Perceptions and Expectations of the Technological Proficiency Levels of University Business School Graduates: Representations of Graduates and Employers.

By

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Abstract

The present study explores business school graduates' experiences in acquiring computing skills, as well as employers' experiences with the computer proficiency of recent business school graduates. Following on the work of Gibbs, Steel & Kuiper (2011) this study examines the experiences of business graduates from Memorial University of Newfoundland, Canada and local employers who hire these graduates. A qualitative research design was employed, and semi-structured interviews were conducted with eighteen (18) participants: twelve (12) business graduates and six (6) employers. Results were divided into three major themes: (1) graduate perceptions of their acquisition of computing skills within and outside their post-secondary program; (2) perceptions of the roles and responsibilities of business schools in the acquisition of computing skills, and; (3) employers' perspectives on specific aspects of graduate computing skills. The findings show that graduates were positive in their appraisal of the value of computing skills in general, and have high levels of confidence about their ICT skills; however, the acquisition of such skills was found to be primarily learned informally, self-taught, or learned during work terms. Some graduates had little or no formal computing training and most participants had no more than a vague awareness of the scope and breadth of computing skills needed in a professional work environment. Thus, there appears to be some misalignment between workplace computer skill requirements, and program objectives. Employers perceive an appropriate balance between the computer proficiency of business graduates and the skills they need for the workplace. The data relating to skill deficits suggest that they are more prevalent in the areas of writing and communication – including grammar and spelling, and business writing. These findings raise questions about a potential gap or a weakness in the current approach to university education for business students. Although there is wide recognition that the primary aim of university business

degree programs falls outside of technical training, there is clearly room for a more standardized approach to the teaching and assessment of computer skills. The findings suggest the need for better coordination between business schools and industry employers to better align the needs and expectations of employers with the goals and objectives of business programs, Recommendations are provided for greater collaboration between business graduates' competencies, employer expectations and the ability of business schools to help standardize and assess computer skills and language proficiencies of their graduates. Finally, more research is necessary to study and help establish effective preparation, training, and intervention strategies for business school students with respect to ever-evolving technological changes and new business applications.

Keywords: Information and Communication Technology, Business, Labour and Employment, Employers, Business graduates, Computing skills, Expectations

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List of Abbreviations

ICT	(Information and Communication Technology)
R & D	(Research & Development)
BBA	(Bachelor of Business Administration)
MBA	(Master of Business Administration)
AV	(Audio Video)
FITness	(Familiarity with Information Technology)
IT	(Information Technology)
ES	(Enterprise Systems)
AMBA	(Association of MBA)
SAP	(Systems, Applications and Products, SAP is an Enterprise Resource Planning software (ERP) from the company SAP AG, Germany)
STEM	Science, Technology, Engineering and Mathematics
PSDP	(Professional Skills Development Program)
CRM	(Customer Relationship Management)
NGO	(Non-Government Organization)
IBBA	(International Bachelor of Business Administration)

Chapter One: Introduction and Statement of Research Problem

Introduction

Computers have become a necessity in all facets of life. Computers are now an essential complement to educational programming at all levels, due to the boom in information and communications technologies (ICTs). According to some estimates, 95% of the population in North America has access to the internet, while just 36.1% has access in Africa. Asia has over one billion internet users, which is largest overall number of users in the world (World Internet Users Statistics, 2018). According to the International Telecommunication Union (ITU), the United Nations agency that oversees international communications, more than 3 billion people are now using the Internet worldwide. A recent report from the ITU states that, the number of Internet users has increased from 738 million in 2000 to 3.2 billion in 2015, which is a seven-fold increase that brings internet usage up from 7% to 43% of the global population. The United States and China represent the greatest number of personal computer users – about 310.6 million and 195.1 million, respectively.

There is a common perception that frequent computer usage equates to strong computer skill levels, but this assumption misrepresents the proficiency levels[1] of college and university graduates and their readiness to enter work environments that require high computing skill levels. In some instances, such assumptions may be the reason that employers use broad terms – rather than honing in on specific skills – to advertise the computing skills required for jobs in business and industry. Factors such as poorly stated requirements for computer competencies in

[1] Computer proficiency, computing skills, computer abilties and compueter compertiencies and other near-synonmous terms are used interchangeably.

advertisements for new positions, and no assessment of computer competencies in the screening or interview process may result in a poor match between a graduate and an advertised position in the workplace. A cursory examination of the wording in position descriptions on employment websites is enough to demonstrate that there are many ways of describing the computing requirements for a job. One objective of this study is to examine potential disparities between employers' expectations of the computer skill preparedness of business school graduates and the graduate perceptions of their own preparedness. In addition, this study seeks to clarify student and employer perceptions of the computer skill levels of business graduates, how such competencies are acquired, and the of role of business schools in developing computer proficiency levels.

To do this, it is necessary to know the kinds of computer-oriented tasks required in target workplaces, the computing expectations of employers for new graduates, how such skills are acquired by business school graduates, and the role of business schools in the acquisition of those skills (Gibbs, Steel, & Kuiper, 2011). In this study, I intend to research these aspects of graduate skill requirements and workplace expectations while identifying implications for employers, graduates, and educators.

There have been direct and indirect research studies emphasizing the computing skills for graduates, especially during the 1990s when the Information and Communications Technology (ICT) sector was taking off and new occupations in that sector were coming on stream. Gibbs and McKinnon (2009) and Gibbs et al. (2011) conducted several studies on this area of research in New Zealand and aimed to explore the gap of computing skills between self-perceptive business graduates and expectations of employers in the advertised jobs. The purpose of the present study is to reiterate and better understand the gap between the perception of business graduates and the

employers for whom they will be working for with respect to the level of computing skills. This study aims to use these examples to help examine the role of business schools in developing computer literate graduates in the Canadian context using Memorial University of Newfoundland as a case study.

Need for the Study

With the acceleration of ICT use there is an expectation that university graduates be proficient in terms of computer literacy. Business graduates, in particular, are expected to use computer tools throughout their career, so computer proficiency is very important for them and the organizations for which they work. According to Johnson, Bartholomew, and Miller (2006), effective computer use and data management proficiency are key qualities expected of business school graduates; therefore, questions relating to the level of graduate preparedness and the ways computer knowledge skills are acquired are important to employers and post-secondary institutions.

Research Questions

In this study, I investigate how well the perceptions and preparedness of business school graduates' computer skills match the expectations of potential employers. I also probe participants about their perceptions of their own proficiency levels and how these skills were acquired. To this end, I will address the following research questions:

1. How do business school graduates represent their level of computer proficiency and what are employer expectations of computer proficiency for positions in the market?

2. How do business school graduates acquire computer skills and how do they represent the role of business schools in developing those skills?

3. What do employers represent as the required level of computing skills expected of new business graduates and to what extent do recent business school graduates possess these skills?

Significance of the Study

Not all students enrolled in first-year business studies present with consistent ICT skills, aptitudes, and experiences; therefore, the focus on computing skills during post-secondary school is important for this study. The fact that virtually all entrants to business school have access to a computer does not guarantee a reasonably standard level of computing skills. The disparity among graduates' ICT skills and employer expectations has the potential to demotivate graduates trying to find professional employment. As technology progresses, there are challenges in preparing graduates to meet the expectations of technology-oriented, competitive job markets. Similarly, there are questions about the responsibilities of business schools in teaching generic and specific ICT skills in university-level programs that are primarily oriented towards business theory and practice, and substantially different from college technical programs.

I personally experienced this difficulty after my degree in business administration. When researching for this thesis and exploring the literature, I found similar research studies done by Gibbs and McKinnon (2009) and Gibbs, Steel, and Kuiper (2011) in the New Zealand context. This is an important area of inquiry; however, after reviewing the available literature published over the last two decades, I could find no studies that specifically focus on the questions relating to computing skills of business graduates and the expectations of employers the Canadian context.

Limitations

There are some limitations to the study. First, this study is conducted in the context of Newfoundland and Labrador and while I am assuming that the principal actors and organizations – business graduates, employers and the business school at Memorial University – are similar to those in other provinces, this may not be an accurate assumption. This study is limited to the perceptions of the experiences of twelve business graduates and six employers and their ability to assess computing skills. Although there is a mixture of experience from business graduates and the employers, not all areas were represented. As well, there are no participants from other provinces of Canada. While the perspectives of these eighteen participants add to the employers' expectations of business graduates in terms of computing skills research literature, the findings of this study cannot be generalized. Second, it is possible that some participants' accounts could be recognized by other business graduates or employers, as Newfoundland and Labrador has a small population of business graduates as well as employers. Therefore, the participants may not have been willing to share some of their experiences and thoughts for fear that someone might identify them through their stories. As a result, these constraints may affect the findings and any utilization of these findings should be taken with caution. And finally, despite my best efforts to bracket my biases and assumptions, it is possible that my own assumptions and experiences as a former business graduate created a bias that placed limitations on my analysis.

Organization of the Thesis

This thesis is organized into five chapters. In Chapter One, I introduced the study on technology and computing skills of business graduates, described the significance of the study and the research purpose. In this chapter, I also outlined the limitations of the study and the methodology utilized for conducting the research.

Chapter Two contains a review of literature relevant to this research topic. Here I provide information about the computing skills of business graduates in general, in North America, the employers' expectations and the gaps around the themes that serve to provide a foundation and framework for this study. The themes addressed in this chapter include the significance of the field; computer skill expectations of employers; the role of business schools in developing computer skills and competencies and computer skill capacity of business school graduates.

Similarly, Chapter Three details the methodology for this qualitative research. In this chapter, I explain the use of the phenomenology approach as the theoretical perspective for the research. I also present the research design and the procedures that were followed in conducting the study, the use of semi-structured open-ended interviews for collecting data from participants and the data analysis strategies.

Chapter Four presents the research findings resulting from an analysis of the data collected from the semi-structured open interviews with the research participants while Chapter Five is the final chapter of thesis. In this chapter, I provide reflective discussions and interpretations of the study findings and further explore themes arising from the participants' viewpoints in relation to both the research questions and extant to literature. This chapter also discusses the implications for practice and suggests areas for future research.

Chapter Two: Literature Review

The purpose of this qualitative study is to (1) investigate Canadian business graduates' perceptions of their computer skills, (2) examine the computer proficiency expectations of potential employers, and (3) study the role of business schools in developing computer literate graduates, using Memorial University of Newfoundland as a case study.

Conducting a literature review typically involves five interrelated steps: identifying key terms, locating literature, critically evaluating and selecting the literature, organizing the literature, and writing the literature review (Creswell, 2013). These procedures and approach were followed in undertaking this review. This literature review includes research that pertains to students' levels of computing skills, the expectations of employers in the job market, the question of how business school graduates acquire computer skills, the role of business schools in developing these skills, and the extent to which business school graduates possess these skills. I also examine literature that addresses the teaching of ICT skills at grade school levels in North America (i.e., Canada and the US).

This chapter is structured in four sections intended to establish the significance of this field of study by reviewing literature relating to (1) graduate acquisition of ICT knowledge and skills; (2) expectations of employers with respect to ICT competencies of graduates; (3) graduate self-perceptions of ICT proficiency, and; (4) the role of business schools in developing students' ICT skills and competences.

Acquisition of Business Graduates' ICT Knowledge and Skills

Not all students who pursue business studies have the same computing aptitude and experiences; this is why the focus on computing skills during post-secondary school is important for this study. As technology is progressing, evolving, and ever innovating in the 21st century, there are challenges in preparing graduates to meet future technology oriented, competitive job markets. The computing background of students entering business education programs differs significantly, as K-12 schools in different geographic regions follow different curricula. Therefore, many first-year students enter business schools with varying levels of computing competencies. Business schools need to assess these skills at the point of entry so that knowledge and skill deficits of incoming students can be addressed, for their program of study. Gibbs et al (2009) argue that computer literacy is the highest skill required in today's workforce, yet employers are not always clear in describing the computing skills required. Normally, people tend to overestimate their level of computing skills in relation to their actual skill level and the computing expectations that employers have for employees (Gibbs et al., 2011). According to Johnson, Bartholomew, and Miller (2006), business students ought to have the capacity to demonstrate an improved comprehension of IT education as they advance through each phase of their school involvement. A last evaluation should demonstrate that students utilize their IT aptitudes during critical circumstances to solve problems. According to Schuetzler, Morrison, and Hayes (2019), businesses place computer aptitude as one of the key skills significant for new business graduates, yet feedback from employers has indicated that outside of technology fields, computing skills are missing among graduates. During recent years, the perception gap has enlarged where computing skill is getting increasingly basic, outpacing graduate capacities. Basically, everyday computer

uses, and abilities are not coordinating with the skills students and workers need to be productive. Similarly, the same additional resources universities provide for skills like writing or math that comparable assets ought to be created to build up students' computing competency and self-adequacy. Through improving their confidence and competence with computing, students can more likely amplify their innovative capacities as students, and later as workers.

Gibbs, Steel, and Kuiper (2011) argue that many people own computers, but they perceive using these computers for specific tasks is difficult; that is why the prevalence of computers cannot guarantee the skill level of users. Computer self-efficacy is defined as a person's perception of his or her ability in using the computer and is taken from the theory of self-efficacy. This corresponds to Bandura's theory of self-efficacy. It means that the way a person perceives his/her ability depends on comparative standards (Bandura, 1977). Similarly, many students start their university degrees with great confidence in their computer skills, but often they need thorough instructions to complete the required tasks (Gibbs, et al., 2011). The expectations employers have about the computing skills of graduates normally exceed their actual skill level. According to Dickerson and Green (2004) "[s]ome of these differences can be explained by the employer's lack of knowledge of what they actually require and the general expectation is that potential employees should possess a number of generic skills". The study conducted by Wallace and Clariana (2005) infers that incoming business students do not have the essential computer knowledge, skills, and capacities to seek employment after their college degree programs and they suggested that first year business students need an introductory computer course that includes both Information Systems (IS) concepts and Information Technology (IT) programming applications.

The recent advancement in technology requires a rapid change and it is becoming very important for graduates to access the amount and sources of information in multiple ways for literacy purposes. In the age of information, students need good IT skills to keep themselves updated and to be ready for the job market. Candy et al., stated that, "No graduate – indeed, no person – can be judged educated unless he or she is 'information-literate" (1994, p. xii). Higher education institutes understand their role in developing graduates' IT skills, recognising that they cannot simply rely on the skills they already have or hope that the students will somehow develop these skills by the end of their university education (Feast, 2003).

Ongoing examination (Bruce, 1997; Bruce & Treat, 2000; Doskatsch, 2000; Nimon, 2001; Wright and McGurk, 2000) of the ideal route for students to obtain IT proficiency at the tertiary dimension recommends that students be taught implanting the teaching and evaluation of such abilities into existing courses. Students consider these skills more important when these abilities are specifically appropriate to the courses they are taking and more specifically when they imminently affect their course appraisal. Then again, it can likewise be contended that educating and evaluating the substance of a control zone is best accomplished through philosophies that urge students to wrap up information-literate as cited in Feast (2003).

There are some preemptive steps taken at the school level to prepare future generations to be IT proficient. Julie (2017) argues that as Canada's technology industry develops, individuals with coding skills and aptitudes are in progressively higher demand because the graduates entering the workforce focus more on PCs and on the mechanism of how to ace the code and control information. As of August 2017, coding is a required component of the educational programs in Nova Scotia, up to grade six. Students as early as grade three utilize floor robots to understand

sequencing and programming, while students from grades four to six use innovation learning programs. Coding is discretionary through grades seven to twelve, as the province attempts to restructure its educational modules in light of coding. Likewise, there are exercises like the Hour of Code that enables students to partake in creator spaces and mechanical competitions to showcase their skills. New Brunswick also takes an interest in the Hour of Code program, and the province includes the Center School Innovation Instruction course for grades six to eight. Outside of those grades, this course can be taken as an elective. Students can likewise participate in a "virtual co-op" with information and communication technology (ICT) organizations that have helped the government with development opportunities. There is also an initiative to train teachers interested in strengthening their ability to teach technology-related skills in the classroom, which includes the use of coding. Manitoba is also studying an approach of giving students an advantage in terms of advancements, innovation, and creativity. Every school level student should have rudimentary coding awareness or knowledge of a digital society in Canada (Floyd, 2019). Ontario and Saskatchewan have both included coding as a discretionary piece of their educational modules to varying degrees. Ontario says that assets are accessible to instructors and that the Train Ontario program enables teachers to discover "inventive courses" in collaboration with students through coding and programming. Secondary school students likewise have the choice to take software engineering classes that incorporate exercises on building and programming. In Saskatchewan, educators of all levels are urged to go past educational modules, so teachers have the flexibility to incorporate a variety of instructional techniques and resources (Julie, 2017).

Julie (2017) notes that according to Alberta's Ministry of Education, the computational approach works by preparing students to address real-world problems in professional life. The

Provincial government of Alberta provides schools access to fast systems through Super-Net. Therefore, most schools throughout the province provide students and educators online access to digital resources, online content, and correspondence services. As such, availability is offered through Wi-Fi, the Foundation Contemplations for a Bring Your Own Device (BYOD) model are re-configuring their Wi-Fi frameworks to empower network-like guest access in public spaces. Alberta's school specialists are spearheading BYOD models and they have unilaterally underlined the significance of students' preparation as a key factor to their prosperity. The zones of interest include digital access and inclusion; digital communication; digital fluency; digital rights; the responsibilities and security; digital health and wellness; and informed digital consumerism. Edmonton's Municipal Government also funded schools in utilizing a cloud computing application called Google Applications in schools. Google Applications enables access to a record for any student or staff inside the school authority (Learning with Technology Overview, 2012).

