British Journal of Applied Science & Technology
15(4): 1-9, 2016, Article no.BJAST.25073
ISSN: 2231-0843, NLM ID: 101664541

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Measuring Trust in Companies

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Author's contribution

The sole author designed, analyzed, interpreted and prepared the manuscript.

Article Information

DOI: 10.9734/BJAST/2016/25073
Editor(s):
(1) Orlando Manuel da Costa Gomes, Professor of Economics, Lisbon Accounting and Business School (ISCAL), Lisbon Polytechnic Institute, Portugal.
Reviewers:
(1) Shih-Chien Chien, Shu-Te University, Taiwan.
(2) Sergey A. Surkov, International Institute of Management LINK Zukovsky, Moscow, Russia.
(3) Borislav Kolaric, Serbia.
Complete Peer review History: http://sciencedomain.org/review-history/13994

Short Research Article

Received 17th February 2016
Accepted 16th March 2016
Published 4th April 2016

ABSTRACT

This paper is going to deal with the topic of trust within real existing leadership relations. The design tries to test trust and trustworthiness in ongoing relations of leaders and followers in existing companies in order to gain more validity of data than other designs, often using students as probants. The paper first discusses traditional ways of measuring trust – mostly done by questionnaires and illuminates their weaknesses. Then a different way is going to be described by adopting and adapting the trust game to make it applicable in companies. The design focusses on real decisions regarding trusting and trustworthy behavior by putting the participants into situations where they have to transfer virtual money. Additional questions about the demographic background of the participants are formulated. Also a guideline for the implementation of the experiment in companies has been formulated.

Keywords: Trust; trust game; leadership; leadership relations; gender.

1. INTRODUCTION

Trust is not directly measurable. What can be measured are only indicators for trust. Therefore researchers mostly use questionnaires. Sometimes also interviews have been applied. But these methods have serious weaknesses: what they measure are not facts, they measure

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the self-perception of the participants. And there is another fact that has to be criticized: Many researchers create interaction by a special test assembly. They take randomly chosen people (mostly students) and simulate leadership relations. So what they observe or measure is trust in an artificial situation which may differ from trust in real existing leadership relations.

This paper is going to go a different way. It discusses an experimental design which is going to be applied in real employer/employee relationships, in order to observe gender specific trusting behavior by the actions of superiors and subordinates. This paper is a concept which tries to solve problems of validity regarding a quasi-experimental design applied in the environment of companies. The concept is based on the trust- or investment-game, originally designed by Berg, Dickhaut and McCabe [1]. The author has adopted and adapted the design of the trust game so that it easily can be used directly in companies. The leaders are in a situation to invest virtual money in their followers as budget for an interdisciplinary project and the followers have the opportunity to reciprocate a certain amount to the leaders.

2. MATERIALS AND METHODS

Reviewing literature, trust research has mostly been measured by questionnaire. In 1996 Schein criticizes the approach of measuring organizational culture instead of observing it. With this Schein criticized himself, as he measured organizational culture for many years. And he states that only observation can bring organization studies to advance [2].

Some years later Glaeser et al. [3] criticized also measurement (of trust) by questionnaire. In their paper they compared the outcomes of questionnaires with real behavior. They stated: "In recent years, economists have tried to identify the impact of social capital by using attitudinal measures of trust from survey questionnaires." [3] And further they criticized that the questions often were "vague, abstract, and hard to interpret" [3]. But the most astonishing finding is that the standard attitudinal questions generally did not predict subject choices in their experiments [3. But they found out that specific behavioral questions did correlate (at least marginally significant) with the participant's behavior in their experiments [3]. In spite of these findings surprisingly some years later Dietz et al. [4] thought that they found a gap: “However, of further interest here is whether the intention to act is translated into actual risk-taking behaviours. This “gap” is ripe for research.“

Yet the author cannot fully understand this statement as Glaeser et al. [3] seem to have already closed that gap, as trusting behaviour also always is risk-taking behaviour.

One of the two experiments applied by Glaeser was an adapted version of the trust game which will be described later on.

Beside the method of measuring trust by questionnaires instead of observing trusting behavior there is another reason for critique regarding trust in leadership relations: mostly the participants are not in a real leadership relation but students – about 75%, which a meta study from 2011 found out [5].

Often students have been recruited for creating a leadership simulation. For example Friedrich investigated trust in virtual leadership relations. And so Friedrich limited, that her results were not qualified to make statements to cooperative behavior in real leadership relations [6]. Experiments regarding trust in real (not virtual or simulated) leadership relations are rare i.e. the author didn’t find such publications.

