Social Sciences & Humanities Open 1 (2019) 100004

Contents lists available at ScienceDirect

Social Sciences & Humanities Open

journal homepage: www.elsevier.com/locate/ssaho

Don't be first! An empirical test of the first-mover disadvantage hypothesis in a culinary game show

Ali Ahmed

Department of Management and Engineering, Linköping University, SE-581 83, Linköping, Sweden

ARTICLE INFO

Keywords:
First-mover disadvantage
Television show
Judgement and decision making

ABSTRACT

The purpose of the study presented in this paper was to evaluate the first-mover disadvantage hypothesis. Data from a Swedish television cooking game show was used to test the hypothesis. Each week four contestants on the game show take turns hosting each other at a dinner. Contestants rate each other's performance and compete for a considerable cash prize. The contestant receiving the highest rating wins the cash prize at the end of the week. The results show that being the first contestant to host the dinner during a week remarkably reduced the chances of winning the cash prize in the end of that week. The results imply that being the first does not always pay off in some circumstances.

1. Introduction

Generally, people think that it is best to be first in various situations: first in the queue, first to board the plane, first in class rankings, first in a new market, or first to introduce a new product. The economics and business literature provide support for the idea that there are advantages to being first, particularly when releasing a new product or entering a new market segment (Lieberman & Montgomery, 1988, 1998). In some circumstances, however, there may be disadvantages associated with being first that can overwhelm the benefits, resulting in a net first-mover disadvantage (Boulding & Christen, 2001; Loschelder, Swaab, Trötschel, & Galinsky, 2014; Suarez & Lanzolla, 2005).

Moreover, there can be several advantages to being a follower or a late-mover rather than being first (Lieberman & Montgomery, 1988). Late-movers may reap advantages from first-movers' investments. Imagine a cyclist who follows the pacemaker or the leading competitor who shelters followers from the wind. A greater amount of effort is required from the cyclist who is leading than from the cyclist who is following. In the marketplace, introducing an innovative product is usually costlier than imitating someone else's product. Late-movers can also study the first-mover's strategies and actions and learn from the predecessor's mistakes and successes. Hence, late-movers may face fewer uncertainties and risks than those who are first. In addition, late-movers may improve upon initial choices made by the first-mover and opt for new and more efficient processes and strategies.

The first-mover disadvantage has been demonstrated previously in a number competitive settings, such as swimming, singing, cooking, classical music, and figure skating contests (Bruine de Bruin, 2005, 2006; Flôres & Ginsburgh, 1996; Glejser & Heyndels, 2001; Haigner, Jenewein, Müller, & Wakolbinger, 2010; Page & Page, 2010; Wilson, 1977). This study replicates and provides support to these findings by demonstrating the disadvantage of being first when competing on the Swedish television cooking game show, *Half Past Seven at My Place*.[1] This show offered an opportunity to study the outcomes of first-movers and late-movers in a high-stakes game environment. Since late-movers were likely to face less ambiguity than the first-movers in this game and had the opportunity to learn from the experiences of the first-movers, it was hypothesized that a first-mover disadvantage would prevail in this cooking game show.

Although the game is a cooking competition, it may resemble many real-life situations, which involve an investment and an effort from a supplier's or a provider's side and a judgement and a preference from a customer's or a recipient's side. In the marketplace, for instance, entrepreneurs are likely to be more fortunate if they develop a later generation of a product than the first, since it usually constitutes less risk and more knowhow. A good example of this was given by Shilling (2007): VisiCalc was the first spreadsheet software available for personal computers. However, when Lotus 1-2-3 was launched, VisiCalc sales ended almost immediately. Later, Lotus 1-2-3 was outclassed by Microsoft Excel.

2. Method

This study is based on data gathered from the television game show

E-mail address: ali.ahmed@liu.se.

[1] The original Swedish title of this show is *Halv åtta hos mig*.

https://doi.org/10.1016/j.ssaho.2019.100004
Received 9 April 2019; Received in revised form 23 September 2019; Accepted 16 October 2019
Available online 31 October 2019

Half Past Seven at My Place which is broadcast by channel TV4 in Sweden. This is a show in which each week four people who have never met before compete against each other in cooking. Contestants take turns hosting each other for dinner from Monday to Thursday. Each day one of the four contestants gets to be the host and cooks a three-course dinner for the other three contestants. After the dinner, the three contestants who were guests rate the performance of the contestant who was hosting the dinner on a 10-point scale where 1 is the lowest and 10 is the highest possible rating. Hence, a host can receive a minimum of 3 and a maximum of 30 total points from the other contestants. The contestants do not become aware of each other's ratings until the end of the week. On Thursday, when the last of the four contestants has hosted the dinner, the total ratings received by each contestant are revealed. The contestant who receives the highest rating becomes the "chef of the week" and wins a cash prize of SEK 15,000 or roughly USD 2000.

