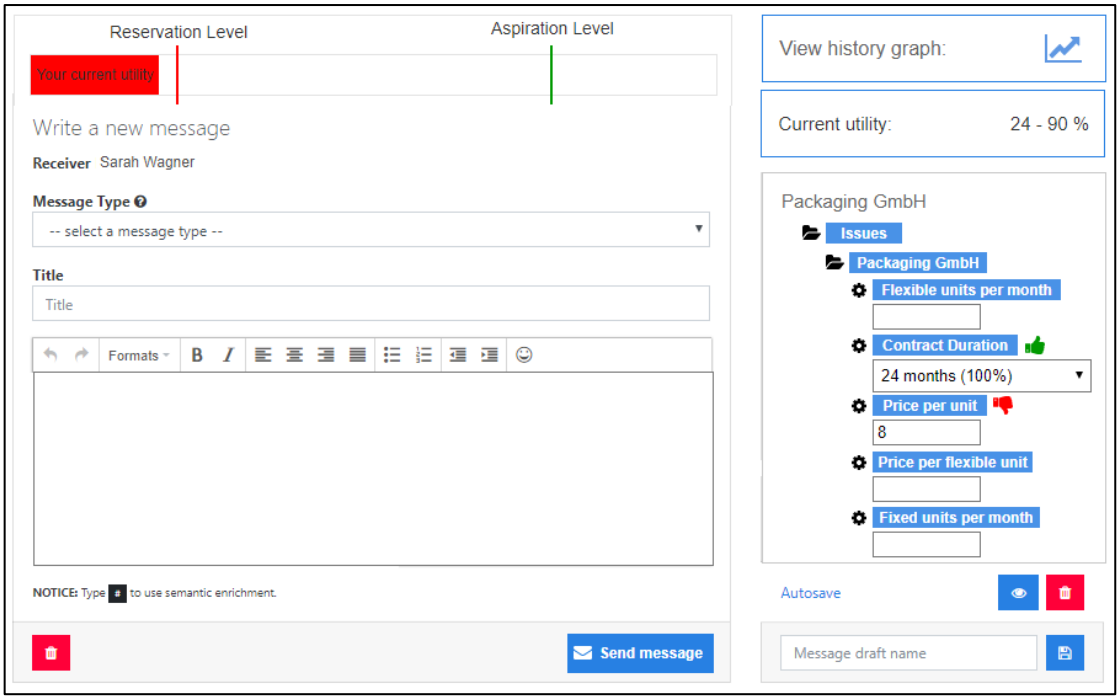

Figure 5. Overview of Setting and Tracking Goals while Writing a Message

Additionally, the history graph provides an overview about the negotiation process. All issue changes are set into relation to the perceived zone of possible agreement. Outcome distributions are assessed to make value claiming and value creation more transparent (cf. Figure 6).

