A Review of literature on 'Notifications and the Effects on Applications'

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Abstract - In today's scenario, with the amount of data being dealt with and the operations that are time taking and are to be looked up at regular intervals, it's important for the person to be notified with the right information and at the right time so as to it decreases human labour and the efforts. The notification system also helps in increasing the engagement with the application and improves the retention rate by providing valuable and relevant updates even when not running.

I. INTRODUCTION

By alerting the person with the help of a notification system, different ways can be depicted by which efficiency in organisations can be improved and the paper hassles also be avoided and organizations as a unit can work better. It allows the individual to receive updated information quickly. The delivery needs to be effective and precise. The primary purpose of these widespread systems is to provide a new means of interacting with the applications and services designed to improve our lives. Viewing our interaction with the application as a simple, and limited, one-to-one relationship will no longer be appropriate, as in the future they will function in a more fluid and dynamic way anticipated large numbers of monitoring systems, collecting different types of data, for could be sent to users as they move between monitoring systems, updating them on any recent changes to the system at opportune and appropriate moments. They could also be used to actively seek this problem. This paper discusses the various approaches taken up by the authors to tackle these patients in hospitals to ensuring the safety of children in amusement parks. With so many potential areas of benefit, there will likely be a significant number of different monitoring systems, covering almost every aspect of our daily lives problem around us. There are countless envisioned benefits to these systems, ranging from more efficient management and care of. An interesting problem to consider is the means by which users might consent to participation in such systems.. When this is considered alongside the different purposes, the cognitive demands on users are likely to increase significantly. Hence it will likely become difficult for users to keep track of, and manage, this information. It is reasonable to assume that the majority of people will have access to one in the future. As such, one effective solution to the problem of data management might be to utilize smart phone-based notifications.

I. 1. Why Notify?

Our focus in this study was on the impact on ongoing tasks and satisfaction of users' information needs resulting from notifications announcing arrival of new updates in the application. Notifications appear regardless of user state, task switches are generally not planned for, and as a result, require unexpected suspension of the ongoing task and occasionally, switch of work context.

What are the advantages of Push Notifications?

- **Wider reach across OS:** Apple and Android combined have the whole of market share. With these OS providing support for push the reach of push notifications is immense.

- **Ability to re engage users without knowing their contact details:** Push notifications don't need a user's email or other contact details. If a user who once installed the application and has given his permission to send him notifications, he can be sent notifications anytime without needing his email

- **Higher opt-ins as compared to emails:** Since the users don't need to give their email id or other contact details and they also have the ability to prevent from receiving notification easily whenever they want, the opt-ins for push notifications are higher than emails.

- **Lower unsubscribe/ opt-out rates:**
Studies have shown that less than 10% of the subscribers who opted for notifications from an application, unsubscribed in a year.

- **Prompt and assured content delivery:** The moment you click on "send notification now", it will be delivered to the users immediately. Unlike emails that sometimes fail to deliver or go to spam folders, these notifications are for sure delivered to the user.

- **Greater mindshare of users:** Sending notifications even when the users are not on your application, helps you capture their mindshare and therefore the market share follows

- **Tech savvy user base:** Since this is a nascent technology, it is safe to assume that your content will reach the most tech savvy user base.

- **Higher conversion rates:** Studies have shown that push notifications have 30 times higher conversion
- Call To Action Buttons or the CTA Buttons is the most crucial element in a Push Notification. The CTA should contain the application name of the landing page so that the user directly lands on the landing page.

- Emoji In Push Notification: Emojis give a sense of personalisation to your notification. Push Notifications with emojis show an 85% increase in open rate as compared to notifications without emojis.

- Push Notification Image Include a large image which is the graphical presentation of the notification message. The image is optional. You can send push notification without an image as well.

- Application Icon Shows the icon of the application in the message. It is essential to convey the message confidently.

- Push Messages should be short, crisp and direct. It should be able to convey the idea instantly to the user without a second thought. But make sure that the content quality of the message doesn't go weak.

