ADOPTION OF AN INFORMATION TECHNOLOGY (IT) innovation is a much more attractive and frequently examined area to study than non-adoption. This is mainly due to the pro innovation bias that is found in the existing IT and information systems literature. Companies spend millions of dollars advertising their new gadgets to consumers. However, many IT innovations face varying degrees of resistance in their lifetime. An IT innovation is a product, practice, or process that relies extensively on technological advances such as computer hardware, computer software, and telecommunications.

One of the most visible IT innovations is the personal computer (PC), which was introduced almost three decades ago. Factors such as age, income, and technological complexity are significant barriers to PC adoption. The presence of multiple computer households and the replacement of older machines can explain the continued annual sale of personal computers. Through PC adoption, the Web has also given birth, to many other innovative technologies such as, peer to peer networks, social computing, and mobile applications. Many of these innovations are targeted at individual users.

In spite of the success of the personal computer, only 51% of U.S. households had at least one computer during the 2000 census. Factors such as income, education, and the digital divide all play a contributing role in the penetration of PCs in U.S. households. Further, the non-adoption of IT innovations is also influenced by factors associated with individual expectations and behaviors.

The IT adoption literature has used “intention to adopt” as a reasonable proxy for actual adoption behavior and continued use of a technology. This is a very useful practice especially in an experimental setting or with early distribution of the product. Possibly, more important than the intention to adopt, is the intent ‘not to adopt’ a new technology. IT innovations are complex and content-sensitive and differ across a variety of factors including features, usability, and connectivity. If companies can better understand the non-adopter, they can use creative strategies to move such individuals into the adopter category, which can ultimately increase product visibility and revenue generation.

Innovation Resistance

Innovation Resistance

For any innovation there is a target group of potential users that will either become adopters or non-adopters of the technology. Adopters are classified into five main groups: innovators, early adopters, early majority, late majority and laggards, this nomenclature has been used as the standard template to address adoption over the last decade. This classification is a temporal construct and is based on the length of time the person waits before adopting the technology. Innovators are the first to adopt and the laggards do so at the latest point in time - the terms ‘late adopter’ and ‘laggards’ have subtle negative connotations attached. The inherent assumption with the above categorization is that at some point in time, all the members of the target population will eventually adopt the technology. However, there will be a group of indi-
viduals, even with the progression of time that never adopts the innovation. IT innovation non adoption can be a conscious, purposeful decision made by the individual and not necessarily the result of socio-economic factors.

Non-adopters represent a subset of the target population that have never used the technology or at best have tested it on a limited basis and not used it after that initial trial period. Individuals that have consistently used the technology and at some point in time stopped using the technology will be classified outside of the group of non adopters. Such persons have discontinued use of the product and are referred to as ‘discontinuers’. Consequently, at any point in time, the target population of an IT innovation can consist of three groups of individuals: adopters, non-adopters, and discontinuers.

Admittedly, the population of non adopters is not homogenous. Firstly, there are non adopters that will explicitly oppose the use of the technology. Such individuals have made a decision based on available information about the product, as well as their personal beliefs. Secondly, there are individuals that deliberately delay adoption of the technology and may be waiting for a change in an important variable such as price, using somewhat of a wait-and-see approach. Thirdly, there are also individuals that are indifferent to the technology or might be unaware of its existence.

Several factors affect the state of individual non adoption. These factors can be broadly differentiated into three main groups: functional, psychological, and informational barriers. Functional barriers are associated with the use of the innovation and include technical components such as interface design, networking capabilities, compatibility with other hardware and software products, interoperability with other systems, and available accessories. Functional barriers also include financial components such as product cost, service costs, and maintenance costs. Recently, Apple reduced the price of their innovative iPhone by 33% to make it more attractive to consumers. User resistance to purchasing the product seems to have been strongly related to its initial price. The full impact of the price reduction may not

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### Table 1. Dimensions of Individual IT Resistance

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| **1. Active Resistance** | 1. Rejecter  
• Explicitly rejects the technology.  
• Refuses to use the technology.  
• Functional, psychological, or informational barriers.  
2. Postponer  
• Delays adoption of technology.  
• Anticipates future changes. |
| **2. Passive Resistance** | 1. Unaware  
• Individual has no knowledge of the technology.  
2. Disinterested  
• Presence of a neutral state.  
• Individual is aware of the technology but unaffected by it. |

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be immediately evident. Psychological barriers refer to conflicts with the user’s prior beliefs, value systems, preferences, and cognition. A psychological barrier occurs if the user perceives that use of the innovation will cause a regression from his/her established social, ethical, religious, or institutionalized traditions. Value and risk are also central tenants of psychological barrier. If there is no associated value with the use of an IT innovation, there will be barrier for its adoption by the individual. Similarly, high perceived risk will result in a lower likelihood of adoption. Lastly, information barriers refer to access to specific content material such as benefits, and challenges associated with the use of the innovation. An uninformed consumer may hesitate to adopt an innovation. Readily available information on the Web makes the information barrier potentially the smallest hurdle to overcome to reduce IT innovation resistance.

### Active and Passive Resistance

Two forms of IT resistance exist – active and passive (Table 1). Active resistance occurs when an individual makes a purposive decision not to adopt the innovation. Rejection is the most involved state of non adoption, and is part of active resistance. Rejection occurs where an individual processes the available information and decides that they will not use the innovation. The second type of active resistance is postponement, which occurs when the individual has decided to delay the adoption of the innovation. The postponer is waiting for the best time to adopt the innovation. Some iphone customers may have postponed purchases and waited for a price reduction or more specific information about the product before buying it. Passive resistance is more subtle than active resistance. Passive resistance occurs in two ways: disinterested - an individual is aware of the technology but has no interest in the product; and unaware - an individual has no knowledge of or exposure to the product.

From a researcher or practitioner perspective, IT resistance is intuitively undesirable. However, resistance is not necessarily negative. Consumer may be exercising “buyer beware” constraints in their decision making. Further, entrepreneurs and developers may not have incorporated sufficient user input before bringing the product to the market. Individual IT resistance may in fact serve as a driver for product redesign and improvement.

### Conclusion

IT resistance can occur in a personal or professional setting where and individual is unwillingly or unable to transition to a new or different product. Users can exhibit different degrees of resistance based on the type of technology that they are presented with. As researchers and IT professionals it is important to understand the subtle nuances of technology resistance and actively engage in strategies to better understand the individual needs of users.

Educating the consumer about the potential value of a product can be one strategy to reduce some of the initial resistance. Training and effective demonstration of the product can also help reduce resistance to the technology. Modification of one of the product variables such as price or usability can be used to entice previously resistant consumers. Resistance can also signal that there are flaws with the current design or implementation of the product.
Actively involving the end user in the design process can break down some of the previously identified barriers. However, in spite of creative and possibly aggressive strategies to attract the consumer, individual resistance can remain a factor that both developers and researchers have to contend with. There can still be an individual that values the technology, understands its benefits, finds it attractive and affordable, but......does not adopt.

References
2. Nuttall, C. Jobs apologizes to iPhone users, FT.com. (Sept. 5, 2007), San Francisco, CA.

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