

**THE IMPACT OF SOCIAL MEDIA ENGAGEMENT ON
UNIVERSITY STUDENT RECRUITMENT**

by

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Abstract

Education marketing managers are increasingly becoming aware of the benefits of social media engagement in recruitment marketing for colleges and universities. Today's prospective student is tech-savvy and information driven. Despite a general emphasis on social media engagement in a university marketing strategy, there is minimal research on the influence it has on university student recruitment and the amount of effort that universities should dedicate to social media engagement. Therefore, this study focuses on the influence of university social media engagement, particularly Facebook, on university student recruitment in the form of student applications.

This study compares two Canadian public universities to examine how strongly their social media engagement on Facebook influences university student recruitment. This study aspires to shed light on the importance of social media engagement, whether it is a strong factor or merely a contributing factor to student recruitment.

To conduct this study, the researcher analyzed two Canadian public universities: 1) a research-intensive university with a paid social media engagement focus, and 2) a comprehensive teaching university with an organic social media engagement focus. Social media engagement data was extracted from Facebook Insights and student application data proxy to the university student recruitment was collected from the Office of Registrar for the respective universities. Pearson's r coefficient correlation and Linear Regression methods were used to analyze the data in terms of linear relationships and interactions effects to draw conclusions.

The study tested three different social media metrics in three hypotheses to examine the influence of the university social media engagement: the university social media user engagement, the university social media content engagement, and the university social media

popularity. The results show that in the case of the university social media engagement, the university social media popularity matters the most. The university student recruitment is positively influenced by the interaction of the university social media popularity and university content engagement.

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1. Introduction

The higher education sector is a competitive market like other business-savvy, revenue-focused sectors (Rutter, Roper, & Lettice, 2016). The higher education sector is an ever-changing and challenging field as universities from all around the world compete for student recruitment, which requires marketing managers to stay current in order to appear relevant to the prospective students and be successful. This is true in the case of student recruitment in local, domestic and international markets. A growing emphasis and increased demand for student recruitment and the university's role in the economy creates a constant need for universities to function as a commercial corporate entity and integrate this mindset into their marketing, branding and brand management strategies (Rutter, Roper, & Lettice, 2016).

Universities invest a great deal in marketing and branding. To be competitive, universities must ensure that they stay attractive, relevant, and flexible with the ever-changing behaviour of communication channels. This is especially true when engaging with prospective students and parents that are in-market searching for a program to study within Canada or abroad. In addition, the service provider model and the somewhat homogenous offerings of universities make marketing and brand positioning very important in order to distinguish themselves compared to companies in other sectors who make tangible products (Lowrie, 2007).

More than ever before, universities in Canada and around the world are capitalizing on digital engagement for marketing and branding in student recruitment (Rutter, Roper, & Lettice, 2016; Owyang, Bernoff, Cummings, & Bowen, 2009). Using digital marketing and communications channels are increasingly essential to any organization's marketing strategy and that is no different for universities (Alalwan, Rana, Dwivedi, & Algharabat, 2017). Digital engagement and social media engagement are increasingly becoming a part of the marketing

strategy for universities around the world, and an important part of the branding practices (Owyang, Bernoff, Cummings, & Bowen, 2009).

Today's students are technology-savvy and the majority of them are born into the social media era (Statistics Canada, 2019). They are demanding consumers, and sometimes themselves 'social media influencers', who show support for brands and universities by following the brand on social media and become members of the brand communities (Rutter, Roper, & Lettices, 2006). They also rely heavily on internet research for information consumption (Google, 2016).

Universities use social media platforms such as Facebook and Twitter, and the various features of these channels to build their brand presence. They communicate marketing messages to prospective students about their programs and courses offerings, they celebrate current students and faculty success, publicize the university's narratives to a broader audience, use social media for crisis management, and generally keep internal and external stakeholders up to date with news and events.

While universities around the world focus on digital engagement and social media engagement as part of their marketing and branding strategy, marketing managers are still unsure about the management and impact of social media on a university's brand (Hanna, Rohm, & Crittenden, 2011). The researcher applied affordance theory to determine the affordances that social media platforms offer to understand the influence of social media engagement on university student recruitment. Affordance theory is widely used as a base theory to understand individuals' relationship and interaction with technology, and by extension to understand social media engagement (Treem & Leonardi, 2012; Majchrzak, Faraj, Kane, & Azad, 2013). Affordance theory helps researchers to understand communications and behaviour within a population in relation to their interaction with the same technology (Treem & Leonardi, 2012).

Researchers have established that social media engagement is important to student recruitment and branding for a university (Rutter, Roper, & Lettice, 2016). However, it should be asked how important and to what degree does social media engagement, especially Facebook, influence the university student recruitment in the form of student applications? To what extent does the university social media user engagement, social media content engagement, and social media popularity influence university student recruitment?

This study is a quantitative analysis of the relationship between social media engagement and university student recruitment. The researcher examined how university social media engagement on a social media platform such as Facebook influences university student recruitment. Given the fact that staff and budget at most universities are limited, this study determines how much effort an education marketing manager should put into social media engagement when it comes to student recruitment and how much does social media matter. Over the course of twelve months, the researcher conducted a comparative study of two Canadian public universities, a research-intensive university and a comprehensive teaching university, and examined the influence of university social media engagement on university student recruitment in the form of applications numbers.

2. Literature Review and Theoretical Background

2.1. Branding and Brand Management

Branding represents the public's perception and feelings about a product and its performance (Kotler & Keller, 2006). The real significance in the value of a brand is the ability to capture preference, keep promises and increase loyalty. A brand can function as a powerful differentiator for the organization inside and outside its sector and affects customer decision (Aaker, 2004; Kotler & Keller, 2006). Therefore, the brand is an organization's most treasured intangible asset.

The marketing and branding of public services such as university programs differ from the private sector because the defining characteristics of public services include the governance of stakeholders and management of political matters rather than economic objectives, and more focus is given to the citizen rather than the consumer (Lovelock & Weinberg, 1990). Branding and corporate branding concepts and practices are often associated with the private sector because of the commercialized nature of the business as compared to the public sector. However, exceptions such as the branding of countries, regions, and cities exist (Jaffe & Nebenzahl, 2001). Finally, the practice and application of marketing concepts to public sector organizations is a relatively new topic for researchers (Kotler, 2011).

In today's competitive higher education marketplace, the role of brand management has reached a new level of importance. One of the unique skills required of marketing managers is their ability to build and manage brands (Kotler & Armstrong, 2010). This is because brands are powerful assets that hold and represent the essence of an organization or institution. The brand image, for the most part, goes beyond an organization's products and services it offers, therefore, the brand must be carefully developed and managed.

2.2. Corporate Branding and Universities

Are universities like all other corporate organizations? The answer to this question stirs debate in the education sector. Academic scholars and administrative departments in higher education usually differ in their understanding of the role of the university within the community (Stevens, Armstrong, & Arum, 2008). While some see universities as the last remaining pure scholarly association (Krause 1996), most academic and university administrators agree in the recognition that this centuries-old institution is gradually being transformed from a “Republic of Scholars” into an organization (Krücken & Meier, 2006). This transformation has cultural and practical consequences, and one of those consequences is the branding and brand management notion in universities. As a result, marketing and branding practices of the universities around the world are growing and more than ever before appear in mainstream marketing and advertising channels such as digital channels like web and social media, and traditional channels such as newspapers and magazines.

Brands and branding are infused in the global economy (Kornberger 2010), and the branding of universities is a popular area of research and practice. This popularity reflects in the operational environment of universities, subject to competition and demands for external accountability (Krejsler 2006; Marginson 2008). Universities create and maintain a brand image and identity through marketing and branding activities in order to attract students, staff, and faculty, and to appeal to corporate partners and government regulators (Chapleo 2011; Hemsley-Brown, & Goonawardana, 2007). Through these channels, universities seek to become more appealing and distinguish themselves from the competition like any other corporate entity.

Universities are corporate brands and they have multiple stakeholders that they communicate with, engage with, and offer services. Corporate branding is the most suitable

branding orientation for the higher education sector and universities. Branding helps the university establish differentiation and key value propositions at the corporate level which helps it market particular programs or services (Lowrie, 2007).

Conversations about the importance of a university brand and brand management in marketing for higher education is not new and it traces back to at least a decade ago. However, in the last few years, studies and researchers have looked at advanced branding concepts within the higher education sector (Ali-Choudhury, Bennett, & Savani, 2009) such as the brand as a logo (Alessandri, Yang, & Kinsey, 2006), brand image (Chapleo, 2007), brand awareness, brand identity (Lynch, 2006), brand meaning (Williams & Omar, 2014), brand association, brand personality and brand consistency (Alessandri et al., 2006).

The higher education sector is very competitive in Canada and around the world. Universities invest a great deal in marketing, branding, and advertising to ensure that they stay attractive and relevant. A growing emphasis on student recruitment numbers and the emphasis of the university's role in the economy creates an emerging need for universities to function as a commercial corporate entity and incorporate this mindset into their marketing and branding strategy and brand management practices (Lowrie, 2007; Ali-Choudhury, Bennett, & Savani, 2009). In Canada, the labour force, along with their skills and imagination create a foundation for an innovative and productive economy. "With declining fertility, an aging workforce and massive retirements, Canada risks shortages of highly skilled labour in the years ahead" (Government of Canada, 2015). To meet these challenges the Canadian education sector must remain internationally competitive (Government of Canada, 2015). The Canadian international education sector mainly competes with other western, English speaking countries such as the United States of America, United Kingdom, and Australia. The sector also competes with

western non-English speaking countries that offer high-quality education, such as France and Germany (CBIE, 2017). As per Canada's government website, "while Canada already has robust two-way exchanges with countries around the world in international education, the global environment is increasingly competitive. The United States, United Kingdom, Australia, Germany, and France all attracted more international students than Canada in 2012" (Government of Canada, 2017).