- Push Notification Title is the most crucial part of any push message. It catches the attention of the user and urges them to click on your notification. Send engaging titles like Buy 1 Get 1 Free, Last Day Of Sale or any other title to get user attention.

How do Push Notifications work?

The three key steps to implementing push are:

1. Adding the client side logic to subscribe a user to push (i.e. the JavaScript and UI in your app that registers a user to push messages).

2. The API call from your back-end / application that triggers a push message to a user's device.

3. The service worker JavaScript file that will receive a "push event" when the push arrives on the device. It's in this JavaScript that you'll be able to show a notification.

I.2. Concept of Notifying:

A psychologist has suggested that a disturbance is "an external phenomenon that occurs by chance, which has occurred and that produces a continuum of mental focus on the central task". Therefore, in its definition it describes a logical thing that happens to the disturbance finder. In this paper, notification can be understood as a technological breakdown, for the purpose of presenting information to the recipient. It is a type of message designed as an announcement to pay attention to the recipient in its delivery.

Notifications play an important role in the creation of user interfaces on mainstream and mobile devices in particular. They advertise incoming communications such as email, voice calls, text messages and events on social media such as when someone tags us in a photo or tells us in a tweet. They also announce system updates and prompt us to confirm that we really want to close the app. There may be complex differences between the estimated benefits of notification and potential interruption.

Without notices, crash studies have shown that they are a common way to initiate conversations and exchange information in workplaces. Other studies show that healthcare professionals are distracted more and more throughout their day, who have reported that it leads to errors in using the patient care information system. This case shows how distraction is a normal part of some settings, and how contextually ill-designed information systems may be hazardous.

I.3.Methodology:

In the paper "Alerts and Awareness: Field Study and Resource Utilization" by Dr Shamsi T. Iqbal and Eric Horvitz, "We conducted a week-long workshop in Arr getting desktop communication information from computer users. Microsoft Outlook was used as an email client , a widely used application within our organization. Outlook is used for a variety of functions beyond email management (e.g., calendar tasks and to-do lists and contacts). have changed and we have not split Outlook usage. Outlook notifications appear as a small modal window in the bottom right corner of the screen and persists for 7 seconds before expiring. In fact we hired users who were given Outlook notifications. Users are recruited through the random selection process used throughout the organization's labor pool. 42 people were enrolled and eventually 20 users completed all stages of the study (Managers = 12, Developers = 8). Users are compensated by coupons for lunch upon completion ". The study also administered pre- and post-study surveys of user self-report reports, preferences and notification use concepts.

I.4. Data Collection

In the paper "Notifications and Awareness: A Field Study of Alert Usage and Preferences" by Dr Shamsi T. Iqbal and Eric Horvitz, "Data was collected using a tool that monitors running as a background process in users' primary work machines. The tool logged time-stamped names of applications in focus and arrival of notifications. Logged data files were periodically flushed to a central server and later processed to be stored in an SQL database for future analysis.

For the first week, baseline data was collected without any intervention. For the second week, users were instructed to disable all notifications within Outlook. We collected data in the no- notification condition for a week which allowed users to settle into the new configuration. We assume that the information needs of users in week
1 and week 2 of the study were relatively stable. We have no reason to believe that they changed, but there is opportunity to explicitly control for such potential instability in future research".

I.5.RESULTS

1682 hours of data were collected from 20 users. In previous research, users were asked to provide a list of the most commonly used applications as part of their job description. These early applications have been studied in the field of performance-focused testing. For comparison purposes, we evaluate the time spent on Outlook and key performance, as well as respond to notifications every two weeks.

Time spent on email and key performance

According to the first notification mode opened, users spent an average of 30.5% (S.D. 12.1) of their working computer time in Outlook, and 33.2% (S.D.
18.0) of their time interacting with other basic apps every session. It defines a session to be limited by entering and closing or unlocking and locking the machine. Closing notifications did not yield significant changes to these percentages; 31.7% (S.D. 13.7) of user time was spent in Outlook, and 34.8% (S.D. 16.4) was spent on other first-party applications. This shows that Outlook takes up a significant percentage of users' time, and notifications don't seem to affect this percentage.

