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Learning Management System Adoption in the University: Exploring the Experiences of Canadian and International Students

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ABSTRACT

Using the unified theory of acceptance and use of technology (UTAUT) model, this paper seeks to explore student's experiences in using Sakai, a learning management system at Brock University. Adopting a mixed methods approach, the study examined the effects of performance expectancy, effort expectancy, social influence and facilitating conditions on user satisfaction. Further inquiries were made on the moderating effects of both gender and the technology experiences of students and how these variables impacted their experiences. The results indicate that although students perceive Sakai as a useful learning tool, they were concerned about the platform's ease of use. Aside from technology experience the results showed that gender and the cultural background of students did not determine the extent to which a student would achieve satisfaction using Sakai.

KEYWORDS: ICT, Learning Management System, Sakai, UTAUT model, Hofstede's Cultural Dimension

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1. INTRODUCTION

In contrast to the Industrial Revolution era, which was built on machinery, skills and labour, the twenty-first century thrives on information communication technology (ICT) (Pillay et al., 2004). As an imperative part of today's society, ICT has brought about rapid transformation in various fields, such as education and politics among others (Yusuf, 2005; Reddy, 2000), and this calls for the need to launch inquiries into how individuals are adopting new technologies and adapting to established ones. An individual's decision to embrace, adapt and apply newer forms of technology has unsurprisingly become a research area of global concern (Bombast & Barky 2007; Denktash et al. 2007). Technology adaptation in this study is defined as a student's ability to adapt new and emerging technologies into their academic activities and how these changes are managed (Oatmeal & Ayhan, 2008). Specifically, it refers to how students adapt to using Sakai, an existing learning management system at Brock University and how this platform impacts their academic work.

Within institutions of higher learning, the impact of ICT systems has become enormous. Some studies have suggested that traditional forms of teaching and learning may be inadequate in meeting the needs of growing student populations (Pillay et al., 2004) hence universities are turning to new technologies and learning platforms to revolutionize the face of teaching and learning.

In view of this, most universities globally have restructured their academic activities along digital lines to meet up with the technological demands in this

information age (Selwyn, 2007). These technological platforms are used to supplement traditional forms of teaching and learning. Platforms such as learning management systems, e-journals, plagiarism detection tools, emails, digital library systems and more are now being increasingly adopted by universities (Henderson et al., 2015). An example is Brock University's Sakai platform, an open source system, which has been adopted to serve as an advanced learning tool.

Undoubtedly, these technological platforms have the potential of impacting the quality of teaching and learning. These platforms also enhance students' skills through their constant engagement. Studies have shown that regardless of students' previous experiences with technology, they expect to acquire more technological skills through their degree program (Haywood et al., 2004: Macleod et al., 2002). As they progress academically, they expect to be exposed to new and emerging technologies and learning management systems and to be trained extensively on how to use them. These skills are seen as assets, which can improve both their personal and professional lives.

However the growing nature of technologies make technology adoption in some universities difficult and frequently stressful (Losh, 2014), which make it difficult for some universities to meet students' expectations. Even in situations where universities keep up with the growing trends, the cultural background and the differences in students' experiences prior to university enrolment make adaptation to available technologies and learning managements systems a growing concern. These differences among students have awakened the concerns of researchers within the field of information systems (IS).

My study aims to contribute to the growing body of research conducted within this field by analyzing the application of information communication technology within the context of a learning management system. It investigates the experiences of first year undergraduate students in their efforts to adapt to Sakai, a learning management system adopted by Brock University. Through the lens of the Unified Theory of Acceptance and Use of Technology (UTAT) model, the study seeks to:

- Explore the relationship between students' technology experience and their adaptation to Sakai (Brock University's learning management system)
- Examine the impact of gender on students' adaptation to Sakai (Brock University's learning management system)
- Examine the influence of cultural orientations on the adaptation efforts of students to Sakai (Brock University's learning management system)

Understanding these experiences is of the utmost importance due to the fact that Sakai is new to first year university students. Despite the notion that university students may be "tech-savvy" (Oblinger & Oblinger, 2005; Palfrey & Gasser, 2008; Prensky, 2001), they are likely to encounter challenges with regards to navigating their new academic context physically, psychologically, emotionally, and technologically. However, while many studies focused on these first three adaptation categories (James et al., 2010; Friedlander et al., 2007), fewer studies have investigated students' technology adoption broadly (Im et al., 2008, Ong & Lai, 2006). Considering the differences in gender, students' previous technology experiences and cultural backgrounds, students are likely to have different

adaptation experiences in using Sakai. These differences among students' adaptation make this research important.

1.1. RATIONALE

These questions are explored in the study because first year of university education is perhaps the most critical year of post-secondary education (Faleel et al.,2012; Dyson, R., & Renk, K.,2006; Chataway, C. J., & Berry,1989).Students are expected to manage the changes associated with living and learning within a university environment away from the norm they are accustomed to (Hardy et al, 2008). Also, due to the growing technology integration within higher educational settings, first year students are also faced with external pressures to adjust academically to new learning technologies and learning management systems either voluntarily or as a mandatory practice. These expectations from authorities, more often than not, ignore the previous technological experiences and cultural backgrounds of students (Idowu,et al., 2004).

While this transition is an important aspect of students' lives, little empirical research has been published on the adjustment of first year students (domestic and international students) adaptation to available learning management systems within a university context(Paechter et al.,2010). Studies conducted on the transition of first year students mainly focus on how students use existing technologies voluntarily (Margaryan et al., 2011) and the access of students to emerging learning technologies (Kennedy et al. 2008). Research has identified some of the emerging technologies as virtual and remote laboratories, wearable

technology, cloud computing, learning analytics, open content, 3D printing, MOOCs, games and gamification, tablet computing, and mobile learning (Johnson et al, 2015). However few studies address the challenges first year students experience when they are expected to adapt to learning management system such as Sakai in a mandatory setting. Premised on this research gap, this study aims to gain insight into the experiences of students using Sakai in a mandatory setting at Brock University.

2. CONTRIBUTION OF THE STUDY

By drawing on the experiences of first year students, I aim to contribute to the small but growing literature on the Sakai adaptation experiences of university students. This study is of both theoretical and practical importance due its unique approach. The paper captures these experiences from the perspective of the students and not from the perspective of the institution, as seen in most studies (Yueh & Hsu, 2008; Panda & Mishra, 2007; Mortera-Gutierrez, 2006). This approach is fundamental as it shifts attention away from the university's view of students' experiences toward one where the real experiences of end users are captured (Ophus & Abbitt, 2009; Park, 2009).

With the majority of studies adopting the UTAUT theory in a voluntary setting, the application of the UTAUT theory in a mandatory setup will help illuminate the unique experiences of students in a mandatory setting. This study also incorporates variables, such as gender, students' cultural background, and their

technology experience as a way to better explain how their adaptation to Sakai was influenced.

Further, it is beneficial as it provides appropriate suggestions that can assist professors at Brock University and other universities who use Sakai to improve students learning experiences.. In addition, the study can provide recommendations for universities on how to prepare the right environment before introducing new platforms to students. It will also provide information for Brock University to assess the effectiveness of the Sakai platform and its impact on students' learning. Results from this study will provide information that can assist when establishing support systems for undergraduate students in general on how best to use Sakai at Brock.

Finally, evidence-based inquiry of students' Sakai experiences is vital in informing higher educational policies and practices. Also, it will provide the IT department with the necessary information that will assist them when reviewing the effectiveness of the platform and the changes that can be implemented to make the platform user friendly.

3. LITERATURE REVIEW

3.1. INFORMATION COMMUNICATION TECHNOLOGY (ICT)

The twenty-first century has been characterized by emerging technological advancements that have immense impact on everyday living. Many universities appreciate the transformative prowess of emerging technologies (Marriott et al.,

2004; Shield, 2000) and continuously roll out various strategic initiatives that seek to integrate various forms of technologically inclined tools into their academic setup (Hénard & Roseveare 2012; Vajargah et al., 2010; Edwards, et al., 2006; Currier, 2001). These integration efforts have the potential to enhance students' independent learning (Beetham & Sharpe, 2013; Claudia et.al, 2004) and consolidate knowledge taught within a field. Studies have further argued that social platforms, such as chat forums, Facebook, and Twitter also provide an avenue that can be adopted to facilitate peer discussions (Hartford, 2005; Hobbs, 2002).

Through an array of ICT channels, universities are now better positioned to meet a variety of students' learning needs and styles (Cavas & Cavas, 2009; Leach et al., 2005). Through training and engagement, universities can take advantage of the variety in ICT channels to bridge the skill gap between novice users of ICT tools and individuals who are relatively experienced due to their background and early familiarity with various technological tools.

Technology integration also provides numerous benefits for faculty members. Eyon (2005) suggests that although some lecturers are not familiar with the current technology trends, they are motivated to adopt ICT tools to improve the teaching both in their classrooms and online. This adoption has also become necessary due to the rising teacher-student ratios in universities, making it extremely difficult for professors to address questions from students in a comprehensive manner within the allocated time frame. Professors therefore find it convenient to use learning management systems to support traditional classroom teaching (Johnston & Huczynski, 2006).

3.1.1. LEARNING MANAGEMENT SYSTEMS

Learning management systems are web-based systems that afford users (both instructors and students) the ability to submit and receive assignments, share academic resources and also interact and receive feedback (Lonn & Teasley, 2009). Within the past decade, most universities have made strenuous efforts to adopt varying forms of learning management systems (LMS), also known as course management platforms to complement traditional forms of teaching and to also support learning either in a distance learning environment, self-paced learning or a blending learning environment (Suleman,2008, Dagger et al., 2007; Arabasz & Baker, 2003).

Hawkins & Rudy (2007) report that more that 90% of North America universities and colleges have rolled out one or more learning management systems in the form of either Sakai, Moodles, Blackboard, Linux or similar learning management platforms. This adoption trend is not only prevalent in North American countries but also in countries such as Australia, Ghana, China, the United Kingdom and other countries (Andrews &Daly, 2008: Obuobi et al.,2006 Sclater, 2008: Pan &Bonk,2007). Internationally, Red Flag Linux and Sakai have been adopted in universities to control IT cost, encourage collaboration among students and also to improve access to academic resources and (Pan & Bonk,2007, Obuobi et al,2006).

These learning management systems (LMS) can be grouped into two main categories: Open source systems and Proprietary solutions. Open source systems

constitute applications, such as Moodle[1], Sakai[2], Tutor[3] and Whiteboard[4] while proprietary solutions include applications, such as WebCT/Black board[5] Grade point[6] Desire2Learn[7] and Learn.com[8].

Open source initiatives are platforms accessible to anyone without license constraint. In contrast, proprietary solutions are software products developed with the aim of making profit from users through rental and sale of the software as well as users paying license fees occasionally (Khelifi et al., 2009).

Studies regard open source systems (OSS) as platforms that enable power distribution and encourage academic collaboration and discussions among both instructors and students. This research will specifically explore students Sakai experience at Brock university.[9] Dagger et al., (2007) regard Sakai, a second-generation open source learning management system as an improvement over most first generation proprietary solutions such as black-box. They also uphold Sakai as a much more flexible– platform compared to most proprietary solutions which they observe are more linear and useful for specific purposes and therefore do not afford decision makers the room to apply various forms of adjustments and modifications to suit students' specific needs.

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[1] (http:// www. moodle.org),
[2] (http:// www.sakaiproject.org),
[3] (http:// www.atutor.ca)
[4] (http:// whiteboard.sourceforge.net
[5] (http:// www.blackboard.com)
[6] (http:// www.gradepoint.net)
[7] (http:// www.desire2 learn.com)
[8] http:// (www.learn.com).
9 Open Source Initiative, "Home—Open Source Initiative," Open Source Web Site, http://www.opensource.org/, Mar. 2007

In addition, Courant & Griffiths (2006) notes that there is less demand for proprietary solutions compared to open source systems now by users. They identified that the main reason for this shift in demand is the cost associated with the use of proprietary solutions.

As a cost cutting measure most universities channel their resources into improving their adopted open source initiatives. For instance, a survey conducted in 2011 by ITC reported a 6% drop in Blackboard usage but a 10% increase in Moodle usage[10]. Another reason attributed to the preference for open source systems is the ability to reduce dependence on software owners.[11]

Notwithstanding the advantages associated with open source systems, Williams et al., (2005) notes that there are significant costs associated with training and the implementation of open source systems.

In a study conducted on Moodle, an open source system, Andrews and Daly (2008) note that students acknowledged that open source systems have some limitations that need to be addressed. Nonetheless they regarded the platform as efficient for encouraging academic collaboration..

Also, a research study conducted among university tutors on their experiences with Sakai showed that respondents regarded the platform as simpler to use compared to Blackboard, but they indicated that Sakai lacked some advanced functionalities compared to other proprietary solutions such as

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[10] http://www.moodlenews.com/2011/blackboard-usage-drops-6-moodle-grows-to-10-market-share-according-to-itc-survey/

[11] Computer Economics, "The Key Advantage of Open Source,"(Retrieved from http://www.computereconomics.com/article.cfm?id=1043, 2005)

Blackboard(Suri & Schumacher,2008). Despite some of its limiting features, respondents appreciated the fact that Sakai has tools such as chat forums, grade book, dropbox, email systems among other useful features (Simonson, 2007).

Dagger et al, (2007) argued that the platform is teacher-centric as it gives more power to course professors or administrators rather than to the learner. Mott (2010) observes that this is due to the inability for the learner to initiate his or her learning activities on the platform (Dagger et al, 2007). In the design of the Sakai platform, Suleman (2008) argues that the focus was heavily placed on the how the portal will improve the courses and modules offered rather than the individual learning experiences[12]. These observed learner experience gaps sets up an important foundation for this study.