With the growing competition in the domestic and international higher education markets and the importance of a university's brand, brand image, brand identity, brand awareness, and brand reputation has to be a focal point of the university's marketing strategy. It should be weaved into every piece of marketing and communication that is public-facing through any marketing channel or media, from print to digital (Casidy, 2013). Casidy conducted an experimental study that clearly establishes the idea of how branding and brand management benefits a university. She researched the students' perception of a university's brand and the brand profile and found a significant correlation between student satisfaction and loyalty to perceived university brand (Casidy, 2013).

In this complex and highly competitive sector, universities around the world are realizing the need to develop strategic marketing plans and to define the university brand as a value proposition that distinguishes its institution from its competitors. Universities invest a great deal in branding, advertising and promotions around the world to ensure that they stay attractive and relevant as they engage with students and parents when they are in-market searching for a program to study abroad. The service provider model and positioning of universities make branding and brand management very important to universities as compared to companies in other sectors who make tangible products (Lowrie, 2007).

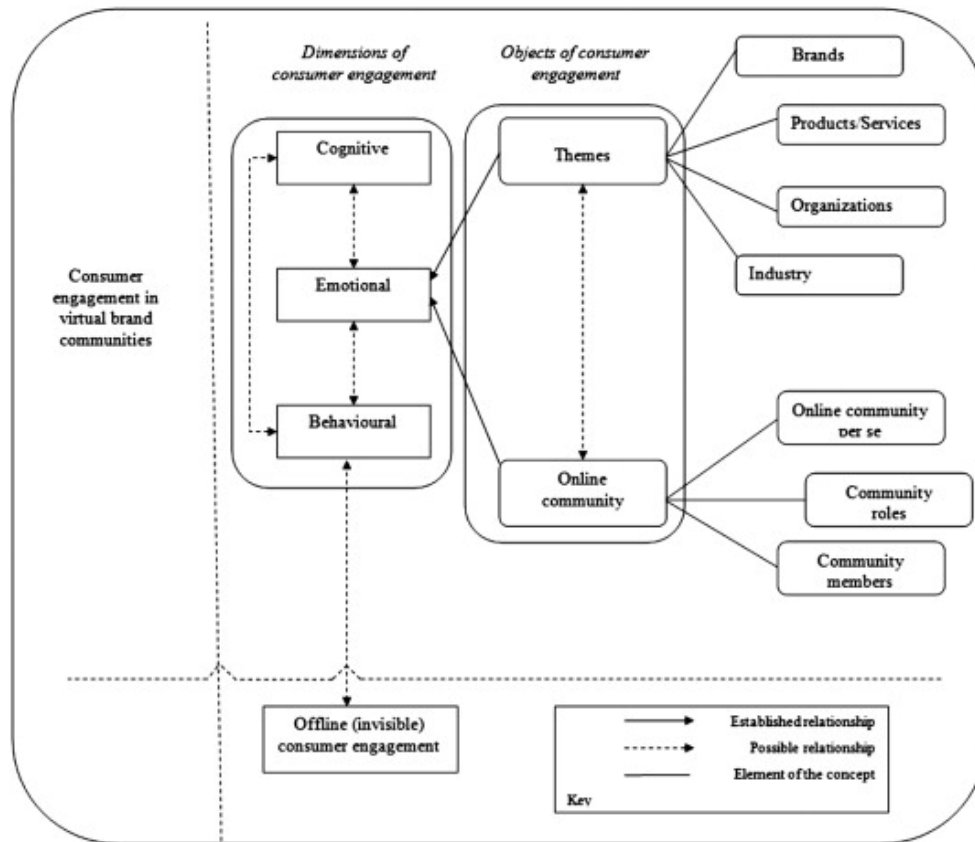
2.3. Digital Engagement

Although the concept of ‘engagement’ has received significant attention across academic disciplines such as social psychology and organizational behavior, the concept has only recently emerged in the marketing literature (Brodie, Ilic, Juric, & Hollebeek, 2013). In this emerging literature, ‘engagement’ research is a promising concept and is expected to provide enhanced, predictive, and explanatory power of user behavior outcomes, including brand loyalty (Fujita, Harrigan, & Soutar, 2017). Engagement in the virtual world of the web is called digital engagement.

Digital engagement has increasingly become a part of the marketing strategy for universities around the world and is an important part of branding practices (Owyang, Bernoff, Cummings, & Bowen, 2009). While universities around the world focus on digital engagement as part of their marketing strategy and branding, universities are unsure about the management and impact of digital engagement on their marketing objectives (i.e. student applications) (Hanna, Rohm, & Crittenden, 2011). Therefore, further research is needed to study the impact of university social media engagement on a university brand.

Brodie et al. (2011 and 2013) established a few common themes supporting the notion of user engagement in the virtual communities after in-depth research backed by some analysis. He found out that the nature of the user engagement concept can be explained by focusing on users' “specific interactive experiences, engagement objects, motivational states, and engagement dimensionality” within the context of the online brand community, which in the case of this research paper refers to social media platforms (Brodie et al., 2011; Brodie et al., 2013). In the case of prospective students, this could be the need to search or evaluate a university for applications.

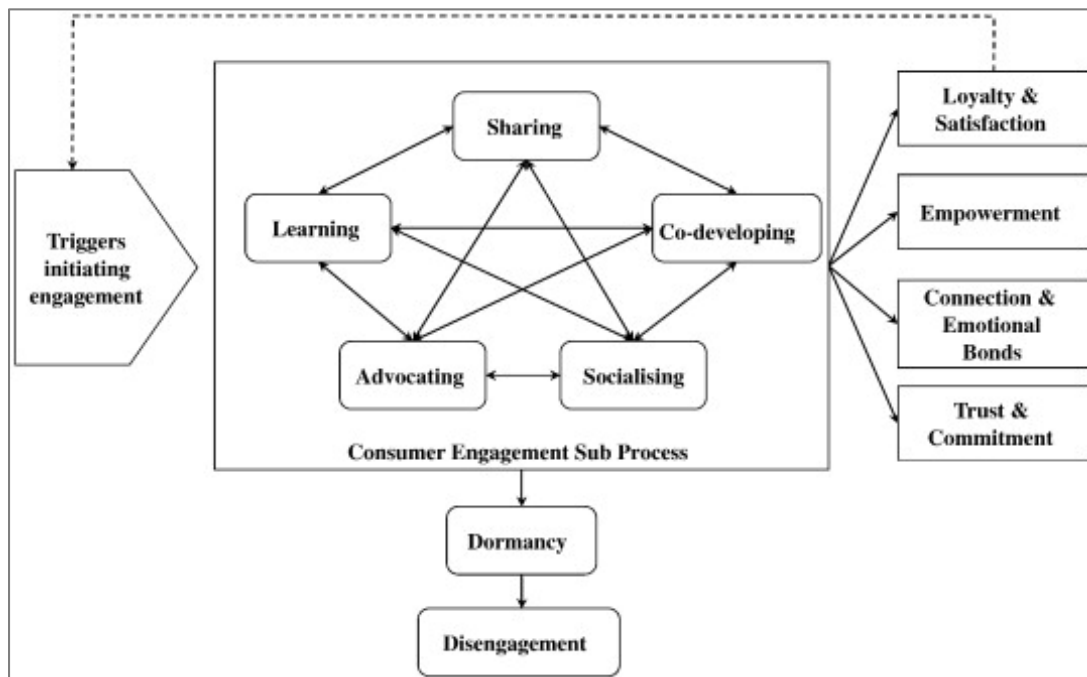
Figure 1: The user engagement process in a virtual brand community.



Source: Brodie et al., 2011 and 2013.

User engagement and digital engagement objects are established proxies used to understand the relationships between the cognitive, emotional and behavioral aspects of user engagement. In the virtual brand communities, user engagement is observed in relation to the specific engagement goals for each user and the complexity level of the engagement process that each user goes through (Brodie et al., 2011; Brodie et al., 2013). Users engage initially with specific inanimate levels of interest towards a brand, such as following or liking a brand on social media and then progress to two-way interactions, engaging with other members of the online brand community (Brodie et al. 2011; Brodie et al., 2013).

Figure 2: The objectives and actions that trigger user engagement in a virtual brand community.



Source: Brodie et al., 2011 and 2013.

Regardless of different levels of user engagement on social media and brand communities, e.g. one-way (liking) or two-way (commenting), the graph above shows that “learning,” “sharing,” “advocating,” “socializing” and “co-developing” are user engagement processes. Brodie et al. (2013) established that the aforementioned user engagement processes with users and user’s level of engagement results in user loyalty, satisfaction, empowerment, connection, commitment, and trust within a virtual brand community. Hence, the case can be made for the importance of digital engagement and the necessity for brands to thrive for engagement in the digital world with their respective brand communities. This is true for Canadian universities, which seek meaningful engagement with prospective students from around the world and thrive to reach them in a more engaging and authentic way to achieve behaviour that favours the university (i.e. the student submit an application for admission to the university).

2.4. Social Media Engagement

One of the prime modes of digital engagement these days is the use of social media. For universities in Canada, digital engagement and its various forms, such as social media engagement, are relatively recent practices. In essence, social media is “a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0 and that allow the creation and exchange of User Generated Content” including social networking sites such as Facebook and Twitter (Fujita, Harrigan, & Soutar, 2017). Since the majority of universities are late adopters of technology, social media engagement is an even newer notion in the higher education field. Social media is increasingly becoming a part of the marketing strategy for universities around the world, and an important part of the branding practices (Owyang, Bernoff, Cummings, & Bowen, 2009).

