
EMPLOYEE OWNERSHIP IN THE LAB : A MULTI-LEVEL STUDY

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ABSTRACT

The proposed laboratory study is designed to fill in a gap in the employee ownership literature by *simultaneously* testing the (1) effect of various forms of employee ownership on *group* productivity, and (2) the effect of different forms of ownership on *individual* perceptions, attitudes, and behaviors. Unlike existing research, in which individual-level data and firm-level data have been collected in separate studies, data collected from two levels simultaneously makes it possible to make causal inferences across two levels of analysis. Further, using a true experimental design in a controlled setting makes it possible to conclude that differences in group productivity were due to differences in the treatment conditions.

The hypotheses predict that groups in which participants experience actual ownership—combined with participation in decision making—will be more productive than groups lacking an ownership experience. If the hypotheses are confirmed, the study will demonstrate for the first time the *psychological ownership*→[*individual perceptions + behavior*]→*collective productivity* causal chain.

This proposed study is unique in that it (1) fills in a gap in the employee ownership literature by demonstrating causality between individual-level perceptions, attitudes and behaviors and group-level outcomes; (2) employs the laboratory method; (3) uses two experimental designs simultaneously, one for each level of analysis; and (4) tests an untested theory of psychological ownership.

PURPOSE OF STUDY

The purpose of the proposed study is to address gaps in the empirical literature of employee ownership. This will be accomplished by *simultaneously* measuring (1) the effect of group-level ownership on individual perceptions, attitudes and behaviors, and

(2) the effect of those individual-level variables on group-level outcomes. That is, to study the employee ownership phenomenon at two levels of analysis.

THE PUZZLE OF EMPLOYEE OWNERSHIP

Existing Literature

Although employee-owned companies tend to perform better than conventionally-owned companies the causal mechanism of this phenomenon remains unclear. A frequent claim for employee ownership in general, and employee stock ownership plans (ESOPs) in particular, is that it causes (or at least contributes to) extraordinary productivity and superior economic performance. The generally accepted explanation is that employee ownership affects the perceptions, attitudes and behaviors of employees such that they increase their effort (“working harder”) and engage in productivity-enhancing cooperative behaviors including information sharing, mutual monitoring and support (“working smarter”). Enhanced human and social capital then interact to produce superior group- and firm-level outcomes. A considerable amount of empirical evidence supports this claim (Blasi, Conte and Kruse, 1996; Bonin, Jones and Puttermann, 1993; Carberry, 2011; Freeman, 2007; Kruse and Blasi, 1997; Kruse, Freeman, and Blasi, 2010).

However, because empirical data has come from two distinct types of studies—firm-level comparisons between ESOP and non-ESOP companies, and individual-level studies of aggregated employee perceptions and attitudes—it has not been possible to show how individual-level variables contribute to collective outcomes.

Firm level studies. The basic finding of the firm-level studies is that, on average, employee-owned companies are more efficient than conventionally-owned companies. They tend to produce superior outcomes on measures such as profit, return on investment, employment, productivity, and the cost of workman’s compensation premia. But, employee ownership by itself is no guarantee of superior financial outcomes: some employee-owned companies appear to perform worse than (or no better than) conventionally-owned concerns. Moreover, employee ownership alone does not appear to enhance performance. Instead, evidence indicates that superior performance is the result of employee ownership combined with internal processes such participatory management practices. Further, not all investigators report positive results: some studies found no performance differences between employee-owned and conventionally-owned companies, and a small number found a negative relationship.

Individual level. At the individual-level of analysis, two types of comparisons predominate the literature: (a) aggregated before-and-after individual-level observations of perceptions of and attitudes toward an ESOP; and (b) comparisons between groups consisting of ESOP participants and non-participants on those individual-level variables. The basic findings of this stream of research has been that (a) on average, employees’ perceptions and attitudes toward employee ownership become more positive after the implementation of an ESOP; and (b) the average satisfaction of groups of employees who participated in an ESOP is greater in comparison to groups who did not participate. (NB: satisfaction with an ESOP, not job satisfaction.) Taken together, this group of

studies tend to show a positive relationship between the existence of an ESOP and favorable perceptions and attitudes.