4. GENDER

Current studies within the field of gender and technology have suggested a shift in the way gender related issues are researched (Anderson et al. 2008, Vekiri & Chronaki, 2008; Volman et al., 2005). From a broader perspective, gender can be regarded as the way ‘men’ and ‘women’ are perceived and expected to behave in the society (Feingold, 1993). Schweingruber (2001) observes that a person’s exposure to and/or the use of technology may sometimes be constructed along gender lines in some countries. Gender has been found to have profound influences on individual attitudes and perceptions

[12] Sakai was designed through a collaborative effort by a team of univeristies(University of Michigan, Stanford University, Indiana University, (Farmer & Dolphin,2005)

toward the use of new technologies (He & Freeman, 2009; Pagram et al. 2006; Burn et al. 2005; Eastmond 2000). Within certain societies there are conventional rules that indicate what is suitable for boys and girls in terms of online engagements and technology use (Johansson 2000; Walkerdine, 1997).

The inequality in access may result in some individuals gaining higher skill levels than others (Pajares & Schunk, 2001) due to the unequal access and opportunities for one gender group. More often than not, those who benefit from the skewed access to technology are mostly males (Cassidy & Eachus, 2002; Carrey et al, 2002; Mumtaz, 2001; Kirkpatrick & Cuban, 1998; Comber et al., 1997; Dutton et al.1989; Miura, 1987). For instance, a study carried out in Eastern Europe suggests that the differences in technological abilities between males and females can be mainly attributed to males engaging with technological tools on a more regular basis (Milagros & Mercedes, 2010; Durndell & Haag, 2002) than their female counterparts.

Others suggest that while males engage with new technological platforms for a variety of reasons, most females use technology for social activities, such as communication (Singh, 2001) and to build their relationships (Vekiri & Chronaki, 2008; Hoffman & Vance, 2007; Mitra et al., 2001). Other studies also observed similar findings with international students although they arguen this trend has improved over time (Jones et. al.2010; Kennedy et al. 2008).

4.1. CULTURAL VALUES

In addition to gender, the relationship between culture and technology has become another area of growing concern to researchers (Kappos & Rivard, 2008;

Holmes, 1998; Davies, 1988). This research area is important because some studies suggest that the successful implementation of ICTs in a society is influenced by the society's perception and acceptance of information communication technology (Steers & Sanchez-Runde, 2008; Erumban & De Jong, 2006; Leidner & Kayworth, 2006). For instance, Davies (1988) argues that technology integration does not occur in a vacuum, but is influenced by social and cultural values.Due to the diverse nature of culture, Davies asserts that espoused cultural values can assist in predicting a person's behavior toward technology. Due in part to the varied approaches to research on culture and the lack of consistency in terms of cultural dimensions used in these studies, Straub et al. (2002) observe that it becomes difficult to define what constitutes 'culture'.For instance, Birukou et al., (2013) define culture to include shared morals, knowledge, arts and beliefs. Similarly, Palis (2006) presents culture as a common way of life which is expressed in the way an individual or a group thinks and acts.

However in this study I will be drawing on Schein's (1985a, 1985b) representation of culture. Schein suggests that culture can be partitioned into three categories. The first level represents the beliefs and assumptions a society upholds about issues and new systems. The second level relates to the society's values, which are enforced and are expected to be adhered to by members of the society. Schein (1985a, 1985b) notes that the last level of culture represents factors such as technology, language etc. of the society.

However, similar to previous studies on culture, this study employed Hofstede's cultural dimension model to explore the impact of national culture on

Canadian and international students' adaptation to Sakai. I employed this model because of its validity in the field of culture (IM et al, 2011; Jackson 1995). Also Hofstede's cultural model has been adopted and used by a large number of related studies (Cronje, 2011; Fischer et al. 2010; Brubeck & Frese 2006).

Despite the increased use of this model, Hofstede's cultural model has been criticized in several ways. Hofstede's position on national culture is regarded as western focused, static, and overly generalised (Nistor et al., 2013; Livian 2011). In spite of these criticisms, Hofstede's culture dimensions continue to offer useful ways to understand culture.

Geert Hofstede defined national culture as the "collective programming of the mind which distinguishes members of one group or category from another" (Hofstede, 1991, 2001). This definition was coined after a study of 53 countries globally. Through his study, Hofstede observed similarities and differences among several countries (Marcus & Gould, 2000). Based on these observations, he categorized these countries under five main dimensions. These five dimensions are: Power-distance, collectivism vs. individualism, femininity vs. masculinity, uncertainty avoidance and long- vs. short-term orientation. However, three of the five dimensions (Table 1) are particularly relevant to this study and will thus be discussed in more depth. They are individualism/collectivism, uncertainty avoidance, and masculinity/femininity.

4.1.1. INDIVIDUALISM/COLLECTIVISM

Individualism/collectivism is the tendency to act either as an individual or as a member of a group (Massey, et al, 2001). Individualistic societies promote the

idea of self-independence. These societies value freedom and challenge its constituents to engage with new materials. In individualistic cultures, achievement is for the individual and not automatically attributable to a group (Hofstede, 1980).

Compared to those who uphold collectivist ideas, people who espouse individualistic cultural tendencies tend to be more independent (Marcus & Gould, 2000; Redding & Baldwin, 1991) and are less loyal to the group (Hofstede, 1984). These individuals constantly seek out new and unique ways to maximize their success (Aladwani, 2013).

On the other hand, collectivist societies value group achievement rather than personal recognition (Aladwani, 2013; Evers, 2001). People integrated within a collectivistic society are expected to accept and work toward the achievement of group values and goals. Individuals within such society tend to conform to and are motivated by the rules and opinions of the larger society (Ford & Kotzé, 2005; Bond & Smith, 1996).

Hofstede identified countries such as Korea, Ghana, and other developing countries as exhibiting higher levels of collectivist ideologies, whiles countries such as Canada, Britain, and other developed countries are seen as individualistic (Hong et al, 2011). It is also important to note that individuals who originate from these countries may not necessarily espouse these values. Marcus and Gould (2000) argue that though these two cultural dimensions may influence how individuals adapt to change; this may not be true for everyone.

4.1.2. UNCERTAINTY AVOIDANCE

Hofstede describes the uncertainty avoidance cultural dimension as being associated with a society that has little tolerance for risk and therefore places value on the need for detailed and precise information in order to make decisions (Hofstede, 1984). He subcategorized this cultural dimension into two: high uncertainty avoidance countries and low uncertainty avoidance countries.

High uncertainty avoidance countries emphasize the need for a structured, environment that provides clear-cut rules and/or procedures on how to perform a task (Al-Gahtani et al., 2007). These societies prefer orthodox ways of performing tasks to learning new ones. For instance, higher educational setups in these countries rarely adopt newer educational technologies in classrooms or on campuses (Daly, 2003). They focus solely on the traditional ways of teaching without investing in new ways of teachings (Ogbu, 1992). Countries such as Kuwait, Ghana, Nigeria and Venezuela among others identify as high uncertainty avoidance countries.

Low uncertainty avoidance countries on the other hand are comfortable with unstructured approaches to education (Marcus & Gould, 2000) and are quick to enact reforms to adapt to changing times. Countries like Canada and the United States of America who identify as low uncertainty avoidance societies invest more in ICT in order to stay informed. Thus, they have a higher passion to explore and adopt new ideas related to technology, business practices or other activities (Zhang et al., 2006). Students who originate from countries low in uncertainty avoidance may therefore prefer to engage and explore newer forms of technological tools (Leidner & Kayworth, 2006, Thatcher 2003).

4.1.3. MASCULINITY VERSUS FEMININITY

Another cultural domain this study will explore is the dimension of masculinity vs. femininity. Studies argue that the phenomenon of masculinity and femininity is different from gender. Whereas gender is generally is constructed as male or female, masculinity and femininity measure society's expectations of how individuals should behave (Srite & Karahanna, 2006; Carrey et al, 2002). Masculinity emphasizes that a person should be competitive, goal oriented and must have the zeal to acquire material success whiles femininity emphasizes the need for an individual to uphold values and to have nurturing and restraint abilities (Bearden et al, 2006, Hofstede & Associates, 1998). These orientations have the tendency to influence a person's attitude toward adapting to new technologies. Table 1 presents a summary of the definitions of Hofstede's cultural dimensions used in this study .[13]

Table 1- HOFSTEDE'S CULTURAL DIMENSIONS

Hofstede's National Cultural Dimensions	
Individualism/Collectivism	"Degree to which the individual emphasizes his/her own needs as opposed to the group needs and prefer to act as an individual rather than as a member of a group'.

[13] Hofstede, G.(1980) Culture's Consequences: International Differences in Work-Related Values, Sage Publications, Beverly Hills, CA, 1980.

Uncertainty Avoidance	“Uncertainty avoidance examines the extent to which one feels threatened by ambiguous situations. It focuses on the level of tolerance for uncertainty and ambiguity within the society”
Masculinity/Femininity	“Masculinity measures the degree to which ‘‘masculine’’ values like assertiveness, performance, success and competition prevail over ‘‘feminine’’ values like the quality of life, maintaining warm personal relationships, service, caring, and solidarity”

4.2. STUDENTS’ TECHNOLOGY EXPERIENCES

Another area rarely investigated is the relationship between students’ technology engagement and their adaptation to educational technologies. Studies suggest that although technology and social media has been embraced globally, fewer studies have been conducted on the impact it has on students’ adoption to learning management system (Gikas & Grant, 2013; De-Marcos et al. 2012; Irwin et al, 2012). This is partly because of the perception that students’ technology exposure is similar (Jones & Shao, 2011).

Social media, a technological platform represents a variety of networked tools, platforms and technologies, which are primarily used channels for communication (Dabbagh & Reo, 2011a). They are seen as platforms that enable individuals to

establish and maintain interpersonal relationships with friends, families and colleagues (Muscanell et.al 2012). Studies suggest that the majority of individuals regardless of their gender, age and country of origin engage with these social media networks in various ways (Quan-Haase et al, 2002). For instance, studies have observed that the gap between the use of social media by relatively mature students and younger ones continues to shrink (Lenhart et al., 2011; Smith & Caruso, 2010; Statistics Canada, 2010; ELI, 2007). These studies also report a constant increase in the use of social media by students in general. Sites such as Facebook, Twitter, YouTube, and Skype, among others do not only facilitate communication, but also provide the platform for academic discussions (Gikas & Grant, 2013; Maton & Bennett, 2010; Ajjan & Hartshorne, 2008).

Other researchers argue that children who engage actively with technology with prior to enrolling in university gain useful skills that make it relatively easier for them to adapt to new technologies (De Rosa et al, 2003; Gee, 2003; Snyder et al., 2002). Research has also found that international students from less advanced technological countries who constantly engage with technology and other social media platforms have some leverage over other immigrants who were not exposed to different forms of technology (Dabbagh & Kitsantas, 2012; Thomas & Thomas, 2012; O'Hear & Sefton-Green, 2004). However, other researchers also argue that access to computers and the Internet as well as the active engagement with social media does not always contribute to students' successful adaptation to learning management platforms (Kennedy et al., 2008; Pence 2007, 2006; Rodgers &

Sheldon, 2005; Angus et al., 2004). These studies note that the type of activities that students engage in make the difference.

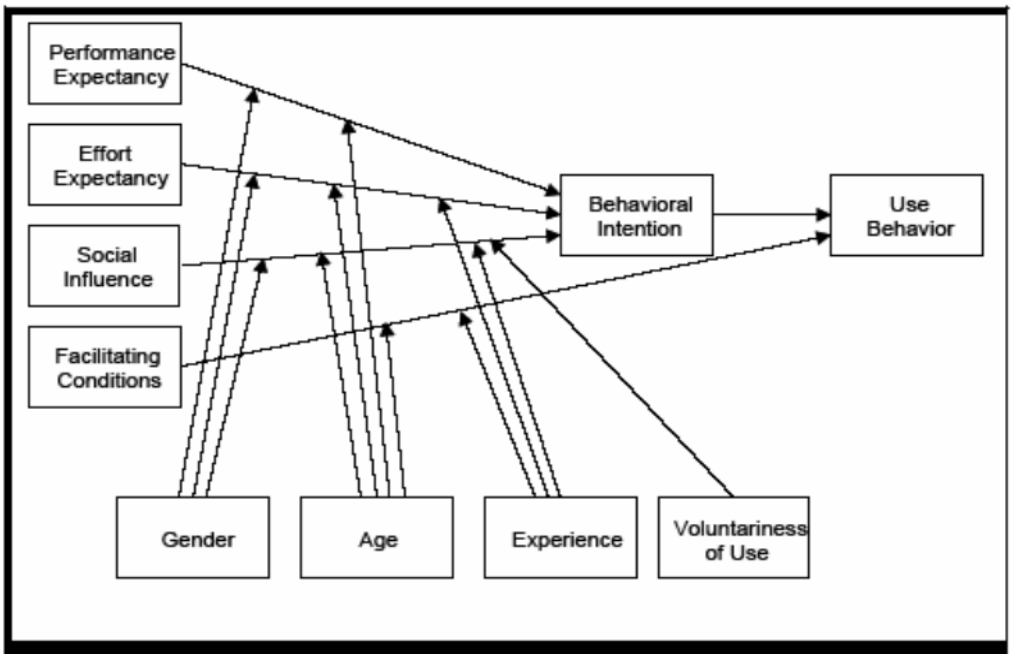
These assertions support the research finding, which argues that students in the information era are not homogenous in their technology experiences (Kennedy et al, 2008). These studies identified that there are different levels of technology experiences between users of different countries and cultural backgrounds (Fusilier & Durlabhji, 2005), hence the need to understand students' experiences within their context.

4.3. THEORETICAL FRAMEWORK

4.3.1. UNIFIED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY MODEL

The study employed and modified a social psychological theoretical framework known as the unified theory of acceptance and use of information technology model to understand students' Sakai adaptation experiences. Unified theory of acceptance and use of technology (UTAUT) is a model developed by Venkatesh, Morris and Davis (2003) to understand individual's adoption to new technologies. The model below (**see Figure 1**) reflects a person's behavioural intention to use new technologies in a voluntarily setting and how these perceptions change over time (Venkates et al., 2003).

