

## **Understanding Digital Network Engagement: Aiding Resistance and Appropriation of Technology**

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### **Abstract**

Some individuals actively resist the impact of digital network technology or appropriate it for their own ends while others passively accept it. This can lead to dramatically different outcomes. Understanding this complex process of human-technology engagement provides insights into how to anticipate and manage the outcomes. Correlations between personality, decision-making style and engagement have been identified from research and surveys, revealing some key distinctions; 'engaged-but-unaware' and 'engaged-and-aware'. Using an ecological approach where 'digital networks' are a tool and the synthesized human-tool unit is evaluated, engagement was found to involve a suite of behaviors 1) intensity and embeddedness, 2) responsiveness to feedback, 3) decision-management and 4) motivators. This forms a practical conceptual model explaining and possibly predicting why some individuals resist and appropriate digital network technology to their advantage while others passively accept and are managed by the technology. This paper is part of ongoing research into understanding digital network engagement.

### **Keywords**

engagement; personality; decision-making; individual

Commercial interests use digital network technology to extract benefits from audience engagement aiming for exclusive locked in relationships not necessarily to the individuals' advantage. The individual on the other hand engages with digital technology to further their own ends. This results in an undeclared battle for the individual's head-space. The inherent nature of digital networks (ubiquitous, embedded, iterative and adaptive) amplifies choices an individual makes at the micro level leading to major societal changes: for example social networking. This paper focuses on understanding the complex processes through which an individual integrates digital network technology into their life. This process is referred to as engagement. It is proposed that engagement involves an interaction of different levels of intensity and embeddedness, responsiveness to feedback, decision-management and motivators.

The range of engagement with digital network technology varies from not-engaged (individuals who simply use it as a tool or entertainment) to very-engaged (those who embed it into their lives and to varying degrees their cognitive processing). Superficially it is easy to assess an individual's level of engagement but understanding it is more complex. Based on original research this paper identifies key elements of engagement and explores reasons for differing engagement levels. It concludes with a discussion on the significance of the results and its potential application.

Over the last few decades it has become evident that digital technology skills can be taught to standardized levels across multiple demographics (Walton, Putnam, Johnson, & Kolko, 2009) but high skill levels do not automatically translate into awareness of the consequences. While sharing similar skill levels there can be variations between individuals' conceptual understanding of their engagement with digital technology. This should not be confused with increased competencies resulting from technical developments like improved user interfaces (Calhoun et al., 2008; Myers, Hudson, & Pausch, 2000). For example individuals may accurately describe what they are doing but not be aware of the complexities of conceptual adjustments undergone for that activity. To understand the variations, this research turned to the uniqueness of individuals: their personalities. Personality was

deemed vital because it is the filter through which the individual gives and receives information and experiences. For example: a person who scores high on the personality trait 'openness' is more likely to seek information and experiences. But if they also have a high level of 'neurosis' or low level of 'trust' then their openness could be modified.

For this reason the Five Factor Model which provides a complete description of an individual's personality has been used (Buss, 1996; Cooper & Pervin, 1998; Jang, McCrae, Angleitner, Riemann, & Livesley, 1998; Loehlin, McCrae, Jr., & John, 1998; McCrae & Paul T. Costa Jr, 1997; Soldz & Vaillant, 1999; Thompson, 2008). Additionally, the individual's decision making style has been considered because decision making is the mechanism that influences actionable outcomes which impacts both externally on the environment and internally on the individual. Rosemary Pacini and Seymour Epstein's self-reporting test provides a measure of the individual's decision making style (Pacini & Epstein, 1999; Witteman, Bercken, Claes, & Godoy, 2009). This test is in line with Keith Stanovich's concept of dual process decision-making (Stanovich, 2010). The third consideration is four selected personality tests deemed relevant to self-awareness in engagement with digital network technology. The factors 'flexibility', 'trust', 'self-disclosure' and 'private self-consciousness' were chosen from IPIP (Goldberg et al., 2006) and all have a Cronbach's Alpha over 0.7.

All three sections were compiled into a randomized online survey. Participants were also interviewed three times providing a deep understanding of each participant's engagement level from which a subjective evaluation of their engagement was derived. The subjective evaluations were then correlated to their survey results using a new model developed for this purpose: The 'DNE model' (Digital Network Engagement model) consists of four components: 1) 'Interactive-style' which involves the elements of engagement-intensity, embeddedness and self-consciousness, 2) 'Feedback-loop' which involves the elements considered necessary to exploit feedback 3) decision-making style and action-potential, 4) motivators for engaging, such as social, entertainment, information seeking and novation.

Initially, there appeared to be no correlation on any factor for any part of the DNE model. On closer examination, participants with higher elemental scores had good correlations in some areas whereas those with lower scores had poor correlations which were masking the results. Participants were therefore divided into two groups based on their elemental scores: Group A the higher scores and Group B being low scores. Group A now produced correlations well over 0.7 in some areas. Group B however showed erratic patterns and low correlations for those areas. This was interpreted as high performers at the elemental level having common causes for their engagement at the factor level i.e. shared personality factors or decision-making style. For example a high score in 'extraversion' corresponded to participants with lower digital engagement scores suggesting face-to-face competencies disinclined investing in on-line interactions.

Overall results indicate three major divisions; 'not engaged', 'engaged-but-unaware' and 'engaged-and-aware'. The consequences of higher 'awareness' appears to be a more proactive and self-managed engagement which can significantly affect individual outcomes.

There are new insights that flow from considering digital networks via an ecological approach to tool-use (Gibson, 1979) which considers the fluid relations and interactions between organisms and their environment, including other organisms. Tool use will be shaped by the intensity of the individual's motivation. But tool-use initially requires the individual's perception-ability to see potential within the tool (Smitsman, 1997) and perception, which Gibson suggests reveals the objects affordance properties not their qualities. The affordance properties of digital networked technologies are more than simply a tool because they are increasingly revealed through engagement which itself is determined by personality and decision-making style. An iPhone for example starts out as a black box filled with circuitry. Depending on the user's level of perception (personality factors are core to this) and action (decision-making style), the smart-phone becomes more than a single use object through its embedding into the users' life. Whether this use of the device enables or disables the individual can be measured and this will give insights into the individual's potential to resist or appropriate digital technology to their advantage. But potential is of little consequence without action-ability which is in

turn dependent not only on decision-making and the individuals ability to take feedback but also on the individual's self-awareness. Therefore all of these elements have to be considered in concert as individuals synthesize with digital networked technologies.

Provisional results of research show self-awareness of the engagement process will increase individuals' capacity to resist and appropriate technology. Self-awareness alone is insufficient. It is the combination of all four factors brought together as a constructive and iterative system that results in positive actionable outcomes for the individual and this led to the development of the DNE model.

The application of the DNE model could assist educators and commercial entities to better evaluate, educate and train for improved outcomes. Current research is indicating that this methodology can be deployed on a mass scale. These results are part of ongoing research into developing an understanding of engagement with digital network technology. It is believed this research addresses meta-level human concepts and behaviors and is therefor independent of culture, class or ethnicity. Future research may shed more light on this issue.

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