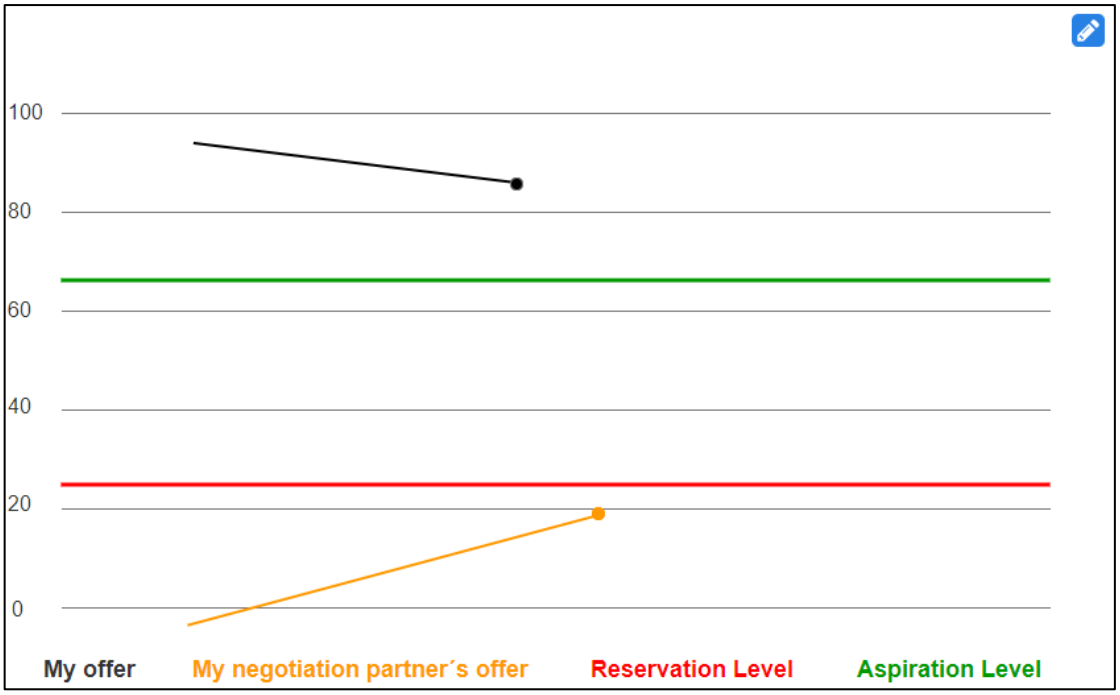

Figure 6. Overview of the Extended History Graph

4.3 Expert Review

The third feature is part of the post-settlement phase. It enables the user to request an *expert review* for a personalised evaluation of their performance. Feedback can be requested for certain topic areas encompassing the preparation, decision-making, communication skills and negotiators' relationship.

After the request has been sent, the expert considers the requested topic areas and writes a personal review of the negotiation. The *expert review* (cf. Figure 7) screen includes three basic elements: (1) an overview about the most relevant indicators for the review, (2) the *expert review* itself including graphs or links to negotiation content, (3) concrete suggestions and advice for future negotiations, and (4) an indication of the reviewers' perceived level of confidence as a five-star-rating.

All of the elements for negotiation analysis described by Sebenius (2007) might be included in a feedback. Due to the huge level of freedom regarding the design of the feedback, the learning success is more related to the quality of the feedback, than to the design of the feature.

For the *expert review*, it is the user's autonomous decision to request feedback. Constructive and positive feedback is especially motivating for novices (Fishbach *et al.*, 2010). Furthermore, constructive and encouraging feedback facilitates feelings of competence and increases intrinsic motivation (Ryan and Deci, 2000b).