Figure 1-UNIFIED THEORY OF ACCEPTANCE MODEL



In their investigation, Venkatesh and colleagues identified four core constructs they believed influenced a person's adoption to new technologies. These four core constructs are Performance Expectancy (PE), Effort Expectancy (EE), Facilitating Conditions (FC) and Social Influence (SI). In addition to these categories, they also identified some moderating variables that influence peoples' adoption behaviour. They found that experience, gender, age and voluntariness were the most significant moderating variables. These moderating variables they argued are determinants of a person's behavioural intention (BI) to use a new technology either in a voluntary setting.

However, despite the extensive use of the UTAUT theory, research has found that the model is mostly employed to investigate users' technology adoption in a voluntarily environment and less research in conducted in a mandatory technology adoption setting. (Chan et al., 2010). The reason for the limited

research in mandatory settings is attributed to the challenge researcher's face in empirically testing the differences in experiences among users (Brown et al., 2002). Nah et al. (2004) argue that the differences in the extent of use of technology in a mandatory environment will vary among users, which will lead to variance in user satisfaction (Nah et al., 2004).

They suggested that the dependent variable (behavioral intention), in the original UTAUT model needs to be changed to fit studies conducted within a mandatory setting (Maillet etal.,2015; Chan et al, 2010; Wu & Lederer, 2009; Anderson& Schwager, 2004; Denktash et al., 2003; Brown et al., 2002). They suggest that user satisfaction is a more appropriate dependent variable in mandatory environments when applying the UTAUT model (Jarupathirun et al., 2010; Ahmad, 2008; Brown et al., 2008; Brown et al., 2002). This modification is important because unlike the voluntary environment where people can decide to use or not to use a particular technology, individuals in the mandatory setting are expected to use the new technology regardless of personal belief or attitude (Adamson & Shine, 2003; Brown et al, 2002; DeLone & McLean, 1992). Failure to use or not to use this technology can elicit rewards or punishments (Denktash & Davis, 2000). Within a mandatory setting, the directive to use newer technological platforms emanates from the structure and culture of the organization (Brown et al., 2002) and not necessarily driven by authority figures such as professors.

Also, although the UTAUT theory is new compared to the other eight user acceptance models, it is known for its comprehensiveness, validity and reliability (IM et al., 2011; AlAwadhi & Morris, 2008). It has also been tested and applied to

understanding peoples' technology adoption in the area of online bulletin boards (Marchewka et al., 2007); tablet PCs (Anderson et al, 2006) and instant messengers (Lee et al., 2007) and many more. In most of these studies, the viability and reliability of the UTAUT model was supported by the results of the studies. The UTAUT model has also been used to test technology adoption in different cultures (IM et al. 2011; Fusilier et al., 2008; Sun & Zhang, 2006) educational technology acceptance in Turkey (Göğüş, & Nistor, 2012) and employees' acceptance and use of computers in Saudi (Al-Gahtani, Hubona, & Wang, 2007) and organisations (Venkatesh, Sykes, & Zhang, 2011; Zhan, Wang, & Xia, 2011),

Based on the tested reliability of this model, the UTAUT theory is ideally suited for this study. It is also the best fit because it offers some level of flexibility that allows the introduction of new dimensions (Oriji, 2010). This flexibility is particularly important to this research because of the additional factors it aims to explore.

In this study, performance expectancy is measured in terms of benefits associated with the use of Sakai for independent learning by students or its use for collaborative learning. Effort expectancy is measured by the ease of use of the Sakai platform. Social influence measures the influence of third parties (professors, friends, teaching assistants) on students' use of Sakai. Lastly, facilitating conditions is measured by students' reported perception of their ability to access resources necessary to support individual adaptation to Sakai. User

Satisfaction is measured by the overall satisfaction students receive from using Sakai.

Below **(i.e. Table 2)** is a brief description of the four core constructs and the dependent variable in the UTAUT model as defined by Venktash et al. (2003). The table also includes the definition of user satisfaction as defined by Brown et al. (2002).

Table 2-DEFINITIONS OF THE CONSTRUCTS IN THE UTAUT MODEL[14]

Construct	Definition
Performance Expectancy (PE)	"The degree to which an individual believes that using the system will help him or her to attain gains in job performance"
Effort Expectancy (EE)	"The degree of ease associated with the use of the system"
Social Influence (SI)	"The degree to which an individual perceives that important others believe he or she should use the new system"

[14] Venkatesh et al. (2003).

Facilitating Conditions (FC)	The degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system
User Satisfaction (US)	"Overall satisfaction associated with using the system"

5. MODEL AND HYPOTHESIS DEVELOPMENT

I hypothesize that results from the survey will provide evidence of students' satisfaction in relation to the use of Sakai. The study also aims to prove that the independent variables will influence students' satisfaction differently. Thus performance expectancy and effort expectancy will positively influence first year students' satisfaction to the use of Sakai at Brock University (Aggelidis et al., 2009; Pare et al, 2006; Thong et al., 2006; Brown et al., 2002, Hong et al., 2002). Due to the mandatory nature of Sakai platform, social influence is not expected to have a significant influence on user satisfaction. I expect facilitation conditions to have a positive influence on user satisfaction as users vary in terms of their ability to access and use resources, such as help-desk support, training and peer support (Sykes et al., 2009; Hsieh et al., 2008).

***H1a**: Performance expectancy will positively influence user satisfaction of Sakai.*

***H1b:** Effort expectancy will positively influence user satisfaction of Sakai.*

H1*c: Social influence will not have an effect on the user satisfaction of Sakai.*

H1d: *Facilitating conditions will positively influence user satisfaction of Sakai.*

Similar to other research findings (Khechine et al.,2014, Bandyopadhyay & Fraccastoro, 2007; Morris et al., 2005; Venkatesh et al.,2003), I expect gender and technology experience to influence the dependent variable (user satisfaction). The inclusion of technology experiences as a moderator in this study is consistent with other research studies (Sun & Zhang, 2006; Denktash et. al., 2003). These studies suggest that there are different levels of technology experience among users (Fusilier & Durlabhji, 2005; Musa et al., 2005) hence the need to understand students' experiences within their context.

Also, research has shown that technology experience has a negative influence on effort expectancy (AlGahtani et al., 2007; Jiang et.al. 2000; Agarwal & Prasad, 1999), which, in turn, influences user satisfaction (Lee & Park, 2008). The reason being that more experienced users of technology would tend to be less concerned with the ease of use of the Sakai platform because they believe they possess the skills needed to adapt to its use. Research has also shown that technology experience will negatively influence facilitating conditions such that students who actively engage with technological tools are less likely to use support systems provided. Research suggests that this will be more pronounced for men due to their extensive engagement with technology (Venkatesh et al., 2012).

***H2**: Technology experience will negatively moderate the influence of effort expectancy on user satisfaction and this is more pronounced for male students than female students.*

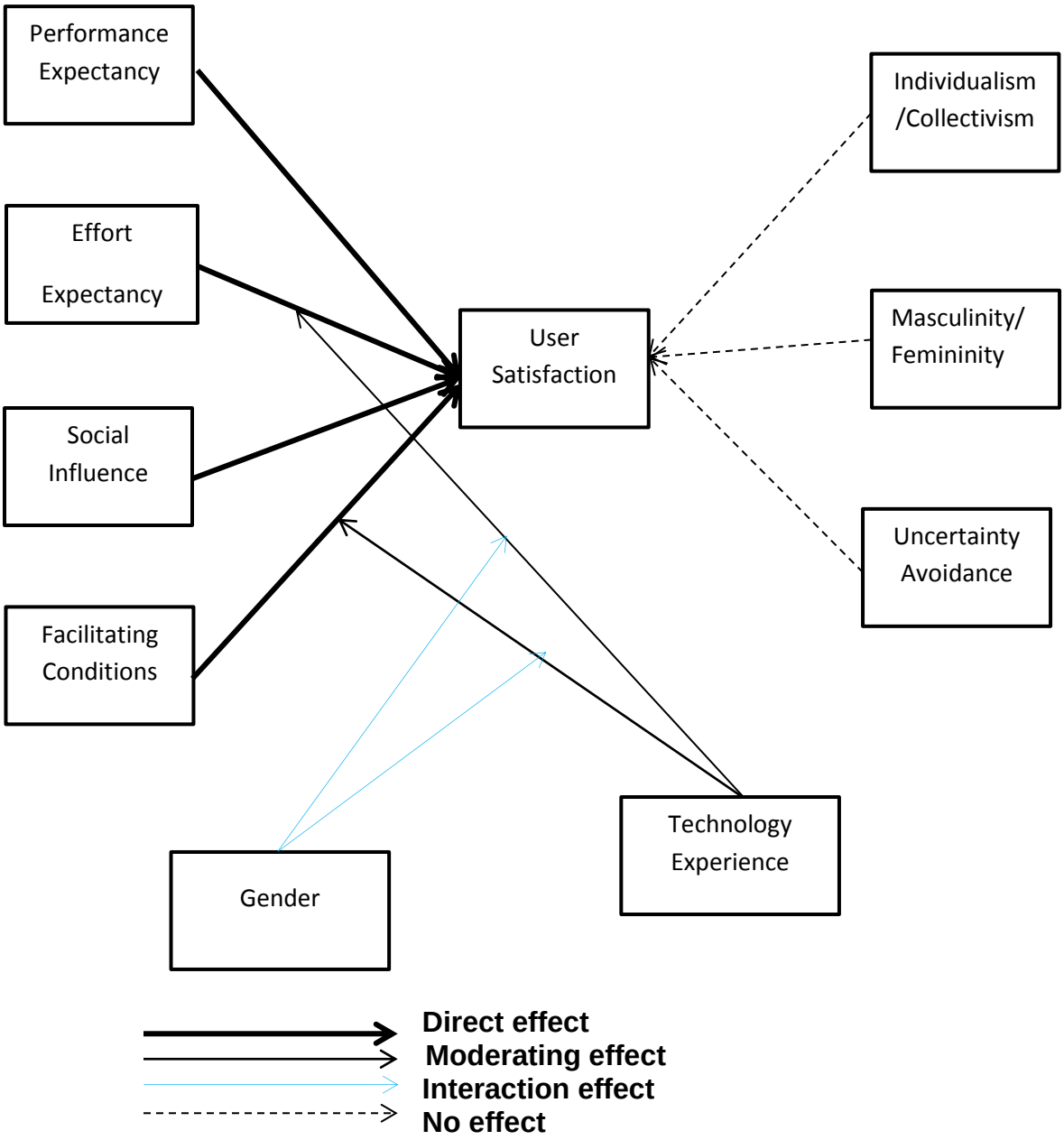
***H3:** Technology experience will positively moderate the influence of facilitating condition on user satisfaction and this is more pronounced for female students than male students.*

Unlike the voluntary setting where a person's technology orientation has the tendency of influencing their attitude toward adapting to new technology, culture has no impact on how students adapt to new technology (Sakai) in a mandatory setting. For example, in voluntary settings, individualism (Zakour, 2007) and masculinity (Nistor et al, 2013) are reported as having negative influences on social influence. Also high uncertainty culture has been found to effect effort expectancy positively in voluntary settings (Bankole et.al 2011). However due to the fact that this study is set in a mandatory setup, I expect no significant moderating effects of culture on user satisfaction.

***H4**: There will no significant moderating effect of culture (measured by individualism, masculinity and uncertainty avoidance) on user satisfaction in mandatory technology adoption settings*

Below is a conceptual representation of the hypothesis (**F**igure 2)

Figure 2-CONCEPTUAL REPRESENTATION OF THE HYPOTHESIS



5: METHODOLOGY

The study employed a mixed methods research approach in which both quantitative and qualitative methods were used (Aspden & Helm, 2004; Johnson & Onwuegbuzie, 2004). Specifically, this study adopted the triangulation mixed method strategy. Triangulation refers to the validation of research methods (Rocco et al., 2003). It promotes the idea that qualitative and quantitative methods should be viewed as research methods that complement each other. Jick (1979) calls for the use of more than one research method to validate the research process and also to ensure that the research question has been answered thoroughly. This approach is appropriate to my study as it uses interviews and focus group discussions, as well as online questionnaires to assess students' experiences in the use of Sakai.

The mixed method research approach is considered to be expansive and a creative form of research, which does not limit researchers. Also it is described as an inclusive and pluralistic way for selecting methods and conducting research (Johnson et al, 2004). Evans et al. (2011) argue that this approach to data collection allows researchers to acquire new knowledge within uncertain and unstable environments. These identified strengths are the reason why a mixed method approach was adopted to explore the experiences of students.

The overall shape of this research study was based on two underlying tenets (Mayes, 2006; Sharpe 2005). First, it takes a learner-centered approach as

the learners' own views and opinions about the use of Sakai become central to the study. Second, the study adopted a holistic approach in which first year students' adaptation to Sakai was set within the context of their learning experience.

In order to achieve the research objectives described above, two steps were taken. The first step involved the completion of an online survey by participants (see Appendix D) using Qualtrics software. The survey included demographic questions, questions on student experiences with Sakai, as well as student experiences with other technologies. Also based on the UTAUT theory, participants were asked questions about the usefulness of Sakai to their academic activities and the ease of use of Sakai. They were also asked questions regarding the availability of help centers or persons to assist with the use of Sakai. They answered these questions on a Likert scale of 1 to 5, with 1 representing strongly agree and 5 representing strongly disagree. The second component of the study involved participants engaging in focus group discussion. The study also made provision for individual interview sessions as an option in the case of scheduling challenges or student preferences. The purpose of the focus group discussion was to gain more in-depth meaning and context to the dominant questions and responses identified in the online survey. Research suggests that feedback obtained from focus group discussions is more specific and meaningful than the information obtained from individual surveys (Patton, 2002). In view of this, prior to the focus group discussions and interview, responses from the online surveys were analyzed to identify common themes. Participants engaged in group

discussions to delve deeper into these themes to help illuminate the reasons behind students' responses.