Newfoundland and Labrador's Department of Education and Early Childhood Development has provided $150,000 to expert learning and assets for schools along with two nomad-training units to help Brilliant Labs work. Brilliant Labs is an Atlantic Canadian association that underpins coding, computational reasoning, technological and Creator Training in schools. This financing will help Brilliant Labs to provide instructive advancements in Newfoundland and Labrador's schools, for example, interface gear, sensors, programming dialects, and 3D printing. To begin, Brilliant Labs will design courses and bolster students and teachers' tech education in elementary schools all over the province. The Provincial Government is focused on the progression of innovation in the classroom. An objective of the Innovation Work Plan is to upgrade K-12 innovation aptitudes through commitments with the innovation business, including an expanded

presentation to coding and interest in youth innovation experience programs, (Fostering Youth Innovation through Coding and Technology, 2018). The Newfoundland and Labrador English School District understands the significance of software engineering and coding. The District urges educators to include students in this worldwide activity, as coding exercises serve to enable students to make, impart, work together, and comprehend issues. The District's objective is that before the end of the 2018-19 school year, 80% of NL's schools will have connected with students in coding related exercises. The Coding Bolster Group also aims to connect all schools throughout the District in coding before the end of the 2019-20 school year (Code to Learn, 2018).

Some steps have been taken in the United States to prepare students at the school level for the current technology boom. Ceccucci (2006) argued that although computing skills are widely available in US secondary schools, they are not yet part of the core curriculum. A survey of 100 randomly selected high schools across the US was conducted to see what courses they offered in five areas. The survey reported that in the US, 99% of secondary schools have a computer education course (obviously characterized as application software), 13% require the course for graduation, and just two states (Nevada and North Carolina) have a PC proficiency necessity for graduation. Eighty percent of the secondary schools have a designs/desktop publishing course (Adobe PageMaker), while 56% have a web/e-commerce course and 50% have a programming course. Visual Basic (VB) is the most common program taught, with C++ and Java also being taught in some courses. About a third of schools also have an equipment/networking course. Many of these are CISCO[2] and CCNA (Cisco Certified Network Associate) curriculum programs

[2] Cisco Systems, Inc. is an American multinational technology conglomerate headquartered in San Jose, California, in the center of Silicon Valley, that develops, manufactures and sells networking hardware, telecommunications equipment, and other high-technology services and products

(Ceccucci, 2006). Even though every CIS (Computer Information System) program ought to build up its remarkable mission, it is profoundly prudent to be acquainted with both program's historical context and the improvement of national curricular models/standards. The discipline has since developed with the progressions in technology, and it is most likely best to consider those developmental curricular changes considering the technology and educational advances of the past three decades (Saulnier, Ceccucci, Sendall, & Peslak, 2019).

Elsewhere in the United States, there have been systematic undertakings to support IT classes at the K-12 grade levels. The STEM Education Act of 2015 expanded the importance of STEM (science, technology, engineering, and math) to help consolidate IT and enabling more STEM guidance in grade schools (STEM Education Act, 2015). The Act has propelled several US states to include more computer science classes in their core curricula. The Chicago Public School District, for example, plans to have IT classes in all types of classroom instruction and to make them necessary for graduation by 2018. New York City will ensure that computer sciences are taught in every public school by 2025 (Staley & Malenfant, 2010). There are on-going efforts to include computing skills to schools, to design computer science (CS) classes, to train educators and to execute computer science instructive modules at a combination of audit levels. Executing these CS courses has proven difficult, particularly in educator plans and in upkeep. Curiously, endeavors that allow teachers to use IT in their own classrooms and subjects (for example, in science or history classes) have been met, with fewer difficulties; even though there are deficiencies in CS courses, they are nonetheless fundamental to educating students in the 21st century (Wilensky, 2018).

Employer Expectations and Graduate ICT Proficiency

McLester and McIntire (2006) suggest that new entrants to the job market may be skilled in the practical use of some software applications but employers are often not satisfied with the level of pure skills (technical skills) of their new employees, including their IT skills. Gallivan, Truene, and Kransky (2004) pointed out that the 21st century demands a higher level of IT skills from job seekers than ever before. They found that current jobs focus on the need for end-user (customer) support more than ever due to the increase in the number of end-users in general and typically many end-users are not capable of dealing with problems themselves (e.g. after-sale services, warranty/guarantee claims, etc.) and therefore seek help.

There is evidence of a wide disparity in computing requirements. Often advertisements for job positions use different terminology for what end-user computing skills are required for similar positions (Gibbs, 2009). In general, job advertisements use broad terms such as "must be computer literate, advanced computer literacy required, expert in Word and Excel, strong MS Office skills, proficient in Microsoft products, highly developed computer skills and exceptional and efficient computer skills" (Gibbs et al., 2011). An examination of position descriptions in job advertisements shows that these descriptions do not clearly depict the expectation of the employers in terms of the specific skills sets for the business graduates they are seeking to employ (Gibbs & McKinnon, 2009). Consequently, there may be a disconnect between the perceptions of business graduates who are about to enter the job market, in terms of their own computing skills, and the expectations of potential employers. This circumstance serves neither the applicant nor the enterprise seeking a new employee (Gibbs, Steel, & Kuiper, 2011).

When composing job descriptions, employers often do not know how to express what level of computing skill they need for the advertised position. As Ballantine, Larres, and Oyelere (2007) observe "[s]ome place too much faith in a candidate's own assessment of their skill level. It is widely reported that people often overestimate their own ability" (especially those with a lower ability). Gupta (2006) states that "[e]mployers prefer workers who are computer literate because they are more productive and efficient at work than those who are not".

Phelps, Hase, and Ellis (2005) contend that many graduates and employees are not confident in their computing abilities. This suggests a need for particular courses to be offered at universities for end-user computing. Bennett (2002) notes that while employers indicate the duties of a job in their advertisements to prospective candidates they normally do not describe the competency level required for each skill area. Unless employers are clear in what they are looking for, graduates will not know what skills to learn and universities cannot offer appropriate classes reflecting these needs for end-user computing which has been in use in one form or another for almost three decades. Murray, Sherburn, and Perez (2007) conducted a study in which they observed US manufacturing companies where MS Office skills were required for all levels of employees. They found that employers expected more from business graduates in terms of their knowledge and experience associated with end-user computing, however, businesses were not clear in describing the actual skills they require. Similarly, Murray et al. (2007) mention that computer education is becoming more important as businesses are more dependent on technology. Grant, Malloy, and Murphy (2009) compared the skill-assessments of new university students with the score they achieved on an online computing test. The test comprised on the commercially available Assessment and Training for Microsoft Office 2003 (SAMS 2003) Challenge test, which

is composed of 35 test questions. The results showed that the students ranked their perceptual skill level higher than what their test results showed. Among word processing programs, presentation software and spreadsheets (used as common software test tools), the most significant difference in skill level was with the spreadsheet software. The difference between perception and actual ability was not significant, for the word processing and the presentation softwares but the majority of skills tested in the word processing section were basic or intermediate skills, they only tested in basic skills in the presentation section. Grant et al. (2009) believe that the skills used in the testing may not be at the level expected by employers and that self-assessment was often used in conjunction with actual testing. However, the level of tasks tested is often difficult to verify. Because of the multilayered nature of IT self-assessment, IT skills tend to depend upon comparison (Talja, 2005) and assessment of personal computing knowledge can change. Kim et al. (2006) contend that to decrease the gap in skill level, the focus should be both on the end-user and on the traditional computing skills. It is possible that people exaggerate their knowledge of the skills they perceive as easy; in the same way, they downplay their knowledge when they feel the task is difficult. Windschilt, Rose, Stalkfleet and Smith (2008), when comparing the skill levels of people, found that people are normally egocentric and that they are more concerned about their own skills than they are about skills of others (Gibbs et al, 2009).

Lisá, Hennelová, and Newman (2019) argued that in surveying graduate skills, one must consider those which employers think are most significant in relation to the degree to which they are fulfilled. It is unnecessary to focus on those skills that have little significance for effective work execution, even if they are limited or absent in graduate skill profiles. It is, however, important to focus on addressing inconsistencies between graduates' and employers' perceptions of acquired

skills. It is self-evident that graduates expect employers to be satisfied, but if they are disappointed in graduate skill levels, this can cause demotivation and a higher pace of graduate turnover. One approach to lessen the gap in the perceptions of graduates and employers is to promote compulsory students' internships, create opportunities for dynamic contacts with employers and the job market, and advance self-management skills, for example, mindfulness. Higher education institutions can provide and encourage such opportunities through career direction services. Arrangement of psychological services to develop mindfulness can assist graduates with finding the right profession, thereby improving their retention by employers.

Hossain, Alam, Alamgir, and Salat (2020) found that both soft skills (communication skills) and technical skills (computer and business skills) are positively related to business graduates' employability, which is consistent with prior studies. Their findings also indicated that social mobility factors also play a significant role in graduates' employability.

Jewell, Reading, Clarke, and Kippist (2020) examined how academic IT skills converted into the business setting by conducting interviews with employers and recent graduates working in Western Sydney. They studied the range of information technology skills that instructors should focus on in preparing business students for the work environment. Their research recognized that there are explicit IT tools, systems and procedures that can inform practical curriculum innovations to help business graduates to be prepared for work. The authors suggest that IT skills are fundamental in data-rich business settings, and choosing, orchestrating, and utilizing that information gives a competitive advantage. Information technology literacy is viewed as one of the most significant graduate characteristics.

Graduate/Student Self-Perceptions of ICT Proficiency

Several studies have examined students and graduate self-perceptions about the efficacy of their ICT knowledge and skills. Rainsbury, Hodges, Burchell, and Lay (2002) conducted a study at a business school in New Zealand to rank a range of skills, such as customer service, teamwork, computer literacy, self-confidence, and learning attitude, they deemed important for employees. The researchers found that the graduates ranked 'hard skills' (e.g. teachable abilities that can be defined and measured, such as typing, writing, math, reading, and the ability to use software programs) as more important than soft skills (e.g., less tangible and harder to quantify skills, such as etiquette, getting along with others and listening and engaging in small talk). Researchers ranked soft skills as less important while students ranked interpersonal skills as more important while computer literacy was determined to be the most important skill for the workforce.

Kaminski, Switzer, and Gloeckner (2009) reported findings from data gathered from a large sample of first year students in 2001 and a randomly stratified sample of seniors in 2005 to inspect students' apparent FITness (Familiarity with Information Technology). In the fall of 2001, a group of first years at a medium size institution completed a survey and in the spring of 2005, a random sample of graduating seniors finished a comparable survey. The survey estimated the students' self-perceptions of their capability in fundamental information technology knowledge and skills, (for example, word-processing and presentation software) as well as in more complex applications (for example, digital audio). Perceptions of abilities in presentation software and browsing were very high with critical rise in estimated ability over the period, but both groups perceived themselves to be less proficient in database, web animations, programming, desktop publishing, digital video, and video audio and these perceptions decreased over the period. One

may accept that an undergraduate would demonstrate an increase in information and communication technology skills, but this research found that usually students' perceptions of skills decrease. This reduction might be because of their increased familiarity with the capabilities required in these skill areas or in the workplace, generally .

In another study by Gibbs and McKinnon (2009) the researchers asked student participants to describe their level of computer skill proficiency. There were stark differences in the scope of responses (i.e., some gave a one-word answer while others were more descriptive about their perceived knowledge and skill level). One of the findings was the considerable variation in the range of meaning attributed to the same descriptors, as participants who described their skill level as basic or intermediate used similar language to those who perceived their skills to be advanced.

Wallace and Clariana (2005) noticed that numerous universities and colleges require incoming students to show a certain degree of computer capability. They reported that many educational institutions offer introductory computer courses to help students in meeting this prerequisite. They also noted that different institutions were considering disposing of introductory computer courses with the expectation that students would show satisfactory computer learning through a capability assessment. It was expected that students would have obtained both computer knowledge (ideas) and skills (applications) in school or through other individual experiences. Giving the students the alternative of taking a computer capability test in lieu of a required course might enable students to take other required, elective, or optional courses that will help them in finishing their degree. Nevertheless, not offering the initial computer skills course may, similarly, be unfavorable to students who might benefit from the skills offered by such a course.

Gibbs, Steel, and Kuiper (2011), stated that there is little compulsion for students to take ICT courses offered in high school because they are classified as electives. University graduates especially business school graduates, are expected to be able to use the available applications to operate in a professional environment. However, some authors have suggested that growing up in a digital generation does not mean that all graduates have acquired advanced computing skills. Research suggests that some graduates may have only a superficial knowledge and familiarity with a variety of applications. Hulick and Valentine (2008) have stated that university entrants still do not have enough computer knowledge and skills. In order to perform well in the undergraduate school of business, incoming first-year students are required to achieve an average score of 58 and 60 percent on two computer competency level assessment entrance tests (a computer concepts test and an Excel pre-test) respectively, and these scores are not commonly achieved.

Recently Impagliazzo (2019) has argued that computing education is evolving from information-based learning to competency-based learning. Traditionally, the process of information transfer in an instructional setting involves the transfer of knowledge to a student as mediated through an educator. While helpful, business studies content is less essential for businesses or for the modern industrial sector generally than transferable skills. In the same way as soft skills, such as the ability to communicate and positive attitudes and interpersonal dispositions are becoming increasingly important, professional technical skills are becoming progressively significant. The combination of expertise and personal dispositions are now underpinning notions of professional competencies. This is not a new idea; professional schools, including schools of medicine, dentistry, law, and education have supported competency for quite

a long time. Yet, professional competency is a generally new idea in the computing field, although its application to computing fields, according to Impagliazzo (2019) is beginning to rise.

Role of Business Schools in Developing Graduate Computer Skills and Competencies

Business schools have been criticized on the grounds that they do not prepare students well enough for a competitive job market (Pfeffer & Fong, 2002; Sadri, 2002) as the 21st century requires different skill sets from business graduates than in the past (McCoy, 2001). Some authors believe that if business education programs are to respond to the requirements of the market, the needs of corporate workplaces should exert a greater influence on their content. For example, McCoy (1996) suggested the amalgamation of business studies and ICT education as a means of preparing students for the IT-focused job market (McCoy, 1996). Some researchers have argued that the best way for students to acquire ICT skills is to embed them in their teaching and to assess them within their existing courses (Feast, 2003). Donald Schön (1983, 1987) brought forward his theory of reflective practice while examining applied university programs, like medicine , law, and architectural design. He contended that the knowledge procured through coursework, what he called propositional learning, was restricted in its effect since it did not contemplate the 'truth of practice'. However, he found that experts moving on from applied projects were successful, no matter how they were educated. Schön discovered that experts improved their training through commitment and created 'practice experience'. Schön distinguished reflection-on-practice (do–learn–think) as a procedure from reflection-in-practice (or reflection-in-action) as more of a tacit element of the conduct of everyday learning. Both are significant and speak to a consistent cycle of learning, as described by Neck and Greene (2011).

Social networks have earned an undeniable place as a cooperative learning tool in education and mobile devices have become potential learning devices for education (Baran, 2014). Benson and Fililppaios (2015) studied more than 600 business and college graduates from the Association of MBA (AMBA) accredited UK colleges, and found that work involvement and the age of business students play a significant role in their utilization of social networks for professional purposes, information, and career management. The research data found that younger students are social networking savvy and can recognize business opportunities, while older graduates are less confident in this field. This is imperative, as graduate students may already be mid-profession and the gap between the younger generation and the accomplished graduates should be bridged by satisfactory educational program changes (Benson & Fililppaios, 2015).

Hawawini (2005) studied business schools about problems that need to be addressed. There was a range of issues identified, including the impact and response of globalisation on business education, a deficiency of profoundly qualified personnel, and uncertainty about how to compensate for the shortfall. Other problems related to the introduction of soft skills into educational programs while safeguarding the more logical concept-based courses, and the assessment of the impact of ICTs on instruction and learning techniques. The first flood of advances in information and communication technologies (ICT) hit schools in the late 1990s. During this time, the greatest concern was that business courses would, in long run, end up virtual, uprooting the conventional classroom-based model of instruction. This concern has since subsided; however, the general problem of integrating ICT education into business degrees has not faded away.

Current ICT applications present opportunities for business schools and other professional schools to more readily coordinate technology into their lectures and educational programs, and to alter the manner in which they convey their programs and technologies. The importance of doing so has become even more evident in recent months, as the COVID 19 pandemic has forced universities to modify program delivery. A professor in a school with numerous campuses or a school with multiple institutions around the globe may offer courses by means of video-conferencing. On the other hand, a professor may offer an online business simulation by use of the internet, to students situated in various locations or to subgroups of students, based on their availability. Likewise, students can, in some instances, take an online course at their own pace without needing to be in the same geographic locations. With the advent of higher bandwidth and new video-technologies, such as those in use during the COVID 19 pandemic enable schools to reach different configurations of students in both real-time and asynchronous formats, thereby fulfilling the increasing interest in business education, while retaining many of the benefits of face to face learning. As previously referenced, corporate customers require courses to further employee learning and job proficiency. Allowing employees to take continuing learning classes in the workplace might appease employers who may not want them offsite. This requires business schools to broaden their connections with learners out of the classroom and into their working environment, potentially extending to blended programs that join on-campus sessions with web-based learning in the work environment. The potential advantages of coordinating ICTs into educational systems and projects can be enormous. When actualized effectively it can help streamline activities, control expenses associated with professional learning and respond to the needs of corporations and people for continuous organizational learning.

