Web Experience and Growth
Emergent Research Forum Short Paper

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Introduction

Corporate websites are often used to provide service to both external and internal clients (i.e., customers and employees). Thus, corporate websites have become an important communication channel, for which anywhere and anytime access with an outstanding user experience is simply expected. Because of this, designing positive web experiences can have a significant impact on reducing costs and increasing revenue in organizations. For example, a recent study shows %70 growth in online sales for an Internet Performance company, after the company improved the experience design of its e-commerce site (Djamasbi et. al 2014). The results of this previous study suggest that the ability to assess the business value of websites experience design can play a significant role in the company's ability to plan and manage growth (Djamasbi 2014). One way to address this need is by using predictive models as a guide for planning the development process and budgets. Predictive models in IS research play a significant role in understanding user behavior. Such models can also serve as an invaluable tool for informing the planning and management of innovation that relies on user behavior. In order to address this need, we propose a basic step towards developing such a model for redesigning a live internal website in a Fortune 500 company.

Background

Despite the popularity of predictive models in IS research, little work has been done to develop a model that can estimate the impact of web experience on growth in usage and assess the impact of important design factors on web experience. Such a model can serve as an invaluable tool for companies for three important reasons: 1) it can provide insight for improving web experience and driving user behavior, 2) it can provide guidelines for prioritizing development efforts and budgets, and 3) it can be used to assess the business value of web experience design. To address this need, we propose an initial model, which estimates the relative impact of a few major design components on web experience and the impact of web experience on intention to recommend, a popular behavioral measure for assessing growth.

Web Experience

One of the most widely used tools for measuring user experience in industry research is the System Usability Scale (SUS) developed at Digital Equipment Corporation (Brooke, 1996). SUS uses 10 questions to measure subjective reactions to a product. Brooke argues that scores for individual SUS items "are not meaningful on their own", combined as a composite score however, they provide an excellent measure of a user's overall reaction to a system (Brooke 1996, p. 194). This composite score, which can range from zero to 100, provides a simple and yet powerful tool for companies to express the subjective reactions of users to their products and services (Albert and Tullis, 2013).

Industry research shows that SUS is particularly effective in capturing user reactions to a website (Tullis and Stetson, 2004). For example, Tullis and Stetson (2004) show that SUS is more sensitive than other commonly used web surveys in revealing differences in user experience with small sample sizes. In particular, SUS proved to reveal differences in web experience reliably with sample sizes as low as eight. Because cost-effectiveness and practicality are a hallmark of research in organizational settings, sensitivity to small sample sizes, makes SUS particularly popular in industry research (Brooke, 1996; Albert and Tullis, 2013). Another reason for the popularity of SUS in industry research is because it can be used to estimate the relative "goodness" of web experience compared to other industry websites. For example, a SUS score below 68 signifies below average web experience while a SUS score above 80 suggest satisfactory experience (Bangor et al., 2009).

Intention to Recommend

Research indicates a strong relationship between customers willingness to recommend a product and revenue growth (Reichheld, 2003). This is because recommenders not only actively encourage others to purchase a product but also they are likely to repurchase that product as well. To assess an individual's willingness to recommend a product to a friend a 0-10 scale is used. People with ratings "9" and "10" are considered as promoters and those with ratings "6" and below are detractors. The degree to which a product is endorsed by customers is then estimated by calculating the Net Promoter Score (NPS), the net difference between the percentage of promoters (people with scores above "8") and detractors (people with scores "6" or below). Similar to SUS, NPS has also industry benchmarks (Wesley 2014). For example, a NPS of 50 to 80 indicates outstanding growth (Net Promoter Benchmarking, n.d.).

It is reasonable to assume that when people have a positive experience with a product they are likely to recommend it to others. This argument is supported by empirical industry data suggesting that customer loyalty can be estimated from customer experience of a product (Lewis 2012). Thus, we argue that

(H1) better *Web Experience* is likely to result in higher levels of *Intention to Recommend* a website to colleagues.

Engagement and Disorientation

Engagement as a user's experience of interacting with a system is often defined as the user's feelings that the system has captured his or her interest (Webster and Ahuja, 2006). Disorientation is often defined as losing one's sense of direction or location on a website (Webster and Ahuja, 2006). Improving user engagement in digital environments and helping users to successfully navigate the information space are major user-centered design goals (Attfield et al., 2011; Krug, 2005). Because engagement with a website and the ability to easily navigate a website facilitate positive user experiences (Krug, 2005), we assert that

(H2) *Engagement* will have a positive impact on *Web Experience*.
(H3) *Disorientation* will have a negative impact on *Web Experience*.