Responding to notifications

Users received an average of 3 email alerts (S.D. 2.12) from Outlook per hour, consistent with the findings in [7, 8]. 4 users showed no quick responses (within a minute) to notifications. The remaining 16 users have switched to Outlook only as a
26.2% (S.D. 30.3) of notices. This shows that most notifications do not cause users to immediately stop their ongoing activity and turn to the source. A postal survey suggested that the nugget information (e.g. sender, subject) given in the notification was sufficient for users to identify key parts of the message and determine whether it deserves immediate attention. As one user put it: "I'm usually able to say if it's worth looking at the topic right away." Users have become more receptive to pointless awareness and the ability to ignore deferred messages or responses as an important notification service - summarized by one user: "It's good to know when a new email has arrived - even if I'm not looking for an idea at the moment."

Time spent in Outlook

When users only switch to Outlook for notification, they spend on average
74.9s (S.D. 34.6) in Outlook. This was significantly lower ($F(1,15) = 5.502$, $p < 0.04$) than the average time spent in Outlook (M = 133.9s, S.D. 106.1) when reached without sending a notification. This suggests that Outlook changes caused by notifications are more likely and users wish to quickly return to their default functions and the no-notifications condition users spent 149.9s (S.D. 123.4) on Outlook on every access. This was significantly higher ($F(1,15)=6.256$, $p<0.024$) than with accesses triggered by notifications, but not different than accesses without notifications triggers in the baseline condition. It appears that despite not having the awareness of new.

II. DISCUSSION

An experiment designed to be viewed from the paper “Notices and Acknowledgments: A Field Study of the Use of Awareness and Choice” by Dr Shamsi T. Iqbal and Eric Horvitz. All interviews and observations made were based on experimental research and the results that led us to it. Our findings provide evidence for the role that informants play in awareness raising and performance. The fact that users continue to work on their main requests for three quarters of email notifications shows that users can choose carefully which notifications to respond. Users seem to find the feature alerts feature important and store that information, willing to accept potential interruptions. Even though users have agreed to get most of the work done with notifications disabled, they also find that it is not compatible with, e.g. An email tone that you can read and check. This suggests that by reducing some form of disruption, we may be introducing another. The results suggest that design efforts should focus on measuring distraction and awareness.

Our results point to the potential differentiation of users, or users working in different work contexts, through their pattern of attention and distraction, from their multidimensional behavioral perspective. Closing notifications seems to have affected users in different ways; some have indicated a greater need to interrupt them to monitor the arrival of information while others may continue to focus more on their core activities. This provides an opportunity to investigate the notification structure tailored for different types of users and their needs. As the user stated: "This is about behavior in using technology." Indeed, various levels of such discipline are seen in the behavior of users.

Although we focus on how users' behavior has changed with the removal of notifications, we have not explored why this change may have occurred. Feedback from users suggested that the effects of lack of emergency information,

the context of users' tasks and users simply not taking full advantage of the lack of alerts to remind them of new information could be some of the reasons. Further research is needed to explore these issues in more depth. We believe that there is an opportunity to promote notification control in order to better serve users' desire to know. This study provides support on the amount of power of a reliable system that can confidently set out the below conditions for incoming messages that the user would like to know. Promising approaches include the use of machine learning to differentiate message urgency, healthy presentation planning, and control over notification control in at work. Such approaches can reduce interruptions while maintaining awareness of key developments. Future notification projects may capture topics and context (e.g., messages from people at meetings to take place soon), as well as analyze the detailed control of notifications.

III. THE BASIS AND THE FINAL WORK

We have investigated the effects of notifications and their unavailability of user activity patterns. The results showed that users turn to about a quarter of all notifications, and that a user's focus on key tasks is unaffected if notifications are disabled. In addition, users appreciate the awareness provided by the notifications and are willing to cause some inconvenience to keep that information. Future work includes field studies on the use of notification algorithms that take into account the time and speed of information transmitted and to study the impact of such alerts on the user's attention.

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