This show provides an unorthodox opportunity to study whether there is a first-mover disadvantage in a high-stakes game environment. The more competitive a contestant is, the fewer points he or she will award to the other contestants. This show is, however, popular and is nationally broadcast, which likely restricts contestants' egoistic behavior. Hence, there is a tradeoff between awarding other contestants the lowest number of points possible to maximize one's chances of winning the cash prize and appearing to be a nice person on television.

It was hypothesized that a contestant who hosts the dinner on Monday would face a first-mover disadvantage and be awarded fewer points for his or her performance than contestants hosting on Tuesday, Wednesday, and Thursday. There are several reasons to believe this. First, on Monday's show, the contestants meet each other for the first time. The contestant who hosts on Monday has no information about his or her competitors before hosting the dinner compared to contestants hosting on the other days. Second, social interaction between contestants attending the first dinner may lead to bonding that could positively affect the number of points awarded by contestants on subsequent days. Finally, it is reasonable to assume that on the first day there is more tension among contestants, particularly on the one who is hosting, and this may affect both the performance of the contestant hosting the dinner and the points awarded by other contestants.

Data was gathered from 208 episodes from the first five seasons of the show using video recordings that were available on the TV4 website.[2] The analysis is, however, based on 196 episodes since eight episodes with celebrity contestants and four episodes with pairs of contestants were deleted. In other words, the data consist of 196 contestants, of whom 99 were men and 97 were women. Contestants age ranged from 20–80 years ($M = 41.51$, $SD = 14.35$). Each week the contestants were almost always two men and two women. One week there was a group of three women and one man and for two weeks there was a group of three men and one woman. The collected data include information about the total number of points awarded to contestants by other contestants, whether contestants won the cash prize, contestants' ages and sexes, whether contestants had an foreign-sounding name, whether contestants were residents of one of the three largest cities in Sweden (Stockholm, Göteborg, and Malmö), and the season in which the show aired. The data that support the findings of this study are openly available in Zenodo at https://doi.org/10.5281/zenodo.2425250.

3. Results

3.1. Main findings

Table 1 presents the data and Figs. 1 and 2 the main results. The second column of Table 1 tabulates the mean total points received by contestants hosting dinners on different days, which are also illustrated in Fig. 1. Out of a maximum of 30 points, contestants hosting dinners on Mondays were, on average, awarded 19.5 points by other contestants while contestants hosting dinners on Tuesdays, Wednesdays, and Thursdays were, on average, awarded 21.6, 21.6, and 22.0 points, respectively, by other contestants. The pattern represented by these numbers is consistent with the first-mover disadvantage hypothesis. Contestants hosting dinners on Mondays were awarded, roughly, two points fewer than contestants hosting on other days of the week. An analysis of variance showed that the difference is statistically significant, $F(3,192) = 7.06$, $p < 0.001$, $\eta^2 = 0.099$. A post hoc power analysis with the software *G*Power* (Faul, Erdfelder, Buchner, & Lang, 2009; Faul, Erdfelder, Lang, & Buchner, 2007) revealed that the sample size in this study ($n = 196$) was sufficient to detect meaningful between-groups differences in mean total points received (medium effect size, $0.06 \leq \eta^2 < 0.14$, as defined by Cohen, 1988) at two-tailed 5 percent level of significance ($\alpha = 0.05$) with 97 percent power ($1 - \beta = 0.97$) using one-way analysis of variance. The small differences in points received by contestants hosting dinners on Tuesdays, Wednesdays, and Thursdays are not statistically significant, $F(2,144) = 0.24$, $p = 0.786$, $\eta^2 = 0.003$.

Table 1
Mean total points and percentage of winners and sole winners by host type.