Beginning in the 1990s, business colleges have been consolidating different ICTs to enhance teaching and learning adequacy (Leidner & Jarvenpaa, 1995). It is now a typical practice for business schools to incorporate IT technologies, such as enterprise systems (ES) software into program areas, including accounting, marketing, operations, and organizational behavior. They can help graduates create integrative abilities by outfitting them with conventional programming skills and IT aptitudes. However, there is a wide range of enterprise software, with new products entering the market regularly and this limits the kinds of specific applications that can be introduced to students. In spite of the fact that their viability is not plainly known, this procedure of mixing courses with IT technologies, causes students to build up these integrative aptitudes (AACSB, 2003). Joseph and George (2002) suggest that enterprise systems represent opportunities for hidden connections among different disciplines and offer a point of convergence for incorporation the integration of knowledge across functional disciplines (Johnson et al., 2004).

Incorporating enterprise systems software into educational programs is resource intensive and challenging for both faculty members and students (Fedorowicz et al., 2004; Seethamraju, 2009). The few studies that have examined the incorporation of ES programming into business programs show that the expenses come from the preparation of academic staff, software and software update costs, and technical support for the products. These expenses may often exceed the academic advantages of coordinating ES into business schools' educational programing (Bradford et al., 2003; Seethamraju, 2009). Putting forth a business defense and getting sufficient financial support in current tight budgetary conditions in universities is a challenge. This financing is instead required for the upgrading or introduction and implementation of other resources, to supplant out of date equipment and to support innovation.

Solving the difficulties identified by Hawawini (2005) and others can open doors for university-level business schools to separate themselves from other business education providers. For instance, schools that globalize effectively and develop creative partnerships with industry may find ways to attain these technologies. Additionally, schools that effectively use ICTs can overcome problems associated with shortages of highly educated faculty and attract a larger number of students, thereby becoming more viable (Hawawini, 2005).

Abdullah, Amin, Mansor, Noor, and Amirudin (2020) argue that the curriculum for programs should consider students' competency level, likewise, the courses offered ought to address variability in students' computer proficiency levels. Prerequisites of the job market and students' knowledge, experience, and self-efficacy of computer applications are continually evolving. Along these lines, the assessment of students' performance in basic computer skills is required to assess the interventions required by business students. The improvement and realignment of course to address skill deficits are fundamental for instructors to plan students for today's worldwide economy. A 2018 report directed by PricewaterhouseCoopers (PwC) related to the business-higher education nexus demonstrates a concerning gap between the perceptions of business school instructors and employers when preparing students for the competitive job market. The report predicted that by 2020, 77% of all employment would require some level of innovative ability and there would be one million more IT-related jobs than qualified-candidates. Therefore, there is a developing need for specialists with STEM skills but there is a lack of graduates who are educated in these fields. As per PwC's yearly CEO overview, 79% of US CEOs are worried that a lack of individuals with key abilities in IT skills will hinder their organizations' development. The report suggests that many students lack the knowledge to utilize advanced technology often

required in the competitive job market. It is suggested that one contributing factor is related to classroom practices; 60% of classroom innovation exercises in business schools is detached (e.g., watching recordings, perusing sites), while just 32% of classroom innovation exercises are dynamic (e.g., coding, creating recordings, analyzing information). This suggests that students rarely rehearse the kinds of innovation skills that are required for some jobs (PricewaterhouseCoopers, 2018).

Summary

This literature review has examined research relating to students' levels of computing skills, the expectations of employers in the job market, how business school graduates acquire computer skills, the role of business schools in developing these skills, and the extent to which business school graduates possess these skills. It also outlines research that addresses the integration of ICTs with teaching practices and aims to describe some of the steps that have been taken to improve ICT skills at the K-12 level in Canada and the US. The research suggests that employers expect graduates to have sufficient and appropriate computing skills, but businesses are not always clear about these requirements when advertising positions. The current literature review also demonstrates that there is a gap between the computing expectations of employers and the actual skills of business graduates and the organization of their programs.

Chapter Three: Methodology

Introduction

To meet the objectives of this study, a qualitative method was used. The following sections provide a point-by-point depiction of the methodology utilized in designing this study and includes the methods used for data collection and analysis. This study follows a phenomenological approach using in-depth interviews to research business graduates' and employers' perceptions about computing skills and practices. In the following chapter I will provide the foundation for using a qualitative research strategy and the techniques utilized in this research study. I will outline the reasons, objectives, and motives for choosing a qualitative research method. Next, I will describe the techniques used, including sampling, recruitment, data collection, data analysis, and ethical considerations.

Qualitative Research

As Creswell (2013, p. 206) notes, "[i]n qualitative inquiry, the intent is not to generalize to a population, but to develop an in-depth exploration of a central phenomenon." Qualitative studies provide the essence of a problem from the participants own point of view and the world they are interpreting. "Throughout the process, [qualitative inquiry] seeks to ensure that the theory emerging arises from the data and not from some other source" (Crotty, 1998). According to Psathas (1973, pp. 6-7), "the role of the participant in the situation, implies that the observer must exercise sufficient discipline on himself to ensure that it is indeed the actors' meanings that are recorded and not merely his own." (as cited in Crotty, 1998).

Similar to Yin (2014), Merriam (1998, 2009) declares that when data are abundant and ideas are conceptual, it is imperative to use research forms that help interpret, sort, and oversee data and that present findings in a manner that conveys clarity and applicability with respect to the outcomes. According to Brown (2008), Merriam's work provided ways and means of using pluralistic strategies to guide practical constructivist research to determine information about a area of interest. Lester (1999) contends that the benefit of a phenomenological (constructivist) approach is the ability to investigate and examine a problem through a participant's perspective – how an individual sees and comprehends the situation they are experiencing. Therefore, I will use a phenomenological theoretical perspective to explore the experiences of both graduates and employers.

Stake (2006) emphasizes the researcher's interpretive role is fundamental in the research process. An interpretative theoretical position sees reality as multiple and abstract, in light of different meanings and comprehensions. Information produced from the research procedure is situated within the time and setting of the study and the researcher is interactive and takes an active role in the study. Regarding epistemology, Stake contends that circumstance shapes activity, experience, and one's interpretation of findings. Morrow (2007) states, this "…is also the most useful approach to understanding the meanings people make of their experiences" (p. 211). For this particular subject area, I hope to grasp how business graduates perceive their computer proficiency and employers feel about the level of preparedness of business graduates in terms of their computing skills.

To understand the perspectives of both the students and employers, I decided to go straight to the source. I intentionally concentrated on business graduates because of their close temporal

proximity in studying at a business school. I targeted computing skills as a subject of the investigation to determine the extent to which there is uniformity of dissonance between graduate self-perceptions and future employers' expectations. This allows for an examination of the proficiency gap between employers and recently hired graduates. Creswell (2012) states that "[i]n qualitative research, we identify our participants and sites based on purposeful sampling, based on places and people that can best help us understand our central phenomenon" (p. 205).

Theoretical Positioning

As a researcher, I am situated within and my beliefs align with a social constructivist epistemology. Social constructivist research is a form of interpretive research whose fundamental goal is to conduct an in-depth analysis of an issue, within its context with a view to understanding the issue from the perspective of participants (Merriam, 2009). Similar to other forms of qualitative research, the researcher seeks to explore, understand and present the participants' perspectives and get close to them in their natural setting (Creswell, 2013). Interaction between participants and the researcher is required to generate data, which is an indication of the need for connection between researcher and the participant. The role of the researcher is to co-construct and interpret meaning based on the lived experiences of participants. The researcher's perceptions and interpretations become part of the research and as a result, an interpretive orientation flows throughout the inquiry (Creswell, 2014). Therefore, open-ended interview questions are often used to allow further expression and to gather data, through the researchers as a conduit. Merriam (1998) argues that in constructivist research, the researcher expects that the truth will emerge through engagement with participants' socially constructed experiences. Participants, therefore, bring their own experience

of a specific situation. Merriam (2009) asserts because an individual is the "instrument for information gathering" the, "interpretations of reality are accessed directly through their observations and interviews" (p. 214).

Phenomenology is a theoretical orientation whereby a researcher interprets the manner by which individuals see, comprehend, and decipher experiences in their lives (Rawlings & Cowell, 2015). As noted, the current study was undertaken through the phenomenological lens of a social constructionist. This worldview underlines the significance of deciphering participants' impression of the importance of a life event, meaning that their view is framed by their connection with the reality of their lived experiences (Lester, 1999; Crotty, 1998). Therefore, business graduates' assumptions concerning their computing ability is central to this study. By looking at both the perceptions that business students have of their own computing ability and the experiences that businesses have in working with these business graduates, the phenomenon of computer preparedness for the business workplace can be better understood. Understanding the essential computing skills employers expect to see in business graduates, and self-perceptions of computing competencies by business graduates will enable the researcher to evaluate the level of coherence between expectations and preparedness.

Considering that competence in computer usage is imperative for business graduates, they presumably have their own perspectives on this topic. The intent of this study is not to generalize to a population, but to develop an in-depth exploration of a central phenomenon (Creswell, 2012). Consequently, gathering data from those with direct involvement in the subject provides authentic representations of the phenomenon under study.

My motivation behind this study was to comprehend employers' perspectives on the computing skills of business graduates. The experiences of business graduates have already been comprehensively outlined in other contexts (Gibbs et al., 2009 & 2011); however, this investigation aims to concentrate on viewpoints of both the employers and business graduates in regards to computing proficiency of graduates for post-graduate employment. By gathering data from employers, and business graduates, concerning computing requirements, this research may be useful to business schools in determining policies and practices associated with further learning opportunities to increase the level of computing skills amongst their students. This may help to close any gaps that may exist between the skill level of students, and the expectations of employers.

The objective of this methodological approach is to ensure there is coherence between the researcher's philosophical position, the research questions, and methods to be utilized in the study (Yin, 2014). Common methods used in qualitative research commonly include observations, interviews, text analysis, and artifact analysis (Merriam, 2009; Simons, 2009). As a researcher, my commitment is to create a trusting, open, and conscious association with the research participants who themselves consented to impart their own experiences and perspectives. This conscious relationship is developed through preparation, thinking about the subject under discourse, asking questions in interviews about participants' experiences, and faithfully representing their stories and perspectives (Walker, 2005).

The viewpoints of the research participants are essential in interpretive research. Morrow (2007) asserts that interview questionnaires are an important instrument through which to acquire subjective participant views. Furthermore, open-ended questions permit a wealth of data to be captured by empowering participants to thoroughly explain their encounters with the particular

phenomenon under study. In this investigation, the data were gathered through open ended interview questions, which gives participants the ability to be expressive and provide enough data for the researcher to generate thick descriptions of these same phenomena.

Research Goals

One of the main objectives of this study was to acquire a better understanding of how business school graduates see their computing skills and the expectations gap between them and their future employers. The study therefore focuses on how employers describe the computing skills they desired in job advertisements. I sought to understand both the business graduates' and the employers' perspectives by looking at the training and preparation of graduate students, the collaborations and involvement of computing skills in course work, the interactions with professors, and the overall places and contexts where computer skills are acquired.

Three essential questions guided my research: 1) How do business school graduates represent their level of computer proficiency and what are employer expectations of computer proficiency for employment in the job market? 2) How do business school graduates acquire computer skills and what is the role, business schools have in developing those skills? 3) What level of computing skills do employers expect of new business graduates and to what extent do recent business school graduates possess these skills?

Research Design

For this study, I adopted research methods used by Gibbs et al. (2011) as a model, but modified the parameters of the study and the questionnaire for the local (Eastern Newfoundland and Labrador) context, to take advantage of convenience sampling.

Sampling

As this study was being conducted to assess perceptions of the computing skills of business graduates and the expectations of employers, purposive sampling was a fitting strategy for participant choice (Creswell, 2012). Creswell described purposive sampling as the conscious choice of people or places that encourages understanding of the decisions being made. Consistent with Merriam (2009), I additionally utilized a convenience sampling technique as I focused on working with local business graduates, from Memorial University of Newfoundland and Labrador. Furthermore, I focused on employers who had direct involvement with business graduates' computing skills, either in an individual or group setting. This was the best approach to use for this study as it ensured that participants had firsthand viable involvement in work or study involving the application of computing skills.

Recruitment

Prior to recruiting business graduates and employers to interview, the research study was approved by the Interdisciplinary Committee on Ethics in Human Research (ICEHR). I then contacted the Academic Staff Member in the Co-operative Education Office of Memorial University by e-mail to seek assistance in recruiting graduates and identifying potential local employers. The email identified the purpose of the study, an invitation to participate (recruitment letter), and included an informed consent form. Individual graduates interested in participating in the study were invited to contact me to participate, or to ask any questions they may have had. I then identified prospective employer participants by purposefully selecting 12 businesses that have previously hired Memorial University of Newfoundland business graduates. Businesses in marketing and sales, banking, hospitality, accountancy, local government consultancy, and

construction industry were contacted. My target group were HR professionals associated with each of the employers.

Participants

Twelve business graduates from Memorial University of Newfoundland and 6 employers (a total of eighteen participants) took part in this research study. Interviews were conducted between June and October 2019. All the interviews were face-to-face, except three were telephone interviews. The length of the interviews varied from 15 to 30 minutes. The graduate participants were a diverse group in terms of work experience and the number of years since they graduated from business school. The employer participants were also diverse in terms of their industry background and their experience hiring business graduates from Memorial University. At the time of data collection, the graduates' work experience ranged from 0 to 4 years. In terms of level of education, 10 had earned Bachelor's degree and the remaining two were Master's level graduates. Most of the business graduate participants were located in the greater St. John's area, except one participant, who moved to Ottawa after an initial period working in St. John's. The employers were all based in the St. John's area; and were situated in the fields of technology, oil and gas, finance, software, sales, marketing, and education.

Procedure

The study was conducted in two phases. In Phase I, using in-depth, semi-structured questions, I interviewed six (6) employer participants about their expectations and perceptions regarding the level and breadth of computing skills of applicants/employees who were recent graduates of Memorial University's School of Business. Similarly, in Phase II, twelve (12) recent business school graduates were selected and interviewed, again using a semi- structured interview

protocol. The informed consent form was sent out in the original recruitment document, but I reminded and encouraged participants to review the form before our interview time. At the beginning of the interview, participants were provided with a summary of the informed consent form to ensure that they understood the form, and to ensure that they were aware of all key components. Participants were given the opportunity to ask questions and consent was obtained from each individual. Participants also consented to the use of direct quotations and to be audio-recorded. I noted the date and time that it was given on a hard copy of the informed consent form.

For both groups, I used open-ended questions to elicit free-flowing responses. In Phase I the questions were designed to identify the IT categories, the specific IT skills, and the level of these skills that employers believe a graduate should have upon recruitment. This data would later be compared to self-report of computer competencies held by business graduates. Participants were also asked about their ideas of the ways business school graduates acquire computer skills and the role of business schools in developing those skills. For Phase II of the study graduates were interviewed using a semi-structured interview questionnaire with open-ended questions, which was a modified version of the Gibbs, et al. (2011) questionnaire. Graduates were asked a series of questions intended to illicit representations of their level of computer proficiency and the level of competency expected for positions in the labor market. They were also asked questions relating to their acquisition of computer competencies.

All interviews for both Phase I and Phase II were conducted in person or by telephone. All interviews were recorded, transcribed, and analyzed using the qualitative method of thematic analysis. “Thematic analysis is a means of recognizing, analyzing and reporting themes within data” (Braun & Clark, 2006). Thematic analysis goes beyond including expressions or words in a

context and proceeds onward to recognizing implicit and explicit thoughts inside the information. The analysis was conducted by getting familiar with the data, assigning preliminary codes to data in order to describe the content and then searching for patterns or themes in codes across the different interviews.

Ethical Considerations

In compliance with the Interdisciplinary Committee on Ethics in Human Research at Memorial University (ICEHR) research checklist, I forwarded all requested information regarding my study and all supporting documentation to the ICHER. Upon review of my study and documents formal permission was granted by the ICEHR to conduct the proposed research. The ethics conventions for directing qualitative research, as laid out by Memorial University of Newfoundland were followed exactly. Anonymization, privacy, and informed consent were strictly observed. All information was accounted for and we endeavored to hide all defining characters of participants. No individual data, aside from educational background and past employment were needed for this study. Classification was addressed in the informed consent form and was repeated before the meeting started to ensure comprehension. The informed consent form clarified the reason and objectives of the research, the participants' role, conceivable dangers and advantages associated with the research, and how results would be exhibited. I likewise provided members with my contact information, alongside that of my supervisor. All information gathered was secured according to the ICEHR guidelines. The ICEHR approved all documentation utilized in this research.

Data Analysis

Transcription and Pattern Identification

All interviews were recorded using an audio recording device so that I could listen to the answers given by participants and transcribe them verbatim so as to examine each one independently (Merriam, 2009). Prior to reading the transcript, I first re-read the research questions and an initial read of the participants' responses. I re-read the interviews, becoming intimately familiar with the data. Following several re-reads I was able to identify patterns within the data; I also made note of any interesting examples or deviations from the established patterns as I transcribed. I did so by making copious notes along the margins of the transcriptions, and also by keeping a note pad alongside my transcriptions where I often recorded my thoughts, remarks, emotions, and considerations of each transcribed interview (Merriam, 2009).