Social media engagement is how brands choose to interact with users, target audiences and stakeholders to empower users, influence brand meaning, and build social media communities (Fujita, Harrigan, & Soutar, 2017). Some of the most appealing characterizations of social media is that it is digital (high reach at low cost), proactive (allows users to take an active role in a brand process), visible (allows users and brands to observe engagement/disengagement behaviours), real-time and memorable (allows the consumption and sharing of information), ubiquitous (allows interactions anytime and anywhere), and interactive (allows users to network with one another) (Fujita, Harrigan & Soutar, 2017). Brands use these characteristics of social media to create user engagement.

The target audience for the majority of universities is between ages 17 and 25 and this group is considered one of the most technology-savvy generation who is heavy users of social media (Statistics Canada, 2019). They use social media for entertainment, socializing, and

product and service research and allow it to influence the process of decision making for them (Google, 2016; Facebook 2017). Giving even more importance to the notion that universities establish their presence on social media.

Since today's students are technology-savvy and the majority of them are born in the era of search engines and social media (Statistics Canada, 2019), they are demanding consumers that show support for brands and universities online by engaging with them. Engagement occurs by users following the brand on social media, becoming members of the brand communities, and even pursuing careers as 'social media influencers'. This audience relies on internet research for information consumption (Google, 2016). Google says that 90 percent of internet searches start with a non-branded search. Users are often unsure of the specific brand they want to buy when they begin looking for information online (Google, 2016). The fact that this demographic relies so heavily on internet research for information and are such active participants in the digital world, further highlights the importance on universities to implement consistent, relevant, and ubiquitous digital marketing, branding, and social media engagement.

2.5. Affordance Theory

Affordance theory is widely used as a base theory to understand the relationship and interaction of individuals with technology, and by extension to understand social media communications and interactions (Treem & Leonardi, 2012, Majchrzak, Faraj, Kane, & Azad, 2013). Affordance theory helps researchers to understand communications and behaviour within a population in relation to their interaction with the same technology (Treem & Leonardi, 2012). Affordance theory in this research clarifies user engagement on social media platforms.

James Gibson first defined the concept of affordance theory. As an ecological psychologist, he explained how individuals perceive the environment and surrounding them in relation to a set of possible acts or actions (Gibson, 1979). Instead of the actual article or action, the individual recognizes the implied use of that article or action. For example, in a command sentence, the actual words spoken matter less in comparison to the tone, background, previous experience, and volume of the delivered message. Also, the notion of affordance “neither belongs to the environment, nor the individual, but rather to the relationship between individuals and their perceptions of the environment” (Parchoma, 2014).

In the past few years, there has been an increasing amount of attention given to social media in the academic and scholarly world. There are a number of published studies and papers on social media and its relation to affordance theory. Social media and its affordances are seen as possibilities and interactions between users and social media platforms (Cabiddu, Carlo, & Piccoli, 2014). Academics and scholars have explored the application of affordance theory to social media in different areas, which include external communication (Argyris & Monu, 2015), customer engagement (Cabiddu, Carlo, & Piccoli, 2014), knowledge sharing (Gibbs, Rozaidi, & Eisenberg, 2013; Majchrzak, Faraj, Kane, & Azad, 2013), user-generated content (UGC) and

knowledge creation (Mansour, Askenäs, & Ghazawneh, 2013; Wagner, Vollmar, & Wagner, 2014), tourism communications (Cabiddu, Carlo, & Piccoli, 2014), international student outreach and massive (or massively) open online courses (MOOCs) (Sleeman, Lang, & Lemon, 2016), mass communication (Hayes, Carr, & Wohn, 2016), and government communications (Chen, Xu, Cao, & Zhang, 2016).

Some of the foundations of social media affordance research created by Treem and Leonardi in 2012 in a literature review of previous studies found that in general, social media affordances fall under four major categories: visibility, editability, persistence, and association (Treem & Leonardi, 2012). They established that these four social media affordances lead organizations and institutions to use social media to socialize, share knowledge and establish organizational or brand authority (Treem & Leonardi, 2012). Based on a study conducted with in-depth interviews at Consolidated Contractors Company and IBM, the study confirmed that social media afforded four potential affordances: commenting, accessibility, viewability and validation, in addition to the four aforementioned affordances (Mansour et al., 2013).

Later research further examined the particular affordances of social media for knowledge sharing and creation. Majchrzak et al. (2013) introduced affordance in social media that promoted workplace knowledge sharing and conversations through four different affordances: meta-voicing, triggered attending, network-informed associating, and generative role taking. However, apart from positive affordances, Gibbs et al. (2013), by interviewing 12 engineers from high-tech companies, found that social media affordance could potentially be negative. The negative affordances of social media involved invisibility, temporary disengagement, and selective control (Gibbs et al., 2013).

In addition, scholars have highlighted social media affordances for external communication uses. In a study that combined affordance theory and public relations theory, Argyris & Monu (2015) identified that social media had eight potential affordances for external communication: presentability, self-expression, monitorability, reach, engagement, connectivity, recordability, and availability.

Malsbender et al. (2014) identified in their literature analysis that there are six specific affordances of social media for governmental external interactions, including the four basic affordances identified by Treem and Leonardi (2012) and two affordances (meta-voicing, and generativity) from Majchrzak et al. (2013). Lastly, it was found that social media afforded government openness in five distinct ways: communicability, interactivity, visibility, collaborative ability, and anonymity (Stamati et al., 2015).

The existing studies have often employed three methods to detect social media affordances within organizational contexts: literature review (Majchrzak et al., 2013; Malsbender et al., 2014; Treem & Leonardi, 2012), in-depth interview (Cabiddu et al., 2014; Gibbs et al., 2013; Stamati et al., 2015), and survey (Obar, 2014). Overall, social media tools contribute distinct affordances for different organizations and different organizational practices, except for the fundamental affordances presented by Treem and Leonardi previously mentioned: visibility, editability, persistence, and association (2012).

2.6. Social Media Affordances

Social media affordances are viewed by researchers to be possibilities and interactions between users and social media platforms (Cabiddu, Carlo, & Piccoli, 2014). There are many applications of affordance theory in relation to social media for different areas of communications: external communication (Argyris & Monu, 2015), customer engagement (Cabiddu, Carlo, & Piccoli, 2014), knowledge sharing (Gibbs, Rozaidi, & Eisenberg, 2013; Majchrzak, Faraj, Kane, & Azad, 2013) , user-generated content (UGC) and knowledge creation (Mansour, Askenäs, & Ghazawneh, 2013; Wagner, Vollmar, & Wagner, 2014), tourism communications (Cabiddu, Carlo, & Piccoli, 2014), international student outreach and massive (or massively) open online courses (MOOCs) (Sleeman, Lang, and Lemon, 2016), mass communication (Hayes, Carr, & Wohn, 2016), and government communications (Chen, Xu, Cao, & Zhang, 2016). New research and practices are emerging every day in the identification of affordances for communications and engagement with brands on social media.

Social media affordances mentioned earlier such as visibility, editability, persistence, and association help universities to socialize, share knowledge and more importantly establish brand authority (Treem & Leonardi, 2012). On social media platforms, this means that a brand posts content on a regular basis to achieve visibility (an affordance) and brands have the option of changing posted content on social media (affordance: editability). Lastly, brands manage a consistent tone and messaging pattern on social media which ultimately ends up forming brand equity and brand perception in the social media communities about that particular brand (affordance: persistence and association). This process reflects traditional communications and marketing and today its use on social media platforms makes perfect sense. The very core of

good branding practice is based on transparency and consistency in telling the brand story and its distinguished features and the social media affordances mentioned above represent those ideas.

Other social media affordances that Argyris & Monu (2015) established are presentability, self-expression, monitorability, reach, engagement, connectivity, recordability, and availability. These affordances facilitate a two-way engagement and communication between a brand and the social media community. Social media features such as posting content in the form of text, image, and video show that social media can afford presentability and self-expression. Any good social media platform provides some form of reporting and analytics for companies and brands to understand the social media following and community better, these relate to social media affordances: monitorability and recordability. Recordability also means that all the social media posted content is archived on a brand's social media page and page administrators could go back to check old posted content and engagement.

The social media affordances that offer brands the most in terms of engagement are social media reach, engagement and connectivity, which allow brands to create a social media community, engage with the community on a regular basis, and connect with the community based on a common need and set of preferences. This again helps brands form brand loyalty and popularity in the social media community, establish brand authority by building an audience community and create or increase brand equity or popularity by capitalizing on social media features and the affordances they offer. This has pronounced applications for universities and the social media affordances that are used to earn engagement, build an audience, and communicate to prospective students in order to create and improve brand image and influence behaviour to ultimately result in student applications to a university.

