An Exploratory Study to identify the Determinants of the wireless Handheld Devices in Higher Education: A Case of USQ

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Abstract

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Introduction

The use of wireless technology is well established in many industries. In the recent years the implication and possibilities of wireless technology in the teaching and training environment has attracted researcher intention. Future of m-learning is evolving very rapidly and the future is very promising. In order to remain competitive tertiary institutions need to exploit the opportunities from the developments in the information technology and use innovative ways to serve their customers. Remote learning is not a new thing for the education environment as students prefers to study in the external mode and wireless technology had the potential to add value not only to the on-campus student but also to the external students as well. Features of wireless technology such as flexibility, mobility, information on demand and portability have attracted the attention of researchers and the application developers in the education environment. For example, students can use the hand held device to enrich the existing learning experience by real-time interactive learning. It is also anticipated use

of handheld devices will not only help the ways students will learn it will also increase the prospect of future learning and teaching strategies.

It appears the there is some consistencies regarding the issues for the successful use of wireless handheld devices for teaching and learning purposes, such as IT infrastructure, specific learning and teaching activities, availability of suitable wireless applications, and change management. Currently, Australian universities are using wireless handheld devices for limited or specific activities on a limited scale and their full potential is yet to be explored. This study will try to identify issues associated with the use of wireless handheld devices and the research question addressed in this study is as follow:

> *What are the factors which effects the adoption of wireless handheld devices in a higher educational environment, specific to USQ environment?*

Research Methodology

Qualitative and quantitative methodology has been considered for this study. The first phase is the qualitative approach and consists of two stages of conducting focus group discussions. Which will help to identifies initial themes for the adoption of wireless handheld devices in higher education environment? This qualitative approach will help to gather first hand information from the students and the instructors by using focus group techniques. The first to stages of the research are exploratory in nature as there is limited literature available in this domain. The second phase of the study would be confirmatory stage of the first two stages, where a survey instrument will be develop form the findings of the focus groups and the literature review. The quantitative approach will help to understand wider community perceived understanding on various factors which effect the adoption of wireless handheld devices in an educational environment.

Stage one qualitative approach:

In this stage a focus group was conducted with a selected group of students at USQ to explore their understanding and issues associated with the use of wireless handheld devices in an educational environment. Main objective of this stage to identify themes

behind the adoption of wireless handheld devices in higher education environment as limited literature is available in this domain. This stage of the research helped to identify themes with respect to user choice of devices, advantages, disadvantages and user expectation form the use of wireless handheld devices in a higher educational environment.

Stage two qualitative approach:

In this stage, we conducted four focus groups discussions similar to stage one. Two focus groups were conducted in the faculty of education and two focus groups were conducted in the faculty of business. Students and teaching staffs were involved in both the faculties in their respective focus group session. The main objective of this stage is to confirm the findings of the stage one and to extract various list of drivers and inhibitors for the adoption of wireless hand held devices in an higher education environment.

Stage three quantitative approach:

In this stage a survey instrument will be develop from the findings of the stage one and two. A university wide survey will be conducted to capture the wider community approach about the drivers and inhibitors of wireless handheld devices and to quantify the determinants in a higher education environment.

Data Analysis

After the transcriptions of the information from the focus group, data was analysed by the authors of the paper by identifying the initial themes. Further qualitative analysis was done by using the NVivo software to identify the initial themes. The data was manually coded to identify the themes that can have the impact on the intention of the user to use the wireless handheld technology in an educational environment mentioned by the focus group participants. Initial review of the data revelled that use of wireless handheld devices in an educational institution such as USQ is at infant stage due to the lack of resources and infrastructure. Initially 78 themes were identified by reviewing the transcripts few times from the focus group discussions. While there were some overlapping in the themes no effort was made to merge the themes initially. Logic behind this exercise is to avoid the premature implication of the participants ideas as it is quite common one idea can be easily be perceived more than one way. While the themes were identified from the context of the focus groups, an effort was made to group them with the help of NVivo software and the numbers of themes were reduced to 21. Table 1 below shows the identified final list of themes.