Throughout the data analysis I practiced continuous reflection and investigation. I re-read the transcripts, and recorded my thoughts, understandings, and questions. Morrow (2007) recommends that working the same information over and over again allows for a more profound comprehension of the data set and how each interview is associated with each other. Moreover, Merriam (2009) suggests that ongoing analysis of the gathered information repeatedly can be an edifying part of the research process and conversely, information that does not undergo this analysis can be difficult to understand. Microsoft Word was utilized for "data preparation" which involved the transcription, "data identification", and the coding or categorization phases, of the interviews- Microsoft Word also allowed for "data management" which refers to both the organizational and retrieval of the data sets (Merriam, 2009). After making note of all thoughts and elucidations, a basic appraisal of the data was undertaken (Creswell, 2012).

Data Coding and Ordering

I began coding the data by arranging and organizing the information for each interview in tables, taking care to include my inquiries and reactions to the data collected. Information identification was then completed, which involved giving shorthand names to various pieces of data to more easily locate each piece of data. A blend of words, expressions, and colors were utilized for this purpose. As I was coding data, various classifications began to become clearer, and so I began to sort and name classes. I arranged the documentation by making soft files for each class, at which point I reordered my data so that each point fitted into a specific classification. Finally, I was able to combine different classifications to create three working topics. This smaller number of working topics allowed for easier correspondence when discussing each finding (Patton, 2015). Initially, I found it hard to name the subjects that had developed. Merriam (2009) clarifies that some subjects "are responsive (answers)" and therefore the names of the various classes must be "compatible with the direction of the examination" (p.184). I therefore renamed the classes so that the names agreed with the observed data.

Data Analysis

To break down the large volume of data I had gathered and transcribed, an "inductive and relative" system was utilized (Merriam, 2009). Merriam portrays the importance of ensuring that the information gathered, and the overall investigation of the subject is objective. This involves arranging and assembling what individuals have said to better understand their viewpoints and to pick up on any patterns and trends in participants' interview responses. This allows for further discoveries to be made throughout the study. Phenomenological academics therefore organize all participant information into group and sort the information by importance and theme (Tite, 2010).

This is also called the "horizontalization of the information" because researchers recognize the statements given by participants that exemplify their experience of the research problem (Tite, 2010). Personal proclamations are esteemed and are gathered and orchestrated to represent the participants' experiences (Tite, 2010). In this way, "finished portrayals" are built by staying true to the primary data, and by giving rich records of participant interviews.

Trustworthiness

There are four aspects of trustworthiness that qualitative researchers endeavor to establish: credibility, dependability, transferability, and confirmability. Credibility is a form of validity; validating the findings of research allows for researchers to be confident that the information they have presented in the study is a genuine portrayal of the participants' interviews, and that explicit techniques were used to gather, organize, and present this information (Creswell, 2012). Silverman (2015) suggested that the credibility of a qualitative study can be achieved by making the research process transparent and showing how this produces particular interpretations. In terms of credibility, both my supervisor and I had the opportunity to have a continued engagement during the data collection process and the interpretations. Silverman (2015) argued that reliability or dependability is more related to quantitative research and not to qualitative research. For dependability of my findings, I compared all interview content with the audio and notes I had taken both during and after each interview. In this study, triangulation was implemented through a method of data collection and the review. Shenton (2004) argues that the key criteria addressed by positivist researchers is that of internal validity and they seek to ensure that their research measures what is researched. To assess the confirmability and credibility of the findings the statements from the participants are incorporated into the study to validate the legitimacy of the

findings and I used my literature review to further fortify and validate all transcriptions, and conclusions. The analysis was conducted by me being primary researcher and my supervisor who sometimes brought different perspectives to the data interpretation. Shenton (2004) said "since the findings of a qualitative project are specific to a small number of particular environments and individuals, it is impossible to demonstrate that the findings and conclusions are applicable to other situations and populations." For transferability, the purposive sampling was applied to form a nominated sample. We employed two methods to ensure data saturation and to make sense of it, namely: operational and theoretical. The operational method was used to quantify the new codes per interview and the majority of codes were identified in the first interviews, followed by fewer codes identified from subsequent interviews. Theoretical saturation was achieved through regular meetings between my supervisor and me, where progress of coding and identification of variations in each of the main concepts were discussed. These strategies helped me to maintain the accuracy and credibility of the research study findings.

My Role as Researcher

As a current graduate student in the education leadership program, my background includes education in business administration and economics. I have experience in the business education field as a student, employer, and as a teacher, therefore I have an understanding and a subjective connection to the expectations gap of computing skills between business graduates, employers, and the role of business schools. In addition, there is personal interest regarding the computing skills of graduates as I have had direct experience as a graduate and I believe that further education on this subject is required. I perceive the significance of subjectivity in subjective research (Tite,

2010). Overall, full objectivity cannot be accomplished as earlier information and recognition does not allow me to maintain a strategic distance from this research. However, this technique offers the chance to assemble and to gather information in an increasingly targeted way. My experience would therefore enable me to understand the considerations and encounters of the participants alone (Wilson, 2015). Due to my experience as a business graduate, I was comfortable interacting with the student participants and I will not be alienated from the subject. My personal experiences and understanding of the business education field is helpful in establishing a relationship with participants, due to my genuine interest in this subject.

Chapter Four: Results

Introduction

The overarching goal of this study, set in Newfoundland and Labrador, is to explore the perceptions of (1) business graduates from the faculty of Business, at Memorial University and (2) local employers on a range of issues related to graduate computing skills. This chapter presents the research findings based on the analysis of data collected from in-depth, open-ended, semi-structured interviews with research participants. The data analysis process is outlined in the methodology section in Chapter 3. The findings are organized into three overarching categories or themes:

1- Graduates' perceptions of their computer proficiency and expectations for the labor market;

2- Graduates' acquisition of computer skills and the role of the business school in technology skill development;

3- Employers' expectations and perceptions of the computer proficiency of business graduates

The themes reflect the data gathered corresponding to the three research questions guiding the study:

1. How do business school graduates represent their level of computer proficiency and what are employer expectations or computer proficiency for positions in the market?

2. How do business school graduates acquire computer skills and how do they represent the role of business schools in developing those skills?

3. What do employers represent as the required level of computing skills is expected of new business graduates and to what extent do recent business school graduates possess these skills?

The results identified participant representations, relating to the required level of workplace computing skills that may affect the transition from university to the workplace for both graduates and those employing them. The interviews with employers and students, along with the questionnaire results from both groups, revealed some interesting results. While some of the themes exposed in the interview data were specific to the employers or the students, there were also elements common to both groups.

Theme One: 1- Graduates' Perceptions of Their Computer Proficiency and Expectations for the Labor Market

The foci of this theme are graduate representations of computer proficiency and expectations for the labor market. Key findings relating to this theme are presented under four sub-themes: importance of computing skills, self-perception of computer proficiency, computing skill requirements, and confidence.

Importance of Computing Skills

Almost all participants highlighted the importance of learning technology and computing skills. There was general agreement that it is difficult to compete in professional life, when one does not have adequate computing skills. As one participant noted, **"**I believe it's essential; I believe it's one of the most important skills that graduates [must] command before getting into the industry." Participants felt that in all business sectors, employers either require a specific degree or diploma, or a high level of competency in computing skills. Notably, participants represented

computer proficiency as being essential not only for new graduates, but also for the individuals sitting at the highest levels of organizations. One graduate summarized the consensus opinion of participants well, describing the need for higher than average computer proficiency as essential to gaining competitive advantages when competing with other job seekers. Being tech savvy, as another noted, makes life easier:

> [I]t is very important; everything is technology-based now, so it's very important for not just business graduates but graduates from every department or faculty to be … technologically proficient. So yeah, this is a skill you cannot do without.

Another graduate noted, "[W]ell from my own experience, I feel that having some computer literacy is always helpful to be successful in any occupation."

Self-Perception of Computer Proficiency

Most of the business graduate participants were confident in terms of their perceptions of their own computer proficiency and considered their computing skills strong. One graduate said, **"**I feel pretty confident with my computing skills", while another described their level of skill development as, "fairly well". A few participants considered themselves experts. In one case a graduate stated:

> I describe myself as very experienced as I have an expert knowledge when it comes to computing skills and I guess it does not have anything to do with programming and things like that it is just day to day things that would help me get my job done.

Similarly, another business graduate self rated at around eight or nine on a scale of one to ten. When asked to clarify, the respondent stated that s/he can do all he/she need to do on a computer proficiently. Some other participants expressed the view that they have above average computing skills, meaning that they have the ability to pick up skills and navigate through any information technology requirements on their own; they don't find it hard to navigate their way around computers. However, even participants who rated themselves highly, felt that their technological expertise is not strong enough to qualify for certain jobs, especially those that involve an understanding of certain specialized technologies, such as 5G connectivity, cyber-security, block chain and other similar highly specialized areas. One graduate noted these are the kinds of specialized skills they have not acquired, and this is something requiring more work in any position requiring such skills. Some others acknowledged that maintaining ICT proficency is a continual learning process, even for those who are quick learners. Even graduates who judged their own computer skills to be moderate, as opposed to highly proficient, felt that if they need to learn something, they are quite capable of doing so, especially with tools such as YouTube or through internet searches.

Confidence

Generally, business graduates represented their level of confidence in their computing skills preparation as high. Graduates felt that the nature of the business sector was such that entrants to the labor market need to be confident in their level of preparation. Variations in confidence levels were attributed to factors such as prior work experience and personal interest in computer applications. It was also acknowledged that prior acquisition of technology skills is a more common phenomenon in the age of digital natives, than it would have been a generation ago.

Thus, confidence seems to largely depend on the pre-university experience of graduates prior to entry to the business program and not the program itself. For example, one participant stated:

> Individually, I did well because I have always had an interest outside my area, so I have always self-taught myself a lot of skills. I planned myself well for the future… I did a lot of observation and research on where I want to be, where I want to be in five years in order to get there what soft skills I would need for myself, so I was very proactive."

Similarly, another interview participant remarked, “I don't know anything about a computer that is impossible.” Participants felt that the acquisition of computing skills is not a specific focus of business programs; for example, one graduate explained that the program does help a lot in applications such as Google Docs, Google Sheets, and Google Slides, because these applications are expected to be learned for use in day-to-day things like working collaboratively or making presentations in class. Some participants pointed out that the business school does help in preparing graduates, in the sense that in order to earn a business degree, students have to complete two or three computer courses which are useful in acquiring hands on experience with computers, computing equipment, and certain fundamental business applications such as MS Excel. Participants in the study also expressed the view that their peers were cognizant of the need to develop greater confidence in their computing abilities. One participant observed that everyone is beginning to realize the importance of technical competency, as people are really taking it more seriously. In the past people may not have been as focused on technical confidence; but, now people really care and there is no place to hide. Another participant noted that, if you cannot learn from the classroom, you learn from your colleagues. Although most participants felt confident about their computing skills, some others were less assured. As one participant remarked:

> I would say, for the most part, I would be able to compete but I cannot say outright that I would be able to compete for every single job opening because I have my strong areas, but the same times I have my weak areas as well.

Another remarked, "I am moderately confident I can learn myself, but I am definitely not as advanced as other people are."

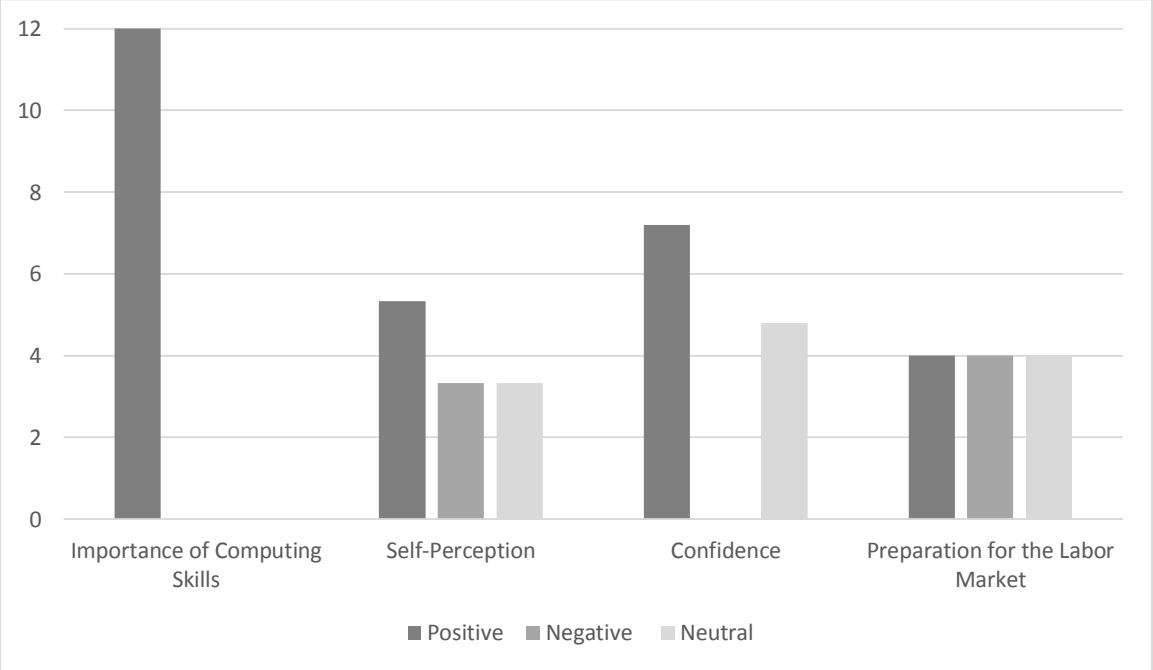
In summary, while most of the business graduates I interviewed were confident in their computer competencies, there was full consensus on the importance of computing skills and the need to be confident in one's abilities.

Preparation for the Labor Market

When business graduates were asked to talk about the quality of computing skills, their perceptions about the quality of what was learned during their degree program varied considerably. Generally, the participants had a positive view about the overall quality of the teaching and learning – particularly the more recent graduates. Some graduates, however, expressed their dissatisfaction with the quality of the computer skills learned during their degree program. For instance, in describing the computer instruction received in their program in relation to preparation for the workforce, some graduates recalled some frustrating experiences. In assessing instructor quality one graduate stated, **"**I would say they're not very well prepared." Another participant commented that, "[O]n average probably under prepared." Although these data are limited, some participants felt the business school could do a better job of teaching more about software and different equipment that are used in the workplace. In terms of the business degree program, overall participants felt that the courses were not geared towards the acquisition of new computing

skills. The business graduates relied on themselves to navigate, especially with Microsoft Excel which they considered to be fairly comprehensive, requiring a lot of practice. Graduates' representation of computer proficiency and expectations for the labour market are shown in Figure 1.

Figure 1. Graduates' perceptions of their computer proficiency and expectations for the labor market.



Theme Two: Graduates' Acquisition of Computer Skills and the Role of the Business School in Technology Skill Development

Theme Two concentrates on the representation of graduates in terms of their computing skills and the role of the business school for computing skills learning in business courses. Throughout the interview process, participants were asked what they liked and what they did not like about computing learning opportunities available through their business programs, as well as

their suggestions for changes or improvement. The findings are presented under seven sub-themes: self-taught computing skills, experiential learning; contribution of business degree program to acquisition of computer skills, alignment in school and work skill requirements, room for improvement, the understanding of expectations and the general perceptions.

Self-taught computing skills

The first subtheme that emerged in the data was that virtually all of the participants relied on independent learning to acquire at least some of their technology skills. Independent learning was revealed to be a significant aspect of graduate proficiency. The data show that a lot of key skills, for example, coding in languages like Python and Canvas was self-taught by seeking online learning tutorial. One participant mentioned that graduates learned software like Cymera, Atris and some others just by trying to figure them out themselves. Some other participants mentioned they developed skills through special interests, like past gaming experiences. One graduates described his experiences in computer gaming:

> I was gamer growing up so like I have always been surrounded by technology and I got a gaming PC in high school. I found like with the hardware whether a computer is crap or a good computer. […] Then throughout school like I have always had a dream, like creating nice power point presentations with the visual aspect of it. I guess as I said earlier what it's a really statistical software Bloomberg, Microsoft Office and learning how to use business research databases like Reminder and iBistro, both the software and hardware.

Another participant expressed the view that she and her classmates had independently developed competencies in standard programs like Photoshop, MS Office, Excel, PowerPoint, and

some of the Google applications. Still another participant mentioned that because of an interest in music, he developed the ability to type fast and navigate the internet well to find things related to his interest in music. He described researching new genres of music coming out and surfing the internet to download music for free. One interesting thing mentioned was that by being surrounded by technology, he felt that his computer ability was constantly evolving. In terms of business applications, such as the MS Office package, he picked up some skills from business school assignments but overall, competency in these applications was mostly self-taught by solving problems, watching a lot of YouTube videos and searching on Google. This experience was shared by several other participants, for example, one graduate made himself familiar with computing, by tinkering with computer applications to the point where he now says that he is very confident in his ability. Similarly, other participants said they were confident about developing material in Microsoft Office and the Google Suite. Likewise, another business graduate began learning computer hardware maintenance in order to clean the fan of the computer, but now can fix a range of hardware malfunctions, which he learned himself.

In the interviews, I also heard that graduates had acquired many of their skills through work terms, proposal writing, and other elements of the program. However, some of their skills were self-taught, for example, graphic design programs (e.g., Canvas) and social media analytics. Some other participants mentioned that they were proficient in basic computing skills like how to create documents, create and save files and other functions, but they were not familiar with specific programs. Coming into their business degree programs they already knew some software programs but had to learn keyboarding and how to use the internet efficiently – skills they mostly learned while completing their degrees.