The Unanswered Question: Employee Ownership is Efficient, But Why?

Although the empirical evidence has painted a convincing picture of a positive relationship between employee ownership and organizational outcomes, the total picture is lacking for two reasons: In the first type of study, comparisons between ESOP and non-ESOP companies are based solely on firm-level data, which means that the firm is treated as a black box, with the result that the *intra-firm processes* by which an ESOP engenders above-average performance remain unobserved. Similarly, the second type of study focuses on individual-level variables such as perceptions, attitudes, and self-reported behavior. But although these individual-level studies give us a peek inside the black box at some of the mechanisms that may lead to productive individual and group behavior, they ignore firm-level outcomes. Disregarding the causal relationship between levels is a fundamental shortcoming in the body of employee ownership research, because *causality in a multi-level system cannot be clearly demonstrated without simultaneous measurement of company-level, that is Level-2 phenomena (type of ownership), and individual level, that is Level-1 phenomena (perceptions and attitudes), together with Level-2 outcomes*. There is no study of which I am aware that *simultaneously* measures individual perceptions and attitudes, measures relevant intra-group structures and processes, measures group- or firm-level performance outcomes, and that identifies and measures comparable results for a comparison sample of firms or groups. This proposed study addresses this gap in the literature.

Theory

Pierce, Rubenfeld, and Morgan (1991) theorized that psychological ownership results from the experience of enjoying three rights: the right to influence the object owned, the right to information about the object, and the right of equity (i.e., return on investment). The right to influence may be realized as participation in decision-making, empowerment, autonomy, or any organizational arrangement where a worker has some control over his or her work environment. As an owner, he or she has a say in how his or her work is done. The right to information is often realized as obtaining financial statements (complete or summarized), operating information, and even strategic information from senior management. As owners, employees are shareholders, and have the same information rights as any shareholder in a corporation¹. Obviously, some companies are more forthcoming with information than others. Under ERISA, the minimum requirement is a once-a-year plan statement, the choice of many ESOP companies. Other ESOPs provide extensive financial data, and educate ordinary employees so that they are able to understand it.

¹ Actually, it is more complicated than that. Technically, the ESOP trust holds company shares in trust for the benefit of the employees, and votes their shares on their behalf. However, many ESOPs pass those voting rights through to the employees. Thus, the degree of influence is determined partly by the extent of those pass-through rights.

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Ownership also entails the right to a return from the object owned. With respect to company stock, return on investment is the increase in the value of the stock, if any, and dividends, if any. Owners also bear the risk of loss.

According to their theory, the presence of these three rights constitutes psychological ownership, which increases organizational commitment, which in turn affects both individual and group outcomes. Throughout much of the employee ownership literature, *psychological ownership* is thought to be a major factor in the *employee ownership→superior performance* causal chain. To test this theory, the proposed experiment measures the effect of *psychological ownership* on organizational commitment, and individual and group performance.

The model proposed by Pierce et al. (1991) is extensive,² and much of it is not suitable for testing in the laboratory. The proposed experiment tests just the feasible parts of the model (See Figure 1, below).

Research questions. Thus we ask three questions: (1) whether type of ownership affects psychological ownership; (2) whether psychological ownership increases commitment; and (3) whether commitment affects group outcomes (cooperative behaviors, work group norms, peer pressure, productivity) and individual outcomes (positive affect, positive attitudes, motivation, individual productivity.)

Predictions. When all three rights are present, the theory predicts that organizational commitment and productivity will result. Therefore, one would expect that the treatment group (i.e., type of ownership) enjoying all three rights will be more productive than those enjoying only two rights, and those enjoying two rights will be more productive than those enjoying just one right. The control group lacking all of the rights will be the least productive. Further, we would expect that the effects of the ownership types are cumulative, so that over time those enjoying the three rights will increase productivity, while in the other groups productivity will remain flat or decline.

METHODS

Sample

The experiment is open to all members of the UIC community who are over 18 and have the use of their hands (so they can fold origami paper). Participants will be recruited by means of flyers, in-class announcement, and the daily e-mail announcements broadcast to the entire university. Other than obtaining expected results, recruiting participants is the most uncertain part of the experiment; recruiting announcements from many departments, including the medical and health science schools, regularly appear in the broadcast emails suggesting that invitations for this study will compete with other announcements.