3. TRADITIONAL MEASUREMENT OF TRUST

The latter statement can be underlined by Dietz et al. who reviewed 14 different measures of measuring trust inside organizations. This paper provides a good and actual overview over the most common measurements of trust. And at the very beginning of their paper they were arguing that the existing measurements are not fully satisfying: “Such a range of possible operationalisations may reflect the multi-disciplinary interest in trust, and its multi-dimensional nature, but it also hints at continuing dissatisfaction with the existing set of measures, an impression strengthened by the fact that there has been very little in the way of repeat testing of the instruments that we do have.“ [4] So this motivated the authors to review the most common measures of trust.

They stated that “all of the measures have been used in high-quality research studies that have either been published in international journals or, [...] presented at the Academy of Management. [4]”.

But all measures were “only” questionnaires. Yet answering questionnaires is quite common in in practice. Most of employees and executives are used to them and may feel hardly disturbed in their workflow. Beside that the distribution and the analysis of questionnaires are easy. Observing trusting behavior or doing experiments within the staff might cause disturbance in workflow and reactance within the probands. These problems are going to be discussed later but surely are the explanation for applying questionnaires instead of alternative approaches.

The aim of Dietz et al. was to ask whether the questions really measure what they intend to measure: namely trust. Following Bryman et al. [7] the cited Dietz et al. [4] reviewed the "measurement validity" of the questionnaires. Therefore they divided trust into three parts:

1. Trust as a belief
2. Trust as a decision
3. Trust as an action [4]

Briefly they saw the „belief“ as an assessment of the trustworthiness of the trustee. This may lead to the „decision“ to trust an probably (not necessarily) to a trusting action. For the evaluation of the trustee’s trustworthiness they found that the following four attributes appear most often in literature:

- Ability
- Benevolence
- Integrity and
- Predictability [4]

After preparing this theoretical background they reviewed whether the questionnaires ask valid questions. They came to the result that most of the reviewed questionnaires focus on trusting belief and “Few test for the respondent’s intention to act, and still fewer for actual trust-inspired behaviours” [4]. Unfortunately the trusting belief is the weakest predictor for future behaviour. The stronger predictor is the intention to trust and strongest are behavioural estimation items [4]. But as strong the predictors may be – they are only predictors and probabilities. Trusting behaviour can never be fully captured with questionnaires.

As already stated it is easier to “measure” trust with questionnaires than observing real behaviour as questionnaires can be distributed broadly while observation of behaviour needs exactly defined settings. So the aim of this paper is to create a methodology, based on the trust game, which allows observing trusting behavior in existing leadership relations. This goes along with organizational problems and requires some adaption in order to get valid results.

4. THE TRUST GAME

The trust game has initially been created by Berg et al. [1]. At this time they called this experiment “investment game”. Later on researchers, like Glaeser or Sutter, called this setting “trust game”. Here we are going to use the term “trust game” – synonymously for the investment game. Berg et. al. designed this special experiment to study trust and reciprocity before the background of the fundamental assumption that individuals act selfishly [1]. The core of the setting was that person A, called the trustor, transfers money to person B, called the trustee. Sending money form the trustor to the trustee means that he or she is going to place trust. The money that the trustor sent has been tripled. So the trustee received the tripled amount. Than the trustee had to decide how much money she or he is willing to send back, i.e. to reciprocate, which means to keep trust, i.e. to act trustworthy [1].

This experiment has been adopted and adapted by many researchers. The already cited Glaeser et. al. took this design and adapted it in some ways and applied it to 274 students from which 189 completed all parts of the study. [3] While Berg took the trusting partners randomly, Glaeser decided to take also participants who had already known each other. Furthermore they doubled the money sent, instead of triple it; they did not repeat the procedure (as Berg did it); they combined the experiment with questionnaires and promises about future action [3].

One of the recent studies using the trust game, applied by Sutter et al., is devoted to the question of how trust and trustworthiness behavior occur over different age groups. There were 662 subjects of six different age groups in this experiment. The participants were asked to transfer money to another person, who gets three times the amount that has been sent. The person who transfers the money, so the trusting person, hopes that the recipients returns some money to him again [8]. Sutter found "...differences in trustor behavior across the six age groups. In particular, we find that transfers *x* increase monotonically from 8-year-old children to students, ranging from 2.0 for primary school children to about 6.6 out of 10 units of money for

students.9 Within our adult groups of students, professionals, and retired persons, we find that average transfers are almost identical for students and professionals, and (insignificantly) lower in our group of retired persons" [9].