Experiential Learning

Many participants credited their work experiences for forcing them to advance in computing skills, since before completing work placements, they had not participated in any formal computer training. While they possessed a basic familiarly with technology there was no systematic training before they started working and, in some cases, they had to use the Internet to acquire certain skills. While participants were generally confident in their ability, they suggested that some of the software used in their programs of study were "a bit irrelevant" and some professors were unfamiliar with the more up-to-date technology. Some participants questioned the software applications used in their degree programs, since it seemed like these applications were not in wide use in their workplaces. One example of this was the Bloomberg terminal, which is in use in the workplace, but was not used in the standard courses for business and commerce programs. Several of the graduates I interviewed said that because of their work placement experiences, they were introduced to specific computer programs like SAP (Systems, Applications and Products), Workday and Survey Monkey, but the use of such applications was not part of their university training.

One participant described the acquisition of specific computer software knowledge as emanating from prior learning experiences:

> Primarily my proficiency lies in MS Word, Excel, and Tally. I have acquired them over the years while I was working with different companies back home in India so that is where the bulk of the experience comes in. Well like I said, Excel and Tally and things like that, they were already there when I entered the business school and those are pretty much the things that I am relying on right now … to carry me through into my career in Canada.

Similarly, graduates felt their job experience enriched or helped develop existing computer skills. In terms of basic software proficiency, the business workplace requires certain levels of proficiency in key products and platforms, such as customer relationship management (CRM) applications, of which there are many; MS Excel; communication tools like Zoom, Skype, and Slack; and form submitting software online like Job Forms and Google Forms. With the exception of Excel, they learned all of these skills in the workplace.

Interestingly, a few participants mentioned that their experience in the K-12 grades helped to develop their computer skills. Some of the basic computer skills they learned were from elementary school or a high school and they built on these during their undergraduate education.

Contribution of business degree program to acquisition of computer skills

Business school is a place to learn business studies and these days business without technology is hard to think of, so the contribution of business schools is important. This was a consistent theme throughout this research. The business graduates I interviewed were in general agreement that specific business software applications are learned in the workplace, while they used general applications, such as spreadsheets (e.g., MS Excel), presentation software (MS PowerPoint) in their business school studies. In business school, they learned some of the advanced applications of spreadsheet programs, such as how to do functions and solve larger scale problems involving large amount of data, which they represented as a very valuable skill and which they were never taught before. Beyond the development of these kinds of computing skills, there was little focus on computing applications. According to the participants I interviewed, many of the

courses they completed emphasized marketing, communications of research and general theory about marketing plans, among other topics.

Some co-operative program graduates mentioned the importance of work terms during their commerce program. They learned more about using technology and software than they did in school, as the work term itself was focused on technology and their daily work with computers helped them in developing advanced skills. They also found work terms very useful because the breadth of experience helped them later in applying for similar jobs, involving multiple skills.

A number of other participants were of the view that their experience in business school was more influential in helping them gain a better understanding of computers, because they had been using a laptop computer, daily for four to five years. Some graduates mentioned that Memorial University has a "fantastic business program" and they have learned a lot, but the emphasis had not been on technical skills. Some of the courses, like organizational theory provide the option to pursue technical systems involving computing skills, but there is no such option in other courses. Similarly, the digital marketing course, where technology is a key element of the curriculum is only available to fourth- or fifth-year business students, as a business elective. There was some suggestion that courses that are more technical, such as decisional modeling in finance, should be introduced earlier in the program to improve learning. Other applications of computers could be found in some courses, which involved writing and utilizing library resources to conduct research, which was invaluable. One participant summarized their experience as follows:

> I did not enter university with a lot of computing skills, and I did not actually come out with a lot either, therefore, it was something that definitely was not taught. There were not

> a lot of courses offered in technical computing skills." […] [The] only skilled group program I actually ever learned was a bit of Excel during decision modeling; otherwise it was using bit of PowerPoint.

In general, therefore, graduates found that their business programs centered on theory, rather than practice, and not a lot of specific technical instruction.

Some international students valued even the limited emphasis on technical instruction, since this was not available to them in their home country. One graduate mentioned that the developing presentations using PowerPoint was invaluable, since in China their education did not have presentations. They related that the use of presentation software helped them to state their opinions in a better way. Some others found the business program useful in that they were afforded ample opportunities to connect with and use computers, something they had not experienced in the past. There was a reference to library resources at the media center that help to teach different skills – skills needed to learn in the program. Another participant mentioned that the business school provided valuable experiences, but at the same time, it was insufficient. Experience in applications such as the aforementioned Bloomberg terminals, research programs and sales software were judged to be among the most important and practical computer skills, and they were typically learned in the workplace.

That said, services like course and career counseling were helpful in improving the computing skills for some participants. One graduate expressed the view that career counseling was helpful throughout her degree. This may be background dependent. For example, one international business graduate informed me that they thought they were never going to make it

through their program, because there was just a huge gap from where they came and how learning was structured and these services helped them understand the system better. Similarly, another graduate found help in landing a professional position through the PSDP (Professional Skills Development Program). Another graduate was of the view that group activities, discussion and studying at foreign institution, helped her to polish her IT skills. She noted that she found it very effective in that the group interaction pushed her to learn new things. Furthermore, she observed that if she had remained in her home country, she would never have been had the opportunity to learn new software, such as Dedoose and NVivo for conducting research, including interviews, coding and data analysis. Other participants noted that some software products learned in their business programs, like trigger file software, are novel and very helpful to business students. Another participant mentioned receiving six weeks of training in certified Internet security and office applications. Similarly, another participant observed that they had learned MS Excel at university, which is a set of skills that they were able to take into the workplace.

Some graduates mentioned that there is a variety of learning modes in acquiring new computer application skills. Business school students learn online, in a classroom, and sometimes by engagement with software, so they feel that the university was helpful in some ways. One interviewee said, "When it comes to computing skills, the things I have learned – if I ever come across these things – I will not be a totally alien and I will take a lot less time to actually develop the competencies."

Other participants differentiated between university resources and training. Some participants said that there was no training provided but there was some, albeit limited, infrastructure in place through which training could take place. The student services available at

the university did have Microsoft Office training, but the level of training was rudimentary and did not cover complex and advanced skills. One of the participants learned how to use SAS (a data analysis software) and some Bloomberg functions.

Some participants mentioned that they were thankful for their business school education because it prepared them for the job market but noted that there is always room for improvement. The general consensus was that the high-quality business programs and mentorship opportunities at Memorial University helps to build confidence among students. Overall, they think the business school does a lot for its graduates in terms of teaching soft skills, but learning the finer technical aspects of learning software and acquiring computer skills, is not a primary focus of the business school.

Neither is occupational placement a major function of the business school. From an occupational perspective, the business school is thought to be effective in delivering supports like resume screening and cover letters. However, finding a job is primarily left as a responsibility of the business graduate. Although the business school establishes partnerships with business organizations, it was observed that a business-specific job portal where employment opportunities could be posted could strengthen ties with the industry as well as linking graduates with such opportunities.

Other participants were not as positive about the career counseling supports at the business school. Some reasons given were that there was only one career fair, and counseling and job placement services were judged as inadequate. There were some observations that the co-operative program office helped commerce students, so they were seen to have an edge. For the BBA

(Bachelor of Business Administration) and the IBBA (International Bachelor of Business Administration), however, finding a work placement was the sole responsibility of the student. One suggestion mentioned in the interviews was for Memorial University's business school to redouble its efforts to build a strong alumni base, whose firms could be in a position to accept work term students in work placements.

Alignment of school and work skill requirements

Another of the subthemes from this research is the alignment between formal learning in university and the occupational requirements of the workplace. As technology develops and computer applications get very specific, and considering the fast pace at which such programs are developed and enter into the marketplace, it is difficult to imagine how four- to five-year degree programs could reasonably keep up and incorporate each new business application product into their curricula. Some participants agreed that the two are somewhat aligned. For example, graduates who wanted to enter sales knew they would need to know how to use one of the CRM (Customer Relationship Management) software options. The need to learn to use other applications, such as email-marketing tools, Mail Chimp, and Hoot Suite for social media posting, as well as acquiring digital camera skills for graphic design was not as clear. Consequently, and as previously referenced, they are not usually taught in the business program. Accordingly, many participants in this study learned these technologies while on a work term. One participant mentioned, "They are not well aligned at all; there was only one course that taught me anything to do with social media and it was a course in the last semester of the program and overall, very few courses offer that." Similarly, another participant felt the computer skills he acquired while in his

program were rudimentary – what they learned was almost a bare minimum in regards to what they needed to know, effectively the bare minimum in terms of what employers are looking for.

Computer skill acquisition also depends on the field. One of the participants said that they did a consulting project with an NGO, which required the application of non-IT skills – the kinds of things that were taught in class, such as HR consulting solutions for clients. This project was practical and aligned well with what they had learned in school. Similarly, not all workplaces require intensive computer usage. Another participant said that when it comes to computer programming and applications, in his experience, they do not use it much in the workplace. Other graduates mentioned completing a course in MS Excel to learn advanced skills but found that they did not have a chance to use them in the workplace. Still another participant mentioned that as they were learning how to navigate their way around computers, digital mobile devices and other technological equipment, they were interviewed for a quality assurance job and one of the questions asked about their familiarity with mobile digital devices, like smartphones and laptops. The items the employer focused on in the interview were not exactly the same things they learned during the business program, but they were somewhat similar.

Based on the data, it appears that business schools do not focus on the range of specific business software applications, but instead prepare students to a level where they are equipped to transfer their learning to help them understand new and unfamiliar software. As one participant mentioned, business school prepares graduates with theoretical and foundational knowledge, as well as and how to present themselves with confidence for overall success at work. This knowledge and these skills are very helpful. The business degree seems to be more complimentary to

workplace training and positions graduates to understand the practical training acquired in the workplace, but it is not a substitute for workplace training.

Opportunities for improvement

Some graduate participants suggested that professors could do more to improve the learning of computing skills. As one of the participants stated, "As far as what I think, the professors could improve on making [computer applications] clearer, for us." Similarly, another participant described a need for some restructuring to get students to be a little more active and attentive through working alongside a professor in the computer lab. Such an arrangement could be helpful in improving engagement and mentoring. Some other participants felt that using computers should be a more substantial part of the program. For example, ICT trends could be part of the curriculum. Another participant was of the view that more labs were required in courses, where they "put the students in the driving seat." Otherwise, there is a risk that they will never learn how to 'drive.'

One participant felt that there was a need for advance courses in ICTs, since he felt the current arrangements did not cover many things that they still want to learn, including high level skills in MS Excel, MS Access, and database software like SQL to improve data analysis work. Other participants observed that there is significant diversity among international students in terms of their familiarity with computer technologies and their readiness to transition into using such applications. One participant explained that, some international students come from areas of the world where teaching is not computer-based; rather it is mostly chalkboards. Therefore, for some international students enrolled in the business program, the transition to Memorial represents a significant change in their lives.

Moreover, some international students were not prepared for web-based courses and it was a shock for them. There was a suggestion that students receive better orientation before they come to Canada, so that they may see how classes are going to be structured. Another participant said that there are some innovations needed in teaching and learning, when it comes to software and technical skills. One suggestion was that the university reach out to industry to recruit course instructors who have advanced proficiency levels in certain applications, or specific computing skills as they have first-hand knowledge of the current business context.

Understanding expectations

Understanding expectations from employers is very important for business graduates and it comes with having a certain level of computing competency. One business graduate noted that many employers are explicit in what they want and if graduates are quick learners, they can meet these technical requirements. Similarly, another participant said employers are less specific; even vague in expressing their expectations. Among the participants I interviewed, there appears to be wide variation in skill expectations. One clear finding from the data is that graduates must be familiar with analytic programs because, regardless of discipline, data management and analysis are very important. With that comes the need to be conversant in social media and marketing using social media. One participant commented that most graduates know how to do data analysis and use MS Excel, but the employers sometimes also want very good report writing and presentation skills. Another participant noticed that is now standard for every employee to have MS Word for text processing and MS Excel proficiency for use in financial tasks and other work, but given that employees are expected to make presentations, they must also be proficient in the use of presentation software.

While some computing skills were identified as industry-specific, such as certain applications in the banking industry, some participants considered that most employers just need someone who is not a "total blank;" they need people who can find their way around the computer and figure out programs by themselves. Some participants felt the scope of computer applications expected in the workplace to be quite challenging to master, as they cover a vast diversity of topics For example, one participant stated, "For a marketing professional, graphic design is the biggest expectation, as well as the aspects of social media and building and maintaining a website." Another participant was of the view that currently employers are not only asking for different computing skills but considerable prior experience – a minimum 3 to 5 years. For advanced positions, graduates told me employers are expecting 5 to 10 years of experience.

I also asked graduates how well they understood the computing skills expectations for positions in the job market for which they had applied. Participants reported significant variation in the level of specificity provided in position descriptions, including reports that some were difficult to understand and interpret and others that did not address expectations for computing skills at all. Another participant revealed that they do not have a computer science degree, but they have a business degree and for advance computing skills, a lot of companies will provide the on-the-job training when it comes to advanced computer skills for a specific job.

General perceptions about the job market

In the following some general perceptions of graduates regarding their perceptions of the job market are presented. First, participants pointed out that certain program streams require both strong computing skills and well-developed soft skills. One participant said that graduates understand that all the accounting and some of the marketing and sales jobs require soft skills. But

most also require complementary technology skills; to be effective in sales interacting with people, to develop soft skills (e.g., good body language), to know software, so a balance is needed. The students who do not learn enough computing skills will lack this advantage. As one participant related:

> I think accounting students are very well trained because they have work terms where they are forced to learn these computing skills but students without those work terms are at a disadvantage. They do not learn those technical skills at all."

Software programming requires the language of certain codes and it is a special skill. One of the participants said that they are very prepared for the day-to-day Microsoft and Google suites, but they lack skills in programming. They explained that most advanced jobs require coding knowledge like Python and C++, and so far, they are still learning and not up to par yet in terms of familiarity with some specific programs.

Second, I asked what were some of the success factors to developing strong computer skills. One graduate spoke about three contributing factors, "it is all about practice, availing of the opportunity and gaining the experience." Another participant mentioned experience, and related stories of classmates; the ones with a lot more experience had more exposure to computers, different software and different systems. Learning attitude was also mentioned by one of the participants, who described a successful business student as one who was always willing and quick to learn. To have good computing skills, it was explained, requires a consistently positive learning attitude and devotion to practice. One participant mentioned that some courses helped her develop

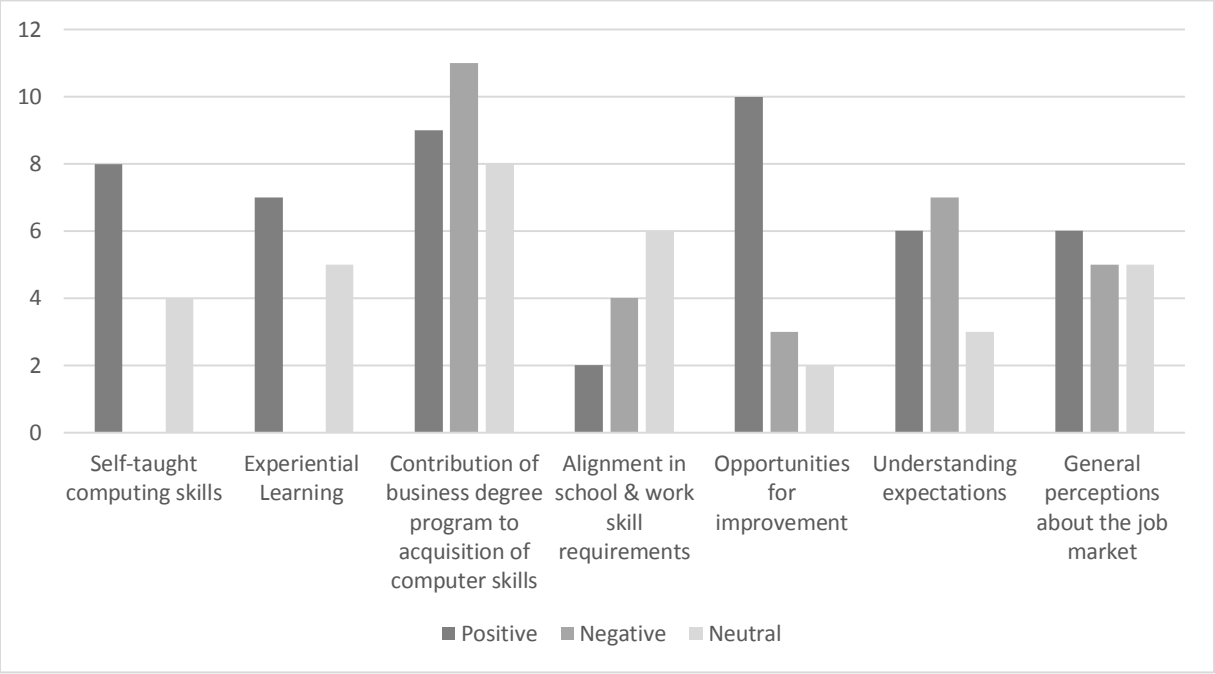
some computing skills, but proficiency requires personal development: you have to apply yourself beyond what is taught in the classroom or in the workplace.

Another participant identified the contribution of the business program as a success factor, while mentioning the importance of student commitment, and willingness to improve to become more competitive in the market:

> [The business program is a very well-sought program; there are a lot of…challenging programs, and it always maintains a high standard for students. Therefore, I do not have [any] doubt that the graduates from [this] well-accredited program will have any issues…

In Figure 2. I present a summary of how graduates represented the role of the business school in the development of their computer skills.