Possible Themes Emerged Form The Focus Group Discussions.
• Accessibility and Availability Of Resources • Convenient and Richness of Learning Resources • Time Efficiency and Productivity • Quality of Education and Learning • Security and Reliability • Financial Pressure on Students • Hardware Features and Characteristics • Equity and Distance Education • Usefulness of The Devices • Availability and Usefulness of The Applications • Human Interactions and Student/Teacher Relationship • Training and Know How • Pleasure and Learning • Flexibility and Customization • Standardization, Policies and Procedures • User Needs and Requirements • Issues Relating Class Size • Better and Quality Of Information • Limitation of Infrastructure and Resources • Technology Is Not Matured • Scheduler and Reminder

Table 1: Themes exerted from the focus group discussions for the adoption of handheld wireless devices at USQ

From the focus group discussions it was quite clear that there were concerned that there were issues that can have positive or negative impact on the intention of the user for the use of handheld wireless devices in an educational environment. Therefore the identified theme were further analysed to identify theme which can have positive or negative impact on the adoption of wireless technology in an educational environment. Table 2 shows the list of classified themes. It is anticipated that this classification of themes will help in the planning and implementation of wireless handheld devices into am educational environment. There is a possibility these themes may change on further investigations at the second phase of the study when view of the wider community is gathered through the survey questionaries.

Positive effect on intention to use	Negative effect on intention to use
• Accessibility and Availability Of Resources • Convenient and Richness of Learning Resources • Time Efficiency and Productivity • Quality of Education and Learning • Usefulness of The Devices • Availability and Usefulness of The Applications • Human Interactions and Student/Teacher Relationship • Training and Know How • Pleasure and Learning • Flexibility and Customization • Standardization, Policies and Procedures • User Needs and Requirements • Better and Quality Of Information • Scheduler and Reminder	• Security and Reliability • Hardware Features and Characteristics • Equity and Distance Education • Issues Relating Class Size • Limitation of Infrastructure and Resources • Technology Is Not Matured • Financial Pressure on Students • Usefulness of The Devices • Availability and Usefulness of The Applications

Table 2: Classification of themes exerted from the focus group discussions for the adoption of handheld wireless devices at USQ

The general glance of the above two tables it is obvious that there are factors that drives the adoption, and there are factors which inhabit the adoption of wireless handheld devices in the educational environment. Further analysis of the qualitative data and the literature review was used to identify the drivers and inhibitors of the

handheld wireless devices at the USQ; such a grouping is shown in table 3 below. The preliminary analysis of the qualitative data shows that there are 22 factors which can have the positive effect on the intention of the user to adopt and there are 15 factors which can have negative effect on the ignition of the user to adopt the wireless handheld devices in and educational environment.

Drivers and Inhibitors

Drivers of PDAs use at USQ	Inhibitors of PDAs use at USQ
• Quality of Education • Time Saving • Information on The Move • Flexibility and Accessibility • Communication • Wireless Accessibility • Learning/Teaching as Fun • Healthy Discussions • Users Motivation • Time Management • Access to Resources • Effective Communications • Entertainment • Learning by Demonstration • Team Projects • Less Papers • Complimentary to Existing Systems • Online Chat and Discussions • Online Submissions • Rich learning experience • Meeting/schedule management • Training	• Pollution Problems • Connectivity Problems • Availability of Applications • Security • Denali of Access • Lack of Tracking • Network Restrictions • Lack of Infrastructure • Lack of Training • Cost • Human Contact • Human Interaction • Learning Difficulties • Equity • Remote students

Table3: Classification of drivers and inhibitors extracted from the focus group discussions for the adoption of handheld wireless devices at USQ

Discussion

Conclusion

Future Research

References