Because the experiment is open to all individuals connected with the university (faculty, all staff, and students), one may (tentatively) conclude that any results are representative of a diverse set of individuals with respect to age, gender, educational

² Here is a link to their paper:
<http://www.jstor.org/discover/10.2307/258609?uid=3739656&uid=2129&uid=2&uid=70&uid=4&uid=3739256&sid=21102692046947>

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attainment, and work experience. As to that, a large proportion of students at the university have full or part-time jobs. Their work experience differentiates them from the stylized ‘sophomore psychology student’ shortcomings of research in institutions of higher learning.

Research Design

The study utilizes a laboratory for testing the model of Pierce et al. (1991). Archival data of this sort do not exist, and a field study would be a monumental undertaking. Alternatively, a lab experiment has the capability of isolating variables of interest, with the usual shortcomings, as noted below.

Treatments

Real effort. Consistent with the lab practice of behavioral economists, participants will engage in a real-effort task and be offered non-trivial compensation for their efforts. In order to make the lab experience as real-life as possible, the level of compensation is commensurate with semi-skilled part-time work in the Chicago area. Real-effort is operationalized as assembling origami figures by hand. The intent is to mimic, insofar as psychological ownership is concerned, the conditions that are found in ESOPs, cooperatives, piece-rate regimes, and conventional wages-plus-raises regimes.

Independent variable: Types and degrees of ownership. After completing a preliminary questionnaire capturing demographic variables, volunteers will be randomly assigned to one of five treatment groups, given instructions and other materials they will require. Instructions are to make as many origami figures as they can against the clock. The number of figures made (productivity) constitutes the pre-test measure. Depending on treatment group, participants will get the opportunity (or not) in subsequent rounds to make financing and marketing decisions and to bear the risks of their decisions.

Dependent variable: Productivity. The group outcome variable will be a measure of group productivity, and the treatment variable will be different forms of (simulated) employee ownership and participation in decision-making. This will be accomplished by manipulating type-of-ownership in a simulated (i.e., laboratory) manufacturing environment, and measuring quality and quantity of figures produced. There are four experimental conditions and one control condition. The individual outcome variable will be measures of perceptions of the right to information, control, and equity (financial return). These three are components of “psychological ownership” as proposed by Pierce, Rubenfeld, and Morgan (1991).

“Black box” variables: Psychological ownership, commitment, affect, attitude, motivation, participation, individual productivity.

The five treatment groups are: I: ownership with participation, II: ownership without participation, III: voluntary ownership (cooperative), IV: no ownership (piece rate compensation) V: no ownership (wages with raises).

Level 1 Measures

Note that variables are measured at two levels of analysis. All measures except productivity will be obtained using paper and pencil self-reports.

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- **Psychological ownership.** The extent to which participants perceive that they have influence, information, and an equity stake in the outcome during the experiment. (N.B. The equity stake is paid in cash.)
- **Commitment.** Participants' reports of how committed they believed themselves to be during the experiment.
- **Affect.** Participants' reports of how they felt during the experiment.
- **Attitude.** Participants' reports of their positive and negative attitudes regarding the experiment.
- **Motivation.** Participants' reports of the extent of their motivation during the experiment.
- **Participation.** Participants' reports of their level of participation
- **Productivity.** Participants' count of the number of figures s/he produced. (This can be checked by the experimenter or assistant.)

Level 2 Measures

- **Group processes.** Group processes will be measured using participants' perceptions of *others'* commitment, attitudes, and participation.
- **Group productivity.** Physical count by experimenter or assistant of figures produced.

Analysis

A simple one-way ANOVA should be sufficient for determining whether productivity is affected by *type of ownership*. Subsequent analyses, using multiple regression with control variables, would yield additional information about differences in effect sizes. To track the ongoing effects of the treatments (there are three trials), a within-subjects ANOVA would yield testable statistics. Because each treatment presents a slightly different experience over time, one can compare the longitudinal effects of ownership type. Hierarchical linear analysis would not only test whether *type of ownership* affects individual-level variables differently, but could also spotlight the degree of differences among the variables owing to type. To determine how individual level variables aggregate to produce group outcomes, structural equation modeling is suitable.