5.1. PARTICIPANTS

Participants for this research were recruited solely from the Brock University campus. Both domestic and international students who had completed their first year undergraduate courses in the university were eligible to participate in the study. The time frame of two academic terms was deemed appropriate as it allows for changes to occur in individuals with respect to their experiences using the Sakai. As Berry (2012) explains, change is a process that continues long after original interaction with technology has occurred. Therefore, it was thought that a time span of two academic terms was appropriate for participants to reflect the experiences of using Sakai.

A total of one hundred and thirty-one second year undergraduate students completed the survey online. Thirty-five percent (35%) were males and 65% of the respondents were female. Three fourths (93%) of the participants were within the age range of 18 and 24 years, six percent (6%) were within the ages of 25 and 34, two percent were (2%) between the ages of 35 and 44 years and one percent (1%) between the ages of 45 years and above. Majority of the participants were Canadian (80%), while 20% were international student. This vast difference between participants is partly attributed to international student participants not reporting their country of origin. Countries recorded were China, Cameroon, Ghana, Kuwait, Mali, Nigeria, and Venezuela. Ninety-eight (98%) of respondent were full-time students, with two percent (2%) reported being part-time students.

Quite a varied number of the departments were represented in the study. The departments are listed in alphabetical order: Biology, Business Accounting, Business Administration, Business communication Child and Youth studies, Computer science, Concurrent education, Earth science, Economics, Film studies, Geography, General Arts, History, Mathematics, Media and communication, Psychology and Tourism.

5.2. PROCEDURE

The research ethics board at Brock University provided clearance for the recruitment of participants. The data collection was conducted over the course of the fall semester at Brock University from the beginning of October, 2015 to the end of February, 2016. However, during the winter break, the survey link was disabled and reactivated in January when school resumed. Participants were recruited by sending an announcement (Appendix B), which contained the invitation letter and the survey link to all course instructors who were teaching second year courses in the fall term with a request that those instructors post the invitation and the link on their Sakai course site for students. This medium allowed the researcher to communicate the purpose of the research with potential participants and answer any follow up questions either by email or by personal communication. The request was sent to (35) professors and (27) professors were able to comply with the request. As not all professors were able to post the link and not all students in second year classes responded to the invitation, only a subset of second year students participated in the study. In order to increase the number of international students, the announcement with survey link was sent to

the head of international student services, who had access to the data of second year international. The database was acquired through the yearly registration of international students. When students access the survey link they were taken to the qualtrics site where they had to read through the consent form prior to being able to access the survey. At the end of the survey, participants had the option to complete a ballot form, copy and send it to me via email for a chance to win a $20 gift card.

The survey was anonymous with no identification assigned to participants. Adhering to this procedure of recruiting participants assured the participants that the course instructors would have no knowledge of whether or not they chose to participate in the research. Also, participants were informed in the consent form that their identity and participation would remain anonymous. It also informed participants that, the study was voluntary and refusal to participate would not affect them in any way. Again to prevent participants from completing the survey twice for a greater chance of winning a $20-dollar gift card, restrictions were applied to the online survey. Participants who had already completed the survey once were not permitted to complete it again. A restrictive code was placed on the link to help prevent duplication. Also, it was the goal of the researcher to obtain a total of two hundred (200) second year participants, 100 Canadian students and 100 international students regardless of their place of origin. An attempt was made to obtain equal number of male and female participants. As a result, a quota was placed on the link to prevent participants from exceeding this limit. A limit of 50

Canadian males, 50 Canadian females, 50 international male students and 50 international female students was expected.

There was no compensation for the online participation other than the online ballot forms, which entered students into a draw for $20.00 gift cards. All submitted ballot forms were printed out in hard copies and a raffle was drawn randomly through manual procedure. One out of every ten participants whose email address was drawn from the raffle was each given a $20 indigo gift card. In addition, participants were asked to indicate interest in being contacted for the focus group discussion. There were no costs for participation in the focus group. The focus group lasted for one hour as well as the individual interview session. Participants of the focus group and the interview session were provided with a snack after the focus group discussion as well as a $10 indigo card as a compensation for their time.

5.3. QUANTITATIVE COMPONENT

This section will discuss the quantitative component of the research in detail. Quantitative research constitutes statistical approach to research design. Leedy and Ormrod (2001) argue that the quantitative approach to research seeks to validate and generalize research results. The first phase of the research was an online survey which participants were expected to complete**.** To validate the model, I developed a questionnaire and administered it to second year students. Participants could complete this survey in the comfort of their homes without necessarily having to be at a specific location. Items in the survey were based on tested scales in the literature and based on the UTAUT model. However, I modified

some previously validated scales to better fit the current research context. Scales for performance expectancy (6 items), effort expectancy (6 items), social influence (3 items), facilitating condition (5 items), and user satisfaction (4 items) were created based on the syntheses in DeLone and McLean (1992) and Maillet et al., (2015). All of the previous items were asked using a 5-point Likert-scale ranging from “strongly disagree” to “strongly agree.” A sample of the online questionnaire is displayed in Appendix **D**. After the online data collection process in February, 2016, the results were analyzed.

6. ANALYSIS

The data was inspected for data entry errors. It proved impossible to replace some of the values by way of mean substitution for twenty-nine questionnaires due to the large size of missing data. These twenty-nine questionnaires were deleted to arrive at a final sample of 102. These twenty-nine questionnaires could not be included in the final analysis due to the fact that most of these participants answered only the demographic section of the study. The questionnaires that were critical to the formulation of models and the testing of hypothesis were either not answered or thoroughly completed by these participants. The majority of participants (77%) enrolled into the university directly after grade 12, 10% had previous university experience, 9% had previous college experience, 2% were working professionals enrolled into the university to further their education, and lastly 8% represented participants who worked for a while after grade 12 before enrolling into the university. Feedback on the impact of technology experience on

Sakai adaptation showed that 19% were expected to submit all their first year assignments through Sakai, 22% reported more than half of their first year courses expected them to submit their assignment online, 19% of the respondent were expected to submit at least half of their assignments through Sakai, 36% responded less than half of their first year professors expected them to submit assignment through Sakai and 4% reported none of their courses expected them to submit their assignments on Sakai. Also 57% of the respondents were required by all their professors to use Sakai as their source of resource information, others reported at least 7% of their professors expected them to use Sakai as an information resource, 5% reported less than half of their professors expected them to use Sakai as an information resource and lastly 1% reported none of their professors expected them to use Sakai for course information. Finally, while some of the respondents (38%) used Sakai as a source of information even though they were required by their courses, others (15%) used it for more than half of their courses, 14% used it for at least half of their courses, 12% used it for less than half of them of the courses and 20% did not use Sakai as their source of academic information.

6.1. PSYCHOMETRIC PROPERTIES OF MEASURES

6.1.1. RELIABILITY OF THE MODEL CONSTRUCTS

As performed in the original UTAUT studies (Venktash & Zhang 2010; Venktash et al. 2003), this study also employed the partial least squares (PLS) regression to examine the reliability of the constructs. I also measured the direct and moderating effects of the presented research structure. PLS is appropriate for the

analysis of the psychometric properties of indicators used to measure a construct and is also well suited for estimating both the direction and strength of the relationships among model variables within a structural model (Omar et.al 2011, Chin et al. 2003). PLS has also been found to be a suitable approach when dealing with small sample sizes (Ringle, Wende, & Will 2005). The reliability measures and research models were tested using both SmartPLS 3.0 and WarpPls 5.0, as these statistical programs are recommended for PLS studies with smaller sample sizes (i.e. Less than 200) (Hair et. al., 2011).

Validated items from prior research were adopted and modified to measure the six latent constructs - performance expectancy, effort expectancy, social influence, facilitating conditions, technology experience and user satisfaction (Jarupathirun et al., 2010; Venktash et al. 2003). As performed in other studies, I transposed the scales of the negatively worded questions to match the questions that were positively worded (Colosi, 2005). Similar to prior benchmark studies, all constructs were modeled as reflective as opposed to formative (Henseler, et al.2009).

Before proceeding with the main model estimation procedures, I conducted preliminary analyses for each of the six constructs to test the reliability and validity of the different scales used. Lee et al. (2009) and Yu (2011) suggests assessment of validity and reliability of model constructs by analyzing the factor loadings, composite reliability and discriminant validity[15] of the constructs. To improve the validity of constructs, it is recommended that factors should load in excess of 0.5

[15] Discriminate validity is seen as the degree to which a construct is different from any other constructs in the model (El-Gayar, 2011).

unto those constructs (Hair et al., 2011). The factors here refer to the individual questions that make up the constructs. Factors (questions) below 0.5 were deleted from the model to arrive at the final presented list in Table 1. Composite reliability values above 0.70 and Average Variance Extracted (AVE)[16] above 0.5 are seen as acceptable (Chin 1998; Fornell and Larcker 1981). For acceptable discriminate validity values, Fornell and Larcker (1981) propose that loadings of constructs should be higher than their cross-loadings. Also the square root of their AVE should also exceed the inter-construct correlations (Chin 1998).

Table 3 presents factor loadings for individual variables as well as the composite reliability and AVE values of the latent constructs. Assessment of construct validity shows that composite reliability was above 0.7 for all six latent constructs. Average Variance Extracted (AVE) was above the proposed value of 0.5 for all constructs except performance and technology experience. I maintained performance and technology experience factors in the model due to their importance and relevance to the original adopted model measures (Akbar, 2013). As shown in Table 4, there is adequate discriminate validity as the diagonal values (bold) are greater than the corresponding correlation values in the adjoining columns and rows. Overall, an acceptable level of reliability and construct validity was achieved for both the instruments and the model.

[16] AVE measures the amount of variance that is captured by the construct in relation to the amount of variance due to measurement error-(http://stats.stackexchange.com/questions/8695/ave-composite-reliability-with-spss)

Table 3- RELIABILITY OF THE MODEL CONSTRUCTS

Scale	**Items**	**Loadings**	**Composite reliability**	**AVE**
Performance Expectancy	PE1	0.807	0.844	0.478
	PE2	0.769		
	PE3	0.704		
	PE4	0.671		
	PE5	0.561		
	PE6	0.605		
Effort expectancy	EE1	0.824	0.895	0.589
	EE2	0.756		
	EE3	0.800		
	EE4	0.669		
	EE5	0.743		
	EE6	0.800		
Social Influence	SI2	0.729	0.804	0.675
	SI3	0.905		
Facilitating conditions	FE4	0.885	0.788	0.675
	FE5	0.724		
Technology experience	TECHEXP2	0.868	0.818	0.384
	TECHEXP4	0.811		
	TECHEXP6	0.603		

	TECHEXP8 TEXCHEXP9	0.830 0.758		
User satisfaction	US1 US2 US3	0.739 0.890 0.807	0.854	0.663

Table 4 -DISCRIMINANT VALIDITY

Scale	**PE**	**EE**	**SI**	**FC**	**TECX**	**US**
Performance expectancy(PE)	**0.692**					
Effort Expectancy(EE)	0.528	**0.767**				
Social influence(SI)	0.384	0.397	**0.822**			
Facilitating conditions(FC)	0.404	0.527	0.384	**0.808**		
Technology experience(TECHEXP)	0.454	0.381	0.192	0.454	**0.780**	
User experience(US)	0.680	0.579	0.432	0.463	0.493	**0.814**

6.2. MAIN RESULTS

Through a hierarchical step approach, I began by analyzing the direct effects for the total sample with technology experience as the moderator variable. This was performed to examine hypothesis H1a, H1b H1c and H1d. I then tested hypothesis H2 by partitioning the sample into two groups (i.e. male and female) and then estimating the direct and moderation effects for both samples separately. Table 5 presents results for direct, indirect and moderating effects. Appendix C contains model results for the entire model estimations performed in this study. The models presented in Table 5 have user satisfaction as the dependent variable, performance expectancy, effort expectancy, social influence and facilitating conditions as independent variables with technology experience as the moderator.

Model 1 presents results for the total data sample. Models 2 and 3 are the estimation results for male and female respondents respectively. The independent variables explain 57%, 70% and 75% of the variance in the user satisfaction variable for models 1, 2 and 3 respectively[17]. As shown in all three models, the strongest determinant of user satisfaction is performance expectancy followed by effort expectancy. The strength and significance of the positive effect of performance expectancy provides support for H1a. The results also show a positive significant effect of effort expectancy on user satisfaction confirming support for H1b. This suggests that apart from the importance students attach to the perceived performance enhancing role of new technology, the user friendliness of such platforms also play a vital role in the satisfaction they receive from the use of these platforms. As expected, social influence did not have a significant effect

[17] Measured by R^2

on user satisfaction due to the fact that the use of Sakai is mandatory, providing support for H1c. However, hypothesis H1d was not supported as the positive effect for facilitating conditions was not significant. This runs contrary to studies such as Chan et al. (2010), who found a significant positive relationship for facilitating conditions. These results are not surprising as previous studies have reported performance expectancy and effort expectancy as the two most common technological attributes of positive user satisfaction (e.g., Brown et al., 2008; Thong et al., 2006; Venktash et al., 2003; Hong et al., 2002).

Further, there is evidence in Table 5 to support the moderating effect of technology experience on user satisfaction especially for males. Model 2 shows that technology experience negatively moderates the effect of effort expectancy on user satisfaction for the male group providing confirmation for H3. This confirms the position that males (perceived as more technologically inclined) would be less affected by the ease of use or otherwise of a technology platform.