Figure 2. Graduates' acquisition of computer skills and the role of the business school in technology skill development.



Theme Three: Employers' Expectations and Perceptions of the Computer Proficiency of Business Graduates

In this section, I show research findings relating to employers' expectations of employee computer proficiency and their perceptions about the computing skills of business graduates from Memorial University. Throughout the interview process, employer participants were asked about the strengths, weaknesses, and adaptability of business graduates from Memorial University in terms of their professional computing skills. They were also invited to recommend suggestions for improvement. The findings are presented under the following nine sub-themes: job advertising; hiring of business graduates; specific computing skills requirements; skill gaps; strengths of business graduates; weaknesses of business graduates; adaptation to technologies; satisfaction with computing skills of business graduates, and; training and development.

Job advertising

According to employers I interviewed, most of the job advertisements for which business graduates apply, ask for generic computer skill requirements. Employers revealed that unless they are seeking specialists in computer science, business writing or software development, position requirements are not very specific. Oftentimes, the requirements are very general. There is an expectation that business graduates will have strong computer skills or office experience with the commonly used computer applications suitable for the position. There are some positions where business graduates would need to have specific computer skills like advanced Excel training, and in these cases the job requirements would be more specific. However, most positions are fairly generic and usually, preference is given to those applicants who have additional capabilities like sales experience. One employer summed up the process by noting that position descriptions are pitched at a generic level, and their view is that most of the individuals whom they are looking to hire are already technically sound.

Hiring of business graduates

As expected there was variation in the level of hiring by different employers. Some regularly recruited from the business school and in one case an employer participant said that they had hired around fifty university business graduates in the last five years. The trajectory of new hires varies – some graduates stay for thirty years, while some others stay for only one year. Usually, it was explained, it takes business graduates two to three years before they get promoted or leave to work with another company in the business sector. One participant described their hiring plan for business graduates in this way:

> With staff positions at Company X, I would say we would be hiring around 40 to 50 recent graduates in five years and those would be more of middle-management type, sort of accountants and senior administrative staff positions. With staff positions, we also hire a fair number of diploma graduates and those will be more of secretarial positions. We also have clerk type roles like store clerks, the other types of clerk roles that we will hire for and [in these cases] we were looking for recent graduates with diplomas – business admin diplomas or secretarial science.

Hiring patterns depend on the industry, and nature of the particular jobs available, as some industries, by their nature, do not typically require intensive computer use. According to another employer interviewee, their hiring plan includes a combination of both college and university graduates in order to capture a wide range of skills commensurate with organizational needs. The business development side of the organization – both marketing and sales – usually requires a business degree. But in other branches of the organization, many of the positions do not require a university level education.

Another participant described the HR requirements of Company Y, which was a software company that provides security software for banks and credit unions to help fight financial crimes. They typically hire business graduates in positions that involve leading development activity and, to date, they have hired about twenty business graduates. Likewise, another employer recently hired fifteen business graduates as part of a hiring phase that also included new college graduates. Many of their financial employees, for example, in accounts payable and administration hold business degrees from Memorial.

Specific computing skills requirements

There are certain computing skill requirements required by employers and they tend to vary from industry to industry, as mentioned by some of the employers. Generally, the kinds of industries that hire business graduates look for knowledge of basic standard business applications, like the ability to use communication applications and search engines, as well as spreadsheet, presentation and word processing software. Other more advanced applications such as accounting packages, advanced MS Excel or proprietary or specialized systems are aimed at a different level of employee. Participants told me that it really depends on the unit within the organization. One employer indicated that for their sector, which is technology based, computing skills are usually well described in advertisements. As a technology company, he explained that they do everything on computers and rely heavily on various project management tools, such as ASANA; therefore, these requirements are made explicit in position advertisements.

In another sector, the financial services area, I heard that proficiency is required in the MS Office Suite, especially MS Excel. Other quasi-management roles, such as coordinators might rely more on PowerPoint for presentations and MS Office for correspondence. Sales and marketing professionals typically require the same kinds of applications (i.e., the complete range of Microsoft Office tools), as well as database applications like MS Access. Some industries have standards for higher level computing. The data from the interviews suggest that the standard can be high, but if a business graduate is computer literate, s/he will stand out among other applicants.

Skills gaps

Although there was general consensus that business graduates are well positioned in terms of technological knowledge and skills and adapted well to new environments, employers from

different sectors mentioned certain skill gaps. When asked about technology skill gaps, one of the employers stated:

> I do not know of anything, in particular, I would want to [change]. I would say the gaps would be more in the literacy [area] – writing, proper grammar, [and] more complicated things like systems analysis, business intelligence type work and analyzing the data."

Another employer mentioned that some of their needs would include social media positions that could be marketing and communications types of roles, where they look for someone who has specific experience with social media platforms; he observed that the use of social media platforms is an area where recent grads are very strong. Some other positions where business graduates are strong involve working with websites as part of administrative roles they might take on in an organization. In one case an employer from a large organization described how they provide training with Excel, Word, and Site Builder for website design.

One of the areas where there appear to be skills gaps is in writing business proposals. One participant mentioned that business graduate employees also have to be very careful in dealing with international norms and customs and he thinks these need to be highlighted in the business school. As an exporting business, their employees require strong communications skills, including knowing how to approach and engage with various clients in a global marketplace. Hiring graduates with good communications skills was represented as a challenge, since English is a second language for some business graduates. This participant stressed the importance of being deliberate in client interactions rather than being overly technical or using slang, that may not be understandable to all. Another employer expressed the view that the issue is not the computer

courses, but understanding the market. There was acknowledgement that it would take considerably more effort to raise someone's business writing skills than to teach them software, especially given that some employers do not require any special computer requirements. The implication here was that employers would be better served by a renewed emphasis on the development of literacy and communication skills at the university level.

Still, another employer felt that certain advanced skills are required, observing that "[p]erhaps more advance use of excel spreadsheets, because …when you know how to use the advanced skills in Excel then it enables you to do things much more quickly." The last employer interviewed said that there was a need for proficiency in cloud-based technology – how to use it, the security issues associated with the cloud and some other specific applications, such as Google Jam Boards and mind mapping systems. However, this employer also stated that there are many tools that are easy to apply and a business graduate just has to have a familiarity with the big ones like Dropbox, Google Drive, and MS Office.

Strengths of business graduates

There was general agreement among the employers interviewed that the computing skills of business graduates are satisfactory to strong, depending on the particular types of applications. They described business graduates as presenting with good basic computer proficiency, and when hired they demonstrate standard levels of productivity. Employers noted an improvement in computer skills in comparison to the past. One employer participant who was interviewed mentioned that they think graduates are strong in standard productivity applications, such as MS Word, MS Excel, and MS PowerPoint. Other interviewees agreed, with one employer stating that

graduate computer skills are very solid, especially in cloud-based software like Google Drive, Dropbox, and some of the more recent web-based applications. In one case, an employer observed that business graduates are usually assigned to lead developments or to other positions within customer success – areas where the opportunity to observe computer proficiency is more limited.

While there seems to be general consensus that overall, computer skills are acceptable – even strong – one employer specifically noted that they have observed weaknesses in business writing skills. Another employer remarked that, many times computing aptitude is not homogeneous across the field of applicants; rather, it depends on the individual who is applying for the job. That said, the data reveal that employers find that the new graduates who come into the workplace are already tech-savvy; therefore, new graduates learn and adapt easily to new or highly specialized software that may be specific to their organization, as compared to veteran employees.

Weaknesses of business graduates

Based on the employer interview data, I could find no prominent weaknesses in terms of computing skills of business graduates. One employer expressed satisfaction with the way business graduates adapt to their proprietary software programs like Banner Finance, Banner Student, and Banner HR. From a technology perspective, employers judged recent graduates as highly adaptive to new technologies. The only issue I heard regarding computer readiness relates to advanced use of MS Excel, such as the creation of pivot tables and formula creation, and even in these cases, the interviewee acknowledged that these advanced skills get better with the practice of continuously creating formulas and pivot tables.

There were concerns, however, with language, writing, and attention to detail. One employer noted specific gaps in grammar and spelling; similarly, some other employers experienced no issues with computer software skills, but identified the need for greater focus on business writing.

Another employer participant compared the commitment and loyalty of recent graduates to that of longer-term permanent employees noting that:

> This generation is different; there is a loyalty issue because we do not give employees permanent jobs. Therefore, they feel like that, there is no loyalty to the company, but the company is not doing their part to instill that loyalty or to build engagement.

Given these employment conditions, the data suggest that commitment levels among recent business graduate employees are less robust than in long term employees.

Adaptation to technologies

Most of the employers mentioned that business graduates adapt well to the customized technologies at their workplaces. For example, one interviewee specifically referenced the observation that recent graduates are very good at learning new programs in comparison to veteran employees. Another employer remarked that business graduates "pick up things easily" because most of the software they use is common across the business world. Some employers said they look for high adaptability for new employees coming because people have to be comfortable with computer systems like info-sys and Microsoft NAV and they are expecting new employees to begin using these systems fairly soon after they have been hired. Likewise, another employer

participant said that they think graduates are very confident that their schooling has prepared them to adapt well to all of the systems they might encounter.

Satisfaction with the computing skills of business graduates

As noted, most employers mentioned good satisfaction with computing skills of business graduates, as they are quick in adapting and navigating organizational software and systems. One of the employers interviewed said that the organization is satisfied with the business graduates they hired. She observed that many times it depends on the individuals, as many entry-level positions do not involve high levels of computing skills, but other times they advance to a higher-level position that involves computer skills and it has been a good experience. Likewise, for more senior-level positions like administrative staff, which are management professional positions, candidates would have to write a computer skills test.

Similarly, to describe their satisfaction levels with business student hires, other employers used phrases like, "it has been great" and "very satisfied." Another remarked that they could not think of a time where they have had to deal with an issue of a business graduate hire with technical deficiencies.

The findings suggest, therefore, that employers are consistent in terms of satisfaction with computer proficiency, but several noted business writing and English language problems, for example, as one employer stated, "there is no issue with computer proficiency, the computer proficiency is there but the issue is in the writing skills." In one of the interviews an employer explained that they find new graduates are bringing advanced levels of computing; they are coming up with solutions that are better ways, more automated ways to do the work smarter, not harder.

Training and development

Almost all employers said they provide some sort of training and orientation to newly hired employees. One of the employers said, "Internally, we do a lot of peer mentoring and pairing up. We have training programs, online courses, some classroom training and they are paired up with more senior people as well." Another employer described their training arrangements as a kind of pyramid touring whereby they pair up with somebody that has some experience in a particular area to facilitate training. There would, in general, be a specific contact person and as training progressed to more complex processes, they consult others up the line - like a pyramid.

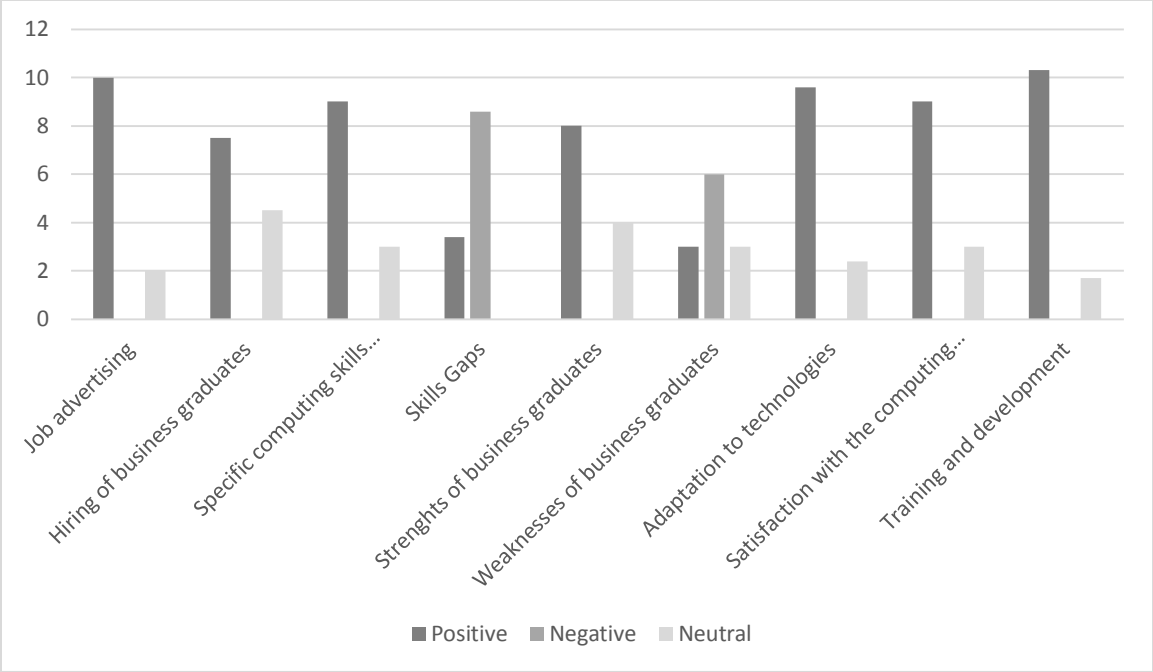
Employers talked about other training models through HR, as well for mentorship opportunities more for higher-level positions. Newly hired employees are paired up with other employees who are more experienced. It is viewed as an onboarding process, to get new employees to become comfortable with the new position. One employer from a software company said they do salesforce training and what is called an intensive onboarding process for every new employee who joins the organization. They go through an extended orientation period – a two-week "boot camp" commonly known as "Company Z University." For those employees to continue to learn the Company Z culture they are then paired up with a member of their team called an onboarding buddy and that is their go-to person to help bring that a new employee up to speed in the new role. Another employer described a robust training and development program where the company offers every employee a thousand dollars a year for training and development. They may use the funding on anything that they feel would help them advance in their position, including the further development of their computing skills. This company's employee base are part of a younger

demographic (average age in the early thirties). Since most of that generation are digital natives, there is a belief among employers that ICT skills are ingrained in them.

Another employer talked about the process of initial training once a candidate is successful in the interview process (in some instances, a multi-phase process). There is job-shadowing for a minimum period of two weeks with an experienced employee. If a new employee is unfamiliar with the computer systems, they get peer mentoring. This might mean multiple contacts within the organization, for example, if somebody in marketing is a business graduate with strong spreadsheet competencies, the company will send the new employee to that individual or MS Excel training. Similarly, the new employee may learn another application from a different individual.

In Figure 3, I present a summary of employers' perceptions and expectations of business graduate computer proficiencies related to Theme Three.

Figure 3. Employers' expectations and perceptions of the computer proficiency of business graduates



Summary

Research has demonstrated that how the youth at business schools engage in learning computing skills affects their chances of getting a professional job. The present study explores business school graduates' and employers' views about their experiences with computing skills. The findings are similar to Gibbs et al (2011) who found that business graduates' self-perceptions are high, as compared to computing skills level expected by employers. The findings also show high levels of confidence among graduates regarding their computer proficiency levels. While employers were generally satisfied with the ICT readiness of graduates, they identified deficiencies in certain soft skills as well as issues with communications, including language, grammar, and business writing.

Chapter Five: Discussion and Conclusion

Introduction

The purpose of this phenomenological study is to explore the perceptions and expectations of business graduates' and employers with respect to the computing skill proficiencies of business graduates, including the role of the School of Business at Memorial University in the acquisition of ICT competencies. In this chapter, I discuss the major findings of the research presented in Chapter Four. I also discuss the significance of the study, draw some general conclusions about how graduates and employers represent computing skills learning and practices of business gradutes in Newfoundland and Labrador and offer suggestions for possible directions for future research. The discussion is structured according to the organization of the preceding chapter with a similar focus on the three major themes and their sub-themes. These themes correspond to the research questions of the study:

1. How do business school graduates represent their level of computer proficiency and what are employer expectations of computer proficiency for positions in the market?

2. How do business school graduates acquire computer skills and how do they represent the role of business schools in developing those skills?

3. What do employers represent as the required level of computing skills that are expected of new business graduates and to what extent do recent business school graduates possess these skills?

Theme 1: Graduates' Representation of Computer Proficiency and Expectations for the Labor Market

In this section, I discuss research findings corresponding to the experiences and perceptions of business graduates in terms of their computing skills learning and understanding of the expectations of the labour market in Newfoundland and Labrador. Specifically, I consider the importance of computing skills; self-perception of technological competencies; confidence in computer proficiency, and requirements and preparation for the labour market.

Generally, the participants in this study were positive in their appraisal of the value of computing skills in general, while recognizing the benefits of a strong background in ICTs as a means of securing a position in the job market in Newfoundland and Labrador. As detailed in Chapter Four, the research participants represented learning and practice, along with formalized learning sessions, as valuable in helping them to develop and improve their computing skills, networking ability, and collaboration and engagement with colleagues and employers. The importance of computing skills was emphasized by all participants, especially given the necessity to be conversant with ICTs in order to be successful in virtually all industrial sectors. When participants were asked about performing in a job requiring computing competencies, self-perception about their own computing skills was positive and their confidence levels were high. However, when it came to formal instruction in computing applications through the business school, the consensus view was that most of the ICT skills graduates had acquired were either learned informally, self-taught, learned during work terms or, in certain instances (e.g. advanced MS Excel or MS Access) learned "just-in-time," in order to complete specific course assignments.