So regarding the game-design in the recent thesis there are two possible ways for measuring the outcome:

1. Simple reciprocity - sometimes also called “one-shot” (as used by Sutter et al. or Glaeser et al.): Person A transfers money, person B returns an amount, then the game ends.
2. Multiple reciprocity (as initially used by Berg et. al): After person A received money back from person B, person A transfers another time and the game is only stopped by the researcher.

For the recent research it is only possible to use the simple reciprocity. It is crucial to not, or hardly, disturb the ongoing leadership relation. So for this reason it is not useful to let the superior know how much money the subordinate returns.

The experimental design of the trust game corresponds to the theory of reciprocal altruism. Briefly described, the altruist gives something that causes him less loss then the other gets profit. And he does so because he trusts that his counterpart acts simultaneously on a later moment [10].

In the above mentioned experiments the one who trusts (or “the trustor”) is the altruist. He sends less money than the other gets. The only difference is the fact that the returned amount will not also be tripled, and thus the benefit for the one who trusts is lower, compared to the reciprocal altruist. This fact may therefore require a higher level of trust from the trustor because of his lower potential profit and the higher potential loss.

5. THE TRUST GAME IN A COMPANY

At this time it is useful to make clear that the diction sometimes is misleading. Following traditional business research methods (e.g. Bryman et al. [7]) an experimental design has to follow strict rules. An experiment always requires a control group. If there is no control group they describe the design as a quasi-experiment [7]. Although Sutter describes the trust game as an "experimental trust game" [11] the author recommends to omit the word “experiment” and to just use the word “game” in this respect – of course being aware that this design is also known as a quasi-experiment.

The trust game should be conducted in a real company with real leaders and their subordinates in order to reduce the level of simulation. The author intends to apply the trust game to 50 female and 50 male leaders, each of them interacting with two of their subordinates.

Yet it is challenging to find companies with 50 female leaders. After evaluating some ideas of which companies come into question the author decided to apply the trust game in a mid-size Hospital. Especially the following arguments are underlining the decision for this kind of company:

- The author assumes that the proportion of female leaders may reach the aim of 50.
- The socialization caused by education of female and male physicians run almost parallel for a long time (school, university, junior doctor). So the influence of socialization in this case is less than in companies with employees with heterogeneous education.
- Trust can be assumed to be extremely important in the job environment of a hospital.

This last assumption can be underlined by Eberl: “trust is a moderator variable, which is only relevant if spontaneous self-coordination rather than hierarchy is preferred as the dominant organizational integration mechanism” [12]. And further: “it can be argued that the conditions for using trust-based self-coordination are only given if task ambiguity is high, and measurability of job performance is low” [12].

Following this we can conclude:

Fig. 1. Trust and self-coordination

When taking a look at the everyday life in a hospital it is apparent that task ambiguity must be high (e.g. “Healing the patient”) and

measurability is low (e.g. “Success of the cure”). In contrast for example in a peace work factory task ambiguity should be low and measurability of the output is high. And this, referring to Eberl, requests low trust.

6. RESULTS AND DISCUSSION REGARDING THE TRUST GAME WITHIN A COMPANY

In the following paragraphs there will be discussed which problems may occur in applying the trust game within a running company. The solutions of the problems are twofold: first the experiment must not disturb company and employees and second must be granted that the outcome of the experiment has to be scientifically valid. As mentioned before almost all measures of intra-personal trust in organizations use questionnaires – according to literature review the trust game never took place in a company. May be the challenge in both solving the organizational problems and gathering valid data can be the reason for that.

6.1 Acceptance within the Company

Nowadays companies may have broadly realized that trust is a crucial competitive advantage. And the impression exists that our recent crisis is more seen as a crisis in trust but in finance. Before this background it can be argued that most companies do not really appreciate the interpersonal trust to be measured by an external researcher because the outcome of the investigation may be different to the management’s expectations. Probably the company has to face a trust level which is not satisfying which can go along with questions regarding management and leadership. When the outcome is not properly communicated it could be quite uncomfortable for the executives**.** For getting the company’s acceptance at this early state of research three points appear important: the company’s benefit, security of data, and integration of the employee organization.

6.1.1 The company’s profit

The outcome of the research is not predictable but the data has to be delivered anonymous and brought to the executives in the form of a presentation. If they want they have to get the full survey (with anonymous data) in order to derive action. Whatever the findings may be, the company must get the chance to see them as profit: when the trust level appears high, the company can publish it; when the trust level seems to be low, the management gets the chance to foster a trusting work environment. This has to be communicated beforehand – in the first contact.