Table 5-MODEL RESULTS

Scale	**Model 1 – All**	**Model 2 - Male only**	**Model 3 - Female only**
R^2	0.57	0.70	0.75
Performance expectancy(PE)	0.454***	0.266**	0.645***
Effort expectancy (EE)	0.293***	0.231*	0.067
Social Influence (SI)	0.054	0.066	0.166
Facilitating Condition (FC)	0.005	0.208*	0.118
Technology Experience(TECHEXP) *EE	0.123	-0.414***	0.239**
Technology Experience*FC	0.114	-0.154	-0.121

Significance ***p < .01. **p < .05

Previous studies on UTAT have mainly adopted Hofstede's individualism, masculinity and uncertainty dimensions as a measure of culture (Nistor et al 2013; Im & Kang, 2011; Min & QU, 2008; Oshlyansky & Thimbleby, 2007). To test for hypothesis H4, I run a PLS estimation model using technology experience and

culture (measured by individualism, masculinity, uncertainty) as moderating variables. I ran this model with the total sample size with the four main constructs as independent variables and user satisfaction as the dependent.

Table 6-CULTURES AND THEIR VALUES

VALUES	**Canada**	**Venezuela**	**China**	**Kuwait**	**East and West Africa**
Individualism	High	Low	Low	Low	Low
Masculinity	Medium	High	Low	Low	High
Uncertainty Avoidance	Low	High	Low	High	High

The data shows that 20% of the students were international students. The countries identified were Kuwait, Mali, Cameroon, Tanzania, Nigeria, China and Ghana. Shi and Wang, J. (2011) reported West African and East African countries as having similar Hofstede scores. I therefore set out the cultural differences as follows: Canada, Venezuela, China, Kuwait and West and East Africa (collectively as one bloc). I assigned values of 1, 2 and 3 to the low, medium and high categorizations respectively based on Hofstede's benchmark (Nistor et al., 2014, IM et. al.2011). Canada scored high in individualism, medium in masculinity and

low in uncertainty (see Table 6). China scored low in individualism, masculinity and uncertainty avoidance. Kuwait scored low on individualism, masculinity and high in uncertainty avoidance. The West and East African countries scored low in individualism and high in masculinity and uncertainty. Venezuela scored low in individualism and high in uncertainty avoidance.

Table 7- MODELS (CULTURE)

Scale	
R^2	0.57
PE	0.442***
EE	0.309***
SI	0.084
FC	0.059
TECHEXP*EE	0.092
TECHEXP*FC	0.112
MASC*SI	0.070
INDV*SI	0.104
UNCERT*EE	-0.093

Significance ***p < .01. **p < .05. *p < .1.

In this model, the independent variables accounted for 57% of the variances in user satisfaction. As predicted in H4, culture had no significant moderating effect in the mandatory setting like Brock University. Individualism and masculinity had no significant effect on social influence. Uncertainty avoidance also had no significant effect on effort expectancy. This result was contrary to some studies

that found significant negative effects of individualism on social influence (Zakour, 2007) and significant positive effects of uncertainty avoidance on effort expectancy in the voluntary setting (Bankole et.al 2011).

Table 8 is a summary of the hypothesis and results.

Table 8- HYPOTHESIS SUMMARY

Hypothesis	**Statement**	**Outcome**	
H1a	Performance expectancy will positively influence user satisfaction of Sakai.	0.454*** (p<0.01)	**Supported**
H1b	Effort expectancy will positively influence user satisfaction of Sakai.	0.293*** (p<0.01)	**Supported**
H1c	Social influence will not have an effect on the user satisfaction of Sakai.	0.0540 (p=0.29)	**Supported**
H1d	Facilitating conditions will positively influence user satisfaction of Sakai.	0.005 (p=0.48)	**Not supported**
H2	Technology experience will negatively moderate the influence of effort expectancy on user satisfaction and this is more pronounced for male students than female students.	Males -0.414*** (p<0.01) Females 0.239** (p=0.02)	**Supported**
H3	Technology experience will positively moderate the influence of facilitating conditions on user satisfaction and this is more pronounced for female students than male students.	Males -0.154 (p=0.16) Female -0.121 (p=0.16)	**Not Supported**

H4	There will no significant moderating effect of culture (measured by masculinity, individualism and uncertainty avoidance) on user satisfaction in mandatory technology adoption settings.	Masculinity 0.0070 (p=0.24) Individualism 0.104 (p=0.14) Uncertainty avoidance -0.093 (p=0.17)	**Supported**

6.3. QUALITATIVE COMPONENT- FOCUS GROUPS/INDIVIDUAL INTERVIEW

The second phase of the analysis process was the qualitative component. Bolderston (2012) asserts that interviews and focus group discussions afford the researcher the opportunity to engage with participants in a research study. Rowley (2012) also observes that interviews enable the researcher to understand the experiences and viewpoints of participants. In order to achieve the stated goals for this thesis, I decided to conduct a focus group and individual interviews with participants. Focus group discussions are interviews designed for small groups in which a moderator discusses the common experiences of group members (Berg, 2004). It involves the gathering of information on a viewpoint of the participants and not necessarily focused on reaching a consensus among group members.

Focus group discussions are a useful methodology as they provide access to a larger pool of data than individual interviews or participants' observations (Pugsley, 1996). Participants for focus group discussions are mostly selected

through a purposive sampling approach from the target population (Kruger et al, 2009; Lederman, 1990). Patton (2002) argues that the feedback obtained from a focus group is more meaningful and provides a platform for in-depth analysis than the information obtained from individual surveys. It also gives individuals within the discussion group the opportunity to hear the opinions of other participants before forming their own opinion.

Despite these strengths, Fontana and Frey (1994) notes that there is the possibility of one or two individuals dominating these discussions. However, Peek and Fothergill (2009) argue that the issue of participants dominating discussions can be controlled by regulating the size of the focus group. In terms of the optimal group sizes, some researchers suggest 20 participants in a group (Morgan, 1997; Pugsley, 1996), whiles others suggest between 6 and 12 participants (Morgan, 1997; Frey and Fontana, 1991).

Another limitation identified with focus group discussions is the tendency of bias on the part of participants due to the possibility that the opinions of some participants may be swayed by others who are relatively more vocal and dominant (Kitzinger, 1994) and this problem is particularly pronounced for less experienced researchers who moderates these discussions (Kitzinger, 1995).

6.3.1. FOCUS GROUP DEMOGRAPHICS

My goal in this research was to conduct four focus groups with 6 participants in each group. A total of twenty-four (24) participants was anticipated, twelve Canadian (domestic) and twelve international students regardless of their country of origin. However, the number of participants was affected by both participant

availability and lack of attendance. As a result, I conducted two focus group discussion sessions and one individual interview. One of the groups comprised 3 female participants– one international student and two Canadian students, while the second group comprised 4 international students – two international male students and two international female students. There were no domestic male participants. All attempts to get an equal number of participants for both groups failed. Although I was initially concerned about the small sample size, I found that in many ways the small group size worked better. This number allowed participants enough time to share their experiences without being restricted by time. Also, in the first group I was worried that Gifty (pseudonym), one of the international students, would feel shy or her comments would be overshadowed by the two Canadian students. Instead her responses were amazing! She was relaxed and was not intimidated to discuss her experiences. I attributed this confidence to the small number of participants in the focus group. Also the homogeneity (females) of the participants helped participants to capitalize on the experiences given the fact that they had a lot in common. Wood (2008) asserts that individuals with similar experiences or who are in the same situations are able to engage in discussions freely.

The focus group discussion was video-taped and transcribed verbatim to capture students' experiences. Also, due to the small number of participants, I got to know the participants better as a researcher during the session and vice versa. The focus group concluded with participants asking me questions about my research and the progress I am making, my background and what I find interesting

about Canada. In essence, the focus group interviews ended in a manner similar to many of the personal discussions that I have with friends.

6.3.2. INTERVIEW

The second form of data collection was an individual interview conducted with one participant who could not make it to any of the focus groups. This approach provided the opportunity for her to share her experiences using Sakai. The interview was semi-structured and, just like the focus group questions, focused on the experiences of the participant. Research suggests that open-ended interview questions allow for participants to use their own words to describe their experiences and how they feel about a phenomenon (Woodgate, 2005). It also allows the interviewer to explore the themes of participants further (Britten, 2006). One-on-one interviews also provide an opportunity for participants to share any information that they may not have felt comfortable discussing with the group.

6.3.3. PROCEDURE

The first focus group was conducted in a research room on campus at the agreed date and time. The second group on the other hand was conducted in a church meeting room. This location was chosen because participants attended the same church so they preferred that location to any location on campus partly because of differences in schedule. In both cases, I was available to usher participants in. After they settled, I started the video-recorder to commence the discussion. I introduced myself to participants and gave a brief overview of the research topic. After that, I handed over the consent form for them to sign. They

were also reminded they could leave anytime they felt they did not want to continue with the discussion. An attendance sheet (Figure 4) was also given to them to sign containing their names, email addresses and departments. An information form was given out to participants and this form asked participants if they would like the opportunity to review the discussion transcripts and a summary of the project upon completion. Two females in the first group asked to review the transcript and the summary of the project while one girl did not want any information.

The content of the interview questions was similar to that of the focus group questions, however based on the responses of the participant, follow-up questions were asked. The interview was conducted in the Child and Youth graduate laboratory. Similar to the focus group discussion, the individual interview session was video-recorded. The interview session lasted thirty minutes despite my efforts to get the participant to discuss her experiences further. I attributed the short length of the interview to the participant feeling shy of the presence of the interviewer. I anticipate it would have been different if she was part of a focus group. The participant was given time to review the consent form and the questions before the interview started.

6.3.4. COMPENSATION

Although there is some debate on the appropriateness of participatory compensation for participants (Hill, 2005), it has been suggested that by giving a token in return for receiving participants' information, researchers can reduce the potential power inequality between themselves and the participants (Eder & Fingerson, 2003). It is my hope that this compensation ($10 Indigo gift card) served

as a symbol of my gratitude for participants' willingness to participate in the discussion. It also aimed to help them realize that their views were very important to my thesis. At the end of the discussion, participants were also given snacks in the form of pizza, drinks and fruit to compensate them for their time.

6.3.5. FOCUS GROUP DISCUSSIONS

Kruger and Casey (2009) suggest that although moderating a focus group discussion may look simple, it requires the moderator to have mental discipline, preparation and group interactional skills. In order to improve my skill level, I conducted a pilot focus group session with friends in order to gain experience and also to test the focus group questions. Although conducting one pilot focus group by no means made me an expert, the pilot study did allow me to gain a basic understanding of focus group moderation that was further developed with every subsequent focus group session.

In the first session, I found that all three participants were dominant speakers who did not have trouble jumping into the group conversation. They got comfortable with each other prior to starting the focus group discussion. They arrived for the discussion ahead of time, so they had ample time to engage in a discussion before I arrived to usher them in. On the other hand, participants in the second group were composed of both dominant speakers and participants who did not contribute much. Three of the international students, two males and one female, were much more engaged in the discussion than the one female international student, Samantha (pseudonym). Nonetheless, in both cases I tried

to provide ample opportunities for participants to find a space to talk. I specifically directed some of the questions to her to encourage participation. Other times I shifted my attention to Samantha or asked her follow-up questions based on their comment. Although I had outlined questions for participants to engage with, I asked follow up questions based on their responses to encourage more discussions. This approach (concept of saturation) was in accordance with Wong's (2008) recommendation that researchers should facilitate the discussion until it reaches a point where there is repetition of ideas and participants share no new information. In both groups, participants respected each other's opinions and time by giving the opportunity to talk without interrupting except for a very few instances when they made comments in agreement to points made by one participant. The focus group discussions and the interview lasted between forty minutes and one hour and thirty minutes respectively.

6.3.6. QUESTIONS

The discussions began with a series of general questions about technology integration in universities globally before moving on to more specific discussion questions on their experiences with using Sakai. This general-to-specific format is said to be the optimal format for an interview as it presents participants with an opportunity to ease their way into the discussion and gain a sense of comfort speaking in the group before being asked to discuss the issues that are the main focus of the discussion (Esterberg, 2002).

I used open-ended questions, which were based on the dominant themes identified in the online survey questions. The focus group discussion and the

individual interview focused mainly on general questions pertaining to student's experiences with adapting to using Sakai. These questions also reflected questions of the research theory being used. These questions were carefully developed and contained considerable input from the literature (Krueger & Casey, 2009). The questions were divided into five sections. The first few questions pertained to students' views on technology integration globally and how they think it has improved university education. The second section focused on questions regarding Sakai, its usefulness, and the challenges they encountered in using it when they enrolled in the university. Students were also asked to reflect on issues, such as gender, cultural background and their experiences with technology prior to enrolling in the university and how these factors affected their adaptation. Additionally, the third question encouraged participants to reflect on their previous experiences with technology in general prior to their university enrolment and how their access or lack of access impacted their use of Sakai. We also discussed their experiences with social media and how it influenced their adaptation to Sakai.

Lastly, the fifth session compelled students to compare their first year experiences with using Sakai and the current experience. The discussion concluded with a question that asked participants to suggest changes and improvement that could be implemented to making Sakai useful to new students and the student body in general. In addition, I asked follow up questions based on participants' comments to encourage them to reflect deeper on their statements as well as to encourage other similar or different opinions from participants.

6.3.7. TRANSCRIPTION AND ANALYSIS

The data from the video recordings were transcribed and analyzed using Nvivo 11 software. The Nvivo software was used to assist in the process of identifying the themes in the discussions. This process employed specific guidelines for thematic analysis of the qualitative data (Braun & Clarke, 2006; Creswell, 2003). They proposed that the first stage of the analysis process involves the researcher becoming familiar with the content of data and reflecting on the meaning. I adhered to this step by transcribing myself and taking time to read transcribed data. The preliminary analysis was undertaken based on eight broad themes based on the response of participants. This was also developed based on the research questions. This procedure was in accordance with the recommendation that researchers should generate themes to organize the results (Fereday &Muir-Cochrane, 2006; Creswell, 2003)

These themes were the significance of technology integration, uses of Sakai, and usefulness of Sakai, weaknesses of Sakai, Sakai adaptation challenges, previous technology experiences, gender and cultural factors, availability of assistance which had sub theme known as suggestions. Below are brief descriptions of the coded themes and the salient comments.