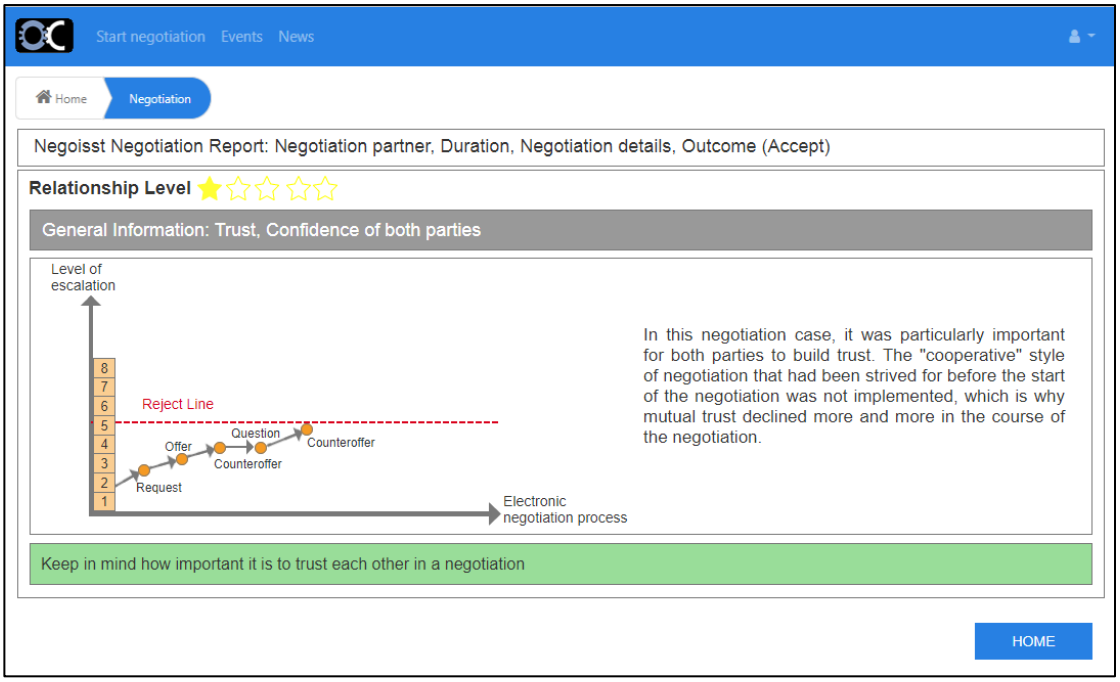

Figure 7. Overview of an Expert Review on the Topic 'Relationship Level'

5.0 A Qualitative Evaluation of the Feedback Mechanisms

The following section will introduce the data collection process and present the interview results to evaluate the designed mock-ups holistically.

5.1 Data Collection

After the negotiation simulation had been completed, the students were asked to participate in an evaluation interview to gain extensive feedback on the designed interactive mock-ups. Participation was incentivised by bonus points, which could be achieved. The semi-structured interviews were conducted in German and lasted about 45 minutes. Overall 13 students of Business Administration, Information Systems, or Business Education on Bachelor or Master level at the University of Hohenheim participated. Participants had an average age of 23 years. While 8 participants were trained in the non-gamified negotiation training, the remaining 5 participants used the gamified version. The interviews were executed by four interviewers using an interview guide to achieve a comparable data collection process.

The interviews were structured into four parts. At first, a brief introduction was given in the form of a case study. Afterwards, the mock-ups of the three features were presented and explained in a video clip. The main evaluation was concerned with the

perceived contribution of the features to improve selected skills. In contrast to the survey, interviewees were allowed to choose from all identified skills in accordance with findings that motivation and experience in negotiations have a potential influence on the evaluation. In addition, the general attitude regarding the usability of the mock-ups has been evaluated based on Shneiderman's Golden Rules (Shneiderman *et al.*, 2018). The answers were assessed by calculating frequencies for similar answers. Skills, which were not confirmed by at least 5 of 13 participants, are not mentioned in the results. In the following, interconnecting questions about the selected features, as well as about the usability were asked. Finally, the participants evaluated their own motivation to participate in an (electronic) negotiation based on the discussed mock-ups.

5.2 Results

The participants stated that the *preparation quiz* would mostly contribute to preparedness (85% of participants) and effectiveness (46%). They argued that the quiz encouraged them to read and analyse the given negotiation case study in detail. Furthermore, the quiz enabled the participants to check their basic negotiation knowledge. Three participants confirmed the value of having different types of questions. As a possible improvement, a closer link to the case study was suggested. 38% of participants claimed a motivating effect of comparing their answers with the solutions. All in all, 77% of the participants described the feedback through the quiz as positive. One participant associated the quiz with a negative feeling before an exam. Potentials for improving the design were e.g. using open questions to raise difficulty, provide extended feedback in the form of specific topic areas the user should repeat or an individualised design of the results.