The findings show that while business graduates may not fully understand the market requirements in terms of computing skills, and even though some position descriptions may be vague, their general perception of their own preparedness for the workplace is that they are confident job seekers. It was likewise clear that a number of the students had inaccurate perceptions of the level of computing that would be required in the professional working environment. Although not directly reported in Chapter Four, some participants noted that it was common for them to face difficulties finding a professional job requiring advanced computing skills. These findings are consistent with Gibbs, et al (2011), who mention that general self-perceptions of graduates and their perceptions of proficiency levels are high. Consequently, students/graduates may procrastinate in terms of learning new skills, on the assumption that they will be trained or be able to otherwise acquire the necessary competencies when they start a new job. The graduates in this study thought that the businesses that hired them would have training available to help them compensate for any of the skills which they might be missing, and they expressed belief in their own capacity to gain the required proficiency levels with these new skills, when necessary. While some businesses confirmed the availability of training in certain computer applications, this perception was not shared by all the businesses represented in the study. These findings suggest that there is a misalignment between workplace computer skill requirements, graduate perceptions of their ability to seamlessly enter the workplace, and their expectations of the widespread availability of workplace training to address skill deficits.

One possible reason for this might be that graduates' computer proficiencies have not been independently assessed; therefore, they have inflated self-perceptions of their skill levels, which have been informed by personal impressions or other forms of unreliable evidence. An individual's

self-perception towards a task can influence how they feel about that task. The graduates who took part in this research had only a vague awareness of the particular type and level of computing skills they would require in a professional work environment and how they might have to apply such skills. Most participants thought that their computing skills would be sufficient for them to use in virtually any work environment. In fact, several participants with little or no formal computing training considered their skill levels to be about equivalent to the who had received professional instruction in computer education at a high level.

Theme 2: Graduates' Representation of Computer Skills and the Role of the Business School

As discussed, the data collected through this research show that the majority of graduates interviewed had a positive self-perception in terms of their computing skills, which they learned mostly through some form of prior learning, self-study, peer-mentoring, or work term experience. There was no strong consensus of opinion in terms of the contribution of their degree programs to the acquisition of ICT skills; participants expressed both positive and negative perceptions of their formal university experience. A number of the business graduates who were interviewed observed some misalignment between the kinds of computer skills required in workplaces and the scope and depth of ICTs learned in their degree programs, prompting some participants to express the view that students would benefit from a stronger practical foundation in business computer applications. A small minority of participants felt that instructors in the business school were insufficiently prepared to teach complementary ICT skills.

As reported in Chapter Four, there was general consensus that, in addition to professional competencies, business programs, and mentorship opportunities at university help to develop soft skills and build confidence. Graduates, however, felt that the technical aspects of learning software

and acquiring computer skills are not among the primary goals focus of a business degree. For example, while certain specific computer skills are required to successfully navigate business studies, formal education programs or modules targeting the acquisition of key business software applications and programs were not part of their program of studies. Typically, business degrees have different objectives and different curricula in comparison to one-to-three-year business programs at technical colleges. University-level business programs attract a different population of learners and prepare graduates for different and more complex and demanding positions in industry. While technical colleges may focus on instructional outcomes in a range of industry-specific software applications, it would be a practical impossibility for university-level programs to keep up with every new software application relevant to industry. The business degree program is effective in providing graduates with theoretical and foundational knowledge, but there is no substantial practical computer training. Thus, the findings of this study suggest that the acquisition of ICT competencies among business graduates is haphazard, inconsistent, and unsystematic.

That said, some business degree streams may include more robust formal computing elements in their courses, for example, accounting majors may well develop better computing skills than marketing graduates. In addition, the data suggest that there are other factors that influence business students' computing aptitude like experience, learning attitude, level of commitment, and the extent to which graduates have taken advantage of co-curricular training or professional development. Neither do business programs attempt to simulate specific workplaces. The data show that when it comes to acquiring computer-oriented knowledge and skills, courses in the business school would likely not be a substitute for workplace training.

While the adult education literature acknowledges that adults can lead their own professional learning, given the identified skills required for effective computer skills learning, business students still need support and guidance. These findings suggest that self-directed computer learning will only be effective and beneficial if business graduates have appropriate foundational skills. Moreover, the data demonstrate that not all graduates feel comfortable with the idea of self-directed computer skills learning; indeed, several of those interviewed for this research had the expectation that their business studies would lead to stronger workplace computer skills.

Consistent with the work of Gibbs, et al (2009; 2011), the findings from this research raise questions about the level of consistency and quality of ICT skills among business graduates and the absence of adequate formal mechanisms to certify the acquisition of professional learning in this area. The consolidated literature that I reviewed suggested that there are few examples of direct measures for assessing the computing skills of business graduates (Saulnier, Ceccucci, Sendall, & Peslak, 2019). Across university business programs generally, and within the program attended by the business graduates in this study, there do not appear to be any systematic approaches to the teaching of key ICT competencies and the evaluation of the computer proficiency of graduating students.

There appears to be a potential gap or a weakness in the current approach to university education for business students. Although there is wide recognition that university degree programs are considerably different from college-level programs, in terms of technical versus professional learning, Gibbs et al (2009) argue that computer proficiency is a fundamental requirement for positions in the workforce, especially among professionals in industry. Although

business graduates expressed strong self-perceptions and high levels of confidence about their computing skills, research suggests that people tend to overestimate their level of computer proficiency in relation to their actual skill levels and the computing expectations of employers (Gibbs et al, 2011). This is exacerbated by the finding that employers are not always clear in describing the requirements for computing skills in position descriptions. Understanding the job requirements of employers can be complex and misleading, since position requirements provided in job advertisements may be generic or vague.

The findings also raise questions about the level of coordination between business schools and industry actors, in terms of understanding both the expectations of employers and the limitations of degree programs. Greater collaboration could help to bridge the gap between business graduates' self-perception, expectations of employers, and the capacity of business schools to be assist in standardizing and assessing fundamental computer competencies of their graduates.

Theme 3: Employers' Expectations and Perceptions of the Computer Proficiency of Business Graduates

Most of the employers who I interviewed had been hiring business graduates for a significant amount of time. According to the employers interviewed, the graduates have more strengths than weaknesses, which is a positive finding, but the weaknesses pointed out by employers cannot be ignored. Interestingly, most employers were satisfied with the level of computing skills at the time of hiring, but that is also dependent on the type of industry, and we

know from the data that many graduates have to play catch up in terms of familiarizing themselves with some computer-based business systems.

Generally, the employers interviewed represented their experiences with business graduates as positive; they were generally confident that university graduates would meet their expectations in terms of computing skills. They believe that, even if there was no formal training, appropriate computing skills would nevertheless be acquired through the students' need to acquire such skills to complete their coursework. That said, the data show deficits in language (grammar and spelling), writing (especially proposal and business writing) and certain more advanced or industry-specific computer applications. There may be opportunities to redress these issues at the curricular level, such as allocating learning opportunities for industry-specific applications, assessing language and writing skills, and creating interventions for students who have skill deficits in these areas, and following-up with graduates after completion of business programs to improve instructional planning in the development of ancillary forms of professional learning.

In terms of their perceptions of how well the computing skill expectations are communicated to potential employees, employers were of the view that business graduates understand well the computing skills requirements for a specific job. And, even if business graduates may not already know specific computer programs, employers feel they are capable of navigating the new programs because they feel university graduates (and especially digital natives) adapt well to new technologies. In terms of job advertisements, most employers were of the view that most computing skill requirements are usually fairly generic and unless the job is in a specialized field, business graduates should have no problem understanding them. Moreover, most employers mentioned that they would provide some training and orientation to newly hired

employees to make them familiar with the working environment and the associated occupational skill requirements. Larger organizations have a higher budget for training and development than do smaller firms, so they have more intensive training and professional development procedures for newly hired employees.

According to Gibbs, et al (2011), position descriptions may garner altogether different interpretations. For any given job advertisement, there is a scope of comprehension of the computing terms used to portray the computing requirements for the job. For the most part, however, the employers interviewed for this study seemed unconcerned about the specificity of computing requirements in position descriptions; they communicated the sentiment that any graduate would have foundational computing skills once they had finished a degree. Indeed, there was a far-reaching, if to some degree unclear, feeling among both employers and graduates that anybody, particularly younger applicants, can essentially "use computers". In the Gibbs et al (2011) study, the students who read the entire advertisement made their interpretations based on all the data given, while others seemed to concentrate on the terms used to describe the computing requirements. The students in the Gibbs, et al (2011) study who read the advertisements more narrowly, constrained their job prospects by limiting their focus when looking at the position advertisements, possibly searching out a skill which they had learned. The scenario looks the same in current study, as most business graduates showed high confidence in their computing skills and did not seem constrained or reluctant to apply for positions in the labour market, based on ICT requirements.

Based on the employer interviews, there is an appropriate balance between what graduates need for the workplace and what the skills they have acquired by the time they graduate from

business school. These findings suggest that employers are satisfied with accepting some responsibility for the provision of professional learning. This finding is consistent with the notion that the employers who took part in this study maintain an organizational culture of ongoing continuous professional development, where the staff constantly learns new skills and grows professionally.

Technology is ever evolving, so the industry's demand for different computer hardware and software applications also changes. Notwithstanding the finding that the employers in this study seem to embrace an organizational learning orientation, employers also have a significant role to play in shaping the education delivered to students, and their needs should be taken into account when designing courses and programs. This cannot be achieved unless employers are regularly and actively engaged in the instructional planning process. Such involvement has the potential to increase the relevance and effectiveness of business programs and provide better job prospects for business graduates. Employers can meaningfully contribute to the planning of formal computing skills learning in several ways: through reviewing professional course plans, proposing ICT topics to university faculty and administrators, and assisting in developing professional learning banks that list optional training available to students. These and other avenues for consultation and collaboration can help improve professional learning in business-related technologies.

Conclusions and Recommendations

The findings from this study are organized into three categories: 1. representations of business school graduates regarding their level of computer proficiency and their expectations

about ICT competencies required for positions in the labour market; 2. representations of business school graduates about the acquisition of computer skills, and the role of business schools in developing those skills, and; 3. expectations of employers regarding the computing skills of business school graduates.

Graduates were positive in their appraisal of the value of computing skills in general, citing self-learning and practice along with formalized learning sessions as valuable in developing employability and career building attributes. Self-perception and confidence levels about computing skills were high, however, the acquisition of such skills was found to be primarily learned informally (e.g., through peer-instruction), self-taught, or learned during work terms. Thus, there appears to be some misalignment between workplace computer skill requirements, and program objectives. Some of the graduates who took part in this research had little or no formal computing training and most participants had no more than a vague awareness of the scope and breadth of computing skills needed in a professional work environment.

These findings aside, employers expressed the view that they perceive a reasonably appropriate balance between the computer proficiency of business graduates and the skills they need for the workplace. Employers are satisfied with the level of computer skills they are seeing in graduates and accept that they will need to bear some responsibility for filling in the gaps. The data relating to skill deficits suggest that they are more prevalent in the areas of writing and communication – including grammar and spelling, and business writing such as preparing written proposals.

In terms of the role of the business school, these findings raise questions about a potential gap or a weakness in the current approach to university education for business students. Although there is wide recognition that the primary aim of university business degree programs falls outside of technical training, there is clearly room for a more standardized approach to the teaching and assessment of computer skills. Moreover, there is a demonstrated deficit in certain language and literacy skills among some students. The findings suggest the need for better coordination between business schools and industry employers to better align the needs and expectations of employers with the goals and objectives of business programs. Greater collaboration could help to bridge the gap between business graduates' competencies, employer expectations and the ability of business schools to standardize and assess computer skills and language proficiencies of their graduates.

Based on the findings of this study, I have developed some recommendations for both the business school at Memorial University and business sector employers, in terms of professional learning and the acquisition of ICT skills. These recommendations may be useful for decision-makers to more effectively support business graduates to grow professionally.

First, continuous follow-up with employers and constructive feedback from students are recommended to establish an information base to guide the design of computer learning initiatives, to strengthen the effectiveness of the computing skills learning in courses and to motivate students and keep them engaged well beyond the actual course session. Supporting professors' professional ICT learning would also enable instructors to receive guidance on how to more effectively integrate various computer applications into course delivery.

Second, business programs should be attuned to both standard and emerging industry-specific software applications and hardware. The university should seek opportunities to establish

enduring links between the business school and industry so that the business students can become familiar with industry requirements in terms of computing skills. The business school might consider partnerships with industry-leading technology providers to sponsor orientation and training sessions where business students could get hands-on insights relating to industry developments. Moreover, as a part of their social responsibility to enhance the business students' computing skills for their particular industries, employers should consider financially supporting computer education in the business school.

Third, consideration could be given to hiring instructors who have worked in the industry, so that they can deliver practical knowledge to students, especially in terms of information technology.

Fourth, employers in specialized fields like finance and accounting, supply chain management, and risk management should coordinate and collaborate with the business school in terms of the computer skills required in the industry. Increased engagement, such as occasional visits of officers from the various industry sectors could help the business education community at Memorial University learn about the latest software applications and skill requirements, to provide opportunities for networking and more nimble industry-centered education. This is especially important in a province such as Newfoundland and Labrador, where Memorial University is the only university and generates most of the graduates who eventually work in these fields.

Finally, the Business School at Memorial University should consider ways and means of assessing the English language and literacy proficiency of students, early in their program, and

direct students who present with written communication deficits to courses and other learning opportunities, that may help develop their abilities in this area.

Recommendations for Future Research

Due to the limitations of this study's scope and methodology, the following areas of interest emerging from this study warrant further research:

- This study was limited to a small sample of business graduates and the employers from the Atlantic Canadian city of St John's, Newfoundland and Labrador. The study could be extended to examine the perceptions and experiences about professional computing skills learning with a larger sample of graduates and employers in different Canadian contexts. Further studies on perceptions of school administrators, and industry recruiters (employers) would also add more insight into this research topic.
- One of the challenges not addressed in this study is the issue of recognition of self-directed professional computer skills or other forms of prior learning. Research is needed that examines ways that business schools could recognize prior learning in the area of computer competencies through some form of recognizable certification or credentialing.
- There is very limited research on ICT learning practices and the evaluation of computer skills learning in business programs. This is a potential area for research, especially considering findings from this study that the ICT skills among graduates show considerable variation.
- The need for further investigation of skill deficits in English language and literacy among business graduates, especially with respect to business writing.

Despite the limitations of this study, the findings have important implications for our understanding of current computer skills learning in university business programs, learning practices, and employer expectations in the context of Newfoundland and Labrador. This study contributes to filling the gap in the research literature by examining several aspects of computer learning among business graduates, including perceptions of computing and software application proficiencies, the acquisition of ICT skills, employer expectations and student perceptions of the labour market. While there is general satisfaction among employers, the research identifies some challenges associated with the pre-employment preparation of business students and several potential policy interventions are suggested.

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Appendices

Appendix A: Graphs' parameters for four themes.

Category	Excerpts from Interviews	Coding/ Decoding / Encoding
Theme1: Graduates' Perceptions of Their Computer Proficiency and Expectations for the Labor Market	"I believe it's essential I believe it's one of the most important skills that graduates command before getting into the industry.", "Well I think it's crucial because if you're not equipped with skills necessary you're going to find yourself, having a hard time to adapt to the modern day workplace.", "I believe it's essential I believe it's one of the most important skills that graduates command before getting into the industry.",	**Importance of computing skills**
	"I feel pretty confident with my computing skills", "I	**Self-Perception of Computer Proficiency**

	would say. Fairly well.", "As I describe myself with very experienced as I have an expert knowledge when it comes to computing skills and I guess it does not have anything to do with programming and things like that it is just day to day things that would help me get my job done.",	
	"Typically, well prepared because of the industry and industries that they going to.", "I think a lot of it depends on the interest of the person if they have work experience and to be quite frank I think some people might not care so much about it so I think it just depends on the person.",	**Confidence**

	"I would say they are not very well prepared.", "University business school in particular could do a better job of teaching us a little bit more about software and different equipment that's used in the workplace.", "Probably, on average probably under prepared.",	**Preparation for the Labor Market**
Theme2: Graduates' Acquisition of Computer Skills and the Role of the Business School in Technology Skill Development	"During my job not in school I did excel in school but everything else I learned on the job which is fine."	**Self-taught computing skills.**
	"My own learning on your own through my own learning and in total that. I have been complimented for being	**Experiential Learning**

	decent at. What I have done in the past. “	
	“Not a lot of focus on computing skills in any course a little bit of focus on except as very specifically on excel the rest of the courses that I did specific in a marketing focus were very kind of general theory based courses about the basis marketing in treating marketing plans and doing our communications of research etcetera rather than have you use a final tool or CRM tool that sort of thing.”	**Contribution of business degree program to acquisition of computer skills**
	“They are somewhat aligned. As I mentioned before most business graduates in the roles of their money put into need to know some technology but	**Alignment of school and work skill requirements**

	they don't need to know how to code they should honor code but they don't need to know. In regards to if we're talking about my experience again marketing I was offered a couple sales jobs when finishing school and I know now if I were to go into sales jobs I would need to know how to use CRM. Coming out of school I didn't I didn't know it was really and probably need to know how to use other technologies like an email marketing tool like Mail chimp that we also use here and I probably need to know how to use things like camera for graphic designer Hoot suite for Social media post schedule. A lot of those get	**&** **Understanding of** **Expectations**

	very specific and should not really be taught in schools I learned a lot of those technologies while on my work term anyway."	
	"From a marketing professional, graphic design is the biggest expectation. Which is not necessarily my specialty but still expected. As well as all aspects of social media and building and maintaining a website." "I think accounting students are very well trained because they have work terms where they are forced to learn these computing skills but students without those work terms are at a disadvantage. They don't	**General perceptions about the job market**

	learn those technical skills at all." "I'm moderately confident I can learn myself but I'm definitely not as advanced as people who are. Maybe ten years younger or grown up with my modern technology."	
	"Yeah like I said it was bare minimum that we learnt to write I'm sure there's a lot of things that I still wanted to. Both those programs like. Excel I learned that you know there's more than just it's more just a spreadsheet that you just plug up into the squares because one of the programs there Sorry one of the course that we did."	**Opportunities for improvement**

