

# An Empirical Investigation of External Factors Influencing Mobile Technology Use in Canada: A Preliminary Study

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## ABSTRACT

*Cell phones have changed the way people live. A deeper understanding of how the attributes of these technologies influence end-users' perceptions is an important issue. A better understanding of cellular phone adoption and use process will inform people's understanding of the diffusion process of other types of communication technologies. This empirical paper examines the influence of the Technology Characteristics, Group Characteristics (Familiarity), Mobility, Facilitating Conditions, and Social Influence on the use of the cell phones. Data were collected through a questionnaire survey from a final sample of 277 cell phone users in Quebec (Canada). The results suggest that, among the factors mentioned, only Mobility has a direct influence on the adoption on all the three indicators of use defined in this study. These findings have theoretical and managerial implications, which are highlighted.*

*Keywords: Canada, Cell Phones, Diffusion of Innovation, External Factors, Technology Acceptance, Use*

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## INTRODUCTION

Technology adoption can be viewed as a decision process which may result in an individual's acceptance and use of an innovation to achieve a specific goal (Rogers, 2003). In spite of the increasing number of information and communication technologies in all aspects of our

lives, several issues related to mechanisms that govern the process of diffusion and adoption of an information and communication technology (Mustonen-Ollila & Lyytinen, 2003) have not been adequately explored. For example, despite the widespread diffusion of cell phones, there is little research investigating psychological factors influencing mobile phone use (Walsh & White, 2006). Further, most of these studies on information and communication technology (ICT) adoption focused on developing countries.

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However, several studies (e.g., Hofstede 1980; Keil et al., 2000; Srite & Karahanna, 2006) suggest that behavioral models do not universally hold across cultures, and so cultural differences between countries may impact the acceptance and use of an ICT. Thus at this point it is not clear if the results of studies on the adoption of cell phones in developing countries are appropriate for highly developed economies. In this study we explore issues related to the adoption of a collective use ICT, the cell phone, in a developed economy. We seek to explore the underlining factors that explain the adoption of the cell phones, especially as these technologies offer various innovative, valued-adding applications including mobile commerce and access to healthcare services. Specifically, we strive to provide answer to the following research question:

*What are the impacts of specific external factors (i.e., mobility, facilitating conditions, social influence, technology characteristics, group characteristics) on the use of the cell phones?*

Our objective is to understand the dynamics of the cell phones adoption and use as Ishii (2004) argued that the diffusion of mobile devices is driven by a better understanding users' behavior. A good knowledge of the needs of the end-users will contribute to the formulation of strategies leading to successful practices. Our study strives towards this end. While adoption of cell phone, an interactive, collective-use ICT, differs from other types of innovations (Markus, 1987; Mahler & Rogers, 2000), similarities may exist between the adoption process of cell phones and the Internet (Rice & Katz, 2003). Therefore it seems reasonable to expect that our research can generate new and interesting insights and to extend the current understanding of cell phone use and its various applications. As such, the results of our work have the potential to be of interest to researchers, cell phones service providers and even public policy makers.

## OVERVIEW OF RESEARCH ON ADOPTION OF THE CELL PHONE

Previous studies that aim to explain the cell phone adoption factors involve the integration of results and concepts from several disciplines (psychology, management, marketing, etc.) can be categorized into three main perspectives.

1. The first perspective is dominated by the diffusion of innovations theories (DOI). It considers that the innovations (cell phones) are diffused among a group of adopters according to the S curve model as highlighted in Rogers (2003).
2. The second perspective focuses on adoption theories to explain the decisions of cell phone adoption by the end-users. The seminal models (Venkatesh & Davis, 2000) used in this perspective are the technology acceptance model of Davis (1989), the theory of the reasoned action suggested by Ajzen and Fishbein (1975) and the theory of the planned behavior by Ajzen (1985). It is important to mention there are few studies related to cell phone adoption in this perspective.
3. The last perspective relates to the studies which focus on domestic usage on cell phones as reason for their adoption (Silverstone & Haddon, 1996). These studies are mostly descriptive and they generally use sociological approaches to examine cell phone adoption. Demographic variables such as gender and age are used to study and to categorize adopters.

Research on the adoption of cell phone technology can also be considered to be at either at the macro or micro levels. Macro level studies explore the process of cell phones diffusion within a given group of adopters. Based on the Rogers (2003) model, they classify adopters in five different groups: the *innovators*, the *first adopters*, the *early majority*, the *late majority* and the *laggards*. The macro level studies such as Tjostheim and Boge (2001), compared the

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