Prior research shows that a user's engagement with a website can be negatively affected by the user's feeling of being lost in the information space, i.e., his or her perception of disorientation (Webster and Ahuja, 2006). Thus, we expect to see that

(H4) *Disorientation* will have a negative impact on *Engagement*.

Layout

In this study, layout refers to the arrangement of various visual elements on a webpage (Djamasbi et al., 2010). Eye tracking studies show that the way web components (e.g., text, links, images, etc.) are arranged on a webpage can affect how users go about viewing a page (Djamasbi et al., 2011; Djamasbi et al., 2010). For example, a good layout can help users find an entry point to a webpage easily (Djamasbi et al., 2011). Thus, it is reasonable to argue that

(H5) *Layout* is likely to reduce *Disorientation*.

Eye tracking studies also show that layout can affect attention to a page (Djamasbi and Hall-Philips, 2014). For example, people are likely to look at more textual information on a webpage when it is arranged in columns. Thus, we argue that

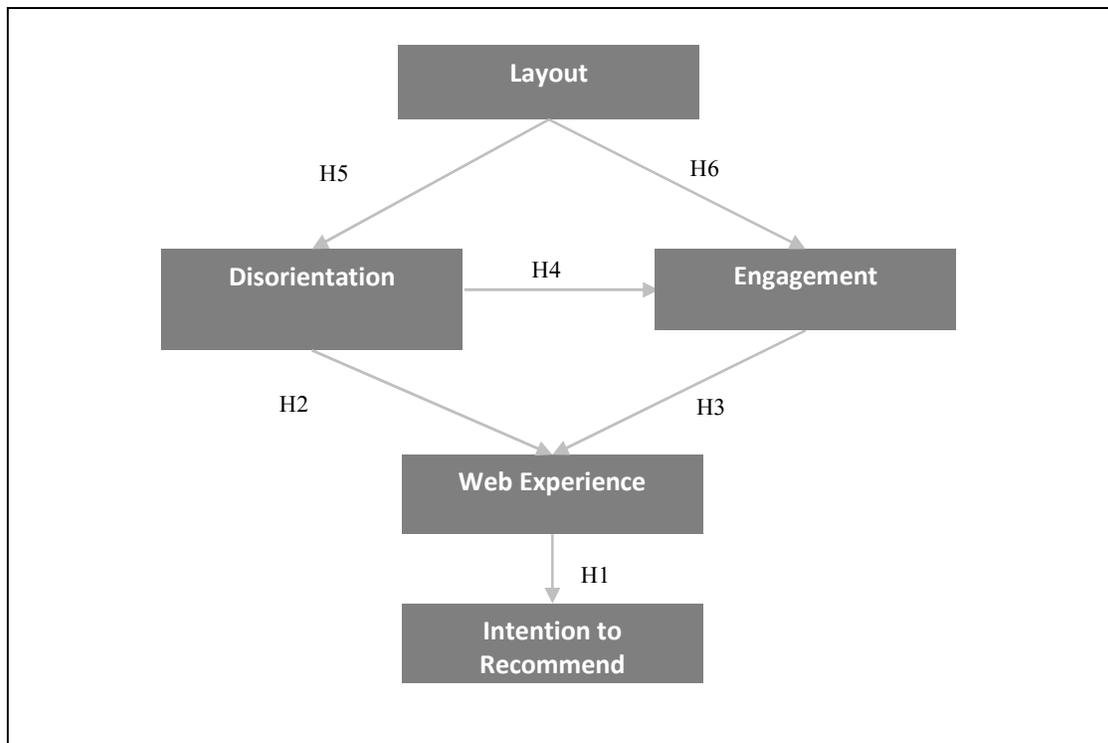(H6) *Layout* is likely to impact *Engagement* with a page.

Figure 1: Proposed Model

Method

Seventeen employees of a Fortune 500 company participated in the study. Participants used an internal website for IT services and products to complete two tasks: 1) ordering a specific laptop to replace their current computer, and 2) look up information on how to register a specific device. It is important to note that the use of this internal website by employees was voluntary. Employees could order IT products

using commercial websites and/or could contact IT support directly for help and services. The objective of redesigning the website was to increase the voluntary use of the website by improving its experience.

As customary in industry research, we measured user experience with SUS (Albert and Tullis, 2013) and measured growth in usage by capturing employees' willingness to recommend the website to a colleague (Reichheld, 2003; Brooke, 1996; Albert and Tullis, 2013). We measured *Disorientation* and *Engagement* by items adopted from Webster and Ahuja (2006). The degree to which users liked the layout of the page was captured by the measure from a prior industry experiment (Gomez et al., 2012).