6.3.8. SIGNIFICANCE OF TECHNOLOGY INTEGRATION

Responses from participants suggest that technology integration in the university is vital to supporting students' learning. They agreed that technology integration speeds up communication between students' and professors and make

access to articles and resources easy. Participants compared spending time at the library searching for books and downloading the books online without having to be at the library. They suggested that the latter made learning simple and easy. Other participants suggested that technology integration in the universities has reduced activities, which require students to use “paper” since all the resources can be found online. One of the participants shifted the discussion briefly and suggested that technology is not only vital in the educational sector; instead she stated that technology has helped the health sector in diagnosing diseases and other health related issues.

Others also suggested that technology integration helps universities to meet up with the growing student population. Notwithstanding these benefits, one of the participants preferred the paper system, such as submitting her assignments and getting the grades from the professor in hard copy format. She also suggested that technology is affecting how people relate to each other, thus instead of people talking to each other in a face-to-face discussion, which her culture promotes, technology has a way of pulling people away from each other. This response was confirmed by another participant when she suggested that technology integration in the university has reduced the teacher-student relationship.

6.3.9. USES OF SAKAI

According to participants’ responses Sakai was used differently in various departments. They also compared it to other courses in which they were enrolled for first year and concluded that there were differences in how professors used the learning management system. The majority of the participants used the Sakai

platform as a medium for submitting their assignments, downloading course articles, reading announcements and checking power point presentations. However, it was surprising that while some of the participants received their grades through Sakai, others received their grades through their student email. Those who discussed more than one course in their first year also identified some differences in how professors used the Sakai platform. They acknowledge that some of the professors used the platforms frequently while others barely used it. Most of them attributed these differences to the lack of technology now-how of professors, while others attributed it to the preferences of professors. Another interesting comment identified was that some of the professors did not use the site frequently because of the number of students in the class. To them, the professor was able to attend to the needs of the class, hence the reason for not relying solely on Sakai.

6.3.10. USEFULNESS OF SAKAI

Sakai was considered by participants to be a useful platform that has improved students' academic activities. However some of them were quick to add that it was only useful if used properly by both professors and students. Some used this platform for communication among themselves. They also noted that Sakai provided up-to-date information about activities in the classroom, for instance class cancellation. They suggested that you do not have been there in person to get access to the information. Likewise, they admitted the platform provided students with the opportunity to access academic information and resources.

6.3.11. WEAKNESSES OF SAKAI

Despite the usefulness of Sakai, participants identified some downfalls of the platform. One of the participants suggested that the platform was not user friendly. She commented that it is sometimes difficult to move from one folder on Sakai to another. Another participant suggested that because Sakai is not a virtual platform, the interaction between students and professors was not enhanced. Also, one of the international students suggested that students were not able to go to the site using their phone like the students' email; as such, students had to check frequently on their laptops for information**.**

6.3.12. SAKAI ADAPTATION CHALLENGES

The majority of the participants, both Canadian and international students, experienced some level of difficulty in using Sakai when they enrolled in the university. These challenges differed from person to person, participants of the same gender and participants of different countries. It is interesting to note that some of the participants from the same country had different experiences. One of the international students commented that she hardly used computers or the Internet in her home country prior to enrolment at Brock, hence adapting to this platform was difficult. Similarly, domestic students acknowledged that they had some challenges adapting to Sakai. These challenges were attributed to the lack of exposure to the Sakai platform and to other similar learning management

systems. However one of the domestic students suggested that she did not have any difficulties adapting to Sakai. She attributed this to her technological skills gained through her exposure to technology in general. One of the international students surprisingly did not have any difficulties using Sakai. She attributed this confidence to her exposure to turnitin.com, which she claimed was more difficult to use than Sakai. Hence, she gained some knowledge from her experience, which she transferred to using Sakai. Others admitted that this platform was not available to them in high school; Sakai was thus a platform new to them and this contributed to any difficulties.

6.3.13. PREVIOUS TECHNOLOGY EXPERIENCES

Almost all participants attributed their ability to adapt to Saki to their previous experiences with technology. They suggested that even though the platform was new to them they were able to explore and adapt to using Sakai. This experience was gained from engaging with technologies prior to university enrolment as well as their social media engagement. For instance, one of the international students suggested she did not have access to technology, but when she came to Canada, she started engaging with social media as a way to communicate with her family back home. Hence she was able to acquire some level of technology skills, which assisted her with using Sakai. Regardless of whether participants had access to personal computers or had to use public computers or family computers, the majority of them admitted that their engagement with technology prior to their university enrolment impacted their experience to using Sakai.

6.3.14. GENDER AND CULTURAL FACTORS

Participants were asked whether they would attribute their adaptation experiences to gender and culture. Almost all participants responded that gender did not have an impact on how they adapted to Sakai. They suggested that both men and women use technology – to them the only difference in usage was attributed to individual preferences. Domestic students attributed this experience to the lack of information and not their gender. They asserted that Canada is very open to technology so their gender does not restrict their usage. However international students in the group attributed their difficulties to their cultural background and the availability of technologies in their homes. Others also attributed this to this class. They suggest that computers and the Internet were difficult to come by both at home and in their schools, hence they mostly come to the university little to no technology skills. Similar to the domestic students, they did not attribute their adaptation experience to gender. However, one of male international students suggested that men are good with technology and exploring new platforms hence gender may play a little role.

6.3.15. AVAILABILITY OF ASSISTANCE AND SUGGESTION

Some of the participants suggested there were resources and individuals who assisted them in their adaptation. The international student services department at Brock assisted one of the international students. However, the other international student did not know this help clinic was available. Other international students contacted friends in their class who were Canadians for assistance while

some of them explored the platform themselves. One domestic student indicated that she contacted her professor through an email for assistance. Another domestic student contacted her sister who was enrolled in a different school who had access to a similar platform for assistance. From the discussion, it was clear that help clinics were not readily available to students, or if they were available students were not aware of these clinics. Hence they suggested that first year students should be taught how to use Sakai. They also suggested that this orientation should be done by the professor, the department, or a PowerPoint with instruction should be posted on “mybrocku.ca” page for student access.

7. DISCUSSION

The sample was comprised exclusively of second year students who reflected on their first year of academic study. This study’s aim was to explore the experiences of students with regards to the use of Sakai, a learning management system at Brock University. The study adopted the UTAUT model to understand these experiences. It approached this inquiry by measuring the impact of the four core constructs (performance expectancy, effort expectancy. social influence and facilitating conditions) on students’ satisfaction using Sakai. It also measured the influence of technology experience (social media engagement), culture and gender on the learning management system (Sakai) adaptation experiences of students.

Out of my eight research hypotheses, six were supported with high levels of statistical significance. The results also confirmed the reliability of employing the

UTAUT theory to a mandatory academic environment. Although the questionnaire included the social influence construct to test user satisfaction, the results showed no effect on user satisfaction. This result was contrary to other research studies conducted in a voluntary setting. Again, although Denktash et al. (2012), in his UTAUT2 model, suggest that facilitating conditions directly influences behavioral intention to user or adopt new technologies in the voluntary, my findings did not support this claim in the mandatory setting. This result is reflective of the idea that students are provided with adequate resources (training, help desk, etc.) and are obliged to use Sakai. These conclusions and differences between mandatory and voluntary setting have also been found in other studies (Yoo et al., 2012; Sun & Zhang, 2006).

This study found support for the hypothesis H1a and H1b. Statistically, the performance expectancy construct influenced students' satisfaction positively with a strong indicator 0.807 (PE1) and 0.769 (PE2). These indicators represent questions such as, "I found Sakai useful for my first year course(s)" and "Using Sakai assisted me in accomplishing tasks more quickly" respectively. These results validated the research finding that students are more likely to adapt well to Sakai when the platform will impact their studies. Due to the importance of performance expectancy on students' satisfaction, there is the need for instructors to clearly communicate their expectation to students with regards to how to use Sakai. Some of the participants reiterated:

"Taking Sakai, for instance, even when you don't make it to lectures you get update information about what happened in class, there are announcements, probably class cancellation you can easily get access to without necessarily taking to someone." (Participant 5)

"I think its speeds up communication between the professor and the students. Because initially the professor had to see his students but then with Sakai he can even communicate with students even in their homes." (Participant, 3)

Previous research in the mandatory setting argued that the ease (effort expectancy [EE]) at which students are able to use the new Sakai will have a greater influence on students' satisfaction than the usefulness of the platform (performance expectancy[PE]) (Sørebø & Eikebrokk, 2008; Adamson et al.,2003). Students will be more satisfied using Sakai if they feel it is easy to use than when they perceive that it is useful for studies but difficult to use. The result of this study was also in line with the findings in this study. Effort expectancy (EE) had a statistically positive influence on students' satisfaction with a strong indicator of 0.824 (EE1), 0.800 (EE3) on its factor loading which was greater than the predictor value of the performance expectancy. These indicators represented questions such as, "My interaction with Sakai was clear and understandable" and "I found Sakai easy to interact with." The results suggest that although students were interested in the usefulness of Sakai on their academic work, their most important concern was the ease of using the platform. Thus, the results suggest that

designers of the Sakai platform should pay attention to the functionality, graphical user interface and the interactivity of the platform as echoed by some of the students in the focus group discussion:

"No I did not have any difficulties adapting to Sakai. Probably this so because I grew up with computers around the house, so I can say I am computer literate. However there was a bit of a challenge trying to understand how the platform was made up, once you understood it was pretty easy*."* (Participant 7)

"So just as we already said, because of our previous exposure to technology we did not have much difficulty adapting to Sakai. We knew it was mandatory so we tried our very best to use it." (Participant 2)

The study also tested for the influence of gender on the UTAUT constructs. The results found no influence of gender on student's satisfaction in using Sakai, which was similar to the results found in other studies (Dečman, 2015; Maldonado et al., 2011). This confirmed the appropriateness of the UTAUT model for both genders. This finding depicts that male and female students can be equally encouraged to make use of Sakai for their academic activities. However, although no significant influence was found for both genders, the result found a significant relationship between female students and social influence. This result provided support for my hypothesis H2 with a positive indicator of 0.166. This result

indicates that instructors should pay attention to the social aspect of the learning management system, such as chat forums. This suggest that although the platform is open to all students in the class, it has a more positive impact on females in the class although it Thus female students are more likely to use the chat forums and other social aspects of Sakai to express their difficulties and to listen to the opinions of others than male students. This result was elucidated by the remarks of a participant in the focus group discussion:

"So *I had some first year friends so we taught each other, we kept asking ourselves questions in our exploration. Our collaboration was very important" (*Participant 3*)*

"When I came to Brock I did not know what Sakai was so when the first assignment was posted, I started panicking, I didn't know where or how to access it. I found this to be barrier, even though there are orientations on what to expect in the course, they don't teach you how to use the platform or where to get help (Participant 8*) "*

The result also provided support for H3. Statistically, students' technology experience influenced effort expectancy for students differently. For instance, while technology experience had a positive influence on effort expectancy for females (0.239**), it had a negative influence for males (-0.414***). This result was similar to other studies which showed that males' technology adaptation

experience is influenced by their attitude and the importance of the technology to their activities, and not the ease of using it, whereas women were more influenced by how easy or difficult the technology was to use. However surprisingly, technology experience did not influence students' facilitating conditions, as I hypothesized (H4). This is attributed to the fact that the main construct itself was not supported in the main model. In view of this, it was not surprising when it was not supported. The following comments illuminate the reason for this:

"*It helped me because when I enrolled in the university I had to engage more with technology than I did in my home country so this experience helped me with how I used Sakai."* (Participant 1)

"Yeah I think so because if you are someone who is always on the social media you will be able to acquire the skills. I think it will be easier for this person than for someone who barely uses social media. The person will be good with exploring and also such a person will be more interested in exploring the other sections on the Sakai page," (Participant 6)

Lastly, there was no significant influence of culture (individualism, masculinity and uncertainty) on students' satisfaction in using Sakai in the mandatory setting. This result supports hypothesis H5. This result was not surprising as research suggests that culture has an impact on technology adoption when introduced in a voluntary setting. For instance, various studies have

documented that performance expectancy has a positive influence on behavioral intention in western countries (e.g. USA) (King & He, 2006; Lee et al., 2003), whereas it has a negative influence on African countries (e.g. Nigeria) (Schepers & Wetzels, 2007; Anandarajan et al., 2002). However, the impact of culture is not represented in students' technology experience in a mandatory setting. A person's culture is not a determining factor in their adaptation; instead the technology experience and his/her exposure to technology impact the adaptation to technology. Comments from participants in the focus groups and interview session explain this further:

"I don't think my cultural background impacted how I used Sakai maybe partly because I was more exposed to technology." (Participant 1)

"I also think it's your exposure to technologies not your culture, if you don't know anything about computers or even the Internet, it becomes difficult." (Participant, 7)

7.1. IMPLICATIONS OF THE RESULTS

Designers of the platform and professors can draw several implications from my study. Based on the results we can conclude that the UTAUT model can be employed to understand user satisfaction, in a learning environment where the use of Sakai is mandatory. The model also explains the adaptation experiences of students regardless of their gender and cultural background.

Findings from this research suggest that students at Brock university find the Sakai platform useful to their learning experiences. However the experience

would be improved if instructors would motivate students to use the platform frequently. Further discussions with students suggest that developers and instructors should not only focus on the usefulness of the Sakai platform but also on the ease with which students are able to use the platform to support their academic work.