Set and track goals were stated to improve goal orientation (62%), attentiveness, strategic and solution-orientation (each 46%). The participants justified the skill selection by pointing out that the feature enabled setting specific goals for each issue. Furthermore, the permanent display of the goals keeps the focus on the aspired values. The visualisation in the extended history graph and the thumbs for issue values were seen as appropriate indicators, showing the set goals during the negotiation. The feedback provided by this feature was stated to be supportive for the negotiation process (77%). In addition, two participants assumed an influence on their negotiation behaviour due to this feature. Single participants suggested automated proposals for the

aspiration level and reservation level, the subsequent setting of targets, an interactive design of the progress bar while writing offers, a less complex website providing more clarity and a higher flexibility for working with the feature as future improvements.

The participants mentioned that the *expert review* would contribute to the skills effectiveness and rationality (each 38%). They argued that the *expert review* increased self-reflection. Especially the objective analysis of individual strengths and weaknesses by an independent professional increased the effectiveness. The most important elements of the feature, according to the participants, were the star-rating (62%), the concrete suggestions how to improve (23%) and the *expert review* itself (15%). As suggestions for improvement, additional on-demand *expert reviews* during the negotiation were described. Furthermore, the participants recommended explanations for the terms used. In addition, an overview site for all topic areas, expanded by a higher number of categories including an overall evaluation of the negotiator's performance using a five-star-scale was suggested. Moreover, negotiators would appreciate a more precise and structured feedback in an appealing design. Being asked about the effect of the presented feedback on themselves, participants described it as good (38%) and constructive (15%). One participant perceived the feature as overloaded.

All participants described the layout of the features to be pleasant and fitting for the Negoisst system. The structure of the features was confirmed and said to be aligned to the negotiation phases. All participants confirmed the informative character of the displayed feedback. Low agreement was reached on questions concerning possible improvements.

Figure 8 sums up those negotiation skills which where stated the most with regards to the observed features.

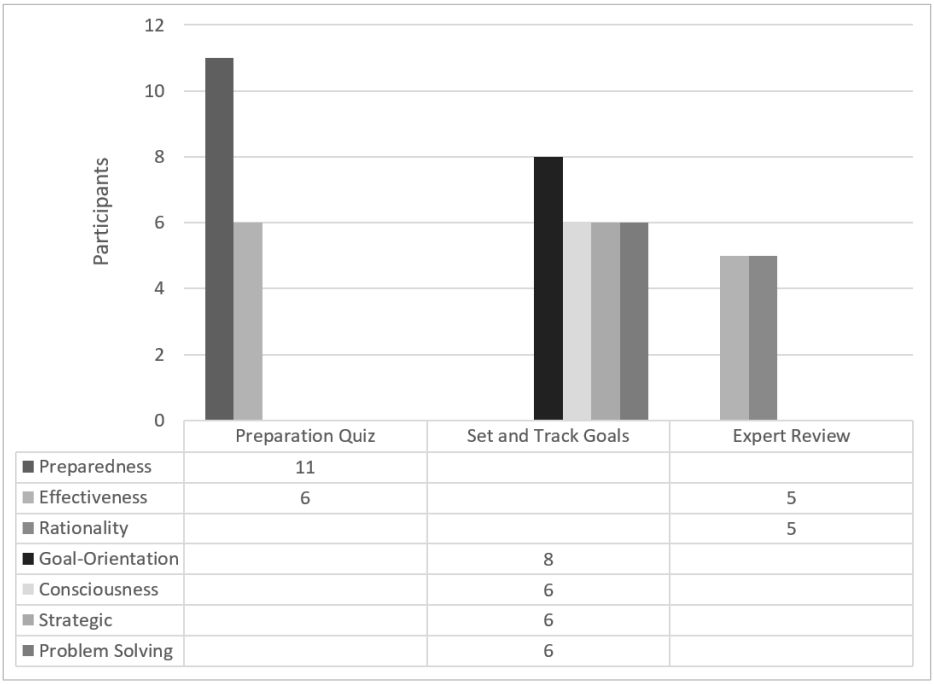

Figure 8. Identified Skills Related to the Features

The interviews included a ranking of the features regarding their usefulness (cf. Figure 9). The results show that most users appreciate having the feature *set and track goals*. The *expert review* was perceived as the second most useful feature. The participants have perceived the *preparation quiz* as least useful.