Results

We used regression analyses to test the proposed model. Our results, supporting the empirical data from industry research (Albert and Tullis, 2013), show that *Web Experience* was a strong predictor of *Intention to Recommend* (R^2 = 0.74, β = 0.87, t = 6.86, p [1-tailed] < 0.01); 74% of variation in intention to recommend was explained by web experience.
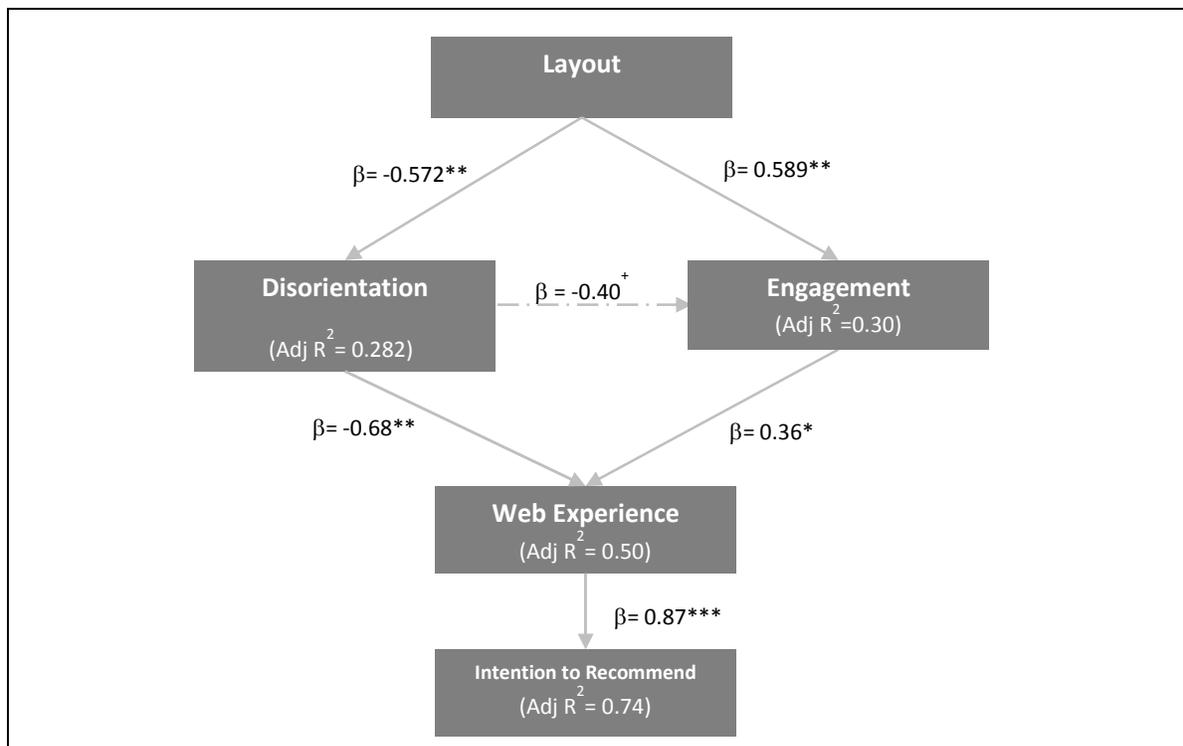

Figure 2: Regression Results, ** indicates p<0.0001, ** indicates p<0.001, *indicates p<0.05 , +indicates almost significant (p=0.058)

Similarly, the results show that 50% (R^2 = 0.50) of variation in web experience was explained by *Engagement* and *Disorientation*. Compared to *Engagement* (β = 0.36, t= 1.88, p [1-tailed] = 0.04), *Disorientation* (β = -0.68, t = -3.55, p [1-tailed] < 0.01) had a stronger effect on web experience. *Disorientation* influenced *web experience* negatively. *Engagement* was affected almost significantly by *Disorientation* (R^2 = 0.30, β = - 0.40, t = -1.70, p [1-tailed] = 0.058). Layout influenced both *Disorientation* (R^2 = 0.28, β = - 0.57, t = -2.70, p [1-tailed] < 0.01) and *Engagement* (R^2 = 0.30, β = 0.59, t = 2.82, p [1-tailed] < 0.01).

The results of our analysis, displayed in Figure 2, support hypotheses H1, H2, H3, H5, and H6. The p-value for H4 indicates that the impact of *Disorientation* on *Engagement* was almost significant.