2.7. Social Media Platforms and Features

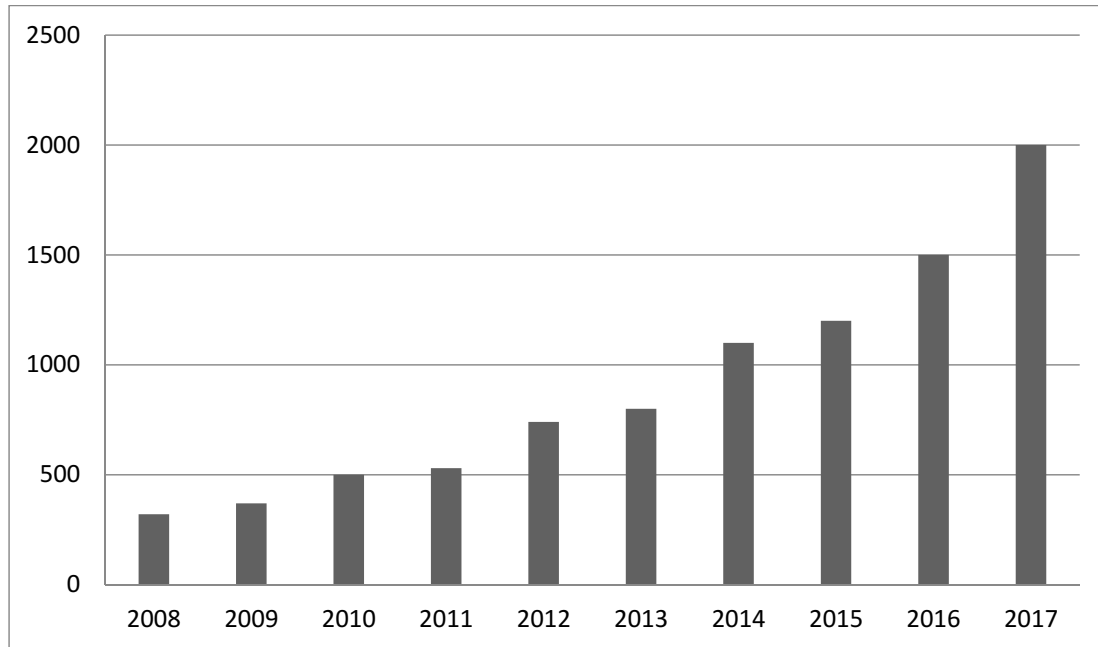
Students are among a demographic that is tech-savvy (Statistics Canada, 2019). They openly associate with brands, show support and follow organizations and brands on social media or become members of brand communities i.e. following or liking brands on social media (Kurre et al., 2012). Social media affects higher education institutions and their brand reputation and has a role in “creating communities of learners where education and contemporary culture intersect” (Kurre et al. 2012). This shows the significance of engaging with students in social media communities and the importance of adopting good social media engagement practices to establish a brand reputation.

Facebook is by far one of the most popular social media platforms worldwide when it comes to the number of active users. Facebook has over 2 billion active users as of June 2017 and 2 billion monthly active users around the world (Facebook, 2017). While most Facebook users in North America are older than 24, it is the primary social media choice for all ages worldwide. The majority of Facebook users worldwide are 18-29 years old (Facebook, 2018; Newberry, 2018; Pew Research, 2018). Universities in Canada and around the world have been successful in using Facebook to connect with prospective students, current students and alumni to strengthen awareness about campuses, programs, research and services, and contribute to a positive brand image.

Universities can engage with audiences on Facebook using a variety of content such as text, image, and video content (Mazman & Usluel, 2010). Among other features, the Facebook video ‘live’ feature is increasingly used by schools to connect with students. Posting and promoting videos is another great way of engaging with audiences. According to Facebook, of all the social videos consumed, about 36 percent of that activity is happening on Facebook.

It captures attention and engages the audience to deliver a message in an effective way (Facebook, 2017).

Figure 3: Facebook monthly active users as of June 2017 (in millions).

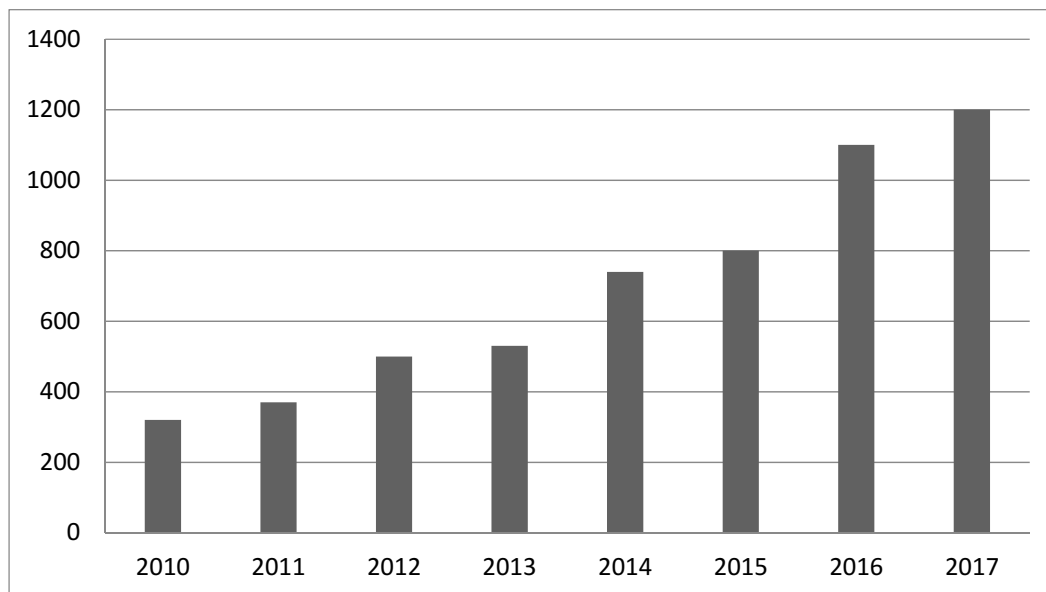


Source: Facebook, 2017.

Twitter, arguably the second most popular platform, is a social networking site that differs from Facebook. It provides a micro-blogging service, enabling registered users to read and post short messages that are called tweets. Twitter messages were limited to 140 characters until late 2017 when the company doubled the number of allowed characters to 280. With over 330 million active users worldwide as of 2017, Tweets are posted to a publicly available profile or can be sent as direct messages to other users. Users also upload photos or short videos (Statista, 2017). As a micro-blogging tool, engagement is more time sensitive on Twitter as compared to Facebook. Those 280 characters have a short lifespan but are very effective in getting the word out in a timely fashion and creating engagement with audiences around the world (Pew Research, 2018).

Since Twitter is mainly used to broadcast messages and virtually all the content is public, people feel comfortable following brands and celebrities on Twitter (Hootsuite, 2016, Statista, 2017). According to Audiense, an agency that specializes in social media insights and strategy development, 42 percent of Twitter users follow brands that provide a great marketing and engagement opportunity (Audiense, 2018).

Figure 4: Number of monthly active Twitter users worldwide in 2017 (in millions).



Source: Twitter, 2017.

The use of hashtags in social media, especially on Twitter is another prominent feature that was later adopted by other platforms. Hashtags are important as they make the content on social media such as posts and tweets ‘searchable’. For example, one can search for trending topics of the day using hashtags on Twitter (Audiense, 2018). Like Facebook, universities use Twitter to spread awareness about programs and offerings, engage with the public, and drive traffic to their respective websites.

3. Theory Development and Hypotheses

Using digital marketing and communications channels is increasingly essential to any organization's marketing strategy and that is no different for universities (Alalwan, Rana, Dwivedi & Algharabat, 2017). It is already established that the education sector and universities in Canada and around the world are capitalizing on digital engagement in marketing and branding as it relates to student recruitment more than ever before (Rutter, Roper & Lettice, 2016; Owyang, Bernoff, Cummings, & Bowen, 2009). Digital engagement and social media have increasingly become a part of the marketing strategy for universities around the world and are an important part of the branding practices (Owyang, Bernoff, Cummings, & Bowen, 2009). This is because students are technology-savvy and the majority of them are born into the era of social media (Statistics Canada, 2019), and as previously noted, this audience depends on internet research for information consumption (Google, 2016). Previous research (Rutter, Roper & Lettice, 2016) indicates that prospective students use social media to seek information. Therefore, it makes sense that universities use social media engagement as a means to connect to prospective students, engage with them, and hopefully encourage them to submit an application to their respective universities.

The researcher used Facebook as the subject of this study because it is the most popular social media channel and the most prominently used by universities (Pew Research, 2017). The researcher used Facebook Insights, the statistical data provided by Facebook that measures social media activity, to find out how the university social media engagement of two Canadian universities influences university student recruitment.

Brodie et al. (2011 & 2013) established a few common themes supporting the notion of user engagement in virtual communities after in-depth research backed by some analysis. He

found that the nature of the user engagement concept can be explained by focusing on users' "specific interactive experiences, engagement objects, motivational states, and engagement dimensionality" within the context of the brand's online community, which in this case is social media platforms (Brodie et al., 2011; Brodie et al., 2013). User engagement and engagement objects are established relationships between the cognitive, emotional and behavioral aspects of user engagement with relation to the specific engagement goals and the engagement process (Casidy, 2013). In the case of universities, prospective students who have engaged with a particular university on Facebook can build an emotive relationship with the said brand that could trigger behaviour in the form of university admission applications.

Furthermore, Facebook, the social media platform analyzed in this study, offers affordances that contribute to student engagement such as visibility, persistence, and association, which help universities to broadcast messages, to socialize, share information about university programming and student life, and more importantly to establish brand authority and brand identity with prospective students (Treem & Leonardi, 2012). If this statement stands true, social media connections and engagement should benefit universities to influence students to choose that institution and apply to enrol at the said universities. This leads to the first hypothesis:

Hypothesis 1. University student recruitment is positively influenced by university social media user engagement.

Users are usually triggered by a common need to join a brand community on social media (Fujita, Harrigan & Soutar, 2017) such as the need to search for a university for admission or exchange information and ideas. Users engage initially with specific inanimate levels of interest towards a brand and then progress to two-way interactions, engaging with other members of the social media community, as previously demonstrated (Brodie et al. 2011; Brodie et al., 2013). In

other words, once students have developed a relationship with a particular university on social media, the content consumption increases as they see, like, and share more posts on-page and off-page on Facebook. The students increase their engagement and move through different levels of engagement such as one-way engagement (following a university) and to two-way engagement (commenting on a social media post by the university). This demonstrates the prospective students' interest level in the university and the content consumed on Facebook, and as a result, can trigger behaviour in the form of student admission applications. If this is true, as the engagement and consumption of posted content by the universities increase, more students see the messaging and are inspired to apply to the respective university. Therefore, the second hypothesis:

Hypothesis 2. University student recruitment is positively influenced by university social media content engagement.