Also, the results depict that there students are not utilizing the available support systems provided by the universities and the departments. Thus ,although there are available support systems in the departments, students did not utilize it partly because they did not know these avenues existed. I suggest that departments should create the awareness of these existing facilities to help students with their adaptation and to improve their learning experience. Students are also encouraged make use of these available facilities to help improve their experiences with using the platform. For the university-at-large, this result would provide them with feedback from students, which would assist them in modifying the Sakai platform to suit both new and continuing students. The results also suggest that the university should solicit ideas and suggestions from students on how the platform can be modified to suit their needs in order for such provisions to be implemented. This approach will enhance students' adaptation and the ease at which they use them. For instance, some of the participants suggested that Sakai platform should be redesigned and/or updated to reflect new features. They argued that the platform is slow and this cause student to spend more time exploring the feature. They argued that updating this platform will reduce this problem. Other

participants suggested that Sakai platform does not support some courses like statistics, mathematics etc. Hence they suggested that the interface should be modified to accommodate all courses.

On the methodological side of the research, the findings showed that because students are expected to Sakai, the influence of others did not really influence their satisfaction. I suggest that social influence should be eliminated from the model when employing the UTAUT model in a mandatory environment.

8. LIMITATIONS

The study identified some limitations. The sample was collected from one university (Brock University) and it limited its participants to second year undergraduate students. This may have affected the number of participants who participated in the study. I anticipate that if participation was opened to students in general it would have increased the number and allowed comparison. Also, the study had an unequal number of male and female participants as well as an unequal number of domestic and international students participating in the online survey. This inequality may have given female students more voice in this study. Also, the study was not able to get male domestic students to participate in the focus group discussion after various attempts. The study anticipates that the presence of male domestic students in the focus group discussion would have provided differing opinions on students' experiences.

Further, if the twenty-nine participants(deleted respondents) had completed the online survey, this would have increased the number of responses which is

seen as relatively small and would have allowed for analysis and discussions based on a broader spectrum of respondents.

Also, although I had some knowledge on the conduct of interviews, I was a novice moderator in the area of focus group facilitation. This might have influenced how I engaged the participants in the discussion. Again, I anticipate that students might have forgotten some of their experiences considering the time duration of the research. Also I acknowledge the fact that self report in the form of interviews and focus groups can be influenced by inconsistencies in participant's comments. Also participants are more likely to be self- conscious considering the presence of researcher and other participants.

A further limitation of this study is the lack of an in-depth exploration of how performance expectancy, effort expectancy, social influence and facilitating conditions may be affected by the different ways professors use the learning management system in their first year courses.

9. CONCLUSION

Technology integration is a growing phenomenon in higher education both in virtual and non-virtual formats. Educational institutions provide various forms of information systems to enable teaching and learning among professors and students. This approach is believed to make teaching and studying easier, efficient and more successful. However, although current students are viewed as digital natives, they do experience challenges when they are expected to adapt to some technologies. The study drew inspiration from the UTAUT theory, which is known

for its robust model and proven research instrument. This model allowed me to test and explain the Sakai adaptation experiences of undergraduate students.

The results of the study show that students are at different levels of technological expertise and comfort with respect to the use of Sakai. This suggests that successful adaptation to Sakai is likely influenced by the ease of use of the platform. Designers should therefore make the Sakai platform easier and also make the interface friendlier. The study also identified that the Sakai platform was useful to students' studies hence I suggest that instructors should provide clear information and instruction to encourage efficient usage of the platform.

The study identified that Sakai, is underutilized in the university. Participants from the focus group discussions noted that the platform is primarily used for communication, uploading lectures notes and PowerPoint slides .Hence they suggested that this approach restrict students to their course contents and to solely interact with students in a particular course. They suggested that the university should invest in upgrading the platform to accommodate other platforms such as social media, etc. and to accommodate academic discussions among disciplines. This suggestion was in line with other research studies that suggested that LMS platforms should be utilized well to improve students learning experiences (Sclater, 2008, Dias & Diniz, 2014).

Also, given that this paper was focused on exploring student's experiences in using Sakai in their first year in the university, the differences in how professors used the platform was not analyzed. Further inquiries in this area would help illuminate how these differences impact students learning experiences. Further

studies can also expand the discussion on culture by investigating how power distance and long versus short term orientation impact students experiences using Sakai.

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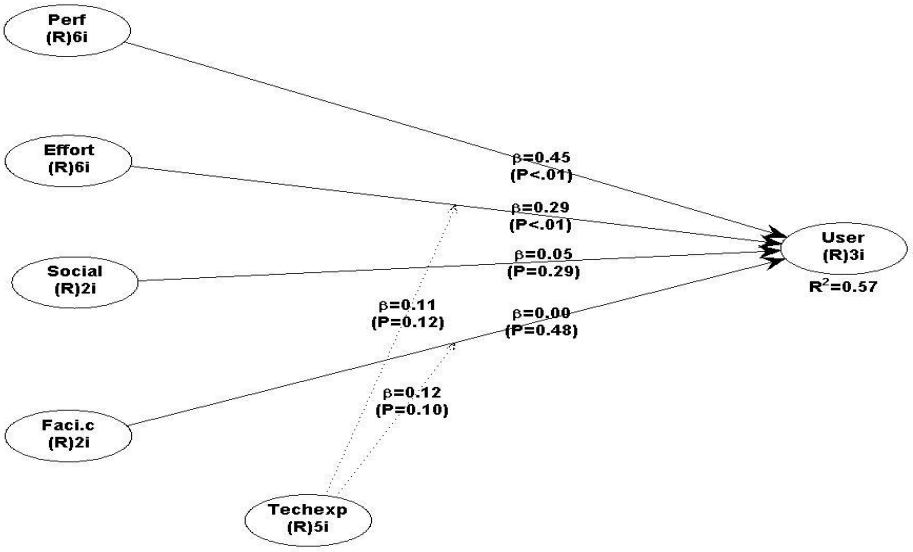
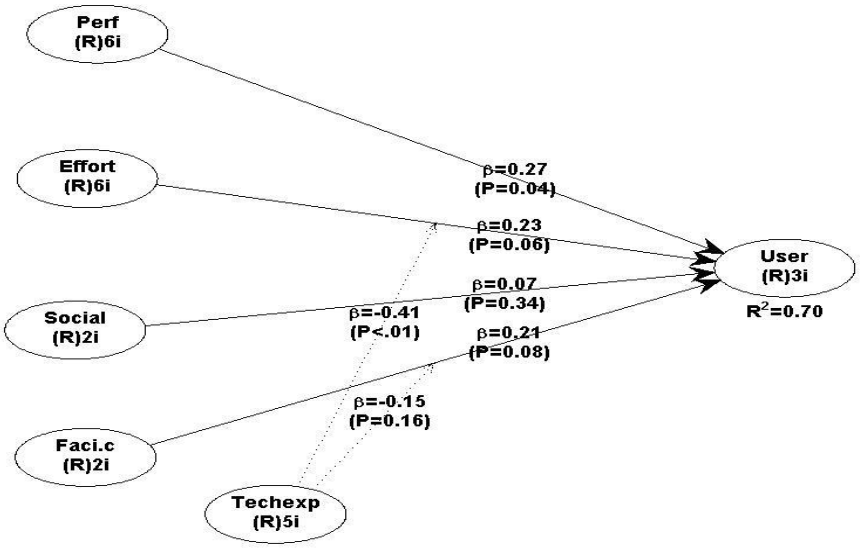
10. APPENDIX

Appendix A - Models

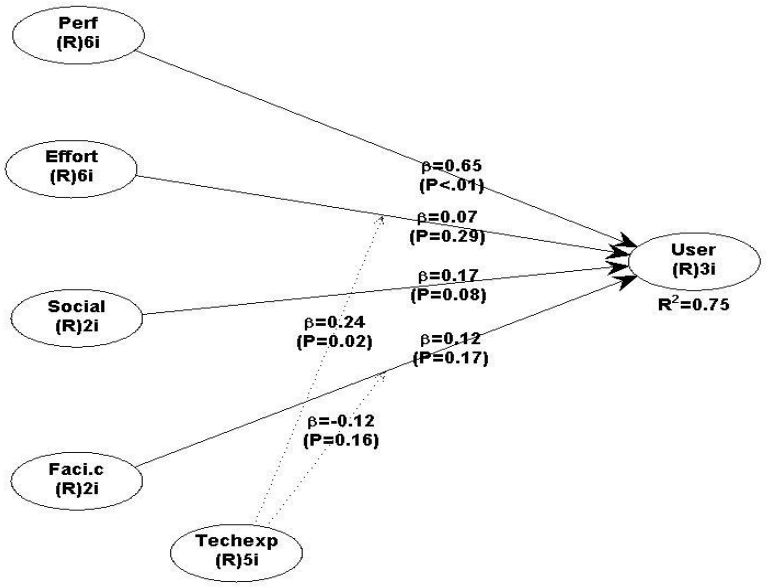
Model 1 – All sample



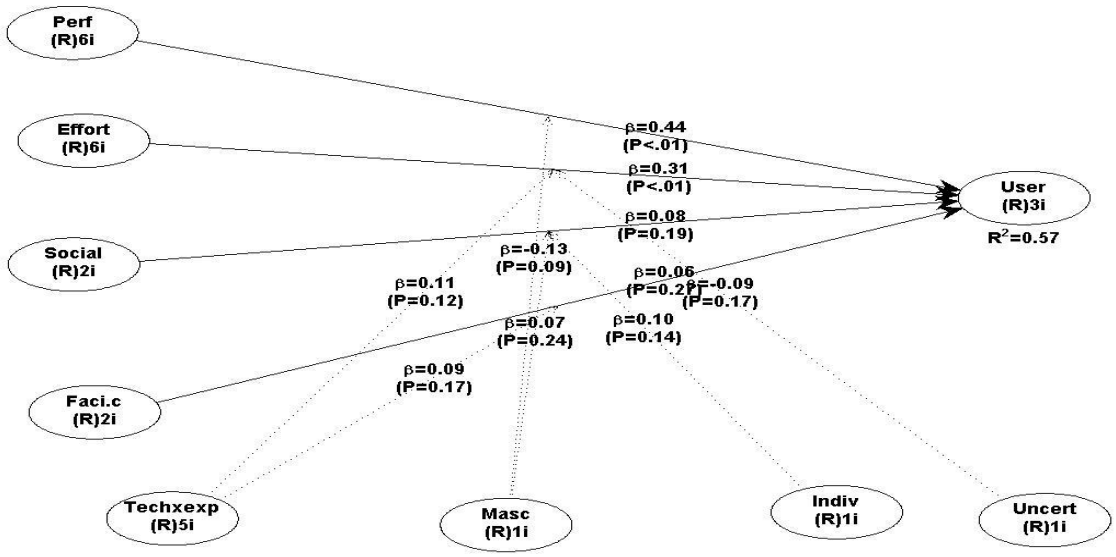
Model 2 – Male


Perf
(R)6i
Effort
(R)6i
Social
(R)2i
Faci.c
(R)2i
Techexp
(R)5i
User
(R)3i
R2=0.70
β=0.27
(P=0.04)
β=0.23
(P=0.06)
β=0.07
(P=0.34)
β=0.21
(P=0.08)
β=-0.41
(P<.01)
β=-0.15
(P=0.16)

Model 3- Female only



Model 4 – Cultural model (Individualism, Masculinity and Uncertainty avoidance)



Appendix B

Consent Form

Technology Adoption in the University: Exploring the experiences of Canadian and International Students.

Student Principal Investigator: Lydia Arhinful, Master's Student, Department of Child and Youth Studies

Faculty Supervisor: Dawn Zinga, Associate Professor, Department of Child and Youth Studies

INVITATION

I, Lydia Arhinful, a Master's student from the Department of Child and Youth Studies, Brock University, invite you to participate in a research project entitled "Technological Adaptation in the University: Exploring the experiences of First year Undergraduate Students (Canadian and International students)". I am conducting this study under the supervision of Dr. Dawn Zinga, an associate professor from the Department of Child and Youth Studies, Brock university. The purpose of this research project is to examine the experiences of first year undergraduate students' adaptation to technology in the university. This research will specifically investigate the factors that influence first year undergraduate students' adaptation to technology in the university. The study will also explore whether there is a

relationship between faster technological adaptation and previous exposure to technology, gender orientation.

WHAT'S INVOLVED

As a participant in the online survey, you have been contacted to participate in the follow-up focus group that further discusses technology use in the university and your previous technological experiences. The time associated with participation in this second part of the study is approximately 90 minutes to discuss questions about your technology use in the university. You will meet with the researcher and five other participants to discuss prevailing questions in the online survey such as "Do you think being good with social media helps you use technology effectively for academic purposes as excepted?" The focus group will start with participants introducing themselves after which they will be provided with snacks prior to beginning the focus group. All focus group discussions will be audiotaped and transcribed using NVIVO software. If you are not comfortable participating in a focus group there is an option to complete an individual interview. Should you wish to complete an individual interview please contact Lydia Arhinful at la13pw@brocku.ca to make arrangements.

POTENTIAL BENEFITS AND RISKS

Possible benefits of participation include the ability to share your experiences in adapting to and using technology in the university. To have your voice heard and your opinions valued and respected. For the larger scientific community and the community at large, this research may offer insights into the types of educational

strategies and supports that promote successful technology adaptation within Canadian university contexts. Research findings will be

available at Brock University library for individual and faculty references. Also these findings will be presented at conferences where other faculty members from other universities will be present and may be published in professional journals. Your participation or decision not to participate in this research will have no bearing on your academics or interactions with anyone at the university. There are no academic benefits or disadvantages to participating or not participating in this research. You may feel embarrassed about your answers to some of the questions but please only share what you feel comfortable sharing in the group setting.

CONFIDENTIALITY

All information you provide is considered confidential; your name will not be included or, in any other way, associated with the data collected in the study. Your name will not be included in the transcript of the focus group or the interview. You will be assigned a pseudonym. There will be no connection between your data and the pseudonym once the transcript is complete. As a participant you are asked to respect the privacy and confidentiality of others in the group by not sharing comments made or identities of group members to friends outside the group.