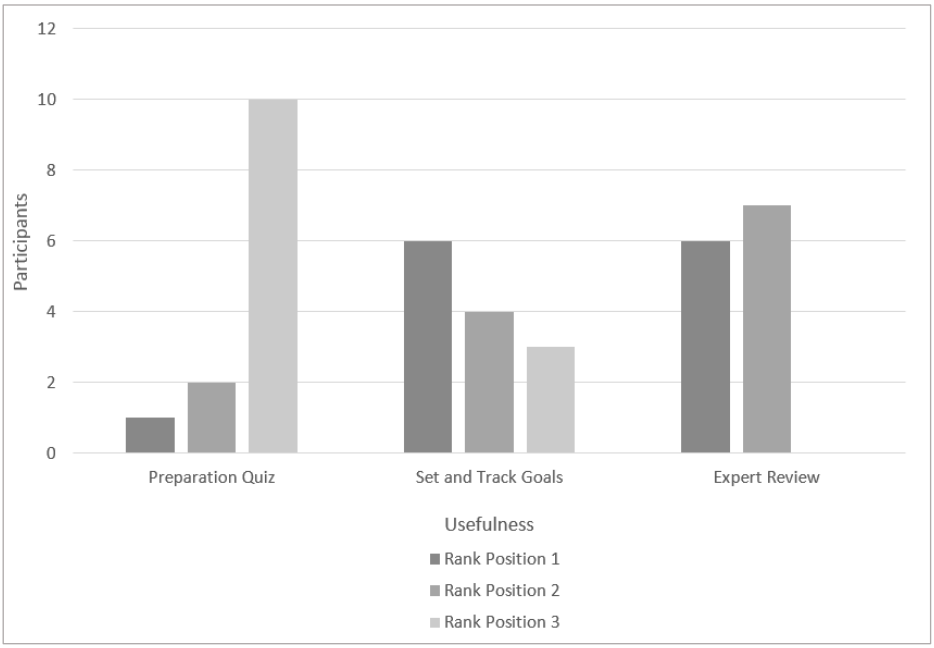

Figure 9. Feature Ranking Depending on Perceived Usefulness

6.0 Discussion

This study aims to design feedback mechanisms in electronic negotiation training to improve learning. More specifically, we focus on the research questions: (1) Which feedback is available? (2) Which feedback is useful? (3) How should the feedback be presented?

Answering RQ 1, we integrate several theories from the literature on negotiations and the learning sciences. Based on a negotiation process model, seven feedback mechanisms are conceptualised relying on those tasks and information available at the specific negotiation phases (cf. Table 2). Mathematical approaches evolving around negotiation analysis provide numerous potentials to generate meaningful feedback. Whilst this list of feedback mechanisms is not comprehensive, it aims to provide an orthogonal set of mechanisms targeting all phases and a broad range of negotiation skills.

6.1 Implications for Electronic Negotiation Training

Performing a survey, these feedback mechanisms are evaluated regarding usefulness and targeted skills. The results show that the feedback mechanisms *expert review*, *set and track goals*, and *preparation quiz* are perceived to be useful and outrank the remaining concepts (cf. Table 3). Survey participants weakly confirmed the theoretically-derived skills. However, in the subsequent qualitative interviews a more diverse assignment of negotiation skills emerged.

Finally, the qualitative interviews aimed at achieving rich insights into the evaluation of the designed mock-ups for the top 3 feedback mechanisms with regards to usability and generated motivation and eventually their potential effects on the negotiation training. While the usability in general was described to be nicely embedded into the Negoisst user interface, also some criticism was uttered regarding the complexity of the designs. The participants provided numerous ideas on how to improve the designs focusing e.g. on more dynamic and individualised feedback.