	Mean total points	Winners	Sole winners
Host on Monday	19.5 (2.56)	10.2% (5/49)	8.2% (4/49)
Host on Tuesday	21.6 (3.16)	32.7% (16/49)	18.4% (9/49)
Host on Wednesday	21.6 (3.46)	36.7% (18/49)	28.6% (14/49)
Host on Thursday	22.0 (2.66)	40.8% (20/49)	28.6% (14/49)
All	21.2 (3.12)	30.1% (59/196)	20.9% (41/196)

Note: A host could receive a minimum of 3 and a maximum of 30 total points from the other contestants. Values in parentheses are standard deviations in the second column and actual fractions in the third and fourth columns. "Sole winners" constitutes contestants who alone won the prize of the week. "Winners" constitutes sole winners plus contestants who won the prize of the week together with others (in the case of a tie).

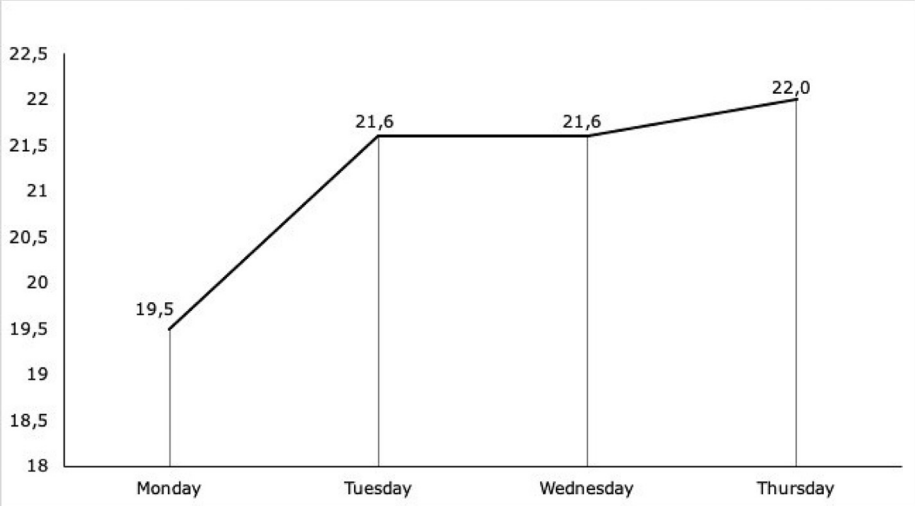
Next, the question is if the differences in points received affected the outcome of the game for contestants. The third column of Table 1 presents the percentage of participants that won the cash prize in the end of the week – either alone or partially together with other contestants (in the case of a tie), illustrated by the solid line in Fig. 2. Only 10 percent of the contestants hosting dinners on Mondays ended up as winners. The corresponding percentages of winners among contestants hosting dinners on Tuesdays, Wednesdays, and Thursdays were 33, 37, and 41 percent, respectively. This is a considerable and statistically significant difference in the outcome of the game for contestants hosting dinners on Mondays, $\chi^2(3,\ N = 196) = 13.07$, $p < 0.01$, $\Phi_C = 0.258$. The differences in the percentage of winners across contestants hosting dinners on Tuesdays, Wednesdays, and Thursdays are not statistically significant, $\chi^2(2,\ N = 147) = 0.70$, $p = 0.704$, $\Phi_C = 0.069$.

The fourth column of Table 1 presents the percentage of participants that won the whole game alone (no tie) during a week, illustrated by the dotted line in Fig. 2. More than 28 percent of the contestant hosting dinners on Wednesdays and Thursdays and more than 18 percent of the contestants hosting dinners on Tuesdays won the game solely. The corresponding percentage of sole winners among contestants hosting dinners on Mondays was 8 percent. In other words, contestants hosting dinners on Tuesdays, Wednesdays, and Thursdays were 2–3 times more likely than contestants hosting dinners on Mondays to win the game. This is a large and statistically significant difference in the outcome of the game for contestants hosting dinners on Monday, $\chi^2(3, N = 196) = 8.48$, $p < 0.05$, $\Phi_C = 0.208$. The differences in the percentage of sole winners across contestants hosting dinners on Tuesdays, Wednesdays, and Thursdays are not statistically significant, $\chi^2(2,\ N = 147) = 1.81$, $p = 0.405$, $\Phi_C = 0.111$.

