



Exploring the relationship between Lead Users and collaborative orientation in the design of a functional running garment

Kristen Morris, University of Missouri, USA
Susan Ashdown, Cornell University, USA

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The reality of design in practice is that design is a collaborative activity and often evolves through the interactions of multiple participants in the process. Researchers and industry professionals have recently recognized users as a source of new product ideas. While some users have great potential to increase product novelty and customer benefit, some do not, making user collaborations risky as they can lead to loss of time and money for the apparel company. If apparel professionals can find the “right” users to involve in the design process, they can reduce the risks while obtaining the benefits of collaborating with users. Past research has shown that Lead Users (LUs) develop product ideas that represent the needs of traditional consumers and can generate commercially successful products (Franke, von Hippel, & Schreier, 2006). LUs may be the “right” collaborators, who can produce novel product ideas. LUs are described as leading market trends because they develop ‘ad hoc’ solutions to satisfy their immediate product needs. A primary assumption of past research on LUs is that LUs desire to collaborate because they can pool their knowledge with professionals and access company resources to develop a product which meets their needs. Given this assumption, it seems likely that LUs would be collaboratively oriented. However, no research has explored the relationship between LU traits and collaborative orientation (CO), or the extent that someone prefers to participate in a collaborative activity, such as design. Therefore, the purpose of this research was to explore the relationship between LU traits and CO.

Methods

The study design used an entrance survey, design session, exit survey, and online evaluation where users (runners) developed and evaluated concepts for a base layer garment to help maintain thermal comfort during runs in outdoor temperatures below 20°F. The target population was women and men between the ages of 18 to 75 who ran at least 30 miles/week. A purposive sampling selection method was used to recruit participants for this study. The entrance survey, called the usership survey, measured three traits of LUs among the sample population: a) leading edge status (LES) which is the extent which users' experience needs and develop solutions to address their requirements earlier than their peers; b) high expected benefit (HEB) which is what users expect to gain from obtaining a solution to their needs; and c) technical expertise (TE) which is users' level of use experience and product related knowledge. The survey instrument was an amalgamation of three existing instruments (Franke et al., 2006; He & Chen, 2010; Morrison, Roberts, & Midgley, 2004). People who scored in the top 25% percent were deemed LUs and placed in small groups of 4-6 LUs for the design sessions. NLUs were also grouped together in small groups. An average of the total usership score for all members of the group was used to create a group usership value. An apparel design student supported each group by acting as a facilitator. The groups had ~60 minutes to come to a consensus on the design and fabrication of a base layer garment. After the groups had completed

the design session, they took the exit survey which asked about their experience of working in a group to solve a design challenge. The items on both the usership and exit survey were tested in a pilot study, checked for reliability, and revised accordingly. The questions on both surveys had moderately good reliability ($\alpha < .770$). Next, technical illustrations and a description of the fit, fabric, and features of each group's garment designs were amassed into an online survey. Members of the original community of runners from which the participants were recruited evaluated each design on innovativeness, marketability, and functionality using 7-point Likert scales. The three variable scores were combined into a single garment scale score which was utilized in the subsequent analysis.

Results and Discussion

Sixty-five runners (42.9% female) participated in the entrance survey, design sessions, and exit survey. The runners were between the ages of 18-68 ($M = 30.25$, $SD = 13.95$) and ran an average of $M = 38.15$ miles per week ($SD = 5.86$). Of these participants, 31 were undergraduate students, 9 were graduate students, and 25 were members of the community. The 65 runners were sorted into seven LU groups and ten NLU groups. The average group usership value for LU groups was $M = 4.95$, $SD = 0.19$, and $M = 4.23$, $SD = 0.19$ for NLU. LU and NLU groups were significantly different from each other on all three LU traits, $F(1, 55) = 41.078$, $p > .001$. The design sessions resulted in 17 base layer design concepts. In the online survey, 183 runners ($M = 32.41$, $SD = 14.13$; 52.6% female) evaluated each of the 17 design concepts between 108-114 times. The highest scoring base layer concept ($M = 5.70$, $SD = 1.27$) was produced by the highest scoring LU group ($M = 5.20$, $SD = 0.38$). Three of the five top-rated concepts developed by LU groups. Garment scores were moderately positively correlated to the group's usership score, $r(65) = .310$, $p = .012$, further supporting previous research that LUs develop commercially attractive products and, therefore, should be considered as collaborators when designing new apparel concepts. From the literature, we expected there to be a significant relationship between higher levels of usership and CO, but no such relationship was found ($r = .025$, $p < .842$). CO was not correlated with any of the three LU traits (LES, $r = .078$, $p < .536$; HEB, $r = .133$, $p < .292$; TE, $r = -.119$, $p < .345$), but rather, it was negatively correlated to TE. The data shows that as TE increases, CO decreases. TE, as measured by the group's averaged miles run per week showed a strong positive correlation between the garment scores and TE, $r(65) = .485$, $p < .001$. Groups who ran more per week were more likely to develop a highly-rated garment. Industry professionals should seek people who score high on LU traits, especially TE, over people who are collaboratively oriented. People who are willing to collaborate and work well in a team may be less likely to produce a commercially attractive garment. This finding is critical to understand how to optimize user collaborations. Apparel professionals may accommodate LUs by working with LUs individually or allowing LUs to have time to work alone to find a solution to their needs. The next steps of this research are to test the output of LU in nominal groups of one.

References

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