Theme3: Employers' Expectations and Perceptions of the Computer Proficiency of Business Graduates	"Mostly university graduates, and we hired may be fifty graduates in last five years." "Some graduates stay for thirty years. Some stay for one year, so it really depends. It usually takes those two to three years before they are promoted and people leave to do the same thing with another company, because it is a professional services firm. And other people leave to take positions after they get their designation outside their professional services, to get promoted in the company, so it's an internal accomplishment."	**Hiring of business graduates**
	"Not so bad, I think they are okay. They have basic	**Strengths of Business graduates**

	proficiency, standard productivity in systems; we have a tracking on it. They have a decent computer literacy; I think people are exposed to computers a lot more than they were years ago."	
	"I think their strengths would be more basic programs like computer literacy like word, Excel and power point."	**Weaknesses of Business graduates**
	"I would say average, we like the students but they're not to like exceptional or anything in computer literacy."	**Satisfaction with the computing skills of business graduates**
	"They are good and they adapt well. We would look for mostly basic, standard business applications for email systems, people can	**Specific computing skills requirements**

	remotely organize web-searches, email, spread sheet packages, MS word, MS power-point, sort of standard things, Accounting packages, understanding how to use accounting packages, anything more would be aptitude beyond that to use the system." "I would think, standard is high in terms of computer, if you are computer literate, it will stand out."	
	"I don't think they are very specific, unless you get into computer science people or business writing and software things then we get very specific with particular technology, particular sort of things, other than that is your	**Job advertising**

	typical office productivity, email, internet type skills, no specific skills on computer literacy we look for."	
	"I don't know, if anything in particular I would want to take. I would say the gaps would be more in literacy of writing proper like grammar, more complicated things like system analysis and business intelligence type of work and analyzing data."	**Skills gaps**
	"Internally, we do lot of peer mentoring and pairing up. We have training programs, online courses, some classroom training and they're paired up with more senior people as well yeah."	**Training and development**

Appendix B: Poster for Recruitment of Volunteer Participants (Social Media)

PARTICIPANTS NEEDED FOR RESEARCH ON *Employers' Expectations of Technological Proficiency Levels of University Business Graduates*

We are looking for volunteers to take part in a study if are

- *the recent business graduate from department of business administration.*
- *employed or looking forward to seek an employment, in St John's and the surrounding areas.*

As a participant in this study, you will participate in an interview in which you will be asked to answer questions pertaining to your views and perspectives relating to the computing skills of business graduates.

Your participation is **entirely voluntary** and will take approximately 45 minutes of your time *over the one session*. This research is designed to explore business school graduates' views on their experiences with acquiring computing skills. By participating in this study, you will help us to study how the computing skills of business school graduates are aligned with the expectations of employers.

In appreciation for your time,
you will be entered in a draw at the end of data collection for a gift card valued at $50.

To learn more about this study, or to participate in this study, please contact:

Muhammad Khurram, M.Ed. Student
mkhurram@mun.ca

Additional information regarding Informed Consent will be provided.

This study is supervised by: Dr. Gerald Galway, Faculty of Education, Memorial University (ggalway@mun.ca)

The proposal for this research has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's ethics policy. If you have ethical concerns about the research, such as your rights as a participant, you may contact the Chairperson of the ICEHR at icehr.chair@mun.ca or by telephone at 709-864-2861.

Appendix C: Poster for Recruitment of Volunteer Participants (Notice Board)

VOLUNTEERS NEEDED FOR RESEARCH IN Employers' Expectations of Technological Proficiency Levels of University Business Graduates

Are You:

- **A recent graduate from department of business administration?**
- **Employed or looking forward to seek an employment, in St John's and surrounding areas?**

If you answered yes to the above noted questions, you are invited to participate in a study to explore business school graduates' views on their experiences with computing skills and employment.

- You will participate in an interview in which you will be asked to answer questions pertaining to your views and perspectives relating to computing skills of business graduates.
- Your voluntary participation will involve one session that is approximately 45 minutes in length. In appreciation of your time, you will be entered in a draw for a gift card valued at $50.00.
- If you are interested in participating in this study please contact: Muhammad Khurram, M.Ed. Student, Faculty of Education, Email: mkhurram@mun.ca
- Additional information regarding Informed Consent will be provided.
- This research is being supervised by Dr. Gerald Galway, Faculty of Education: ggalway@mun.ca).

The proposal for this research has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's ethics policy. If you have ethical concerns about the research, such as your rights as a participant, you may contact the Chairperson of the ICEHR at icehr.chair@mun.ca or by telephone at 709-864-2861.

Employers' Expectations of Technological Proficiency Levels of University Business Graduates Email: mkhurram@mun.ca

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Employers' Expectations of Technological Proficiency Levels of University Business Graduates Email: mkhurram@mun.ca

Appendix D: Informed Consent Letter

Informed Consent Form

Title: Employers' Expectations of Technological Proficiency Levels of University Business Graduates

Researcher: Muhammad Khurram, Education Leadership Masters Student, Faculty of Education, Memorial University of Newfoundland, mkhurram@mun.ca.

Supervisor: Dr. Gerald Galway, Professor, Faculty of Education, Memorial University of Newfoundland, ggalway@mun.ca.

Introduction:

My name is Muhammad Khurram and I am a master's student in the Education Leadership program at Memorial University of Newfoundland. As part of my Master's thesis, I am conducting research under the supervision of Dr. Gerald Galway.

You are invited to take part in a research project entitled *Employers' Expectations of Technological Proficiency Levels of University Business Graduates.* This form is part of the process of informed consent. It should give you a basic idea of what the research is about and what your participation will involve. It also describes your right to withdraw from the study.

In order to decide whether you wish to participate in this research study, you should understand enough about its risks and benefits to be able to make an informed decision. This is the informed consent process. Take time to read this carefully and to understand the information given to you. Please contact the researcher, Muhammad Khurram, if you have any questions about the study or would like more information before you consent.

It is entirely up to you to decide whether to take part in this research. If you choose not to take part in this research or if you decide to withdraw from the research once, it has started, there will be no negative consequences for you, now or in the future. You may skip also any questions that you do not wish to answer.

Purpose of Study:

The purpose of the study is to explore and better understand the perceptions of graduating post-

secondary business students and the employers for whom they will be working with respect to their level of computing skills. This research will focus on the views and experiences of employers and future employees in relation to the computer preparedness of business students who are about to graduate. By gaining further insight and information on this topic, business schools may be in a better position to prepare graduates in terms of requisite computing skills for the competitive job market.

What You Will Do in this Study:

If you are an employer, you will be asked to provide your insights, views and perspectives on the skill expectations for business graduates and any gaps you perceive in their computing skills. You will also be asked about the role of the business school in the acquisition of computing skills by its graduates.

If you are a recent graduate, you will be asked to provide your insights, views and perspectives on the skill expectations of employers and your perceptions about your own level of computing skills. You will also be asked about the role of the business school in the acquisition of computing skills by its graduates.

Time Commitment:

Your time commitment will include a personal or telephone interview that is approximately 45 minutes in length.

Withdrawal from the Study:

You may withdraw from the study within a week after your interview by informing the researcher (via telephone or e-mail) that you no longer wish to continue in the study. You may withdraw during data collection, and if you choose to do so while data is still being collected, the researcher remove your data from the analysis, unless you indicate otherwise. Once data collection has ended, however, the data will be aggregated anonymously and it will no longer be able to be removed. This is anticipated to be approximately one week after conducting the interview.

Possible Benefits:

As an employer participant, you may gain further information and insight into the computing skills of business school graduates, which could be beneficial for future hiring. As a graduate, this insight and information may be useful in getting ready for a competitive job market. In addition, the education research community as a whole will benefit from this research because it will serve to help inform the policies relating to the preparation of business school graduates.

Possible Risks:

While the topic of computing skills is not considered to be a sensitive, you are free to stop the interview at anytime if you feel uncomfortable. The 24-hour mental health crisis line is: 737-4668 (local) or 1-888-737-4668 (province-wide), Mobile Crisis Response Team: 1-888-737-4668 St. John's Region, Psychiatric Assessment Unit: 777-3021 or 777-3022, 24-hour Walk-in Crisis Service at the Waterford Hospital Site on Waterford Bridge Rd and the line for Health Sciences Emergency Department on Columbus Drive in St. John's 777-6335.

Although questions will focus on computing skills, the researcher will not publish information about any specific graduate or employer. All personal information provided to the researcher will be protected and anonymized including your identity and place of work.

Confidentiality:

The researcher will respect your right to privacy as a participant by coding all identifying characteristics. All personal information such as your name and place of work will be made anonymous. No other personal information will be necessary for this research. Although the data from this research project will be included in a report, and potential publication, the data will be reported in aggregate form, so as to minimize the possibility that any individual might be identified. Moreover, the consent forms will be stored separately from the interview data, so that it will not be possible to associate a name with any given set of responses. Although we will report direct quotations from the interviews, you will be provided with a pseudonym, and all identifying information such as name and place of work will be removed from any publications. However, due to the relatively small and defined sample, there is a small risk that employer participants might be recognizable to informed readers. All the participants are advised not to specifically name or otherwise include any potentially identifying information about businesses / employers and students / employees, respectively, in their responses. The researcher will not include any information in any publications or presentations that would make it possible to identify you.

Use, Access, Ownership, and Storage of Data:

The data collected during the interviews, will be kept in a secure and locked cabinet. Consent forms will be stored in a separate cabinet that is also secure and locked. All data will be stored in secure locations at the researcher's residence during the data collection and analysis stages. Once the study is complete, all data will be moved to the supervisor's office in which it will be stored in secure and locked filing cabinets. The interviews will be transcribed and will be kept secure in password protected audio file on a secure computer. If the interview is conducted by phone or skype, the consent form will be e-mailed to you in advance of the interview and you will be asked to read and return the signed informed consent form to the investigator's via email. The only individuals with access to the data include the researcher and supervisor. Data will be kept for a

minimum of five years, as required by Memorial University's policy on Integrity in Scholarly Research. After this time has elapsed, all data will be destroyed.

Anonymity:

Anonymity refers to protecting participants' identifying characteristics, such as name or description of physical appearance. As a participant, you will be provided with a pseudonym at the beginning of the interview so that no identifying information will be provided within the interview transcripts. Participant consent forms will be secured separately from interview data. All data will be aggregated after collection so no identifying characteristics will be evident in the report or publication. Every reasonable effort will be made to ensure your anonymity. You will not be identified in any publications.

Reporting of Results:

The data will be included in a thesis and may be published, and data will be reported using direct quotations, however the data will be anonymized and compiled in aggregate form. Upon completion, the thesis will be available at Memorial University's Queen Elizabeth II library, and can be accessed online at: http://collections.mun.ca/cdm/search/collection/theses. The researcher may also publish the research results through an article in a scholarly journal.

Sharing of Results with Participants:

Once the study is complete and the thesis is accepted, the researcher will make access available by posting the thesis on research-gate and google scholar.

Questions:

You are welcome to ask questions before, during, or after participation in this research. If you would like more information about this study, please contact: Muhammad Khurram, mkhurram@mun.ca, or Dr. Gerald Galway, ggalway@mun.ca

Ethics Approval

The proposal for this research has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's ethics policy. If you have ethical concerns about the research, such as the way you have been treated or your rights as a participant, you may contact the Chairperson of the ICEHR at icehr@mun.ca or by telephone at 709-864-2861.

Consent: Your signature on this form means that:

- You have read the information about the research.
- You have been able to ask questions about this study.

- You are satisfied with the answers to all your questions.
- You understand what the study is about and what you will be doing.
- You understand that you are free to withdraw participation in the study without having to give a reason, and that doing so will not affect you now or in the future.
- You understand that if you choose to end participation during data collection, any data collected from you up to that point will be retained by the researcher, unless you indicate otherwise.
- You understand that your data is being anonymized after collection and therefore cannot be removed once data collection has ended after a week of your interview.

I agree to be audio-recorded ☐ Yes ☐ No
I agree to the use of direct quotations ☐ Yes ☐ No

By signing this form, you do not give up your legal rights and do not release the researchers from their professional responsibilities.

Your Signature Confirms:

I have read what this study is about and understood the risks and benefits. ☐
I have had adequate time to think about this and had the opportunity to ask questions and my questions have been answered. ☐
I agree to participate in the research project under standing the risks and contributions of my participation, that my participation is voluntary, and that I may end my participation. ☐

A copy of this Informed Consent Form has been given to me for my records.

_____ Signature of Participant	_____ Date

Researcher's Signature:

I have explained this study to the best of my ability. I invited questions and gave answers. I believe that the participant fully understands what is involved in being in the study, any potential risks of the study and that he or she has freely chosen to be in the study.

_____ Signature of Principal Investigator	_____ Date

Appendix E: Interview Questions for Employer Participants

Participant Questionnaire (Employers)

READ preamble, and ask participants to read and sign informed consent form. (Separate Document)

Research Question. What do employers represent as the required level of computing skills is expected of new business graduates and to what extent do recent business school graduates possess these skills?

ICEBREAKER:

1. Tell me about your organization and your role in hiring new graduates for positions requiring business degrees or the equivalent of business degrees.

Title & Designation:

2. About how many university or college business graduates have you hired in the past five years? Do you hire mostly university or college graduates?

FOCUSED QUESTIONS

3. Generally, what is the career trajectory of entry-level business graduates within your company?

> Follow-up: How long do graduates stay in your employment? How long before they are promoted, and generally, why do they leave?

4. Speaking specifically about computing skills and the application of those skills in your workplace, how would you describe the quality and proficiency of business graduates from Memorial University?

> Follow-up: What are their strengths and what are their weaknesses or areas where you perceive gaps?

5. How satisfied have you been generally with business graduates of Memorial University who you have hired?

> Follow-up: How satisfied have you been with the level of computer proficiency they bring to your organization?

6. In terms of computing skills, how do university business graduates compare with business graduates from the college sector (College of the North Atlantic or the private training institutions)?

7. Sometimes there may be proprietary software or computer programs specific to your organization or business sector. How well do university business graduates adapt to such technologies?

8. What are the most important computing skills that you, as an employer, look for in business graduates?

9. How would you describe the level of aptitude for computing skills that would be sufficient to secure a job in your organization?

10. When your company advertises a job position, how specifically are the computing skills requirements described, for example, does your company use generic terms like "advanced MS Excel skills," or "highly developed computing skills," or are the requirements more specific? Explain.

11. What additional technology training or computer courses, if any, do you wish university graduates had undertaken and why?

12. Talk about the kinds of computing skill training and peer mentoring, if any, that is available in your organization for newly hired employees? How often do new employees need to avail these opportunities?

Those are all the questions I have. Thank you.

Appendix F: Interview Questions for business graduates' participants

Participant Questionnaire (Business Graduates)

READ preamble, and ask participants to read and sign informed consent form. (Separate Document)

Research Question 1: How do business school graduates represent their level of computer proficiency and what is expected for positions in the labor market?

1. As a business school graduate, how important is computer proficiency for new entrants to the job market?
2. How would you describe a person with strong computing skills; in other words what should they know and be able to do?
3. How would you describe yourself, in terms of your own computing skills?
4. When you think about other business school graduates generally, how well prepared are they for the workplace, in terms of their computing skills?
5. Follow-up: How well aligned are their actual computing skills with their self-perception of their computer competency?
6. In terms of employment, what was your most recent paid position? What kinds of computing skills did you utilise in that position?
7. Generally speaking, in considering the kinds of positions that you have applied for recently, how confident are you that your computing skills match or exceed the position requirements?
8. Follow-up: In what areas of computing do you feel most proficient and in what areas do you feel you would require additional training?

Research Question 2: How do business school graduates acquire computer skills and how do they represent the role of business schools in developing those skills?

1. What kinds of computer hardware and programs are you proficient in? Where did you acquire the majority of those computing skills?
2. What kinds of computer skills had you already developed before entering business school? How confident you were about your computing skills, when entering your business program at university?
3. What kinds of computer skills have you acquired while completing your business degree? Talk about how you acquired those new skills?
4. How effective were the courses and the overall program you completed in the business school in helping you to acquire and develop your computing skills?
5. How well aligned are the computer training and experiences that were part of your business program with the skills and competencies required in the workplace?

6. Talk about some of the strengths of the computer instruction you received through your business program? What were some of the areas that you feel could be improved?
7. When you attended business school, did you receive course and career counseling? How useful were these services?
8. When you attended business school, did you use the placement services offered at Institution, you studied? How useful were these services?

Research Question 3. What do employers represent as the required level of computing skills is expected of new business graduates and to what extent do recent business school graduates possess these skills?

1. In the recent past, when you have applied for positions in the job market, how well, did you understand the expectations for the positions, in terms of computing skills?
2. In your interactions with employers or prospective employers, whether through job fairs, interviews or actual employment, what kinds of computer competencies are typically expected?
3. In terms of your own proficiency, how confident are you in being able to compete for any relevant position in the job market, requiring advanced computing skills?
4. How confident are you that your fellow business graduates would be able to compete for positions in the job market that require advanced computing skills?

Those are all the questions I have. Thank you.