Chapter 2

Enhancing User Experience in Public Spaces by Measuring Passengers' Flow and Perception Through ICT:
The Case of the Municipal Market of Chania

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ABSTRACT

This research investigates user spatial experience transformations that occur in hyperconnected public spaces and transform them to hybrid spaces. Following this target, the authors conduct an experiment in the Municipal Market of Chania, Crete, in which they evaluate user behaviors on a population of 33 participants comparing their spatial experiences before and after the use of ICT. Through qualitative and quantitative methods (the use of the technology Indoor Atlas as well as questionnaires), the authors

analyze behavioral change among users with and without access to Crete 3D, an online ICT-based innovative informative platform, aiming to establish a theoretical framework of understanding user interaction with built space. This process enables knowledge transfer in a twofold way: the authors present how to use metrics to evaluate user-building interaction and how users can quickly gain a deep understanding of the building in use.

INTRODUCTION

According to Nikos Komninos, intelligent cities are encountered at the intersection of innovation and collaborative digital spaces. "For us, a digital city is a collaborative digital space used to facilitate and augment the activities and functions taking place within the physical space of the city" (Komninos, 2008 p.247). In digital spaces, information acquisition is facilitated by sensors, digital networking and other technologies. But how can we evaluate user experience and user-building interaction in a physical space where digital technologies are not already embedded? The issue of combining wireless ICT with IoT technologies and immersively integrating them into the user environment are the crux of the problem. In this specific case, the objective is to decipher user experience within the public space of the Municipal Market of Chania, by establishing a temporary digital environment within the bustling physical space. Following this objective, the paper has been divided in seven sections. The first chapter analyzes empirically visitor types and their interaction with the building's physical space. The second and third chapter, focus on how ICT and IoT technologies contribute to the decoding of user behavior in this specific case, while the fourth chapter describes the in-situ experiment. Then, qualitative and quantitative data sets extracted by the technology and traditional users prior to their visit are analyzed and compared. The sixth chapter draws upon the entire thesis, tying up the empirical and metric strands, aiming to provide a comprehensive model of user behavior in the framework of new digital technologies. Finally, the conclusion highlights areas for further research.

The methodology of this study is based on empirical analysis as well as qualitative and quantitative data acquisition and comparison. During the first part of the study, the authors visited the building and conducted an empirical documentation of its morphological entities, aiming to extract patterns of flows within the site and highlight the points of maximum interaction between users and built space. As built space, we define: a) the interior space of the building and b) the interstitial spaces that connect the built space of the monument with the urban tissue. During the second part of the study, the authors engaged a group of 33 users, formed by young people that visited the building on a summer day. Two subgroups were formed: the users of the first subgroup entered the building and were asked to circulate freely, while the users of the second subgroup launched the visit after navigating into the Crete3D platform. Crete3D is an online WebGL platform, where users can find replicated morphologies of the main archaeological Cretan monuments presented through a conceptual 3D model. Through the platform, users are able to navigate around the monuments and speculate them at different levels of spatial and contextual detail. The platform allows for switching between seven historical periods and offers a comparative study of their evolution in time. The platform's innovative feature was the potential 'to manage such a large amount of information over the internet, in a transparent, light and simple way for the end user, in addition to offering the ability to compare data over time, during the historical periods.' (Parthenios P. et al, p.1, 2012). Users' location was monitored real-time through the Indooratlas application that was previously

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