Digital engagement is essential because prospective students are the demographic that are technology-savvy (Google, 2018; Statistics Canada, 2019) and the majority of them are born into the search engine and social media era. They rely on internet research for information consumption and form opinions about brands based on their popularity, digital footprint, and digital engagement (Owyang, Bernoff, Cummings, & Bowen, 2009). Users engage with a brand on social media with a cognitive decision to evaluate their buying choices and seek information (Fujita, Harrigan and Soutar, 2017). In addition, users engage in social media or in virtual brand communities that have common goals as their own. Users following social media platforms have similar interactive experiences and engagement objects (Brodie et al., 2011; Brodie et al., 2017). This is best explained by additional affordances such as commenting, accessibility, viewability, and validation, other than the preceding four affordances (Mansour et al, 2013). If social media

validation is important and users with similar goals follow the same brand on social media, then social media validation could encourage more users to join the online brand community. This lays the foundation for the third hypothesis:

Hypothesis 3. University student recruitment is positively influenced by university social media popularity.

4. Research Methodology

4.1. Sample

This research aims to test the influence of the university social media engagement, social media content engagement, and the university social media popularity on university student recruitment. The researcher conducted a comparative study of two public universities, the University of Northern British Columbia (UNBC) and Vancouver Island University (VIU) in British Columbia (BC), Canada, to examine the influence of university social media engagement on university student recruitment.

UNBC is located in the City of Prince George in northern British Columbia and has a total student population of approximately 3,500. VIU is located in the City of Nanaimo on Vancouver Island in British Columbia with a student population of approximately 22,000 (UNBC, 2018; VIU, 2018). Both of the organizations are public universities authorized under provincial legislation to deliver post-secondary education and training in British Columbia. Both institutions have been granted the Education Quality Assurance (EQA) designation by the Government of BC (Ministry of Advanced Education, Skills & Training, BC Government, 2018).

VIU is a comprehensive teaching institution that evolved from a college to a university and therefore offers a range of undergraduate, graduate and vocational training programs. UNBC is a research-intensive university focused on cutting-edge research in environmental and bio-energy sciences among others. Both institutions attract students from BC, Canada, and around the world. UNBC hosts students from more than 55 countries and VIU is home to international students from 95 countries around the world (UNBC, 2018; VIU, 2018). While VIU inclines toward open-access teaching to education, students recruited at UNBC are focused on

competitive research in the undergraduate and graduate levels (Ministry of Advanced Education, Skills and Training, BC Government, 2018).

The researcher conducted this comparative study on the aforementioned universities for a period of twelve months (August 2016 to July 2017). The sample size is 12 points of data comparison for 1 independent variable (Y), and 12 points of data comparison for each of the three dependent variables (X1, X2, and X3).

The metrics used to explain university student recruitment is total student applications for both domestic and international students. For social media engagement, this research focuses on Facebook Insights data measured as engagement, impressions, and likes.

The social media strategies for the aforementioned universities are also different from one another. For the period of study, UNBC aggressively invested in paid social media marketing including paid advertising, user acquisition, and boosted posts on Facebook (UNBC, 2018) while VIU, due to a limited marketing budget, focused on organic user engagement and user acquisition (VIU, 2018). This is an interesting difference to observe. This difference might show whether organic content on social media is more appealing to students and therefore produces more interest in the form of student admission applications or vice versa. Each of the aforementioned universities and the respective data were independently studied and statistically analyzed to draw comparisons because the two institutions are fundamentally different in nature and in their social media marketing approaches.

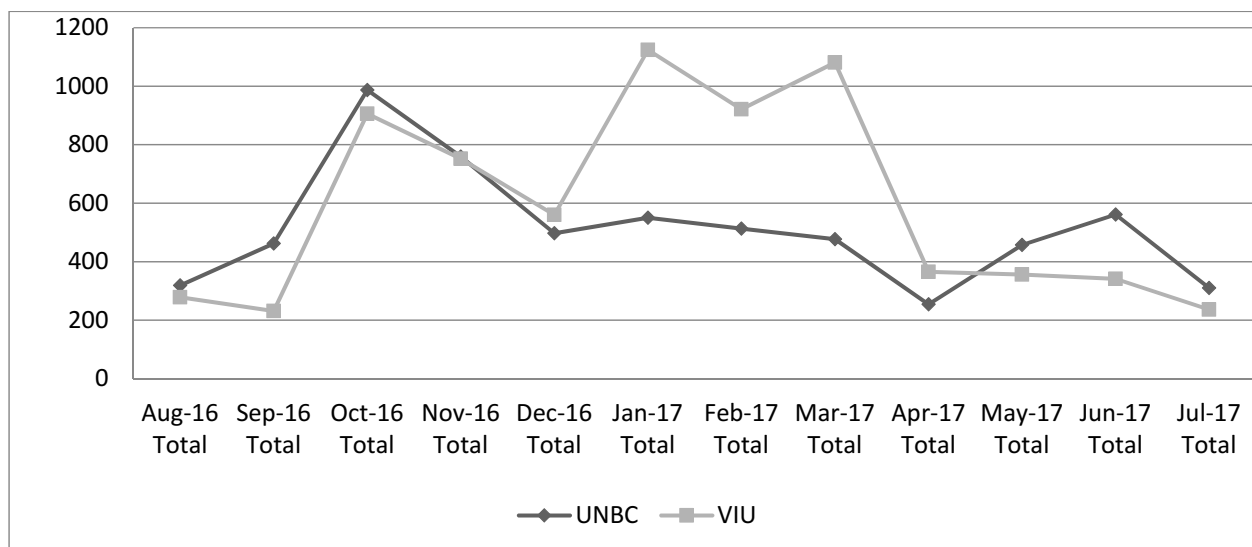
4.2. Data

There are two types of data used for this study: the number of total student applications for both domestic and international as a proxy for the university student recruitment, and social media engagement Facebook metrics as proxies for user engagement (Monthly Page Engaged Unique Users), content engagement (Monthly Total Impressions), and social media popularity (Lifetime Total Likes).

The student application data was collected directly from the Office of Registrar for the respective universities with a request to acquire the total student applications numbers arranged monthly for a period of twelve months – August 2016 to July 2017. This includes international and Canadian domestic applications.

The data was charted to make general visual observations of the application trends such as peaks and valleys over time. Refer to Figure 5.

Figure 5: Total student applications for domestic and international students at UNBC and VIU.



Source: UNBC Office of Registrar and VIU Office of Registrar, 2017.

Although slightly different from each other, the data displays a clear pattern in application trends. This is due to the application intake period also known as the ‘student recruitment cycle’ for Canadian public universities. The student recruitment cycle for Canadian public universities is generally from the middle of September to end of March every year with the exception of a dip in activities between the end of December and beginning of January due to the Christmas holiday season. Generally, summer is rather quiet for recruitment activities, albeit not entirely inactive, as the data shows.

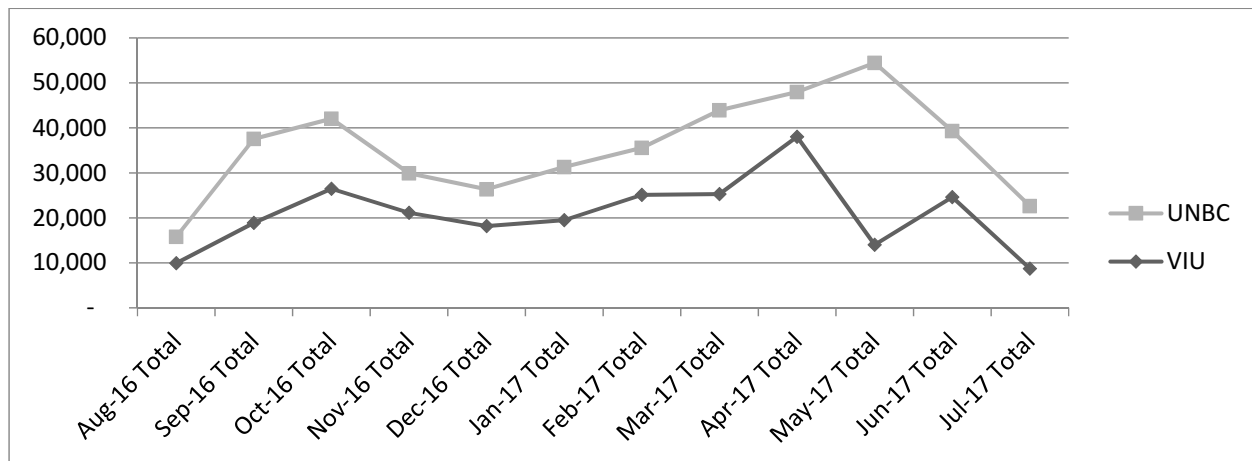
The data was collected with the permission of the marketing departments of the respective universities. The Facebook Insights data was supplied in a rough format that displayed daily activities, which the researcher arranged in a monthly format for the purpose of this study.

The particular Facebook metrics used in this study were used due to their direct relevance to user/student engagement on social media.

A description of Facebook Insights (Facebook, 2018):

- Monthly Page Engaged Users: the number of people (unique users) who engaged with a Facebook Page. Engagement includes any click or story created.
- Monthly Total Impressions: the number of times any content from a Facebook Page or about a Facebook Page entered a person's screen. This includes posts, check-ins, ads, social information from people who interact with a Facebook Page and more.
- Lifetime Total Likes: the total number of people (unique users) who have liked a Facebook Page.