6.1.2 Security of data

Data about the trust level within the leadership relations are sensitive. Therefore the data must be confident and partly anonymous. The company must have the right to set a restriction note in the survey. This must assure that publications of the outcomes are only possible with the agreement of the company.

6.1.3 Integration of the employee organization

The investigation should take place in an Austrian company. In Austria traditionally the employee organizations are involved in management matters. So the members of the employee organization have to be involved beforehand – at the same time, or even right after getting the principal o.k. from the management. Their commitment may be (not necessarily but probably) valuable for the acceptance of the experiment within the employees (e.g. superiors and subordinates).

7. ACCEPTANCE WITHIN THE PARTICIPANTS

While the acceptance within the company is the fundamental requirement for applying the trust game in a company, the acceptance of the game within the participants is necessary to get valid data. For the probants it is a broadly new situation to state their trust in another party in such a clear and measurable way: in transferring money. So for fostering the acceptance the following points are essential:

- Open communication: This must be done in cooperation with the management and the employee organization.
- Procedure: Before applying the trust game every participant has to be informed about the exact procedure.
- Results: Dealing with the results is a sensitive task. So the outcome will be communicated in a cumulative way. The data must neither allow any conclusion about the trust level within single relationships nor within the departments.

Also this fact has to be brought to the probants before doing the game.

7.1 Organizational Challenges

As already pointed out an experimental design for measuring trust in companies is likely to disturb the work flow. In consequence the trust game has to be prepared carefully in order to get the disturbance as low as possible. This may sound banal but the solution of this point is crucial for the company. Three factors are important: time, duration and location.

- Time: The timing of the trust game has to be in accordance with the schedule of the participants. As hospitals are running 24 hours and 7 days per week it will be necessary to prepare the setting in a way that the participants (superiors and subordinates) can pass it separately.
- Duration: The trust game itself can be done in a few minutes. But in order to get valuable data it has to be combined with a questionnaire which will be described later. Furthermore the probants have to get a brief description of the game. The aim is to keep the procedure as short as possible and not longer than necessary.
- Location: The trust game is going to observe trusting behavior within an organization. So it is necessary to apply it inside the organization. Not only in order to do the game time efficient but also to keep the simulation level low. The participants must have the feeling that they are acting within the environment where they are used to.

7.2 Accompanying Questionnaire

The aim of the study is to find out whether there exist gender differences in trust within leadership relations. It explicitly is not intended to discover any correlations between answers of a questionnaire and behavior. This work has already been done for example by the before cited Glaeser.

In order to reduce the influence of other factors on trust some items have to be checked with an accompanying questionnaire. Beside the demographic data like gender and age, also questions regarding socialization seem to be crucial. Above this also the duration of the leadership position may be important. The following paragraphs will describe this deeper.

7.3 Demographic Data

Beside gender also age and nationality seem to be important. Gender of course because there is the main focus on. Age because there might be differences in trusting behavior. An interesting findings stems from the already cited Sutter who explored differences in trustor behaviour across six age groups. His findings support the assumption that there are differences of trusting behaviour over the reviewed age groups. But there is only one single age group covering the targeted probants: The age group of the “professionals” [11]. So while he has discovered the principle that trusting behaviour is connected to age he did not discover differences within the age group of the professionals. In order to avoid possible differences within this age group the questionnaire will capture smaller age groups. To avoid conclusions on the probants (their data will be anonymous) based on the demographic data the definitions of the age groups must not be too narrow. A possible approach might be a 10-year interval, starting at -30 and ending at +60.

The third Item which will be covered by the questionnaire is the cultural affiliation of the participants. In this matter Hosftede’s research gives us hints that cultural differences concerning trust may exist. He did not explicitly explore trust but he explored a contradictive item: Individualism. He defines that term as follows: “Individualism (...) is the degree to which people (...) prefer to act as individuals rather than members of groups” [13]. Comparing trust with individualism we can come to the conclusion that trust is fostering the “we” while Hofstede states that individualism fosters the “I”. And trust research supports the assumption that trust is the glue between individuals to become a team or a “collective”. Shorter: the assumption can be:

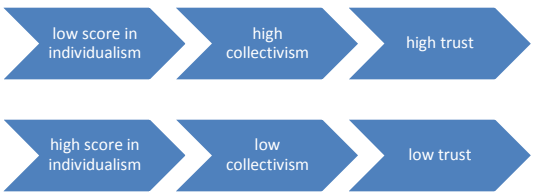

Fig. 2. Connecting individualism with trust

Despite the fact that the connection between individualism and trust results from definitions of terms and lack empirical evidence, the influence of cultural affiliation will be excluded by the integration of this item.