You will be able to withdraw your consent for two weeks after your focus group/interview after that time there is no way to withdraw your consent as there will be no way of identifying your individual data after that date. All individual interviews will be inserted into focus group data to protect confidentiality and

anonymity. In written reports of this research and oral presentations, excerpts from comments made by participants in the discussion will be used but no one's name or unique identifying characteristics will be associated with any quotes. For example, "I faced challenges uploading weekly reading responses on sakai for grading ……." This helps us to represent your voice and opinion without compromising your confidentiality. Electronic data will be stored on a password protected computer whereas hard copies of the completed survey will be stored in locked filing cabinets. The videos of focus groups and interviews are recorded on a hard drive video camera. Once the videos are transcribed the video files will be deleted from the video camera hard drive. The locked filing cabinets and the password protected computer are located in a research lab that is locked and has a key pad entry system in addition to the regular lock. Only the student investigator will have access to the raw data and the master list linking pseudonyms which will be stored on the password protected computer. Once the data set have been completely entered into Nvivo and SPSS, the master list will be confidentially shredded. All research materials (consent forms, hard copy surveys) will be kept until 2 years after completion of the thesis and will then be confidentially shredded. All electronic data will be retained for two years and then deleted from the password protected computer.

VOLUNTARY PARTICIPATION

Your participation is completely voluntary. You may choose to answer or not answer any of the questions during the focus group or interview. You are free to withdraw at any time.

PUBLICATION OF RESULTS

Results of this study may be published in professional journals and presented at conferences. Feedback about this study will be mailed to you if you chose to provide your address. The results will be available in late 2016. If you have any questions at any point after the study please contact Lydia Arhinful via e-mail la13pw@brocku.ca or Dr. Dawn Zinga at Brock University by phone (905) 688-5550, ext. 3152 or via e-mail dzinga@brocku.ca.

CONTACT INFORMATION AND ETHICS CLEARANCE

If you have any questions about this study or require further information, please contact the Principal Investigator or the Faculty Supervisor using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University (??-???). If you have any comments or concerns about your rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brocku.ca. Thank you for your assistance in this project.

CONSENT FORM

I agree to participate in this study described above. I have made this decision based on the information I have read in the Consent Letter. I have had the opportunity to receive any additional details I wanted about the study and understand that I may ask questions in the future. I understand that I may withdraw this consent for two weeks following my focus group/interview.

This section was added to the focus group consent form)

Name: _____

Signature:_____

Date: _____

Appendix C

ANNOUNCEMENT

Dear student,

I am writing to invite you to take a short survey to help me understand the experiences of undergraduate students' adoption to technology (Sakai) in the university. Participation in the study is voluntary. I am conducting this study under the supervision of Dr. Dawn Zinga, an associate professor from the Department of Child and Youth Studies, Brock University. We will like to hear about your experiences in using Sakai during your first year at Brock University.

Here is a link to the survey:

https://brocklrc.az1.qualtrics.com/SE/?SID=SV_b3H4xAKkNArBx6B

It should take about 20 minutes to complete. We appreciate your honest responses to the questions in the survey. This research has been approved by Brock

University's Institutional Review Board for Social Sciences with file number (14-324 ZINGA).

All responses are completely confidential and anonymous. Your participation or not will have no effect on your grades as we have no way of tracking your participation. You also have the option of completing the survey manually in hard copy with the help of a research assistance in a research laboratory designated for this research. You can send an email to the student principal investigator Lydia via la13pw@brocku.ca to book your preferred day and time.

All participants have equal chances of winning 1 of 10 $20 gift cards. Participants who participated in the online survey will be asked to complete a (Copy and paste to word) ballot form and send it to Lydia via la13pw@brocku.ca. Ballot forms completed in hard copy will be collected by the student principal investigator after completion of the survey manually.

Participants have the option to volunteer to engage in a focus group discussion which is expected to last 90 minutes. Participants will also be provided with the option to engage in an individual interview if they prefer that type of setting or if scheduling proves to be an issue. Individuals who engage in the focus group will be provided with snacks in the form of pizza, fruits and drinks and given a $10.00 Indigo gift card each to compensate them for their time. To participate in the focus group discussion, copy and send the statement below to Lydia via la13pw@brocku.ca .

Yes, I would like to be contacted to participate in a follow-up focus group. Please contact me.

Please let me know if you have any questions. Thank you for your participation in this research project.

Lydia

Student Investigator

la13pw@brocku.ca

APPENDIX D

ELECTRONIC SURVEY

Welcome to the survey. Thank you for your assistance with this research.

Please answer the following questions about yourself and your background.

Part 1: Demographic Questions

Q1 What is your age?

- 18 to 24
- 25 to 34
- 35 to 44
- Above 45 years

Q2 What is your gender

- Male
- Female

Q3 I describe myself as

- Canadian (Domestic) student
- International student
- Other _____

Answer If I describe myself as International student is selected

Q4 Please specify your country of origin if you are an international student

……

Q5 What is your year of study?

- First year
- Second year
- Third year
- Fourth Year

Q6 What is your status in the university?

- Full-time
- Part-time
- Other _____

Q7 What is your program of study?

……

Q8 Which of the following best describes your path of entry into the university?

Tick all answers that apply

- Entered directly from grade 12
- Previous university experience
- Previous college experience
- Working professional continuing education
- Worked for sometimes after grade 12 before enrolling in the university

Q9 What is the educational level of your parent or guardian?

- Completed high school
- Completed college
- Completed university
- Completed master's degree
- Completed PhD

TECHNOLOGY AND EDUCATION

This section focuses on your first year experiences using the University's Sakai platform. Reflecting back on your first year experiences using the University Sakai platform, please answer the following questions

Q10 How many of your first year courses required you to submit assignment to Sakai?

- None
- Less than half of my courses
- At least half of my courses
- More than half of courses
- All my courses

Q11 How many of your first year courses required the use of Sakai as an information resource (e.g. lecture notes, chat forums, announcement, course grades etc.)?

- None
- Less than half of my courses
- At least half of my courses
- More than half of courses
- All my courses

Q12 For courses that did not require the use of Sakai, did you use Sakai as an information resource (e.g. Lecture notes, chat forums, announcement, course grades etc.)

- No
- Yes, but for less than half of my courses
- Yes, for at least half of my courses
- Yes for more than half of courses
- Yes for all my courses

Part 2: Technology and Education

This section focuses on second year undergraduate student's adoption to Sakai and Email in the university. Understanding these adaptation experiences is important for developing and implementing effective technology support systems that will assist undergraduate students upon enrolment in the university. ***Reflecting back to your first year in the university,*** please indicate your agreement or disagreement with the statements below by selecting the scale that describes your experience on a Likert scale of 1 – 5 (where 1 represent strongly agree and 5 represent strongly disagree).

	Strongly Agree	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
Performance expectancy					
I found Sakai useful for the courses I was pursuing.					
Using Sakai assisted me to accomplish tasks more quickly.					

Using Sakai increased my productivity in the courses I was pursuing.					
Using Sakai increased my chances of getting higher grades in my first year.					
Sakai gave all students equal chance to carry out their academic activities online.					
Using Sakai did not increase my knowledge in the course(s) I was taken					
Effort expectancy					
My interaction with Sakai was clear and understandable					
It was easy for me to become skillful at using Sakai during my first year.					
I found Sakai easy to interact with.					
Receiving and downloading academic document on Sakai was easy for me.					

I encountered difficulties with using Sakai during my first year.					
Social Influence					
People who are important to me thought I should use Sakai.					
The professor of the course expected me to use Sakai for my course work					
The instructor(s) of the course(s) of the course was helpful in using this technology (Sakai).					
Facilitating Expectancy					
I was able to use Sakai without assistance for academic activities during my first year.					
I did not have the skills required to engage with technology (Sakai) for academic work during my first year.					
I had the prior knowledge					

necessary to use the Sakai.					
A specific person (or group) was available to provide assistance with using Sakai.					
The course I was taken provided the necessary help for using this technology(Sakai)					
Sakai is different from other technologies I have used prior to enrolling in the university.					
User Satisfaction					
Overall, using sakai was very satisfying					
I was very satisfied with the information I receive from the system.					
Overall Saki was useful to the course(s) I was taken in my first year					
Using Sakai was partially useful to the course(s) I was taken					
Previous technology Experience					

It was easy to access and use technology prior to my university education.					
My parents restricted my engagement with technology					
I had a personal computer before coming to the university					
I rarely engaged with technology at home because I had to share with my other siblings.					
I was surfing the internet more frequently prior to my enrolment to the university.					
I seldom used the social media prior to my enrolment to the university.					
I had some restrictions engaging with technology at home prior to my university enrolment.					
I did not have access to a personal computer at home prior to the university					

I actively engaged with technology prior to the university.					
I enrolled in the university with the skills needed to engage with Sakai.					
My cultural background encouraged active engagement with technology.					
My parent encouraged me to engage with technology at home.					

Thank you for taking the time to complete this survey! Your assistance is greatly appreciated. Before you quickly submit your response below, please copy and paste the ballot form into your e-mail. All participants will be entered into a draw to win one of ten $20.00 gift cards. Winners will be contacted through their Brock email to pick up their gift cards at the Child and Youth Studies graduate laboratory at a scheduled day and .time. Please come along with your student ID card for verification. Information on the ballot form will primarily be used for the draw and will be separated from the survey. It will not be used for analysis purpose and will be destroyed (shredded) after winners have been given their gift cards.

Ballot form

Thank you for participating in our survey! Fill in the following ballot for a chance to win a $20 dollar gift card!

Remember to e-mail your ballot to la13pw@brocku,ca so that it can be submitted in the draw.

Name…….

E-mail……

Department……

Please indicate whether or not you would like to be contacted to participate in a follow-up focus group.

☐ Yes, please contact me. ☐ No, I am not interested in being contacted

Appendix E

Focus Group Discussion Questions

Signing of consent form

Introduction and getting to know each other

Overview of the research topic and the purpose of our gathering.

1. Explore Issues

How do you perceive technology integration in most universities globally?

Do you think these e-learning platforms are useful for students learning? (Sakai, online library repository, brock email, etc).

Now we will focus on Brock's e-learning platform -Sakai

How was Sakai used in your course? Did you use Sakai frequently or specific purposes?

Did you find Sakai platform useful? Please explain.

Did you have difficulties adapting to Sakai for academic purposes?

If Yes

Would you attribute your challenges to your gender and/or cultural background?

OR

Would you attribute your challenges to your inadequate technological skills?

If so, in what ways? If none of the above, to what would you attribute challenges or lack of challenges?

What do you think was your greatest challenge to using technology (Sakai) in the university?

(Example: checking grades, posting assignment online etc).

Did you ask for assistance from others (Example: Professors, friends in higher level, TA etc) to use Sakai or did you overcome these challenges personally.

Now, I'd like you to think back on your experiences prior to enrolling in the university- Brock.

What types of technology did you have access to or have you used in the past year prior to enrolling at Brock?

Did you have a personal computer or a family computer?

Were there other ways you accessed computers or the internet? (Library, school, internet café, please identify other means access).

Did your parents have restrictions on computer or internet use or where you permitted to use the computer and internet as often as you wanted?

Do you have siblings with whom you had to share computer and internet time?

Did you have equal access to using the computer at home or did your siblings have more access? How did you manage access?

Do you think your countries values on technology influenced your technology adoption experience?

Would you say your exposure to technology prior to the university had an impact on your Sakai adaptation experience?

2. Now let's go back to talking about your more recent experiences

How often do you engage with social media?

What is the motive for using the social network? (Contacting family and friends, school work, to build my self-identity, developing computer skills)

Some people say that men and women use technology and social media differently. What do you think about how men and women use social media?

Do you think using social media influenced how effectively you adapted to the university's e-learning platform (Sakai) for academic purposes?

3. Current Experiences

Are you still struggling with using Sakai for your academic work?

Were you given training or assisted in your department on how to use Sakai for your academic work?

Did you identify any factors that helped you to cope or adopt well to using Sakai in the university?

Do you think the university should create programs to educate first year students about issues related to using Sakai for academic purpose?

Can you give any suggestions that the university should take into consideration when establishing these support systems for students?

	Strongly Agree	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
Performance expectancy					
I found Sakai useful for the courses I was pursuing.					
Using Sakai assisted me to accomplish tasks more quickly.					

Using Sakai increased my productivity in the courses I was pursuing.					
Using Sakai increased my chances of getting higher grades in my first year.					
Sakai gave all students equal chance to carry out their academic activities online.					
Using Sakai did not increase my knowledge in the course(s) I was taken					
Effort expectancy					
My interaction with Sakai was clear and understandable					
It was easy for me to become skillful at using Sakai during my first year.					
I found Sakai easy to interact with.					
Receiving and downloading academic document on Sakai was easy for me.					
I encountered difficulties with using Sakai during my first year.					
Social Influence					
People who are important to me thought I should use Sakai.					
The professor of the course expected me to use Sakai for my course work					

The instructor(s) of the course(s) of the course was helpful in using this technology (Sakai).					
Facilitating Expectancy					
I was able to use Sakai without assistance for academic activities during my first year.					
I did not have the skills required to engage with technology (Sakai) for academic work during my first year.					
I had the prior knowledge necessary to use the Sakai.					
A specific person (or group) was available to provide assistance with using Sakai.					
The course I was taken provided the necessary help for using this technology(Sakai)					
Sakai is different from other technologies I have used prior to enrolling in the university.					
User Satisfaction					
Overall, using sakai was very satisfying					
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I was surfing the internet more frequently prior to my enrolment to the university.					
I seldom used the social media prior to my enrolment to the university.					
I had some restrictions engaging with technology at home prior to my university enrolment.					
I did not have access to a personal computer at home prior to the university					
I actively engaged with technology prior to the university.					

I enrolled in the university with the skills needed to engage with Sakai.					
My cultural background encouraged active engagement with technology.					
My parent encouraged me to engage with technology at home.					

Table 9

Attendance sheet

Name	Email	Department	Sign	Gift Card