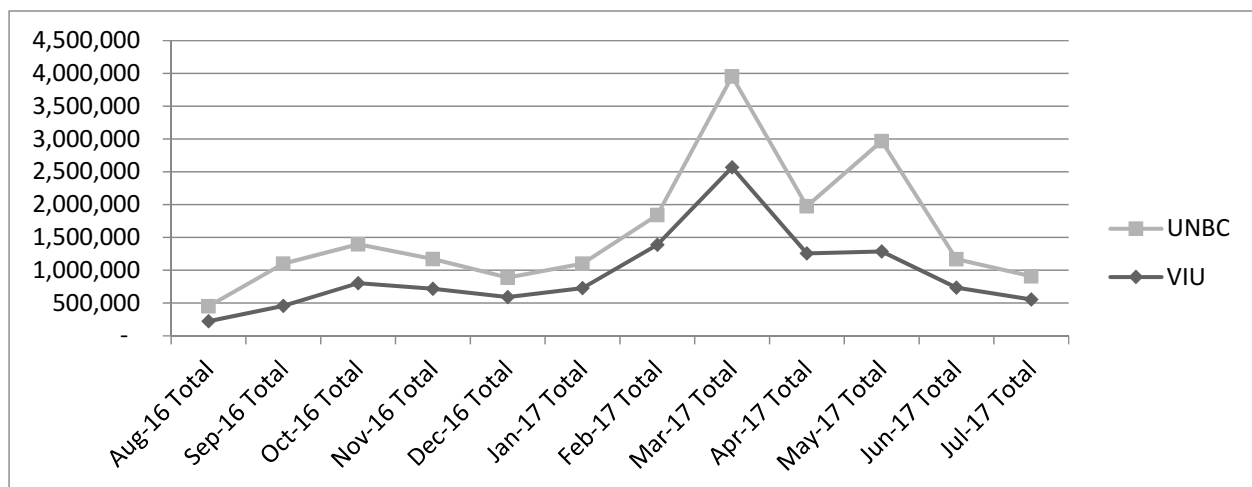
Figure 6: Facebook Monthly Page Engaged Users for UNBC and VIU



Source: UNBC and VIU Facebook Insights, 2016 – 2017.

For Facebook Monthly Page Engaged Users, the trend is similar for both universities month-over-month for the twelve-month period, except for May 2017 where VIU saw a dip in student engagement. The data shows a similar trend to the total number of student applications during the recruitment cycle. There are increased activities and interest in the fall and spring seasons when students are actively evaluating their options and submitting applications to universities. Refer to Figure 6.

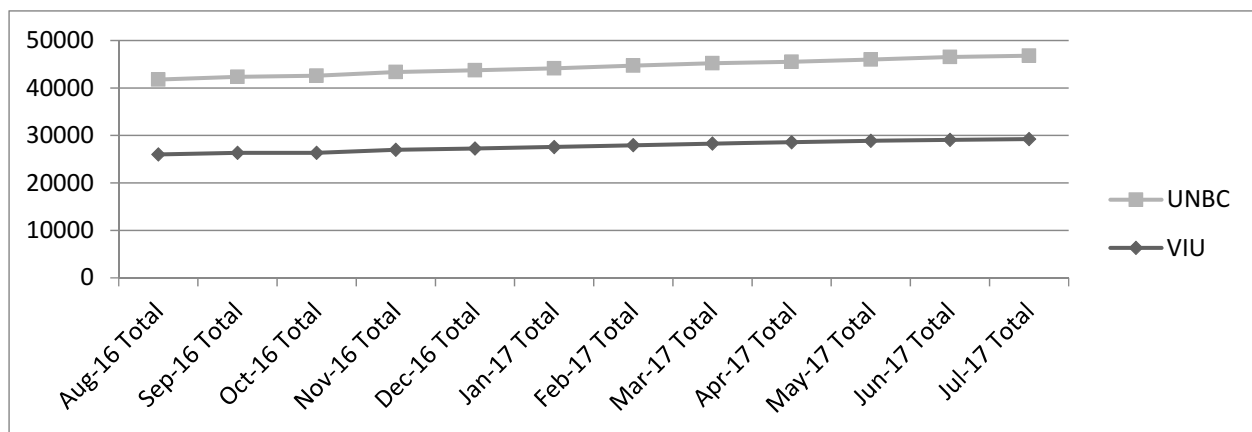
Figure 7: Facebook Monthly Total Impressions for UNBC and VIU.



Source: UNBC and VIU Facebook Insights, 2016 – 2017.

For Facebook Monthly Total Impressions, the trend is similar to the Facebook Monthly Page Engaged Users and total student applications. Refer to Figure 7. The demand for content consumption on Facebook month-over-month for the twelve-month period follows the same peaks and valleys for both UNBC and VIU. This, once again, shows increased activity and interest in the fall and spring seasons when students are actively evaluating their options, engaging with content posted by the universities, and submitting applications to universities.

Figure 8: Facebook Lifetime Total Likes for UNBC and VIU.



Source: UNBC and VIU Facebook Insights, 2016 – 2017.

The trend for Facebook Lifetime Total Likes is similar between UNBC and VIU. Refer to Figure 8. Universities build their follower base (Likes) over time. This shows that although the baseline was different for UNBC vs. VIU, both universities have increased their total number of followers on Facebook in a steady and positive trend.

4.3. Research Design

This study examines the influence of the university social media engagement on university student recruitment, therefore, a correlation analysis such as Correlation Coefficient or Pearson's r and the General Linear Model regression statistical analysis methods were chosen to study the linear relationships in order to study the influence of the dependent variables on the independent variable.

The researcher followed the steps below for a statistical analysis of the data:

Step One: The first step was to generate Scatterplots for both UNBC and VIU to create a visual representation of the data for the independent variable (Y) and dependent variables (X1...X3) (Abraham & Ledolter, 2006).

Step Two: Correlation Coefficient or Pearson's r , studies the degree of linear association of two variables Y and X. Pearson's Correlation tests analyzes whether the two variables have a strong or weak relationship with each other. The analysis takes a value between -1 and +1 and shows the strength and direction of the relationship. The closer the value is to -1 the stronger the negative relationship and the closer the value is to +1 the stronger the positive linear relationship. If the value is closer to 0, the linear relationship is weak (Abraham & Ledolter, 2006).

Step Three: General Linear Model regression analysis takes this one step further as it explains the influence of changes on an independent variable (Y) due to changes in a dependent variable (X) (Duke University, 2018; Yale University, 2018). In addition, the General Linear Model is used to observe the interaction between the fitted values of the dependent variables (Minitab, 2019). This is perfect since this study examines the influence of the university social

media engagement ($X1 \dots X3$) on student application numbers as a proxy for university student recruitment (Y).

The linear models considered with and without interactions for testing hypotheses are:

Linear:

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon$$

$$Y = \beta_0 + \beta_2 X_2 + \varepsilon$$

$$Y = \beta_0 + \beta_3 X_3 + \varepsilon$$

The model with 2-way interactions:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_4 X_1 X_2 + \varepsilon$$

$$Y = \beta_0 + \beta_1 X_1 + \beta_3 X_3 + \beta_5 X_1 X_3 + \varepsilon$$

$$Y = \beta_0 + \beta_2 X_2 + \beta_3 X_3 + \beta_6 X_2 X_3 + \varepsilon$$

The model with 3-way interactions:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_7 X_1 X_2 X_3 + \varepsilon$$

Analysis of variance model is:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_1 X_2 + \beta_5 X_1 X_3 + \beta_6 X_2 X_3 + \beta_7 X_1 X_2 X_3 + \varepsilon$$

Note: The total student applications is used as a proxy for university student recruitment and is denoted by Y . Facebook metrics, engagement, impressions, and likes are proxies for social media user engagement, content engagement, and university popularity and they are denoted by X_1 , X_2 , and X_3 respectively.