3.2. Regression analysis

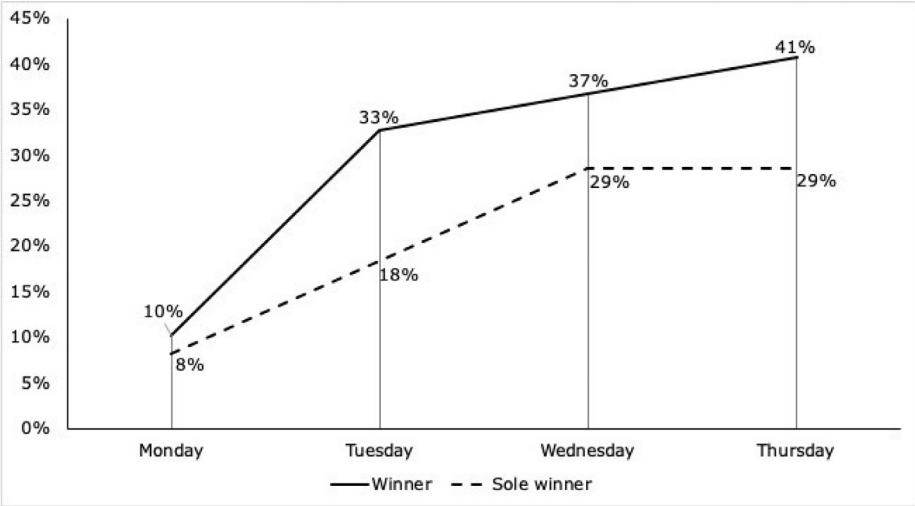
Table 2 presents some regression analyses that examine the

[2] See http://www.tv4play.se/.



Note: A host could receive between 3–30 points in total from other contestants.

Fig. 1. Mean total points received by hosts on different days of the week.



Note: "Sole winner" means winning the prize of the week alone. "Winner" means being a sole winner or winning the prize of the week together with others (in the case of a tie).

Fig. 2. Probabilities of being a winner and a sole winner on different days of the week.

robustness of the findings presented earlier while controlling for a number of (available) factors. All models in Table 2 are ordinary least squares regressions and include controls for the contestant's sex and age, foreign-sounding name, residence in one of the three largest cities in Sweden, and the season in which the show aired.[3] The independent variables of interest in these models are the different days on which the contestants hosted their dinners. In all models, standard errors are corrected for clustering at the week level.

In Model 1 the dependent variable is the total number of points received by contestants. The ordinary least squares estimates of this model show that contestants hosting dinners on Mondays were awarded significantly fewer points than any other contestants. Contestants hosting on Thursdays, for example, were awarded almost 2.5 points more than contestants hosting on Mondays. This is a considerable difference. The differences between contestants hosting on Tuesdays, Wednesdays, and Thursdays were not statistically significant.

The second model in Table 2 is a linear probability model in which the dependent variable is a dummy equal to 1 if a contestant won the cash prize, either solely or partly (in case of a tie), at the end of the week.[4] The result of this regression shows that the significantly lower points awarded to contestants hosting on Mondays considerably affected their chances of

[3] Exclusion of control variables from the models do not change the results. Table 2 presents estimates of models including all available controls. Estimates of models excluding controls are available upon request.

[4] A probit (or logit) model is actually more appropriate than a linear probability model when the dependent variable is dichotomous. The probit and linear probability regressions, however, generated analogous results in this study. Only linear probability regression estimates are, therefore, presented in this paper since they are easier to interpret. The probit regression results are available upon request.

Table 2
Results of regression analysis.

	Model 1 Total points	Model 2 Winner	Model 3 Sole winner
Host on Monday	−2.423*** (0.608)	−0.315*** (0.096)	−0.212** (0.086)
Host on Tuesday	−0.248 (0.510)	−0.065 (0.109)	−0.092 (0.101)
Host on Wednesday	−0.290 (0.667)	−0.053 (0.119)	−0.009 (0.112)
Host on Thursday	Reference	Reference	Reference
Controls included	Yes	Yes	Yes
R^2	0.149	0.086	0.057
N	196	196	196

Note: Regressions are ordinary least squares. Dependent variable in Model 1 is the total number of points awarded to a contestant by other contestants. Dependent variable in Model 2 is a dummy equal to 1 if a contestant was either the sole winner or one of the winners. Dependent variable in Model 3 is a dummy equal to 1 if a contestant was the sole winner. Probit regression estimates of Models 2 and 3 are similar to those presented here. All regressions include controls for age, sex, foreign-sounding name, big city, and season. Exclusion of controls do not change the results. Standard errors presented in the parentheses are robust; corrected for clusters at week level.
***$p < 0.01$, **$p < 0.05$, *$p < 0.10$.

winning the cash prize. Model 2 shows that contestants hosting on Mondays had about 32 percentage points lower probability than contestants hosting on Thursdays of winning the cash prize.