The final mock-ups have been evaluated in the interviews. *Set and track goals* were perceived as most useful, followed by *expert review* and the *preparation quiz*. All three features were conducive towards feelings of competence and, according to SDT, may enhance intrinsic motivation. The first two mechanisms also facilitate users' autonomy,

i.e. by allowing to define own goals or requesting the *expert review* on demand. *Set and track goals* provides the most self-determined learning experience, as users are free to define their goals and track how well they are currently performing towards these goals. Such features make the learning experience more meaningful to the users (Nicholson, 2012). On the opposite side, the *preparation quiz* feels more like a test and might be perceived as controlling. Controlling feedback diminishes user autonomy and in turn their motivation (Ryan and Deci, 2000b), which might explain why the *preparation quiz* was the least preferred option in the interviews.

All three features include feedback presented in a motivational way, allowing users to reflect on their actions and derive lessons learned for further experimentation. The necessity to stimulate users' need for competence and autonomy in e-negotiation training postulated in the framework of Schmid and Schoop (2019) has been realised in the three designed features and is expected to improve users learning experience.

The results for the perceived contribution of the feedback mechanisms to possible improvements of negotiation skills, were only partly identical in the survey and the interview.

Preparedness was the most important skill for the *preparation quiz* in the survey (cf. Table 4) and in the interview (cf. Figure 8) with effectiveness being the second most important skill mentioned in the interview. The skills reliability, rationality and visionary in the survey were not mentioned in the interview at all.

For *set and track goals*, strategic orientation was the most important skill in the survey (cf. Table 4) whereas strategic orientation, conscientiousness and problem solving were the second most important skills and goal-orientation the most important skill in the interview (cf. Figure 8). The second most important skill in the survey, namely problem orientation, was mentioned in the interview only once.

Confidence and goal-orientation were the most important skills for the *expert review* in the survey (cf. Table 4). Only two participants in the interview confirmed this skill selection. Meanwhile effectiveness and rationality were the most important skills in the interview (cf. Figure 8), which were not mentioned in the survey. All in all, the perceived relationship between the artefacts and an improvement of negotiation relevant skills has been confirmed.

6.2 Limitations

Our study has several limitations. First of all, the ranking of feedback mechanisms only allows a relative assessment of their usefulness. An absolute measurement of usefulness for a specific mechanism cannot be deduced. In addition, it became obvious in the survey as well as in the interviews that it is quite hard for the participants to grasp and judge the negotiation skills in a profound manner.

Furthermore, the research design induces several drawbacks due to providing incentives for the students by grading negotiation outcomes as well as providing bonus points for interview participation. Moreover, the lecturer-student relationship might induce social desirability bias. Finally, the sample completely consists of students. Herbst and Schwarz (2011) showed that the performance of well-trained students is comparable to that of professional negotiators.

7.0 Conclusion

The present study employs a design-science research approach to design feedback mechanisms for electronic negotiation training. First of all, we derive kernel theories from the literature in the realms of negotiation and the learning sciences. By integrating the literature, we conceptualised seven feedback mechanisms distributed over all phases of the negotiation process and addressing several negotiation skills to be learned. These seven feedback mechanisms are evaluated in a quantitative survey to provide a ranking of usefulness by users of an NSS. The three feedback mechanisms *expert review, set and track goals* and *preparation quiz* deemed to be most useful were specified completely to design interactive mock-ups. These mock-ups were subject to further evaluation in qualitative interviews. The look and feel of the mock-ups is evaluated with regards to usability, addressed negotiation skills and learner motivation. While usability was evaluated to be quite good, the negotiation skills reported in the interviews differed considerably from the ones rated in the survey. Finally, tendencies for increased learner motivation are shown based on the interviews.

Future research must separate the evaluation with regards to the negotiation phases and the evaluation with regards to the tasks. Based on the suggested improvement, the proposed features require further design iterations, following the ideas of push and pull mechanisms as well as of individualised feedback to reduce information load. Also, the

relationship between single elements and the different nature of hedonic and utilitarian systems requires further analysis.

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