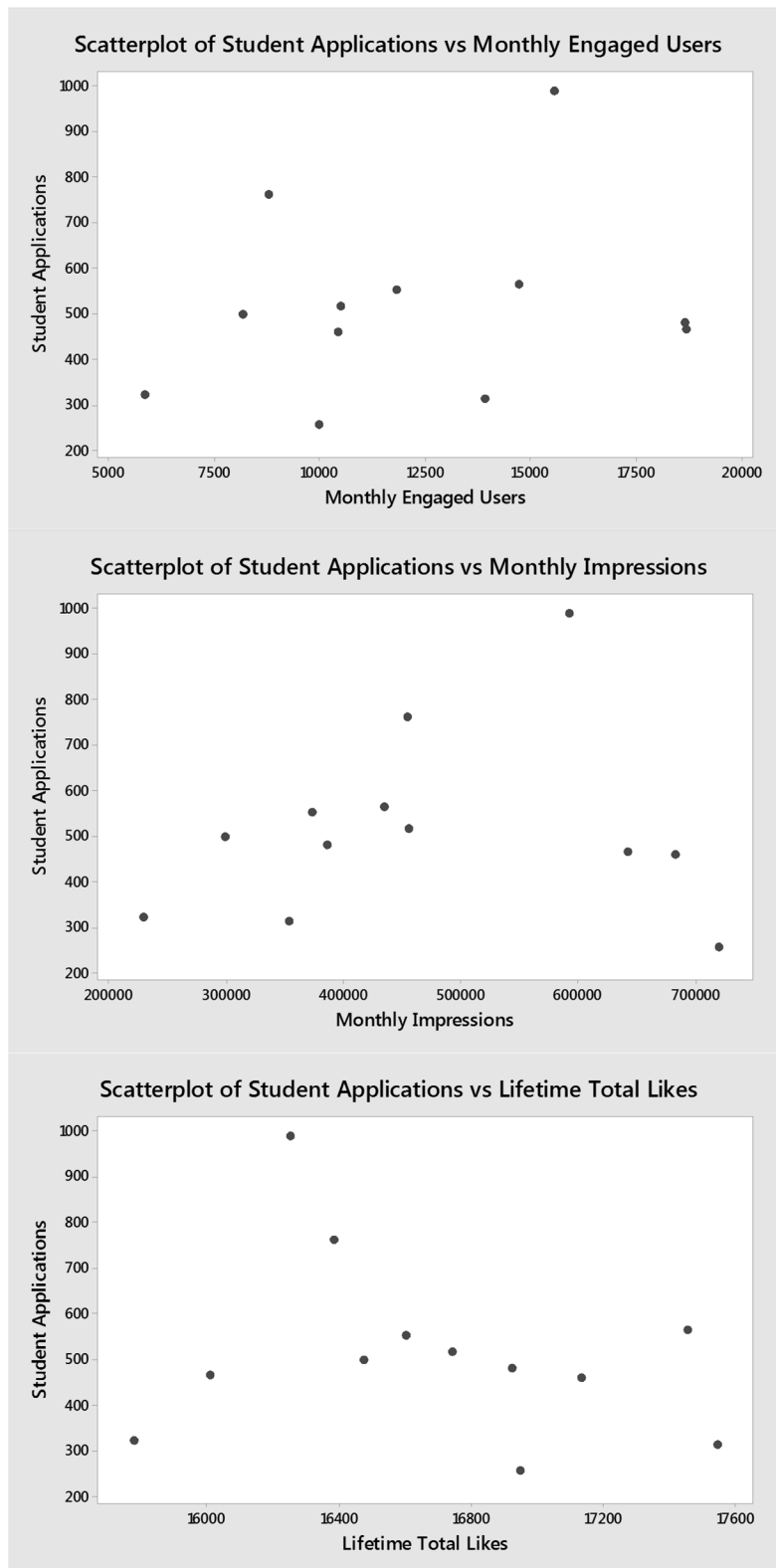
5. Results and Analysis

After running some initial analysis, the data was cleaned and checked for linearity and normality and extreme outliers in the data were removed for analysis to avoid skewness in the results (Minitab, 2018).

Step One:

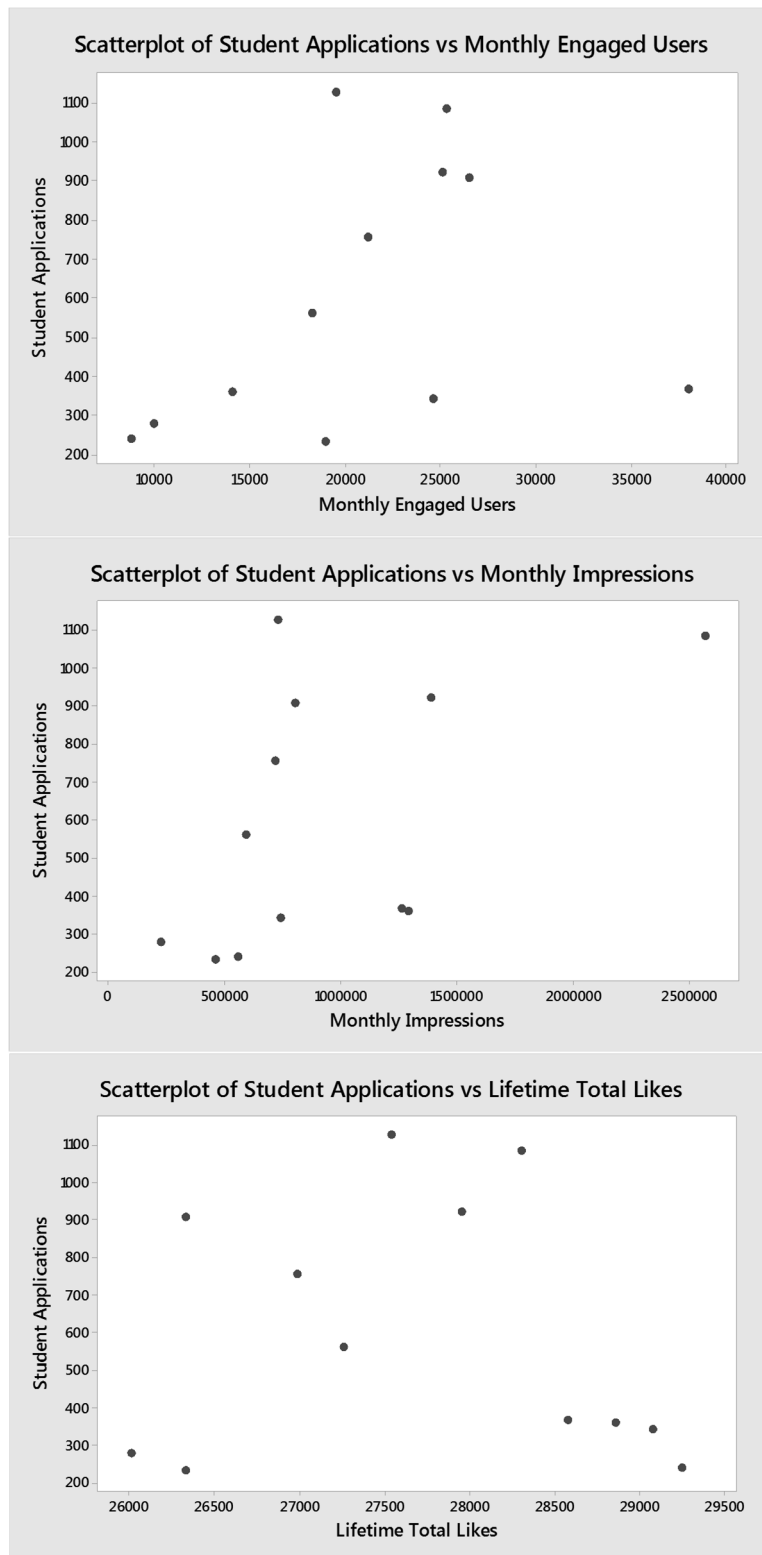
Scatterplots were generated to create a graphical representation for the data for UNBC and VIU to observe the relationship between the independent variable and the dependent variables.

Figure 9: UNBC data presented in separate scatterplots



Source: UNBC data analyzed by software Minitab 2018.

Figure 10: VIU data presented in separate scatterplots.



Source: VIU data analyzed by software Minitab 2018.

In the scatterplots above, the relationship between Student Applications (Y) and Monthly Engaged Users (X1) and Student Applications(Y) and Monthly Impressions (X2) are generally trending in a positive direction for UNBC. However, the relationship between Student Applications (Y) and Total Lifetime Likes (X3) is rather flat. In all three cases, there are few outliers in the plots. Refer to Figure 9.

The scatterplots for VIU trends less towards a linear relationship representation for all three cases. There are far more outliers in the data. Refer to Figure 6.

Step Two:

Table 1: Correlations Coefficients for UNBC.

	Student Applications	Monthly Engaged Unique Users	Monthly Impressions
Monthly Engaged Users	0.214 (0.505)		
Monthly Impressions	0.115 (0.723)	0.298 (0.348)	
Lifetime Total Likes	-0.257 (0.420)	0.215 (0.502)	0.117 (0.718)

*Pearson correlation
(P-Value)*

Source: UNBC data analyzed by software Minitab 2018.

Using Coefficient Correlations analysis or Pearson's r , the values exhibited in Table 2 shows the strength of the relationship between the independent variable Student Applications (Y) and the dependent variables Monthly Page Engaged Unique Users (X1), Monthly Impressions (X2), and Lifetime Total Likes (X3). The table shows the Coefficient Correlation of each dependent variable to the independent variable separately and *when* the independent variable is interacting with two or three dependent variables at a time.

For UNBC, the Coefficient Correlation values for Y vs. X1, Y vs. X2, Y vs. X1X2, Y vs. X1X3, and Y vs. X2X3 show positive relationships as they all take a value between 0.1 and 0.3. The strength of relationships, however, is not very strong as the values are closer to 0 than +1.

For VIU, the Coefficient Correlation values for Y vs. X1, Y vs. X2, Y vs. X1X2, Y vs. X1X3, and Y vs. X2X3 show positive relationships as they all take a value between 0.1 and 0.3. The strength of relationships, however, is not very strong as the values are closer to 0 than +1.

Table 2: Correlations Coefficients for VIU.

	Student Applications	Monthly Engaged Users	Monthly Impressions
Monthly Engaged Users	0.182 (0.470)		
Monthly Impressions	0.413 (0.088)	0.569 (0.014)	
Lifetime Total Likes	0.019 (0.940)	-0.050 (0.843)	0.031 (0.904)

Pearson correlation
(P-Value)

Source: VIU data analyzed by software Minitab 2018.

Step Three:

The results for *General Linear Model* regression analysis of data for UNBC and VIU analyzed in Minitab software are as below.

Table 3: Regression analysis of UNBC

Analysis of Variance

Source	DF	Adj SS	Adj MS
Model	7	378856	54122
Linear	3	205123	68374
Monthly Engaged Users	1	82195	82195
Monthly Impressions	1	99859	99859
Lifetime Total Likes	1	164109	164109
2-Way Interactions	3	264112	88037
Monthly Engaged Users*Monthly Impressions	1	78130	78130
Monthly Engaged Users*Lifetime Total Likes	1	233522	233522
Monthly Impressions*Lifetime Total Likes	1	142277	142277
3-Way Interactions	1	218060	218060
Monthly Engaged Users*Monthly Impressions*Lifetime Total Likes	1	218060	218060
Error	4	63216	15804
Total	11	442072	

Coded Coefficients	Effect	Coef	SE Coef
Constant		4153	1377
Monthly Engaged Users	8574	4287	1880
Monthly Impressions	9430	4715	1876
Lifetime Total Likes	11654	5827	1808
Monthly Engaged Users*Monthly Impressions	11167	5583	2511
Monthly Engaged Users*Lifetime Total Likes	19464	9732	2532
Monthly Impressions*Lifetime Total Likes	14155	7077	2359
Monthly Engaged Users*Monthly Impressions*Lifetime Total Likes	22822	11411	3072

Source	T-Value	P-Value	VIF
Constant	3.02	0.039	
Monthly Engaged Users	2.28	0.085	137.16
Monthly Impressions	2.51	0.066	114.43
Lifetime Total Likes	3.22	0.032	867.59
Monthly Engaged Users*Monthly Impressions	2.22	0.090	296.99
Monthly Engaged Users*Lifetime Total Likes	3.84	0.018	764.36
Monthly Impressions*Lifetime Total Likes	3.00	0.040	863.33
Monthly Engaged Users*Monthly Impressions*Lifetime	3.71	0.021	829.38

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
125.713	85.70%	60.68%	0.00%

Source: UNBC data analyzed by software Minitab 2018.