The last model in Table 2 (Model 3) is another linear probability model in which the dependent variable is a dummy equal to 1 if a contestant won the cash prize exclusively. The result of this last regression shows that contestants hosting on Mondays had about 20 percentage points lower probability of winning the complete cash prize than contestants hosting on other days.

Hence, the regression analysis also supports the first-mover disadvantage hypothesis and confirms the preliminary results.

4. Conclusions

This study examined the first-mover disadvantage in a television cooking game show from Sweden. The results showed that being the first host on Monday significantly reduced the number of points awarded by other participants, which also considerably decreased the chances of winning the cash prize.

This study demonstrates that being first is not advantageous in some contexts and circumstances. Not being the first might be better if learning about one's competitors is beneficial to improving performance. When interacting with new people, some extent of time might be necessary to get comfortable enough to perform at one's best. The tension and pressure might have been higher on the first-movers who hosted on Mondays. In addition, late-movers had more information about other contestants and the possibility to observe and learn during the first dinner before they hosted their own. Recent research has shown that if information asymmetries prevail between two negotiating parties, then both parties are actually better off not making the first move or offer (Maaravi & Levy, 2017).

Furthermore, socializing during the first dinner created a chance to bond, and the contestants were possibly closer to each other on the following days than they were on the first day, which may have influenced how contestants awarded points. The mere-exposure effect is well-documented in the psychological literature (Bornstein, 1989; Zajonc, 1968). The more people see, hear, or in other ways get familiar with something, the more they like it. In human relations, the more a group of people interact with each other, the more affection and attachment occur among them.

Lastly, keeping in mind that a television game show is normally not designed by researchers, the results of this study should be taken with some caution. One issue in the current study is that the assignment of contestants over different days during a week was not always random, but depended on the television crew's preferences. This opens up the possibility that some unknown factors might have been at work and may have affected the outcomes in the game.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

Bornstein, R. F. (1989). Exposure and affect: Overview and meta-analysis of research, 1968–1987. *Psychological Bulletin, 106*, 265–289.

Boulding, W., & Christen, M. (2001). First-mover disadvantage. *Harvard Business Review, 79*, 20–21.

Bruine de Bruin, W. B. (2005). Save the last dance for me: Unwanted serial position effects in jury evaluations. *Acta Psychologica, 118*, 245–260.

Bruine de Bruin, W. (2006). Save the last dance II: Unwanted serial position effects in figure skating judgments. *Acta Psychologica, 123*, 299–311.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41*, 1149–1160.

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*, 175–191.

Flôres, R. G., Jr., & Ginsburgh, V. A. (1996). The queen elisabeth musical competition: How fair is the final ranking? *The Statistician, 45*, 97–104.

Glejser, H., & Heyndels, B. (2001). Efficiency and inefficiency in the ranking in competitions: The case of the queen elisabeth music contest. *Journal of Cultural Economics, 25*, 109–129.

Haigner, S. D., Jenewein, S., Müller, H. C., & Wakolbinger, F. (2010). The first shall be last: Serial position effects in the case contestants evaluate each other. *Economics Bulletin, 30*, 3170–3176.

Lieberman, M. B., & Montgomery, D. B. (1988). First-mover advantages. *Strategic Management Journal, 9*, 41–58.

Lieberman, M. B., & Montgomery, D. B. (1998). First-mover (dis)advantages: Retrospective and link with the resource-based view. *Strategic Management Journal, 19*, 1111–1125.

Loschelder, D. D., Swaab, R. I., Trötschel, R., & Galinsky, A. D. (2014). The first-mover disadvantage: The folly of revealing compatible preferences. *Psychological Science, 25*, 954–962.

Maaravi, Y., & Levy, A. (2017). When your anchor sinks your boat: Information asymmetry in distributive negotiations and the disadvantage of making the first offer. *Judgment Decision Making, 12*, 420–429.

Page, L., & Page, K. (2010). Last shall be first: A field study of biases in sequential performance evaluation on the idol series. *Journal of Economic Behavior & Organization, 73*, 186–198.

Shilling, A. G. (2007). First-mover disadvantage. *Forbes, 179*, 154.

Suarez, F., & Lanzolla, G. (2005). The half-truth of first-mover advantage. *Harvard Business Review, 83*, 121–127.

Wilson, V. E. (1977). Objectivity and effect of order of appearance in judging of synchronized swimming meets. *Perceptual & Motor Skills, 44*, 295–298.

Zajonc, R. B. (1968). Attitudinal effects of mere exposure. *Journal of Personality and Social Psychology, 9*, 1–27.