The fourth item which will be covered is the level of education in order to evaluate whether different educational backgrounds of trustor and trustee influence the levels of trust and trustworthiness within a leadership relation.

8. DURATION OF LEADERSHIP

Again citing Billing and Alvesson they see another influence on leadership style. They experienced that differences removed over time because women adapted their style to that of male managers: (women) "... consciously chose not to use their original way of handling matters because they felt that it would not be effective/good/acceptable" [14]. In trust literature the influence of the factor time is seen by most researchers (explicitly or implicitly) for a precondition for trust formation. For example Graeff states that the longer someone knows a person the more information he gets. And so he can either use these information rationally or generate an emotion out of the information in order to create a meta decision level [15]. And this is the decision level for trusting behavior.

The impact of the leadership duration will be deleted by an item which asks for it.

9. EXECUTING THE TRUST GAME

The major reason for not applying the trust game in companies may become clear when we are going to look at the game situation itself. The classical setting is that the trustor sits opposite the trustee and transfers him or her some money. Afterwards the trustee is sending money back to the trustor. This sounds easy, at least in an experimental and artificial situation. Now imagine: the superior sits opposite of a subordinate; both are engaged in an existing leadership relation; the situation is observed by the researcher; both, the trustor and the trustee, argue that their decision has impact on their relationship. So in this setting it has to be argued that both are acting trustful in order to leave a good impression and not to disturb their relationship. This may differ to real behavior and leads to invalid data.

Now when the design is going to be changed in a way that both, superior and subordinate, are anonymous, the data may seem to be valid but will not reflect the trust level within the leadership relation. There is no anonymity in real relationships. So the outcome lacks internal validity – “we do not measure what we intend to measure”. Beside that the quasi-experimental design changes into a quasi-questionnaire.

A possible solution for this dilemma may be the following design:

- The superior gets a name of one subordinate and a specific virtual amount, called “budget”, (e.g. € 1.000,--), accompanied by the call to define an amount (out of these € 1.000,--) she or he is going to transfer to this person.
- The superior writes an amount on a paper, the researcher triples the amount and puts it into an envelope. For example the superior gives € 600,-- and keeps € 400,--, the subordinate gets € 1.800,--.
- The subordinate has already been informed that the amount the superior can give varies. This assures that the subordinate cannot conclude which proportion of the budget she or he receives. This is assumed to be crucial when the ongoing leadership relation has not to be (negatively) influenced by the trust game. In fact the budget of the superior will not be varied very much. If the amount varies too much (e.g. from € 10,-- to € 10.000,--) the budget itself may influence the decisions and questions the validity of data. So the suggestion is to vary the budget in maximum 10%.
- This envelope with the tripled amount will be given to the subordinate. She or he has the opportunity (not the obligation) to return an amount to the superior, i.e. to reciprocate.
- The subordinate writes an amount on a sheet of paper and puts it into an envelope. This happens anonymously. The superior must not conclude from whom the reciprocated money comes from – again in order to not influencing the ongoing leadership relation. Only the researcher knows the identity of this subordinate because logically this is necessary for research and analyses.
- As the game will be conducted with separated superiors and subordinates, for the game itself it is not necessary to inform the superior about the reciprocated amount(s). Of course the researcher will do so to give the superior the opportunity to derive action from the trust level, but the game itself ends when the subordinate defines the money to be returned.

Yet the job of the researcher is to record the budget and the transferred amounts in combination with the identity of the probants. The amounts will be transferred into percentages because the budget changes. The analyses itself has to take place in consideration of the accompanying questionnaire with the items of socialization duration of the leadership relation as moderator variables.

10. CONCLUSIONS AND REMARKS

Management and leadership literature regarding trust leave some lacks in internal and external validity. Probants are seldom professionals, the number of participants often is low and the Measurement with questionnaires often does not predict real trusting behavior.

As this design is totally new it will be tested beforehand with university students. After this some adaptions in operationalization may take place. The principle design of the trust game applied in an organization will stay the same. If the suggested solutions and the adaption of the game are fruitful this method of measuring trust in organizations can close a gap in trust research. It may have been provided a new way of measuring trusting behavior in leadership relations. Of course the participants are facing an artificial situation but the aim of the game is to keep the simulation level as low as possible. Of course the probants have to deal with virtual money so they have to abstract. As the majority of money running around the world is just virtual it can be assumed that the participants are able to abstract. To boost the outcome some can use real money. But this opens not only budgetary questions but also ethical ones.

The aim of this new design is to create a completely new approach to the topic of trust within companies with the lowest possible level of simulation and the highest level of validity.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
http://sciencedomain.org/review-history/13994