Discussion

Our results showed that 76% of variation in the behavioral measure of growth (intention to recommend) was explained by variations in web experience (SUS). The coefficient value was also quite large indicating a strong significant relationship between web experience and the likelihood to recommend the website to a colleague. These results are consistent with prior industry studies that suggest a strong relationship between experience design of a product and its NPS (Albert and Tullis, 2013). The results suggest that positive *Web Experience* is likely to have a major impact on growth in its usage and hence provide a completing case for the business value of web experience design for the internal website.

The results also show that *Web Experience* was predicted by *Disorientation* and *Engagement*. *Layout* was a strong predictor of both *Disorientation* and *Engagement*. The relationship between *Disorientation* and *Engagement,* however, was only marginally significant. One explanation is that to detect the impact of *Disorientation* on *Engagement* we need to have larger sample sizes. Another possible explanation is the website genre. The previous study that finds a relationship between *Disorientation* and *Engagement* used a prototype website for teaching technical writing to non-technical students (Webster and Ahuja, 2006). The website used in our study is an actual website currently assisting the employees of a Fortune 500 company in accomplishing their organizational tasks.

Our results showed that *Disorientation* had a stronger effect on *SUS* than *Engagement*. The website used in our study was an internal company website for employees to complete organizational tasks. Because of the utilitarian nature of internal websites, it is likely that employees do not place as high of a value on engagement as they do on effectiveness of navigation.

Additionally, our results show that layout of a webpage had a significant impact on a user's feeling of disorientation. These results support prior findings that suggest layout is an important factor in helping users to find entry points into a web page and to look for information around those entry points (Djamasbi and Hall-Phillips, 2014). The results also showed a significant relationship between *Layout* and *Engagement*. These results support prior studies that suggest layout can influence attention to a webpage (Djamasbi and Hall-Phillips, 2014; Djamasbi et al., 2011).

A recent study shows that a year after web experience scores, measured as SUS, verified that a company's modified m-commerce was significantly improved, the sales over the company's mobile channels were increased by more than %70 (Djamasbi et al. 2014). While this previous study does not show a direct link between improved SUS scores and revenue growth, it makes a compelling case for the business value of SUS and its importance in industry research. Our results support this previous study (Djamasbi et al. 2014) and extend it by showing a strong direct link between web experience and intention to recommend, a growth indicator. Our results also support empirical evidence provided by previous industry studies showing a strong relationship between SUS and NPS (Albert and Tullis, 2013; Lewis, 2012). Thus, our results provide further support for the use of SUS in web research (Tullis and Stetson, 2004). Additionally our results shows that page layout (an important design factor) can significantly affect users' feelings of disorientation and engagement ($p<0.001$), with former having a much larger impact ($\beta= -0.68$ vs. $\beta= -0.36$) on web experience.

Our findings have important theoretical implications because they provide a rationale and theoretical direction for developing predictive models that can connect design factors to web experience directly and to growth indirectly. Our results have also important practical implications. For example, the results show that early formative "layout prototype" tests are likely to result in significant improvements in reducing disorientation and improving engagement in later stages of development. Additionally, the predictive nature of behavioral models, such as the basic model in this study, can help companies to prioritize their plans and budgets (e.g., implement the strongest effect first to see if they can reach their improvement goals). Finally, the results can help managers to make business cases for developing or redesigning a website.

Limitations and Future Studies

As with any scientific investigation our study is not without limitations. We tested our model with only one internal voluntary website and used a limited number of tasks. However, we minimized threats to external validity by using an actual live website and actual tasks that are frequently used by the employees when using the website. Nevertheless, future studies using different internal websites and different tasks are needed to increase the generalizability of the results. Similarly, future studies are needed to see if our results extend to external facing websites and/or different genre of websites. We also used a relatively small sample size, which can impact the possibility of finding statistically significant results. However, we found significant results for all of our hypotheses except one, for which the results were marginally significant. While these results suggest the possibility of a large effect size, future studies with larger sample sizes are needed to confirm our significant findings and verify the hypothesis that was marginally significant.

Conclusion

Our findings indicate that web experience is a strong indicator of intention to recommend a website to colleagues for internal facing websites in a company. Paying attention to layout of a webpage can significantly improve disorientation and engagement, which in turn can strongly impact user experience of the website. The results also suggest that engagement may not be as important as disorientation in improving user experience of internal company websites. These results provide a basic step toward developing a theoretical model that not only can assess the improvements in web design but also can link design improvements to ROI. This in turn, can serve as an invaluable practical tool to plan development efforts in a company.

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