Expected Outcomes

If the predictions are supported by the data, researchers and managers can be more confident in the power of employee ownership to affect positively individual and firm outcomes. Further, it will tend to fill in some of the blank spaces in the roadmap from conventional ownership to successful employee ownership.

In addition, the study has the potential to open up new avenues of investigation. Researchers may be inspired to experiment with a variety of management-related variables in the laboratory. Others may be inspired to replicate the study in the field. This study has the potential to be a watershed in employee ownership research.

Limitations

Generalizability. By their nature, laboratory studies do not necessarily generalize to real-life phenomena. Isolating participants in a sterile setting removes any verisimilitude regarding the experiences of live employees in real companies; the artificiality of the

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setting makes any comparison to real experience questionable. On the other hand, the feasibility of measuring psychological ownership among scores of employees in dozens of firms is, as a practical matter, so resorting to the lab is an acceptable accommodation until practical obstacles can be overcome. Generalizability to all firms with some form of employee ownership is further limited because this study focuses on just three forms of employee ownership, thereby omitting other forms. Conventional ownership is mimicked in the control condition.

Construct validity. There is no guarantee that the participants will experience anything akin to psychological ownership during their few hours in the lab. To the extent that the perceptions, attitudes, and behaviors of study participants represent those of employees in the field, the results may be only tentatively generalized. An exploratory study such as this cannot be expected to hit all of its markers; rather, subsequent studies are sure to refine and improve the validity of treatment conditions.

Institutional Review Board Approval

This research has received approval from the UIC Office for the Protection of Research Subjects (Protocol #2012-0664).

NOVEL CONTRIBUTION

New data set. The study is expected to be a source of new data. What is different is that it will come from two levels of analysis collected simultaneously so that the relationship between individual-level variables and collective outcomes is made clear.

Multi-level focus. In order to overcome single-level shortcoming in the literature, group-level variables, individual level effects, and group-level effects are measured simultaneously.

Multiple levels of analysis. The necessity of taking level into account cannot be ignored in management research (Rousseau, 1985; Kozlowski and Klein, 2000). Behavior is influenced by context, so a complete understanding of behavior requires taking context into account. This experiment will contribute to our understanding of the interaction of context with individual outcomes.

Experimental control. This study is also novel in that it utilizes a laboratory method to compare different forms of ownership side by side with controls that are not possible in a field study. By moving empirical research into the laboratory, a host of confounding factors may be eliminated.

Experimental design. The study will employ two designs, one for each level of analysis. The *Pretest-Posttest Control Group Design*, i.e. a “true experimental design” will be used for testing group level outcomes, and the *Posttest Only Control Group Design* will test for individual level outcomes (Campbell and Stanley, 1963).

Controls. Individual differences may have an effect on psychological ownership, so self-efficacy/expectancy, affect, perceptions, attitudes, motivation, and demographic data will be collected and incorporated into statistical analyses to determine if they affect predicted outcomes.

IMPLICATIONS FOR PRACTICE

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Because of the gaps in the empirical literature, neither scholars nor managers can be confident of knowing which factors lead to the well-documented superior performance of employee-owned companies. Thus, managers may be reluctant to institutionalize employee ownership, while scholars' understanding of the internal mechanisms that drive performance remain speculative. With the results of the proposed study in hand, managers will have guidance for achieving the full potential of employee ownership for their companies, whereby employees, managers, and outside shareholders (if any) will all benefit. It is generally agreed that employee ownership promises a win-win outcome for all stakeholders.

If the data confirm Pierce and his colleagues' (1991) model, then managers have a rationale and a template for structuring an ESOP (or other ownership structure) in which participation in decision-making is encouraged, financial information is shared with employees, and employees bear the risk and reward of ownership resulting from the changing fortunes of the company's stock. These are not easy tasks. This author has observed the diversity of attempts to implement these practices as displayed at The ESOP Association's Annual Conferences. Many companies have been successful, others have not. To the extent that these laboratory data can confirm causation between ownership, individual outcomes, and group outcomes, human resource managers in employee-owned companies will be able to contribute to their success.

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