The Adjusted R Squared value is 60.68% for the whole regressions analysis, which shows the overall fit for the data in the model and it is strong. For UNBC, the P-values for linear analysis is not significant for Y vs. X1 (P-value: 0.085) and Y vs. X2 (P-value: 0.066). However, the P-value for Y vs. X3 is significant at 0.032.

For the two-way interactions of the variables, the P-value for Y vs. X1X2 is insignificant at 0.090. However, the P-values of Y vs. X1X3 (0.018) and Y vs. X2X3 (0.040) are significant.

For the three-way interaction, the P-value of Y vs. X1X2X3 is significant at 0.021. Refer to Table 3.

For VIU, the Adjusted R Squared value is 59.53% for the whole regressions analysis, which shows the overall fit for the data in the model and it is relatively strong. The P-value for linear analysis is not significant for Y vs. X1 (P-value: 0.472). However, they are significant for Y vs. X2 (P-value: 0.020) and Y vs. X3 (P-value: 0.028).

For the two-way interactions of the variables, the P-values for Y vs. X1X2 (P-value: 0.860) and Y vs. X1X3 (P-value: 0.667) are not significant.

For the three-way interaction, the P-value of Y vs. X1X2X3 is also not significant at 0.776 in the case of VIU. Refer to Table 3.

Table 4: Regression analysis for VIU

Analysis of Variance

Source	DF	Adj SS	Adj MS
Model	7	1092751	156107
Linear	3	659587	219862
Monthly Engaged Users	1	29624	29624
Monthly Impressions	1	656740	656740
Lifetime Total Likes	1	538902	538902
2-Way Interactions	3	433601	144534
Monthly Engaged Users*Monthly Impressions	1	1674	1674
Monthly Engaged Users*Lifetime Total Likes	1	10140	10140
Monthly Impressions*Lifetime Total Likes	1	373885	373885
3-Way Interactions	1	4353	4353
Monthly Engaged Users*Monthly Impressions*Lifetime Total Likes	1	4353	4353
Error	4	188550	47138
Total	11	1281301	

Coded Coefficients	Effect	Coef	SE Coef
Constant		1450	234
Monthly Engaged Users	-961	-480	606
Monthly Impressions	2850	1425	382
Lifetime Total Likes	-3280	-1640	485
Monthly Engaged Users*Monthly Impressions	-252	-126	669
Monthly Engaged Users*Lifetime Total Likes	871	435	939
Monthly Impressions*Lifetime Total Likes	-4909	-2455	872
Monthly Engaged Users*Monthly Impressions*Lifetime Total Likes	-698	-349	1149

Source	T-Value	P-Value	VIF
Constant	6.20	0.003	
Monthly Engaged Users	-0.79	0.472	25.56
Monthly Impressions	3.73	0.020	9.54
Lifetime Total Likes	-3.38	0.028	26.96
Monthly Engaged Users*Monthly Impressions	-0.19	0.860	10.65
Monthly Engaged Users*Lifetime Total Likes	0.46	0.667	47.01
Monthly Impressions*Lifetime Total Likes	-2.82	0.048	38.87
Monthly Engaged Users*Monthly Impressions*Lifetime Total Likes	-0.30	0.776	39.26

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
217.112	85.28%	59.53%	0.00%

Fits and Diagnostics for Unusual Observations

Obs	Student Applications	Fit	Resid	Std Resid	
1	278	256	22	1.17	X
12	236	253	-17	-0.90	X

X Unusual X

Source: VIU data analyzed by software Minitab 2018.

5.1. Summary of Findings

Table 5: Summary of regression analysis for UNBC and VIU

Variables	P-value UNBC	P-value VIU
Student Applications (Intercept)	*0.039	*0.003
Monthly Engaged Users (X1)	0.085	0.472
Monthly Impressions (X2)	0.066	*0.020
Lifetime Total Likes (X3)	*0.032	*0.028
Monthly Engaged Users*Monthly Impressions	0.090	0.860
Monthly Engaged Users*Lifetime Total Likes	*0.018	0.667
Monthly Impressions*Lifetime Total Likes	*0.040	*0.048
Monthly Engaged Users*Monthly Impressions*Lifetime Total Likes	*0.021	0.776

* $p < 0.05$

Source: UNBC and VIU data analyzed by software Minitab 2018

The results present an interesting mixture of significant and non-significant implications based on the outcome of the statistical analysis. Refer to Table 5.

In the case of UNBC, the user engagement and content engagement statistical analysis are not significant. This means that these two metrics, when observed in isolation, do not influence the university student recruitment. Hence, the results do not support H1 and H2. However, there is a significant influence of the university social media popularity on university student recruitment. Therefore, the results support H3.

For VIU, the influence of user engagement is not statistically significant and the results do not support H1. However, content engagement and university popularity results are statistically significant and support H2 and H3.

Although in the case of UNBC, the effect of university social media engagement and university content engagement and consumption does not have a significant influence on the university student recruitment and the results do not support H1 and H2 because the P-values are very close to the significant level of $\alpha=0.05$. It is possible there is a limitation in the metrics that causes this. For example, in the case of H2, it could be due to the different metrics that Facebook packs together as Monthly Total Impressions that include posts, check-ins, ads, and social information from people who interact with a Facebook page (Facebook, 2017) which creates noise in the outcome of the statistical analysis. Perhaps if unpacked, some of the metrics such as post interactions are more significant and have a stronger influence on university student recruitment. However, Facebook analytics presents a limitation because all the data come clumped together under one metric: Monthly Total Impressions. A separate study outside of this paper could look into gathering those metrics separately, perhaps manually or with the use of software, to find out more.

Outside of the developed hypotheses, the researcher did a further analysis of the metrics to check two-way interaction effects between the variables. The results show that when the university social media engagement and the university content engagement interact with one another, the influence on university student recruitment is not significant in both cases (UNBC: P-value: 0.090, VIU: P-value: 0.860). When the university social media engagement and the university social media popularity interact with one another, they have a significant influence on the university student recruitment (P-value: 0.018) in the case of UNBC; however, the influence is not significant in the case of VIU (P-value: 0.667). When the university content engagement interacts with the university social media popularity, the influence is significant on the university student recruitment in both cases (UNBC: P-value: 0.040, VIU: P-value: 0.048).

Lastly, the researcher tested three-way interaction effects between the variables. The results show that when the user engagement, the content engagement, and the social media popularity interact, they have an influence on the university student recruitment in the case of UNBC (P-value: 0.021). However, the three-way interaction does not have a significant influence on university student recruitment in the case of VIU (P-value: 0.776). This means that the three factors combined, the university social media engagement, the university content engagement, and the university social media popularity have a positive effect on university student recruitment. It could be interpreted that students who followed UNBC on social media, received regularly posted content updates, and engaged actively with the social media content, appreciate the university brand and program offerings, therefore, are more likely to submit an application to the respective university. However, this was not the case for VIU for the three-way interaction.

The above analyses examined UNBC and VIU independently to draw comparative results. In the spirit of comprehensiveness, a statistical analysis was conducted with data combined from both of the aforementioned universities. However, the researcher did not find any statistical significance in the results to include in this paper.

6. Discussion and Implications

While the prominent role of university branding and social media marketing has been established in previous literature on marketing and digital marketing, there is limited research on the degree to which the university social media engagement and social media popularity affect university student recruitment. Furthermore, the effect of the university social media engagement metrics, specifically engagement, impressions, and likes have not been examined before when it comes to their influence on university student recruitment. This produces a gap in the theoretical literature and managerial practices in the use of social media marketing for universities in Canada and around the world.

The aforementioned social media metrics are relatively new, which creates uncertainty towards the importance of social media engagement in marketing and recruitment. There is not a study to explain the importance and nature of the aforementioned social media metrics as well as the influence of the university social media engagement on university student recruitment. To address these limitations and gaps in knowledge, this paper examined the influence of university social media engagement, such as social media user engagement, content engagement and university social media popularity on university student recruitment.

This paper is a comparative analysis of two Canadian public universities: 1) UNBC, a research-intensive university, and 2) VIU, a comprehensive teaching university. Twelve months of data were examined to determine the influence of the university social media engagement on university student recruitment. A quantitative analysis of the relationship between the university social media engagement (user engagement, content engagement, and social media popularity) and university student recruitment was conducted. The study was conducted to check the one-way influential relationship of each of the three metrics identified to test engagement,

impressions, and likes, as well as two-way and three-way interactions of these metrics with university student recruitment measured through student applications. With these findings, this study provides a better and deeper understanding of different metrics of university social media engagement and the importance of university social media engagement on university student recruitment.

6.1 Theoretical Contributions

First, this study establishes a clear understanding of social media engagement, specific to Facebook, and its impact on university student recruitment. Previous literature provides an understanding of the importance of social media in student recruitment (Rutter, Roper, & Lettice, 2016). However, the literature does not show any evidence of how impactful social media engagement can be to university student recruitment. Second, the social media engagement metrics, Facebook engagement, impressions, and total likes, have never been examined before to test the impact of these metrics independently on university student recruitment, and in joint interaction. Third, this study looks at social media affordances and their relation to social media engagement for a university brand and university student recruitment. Although, there is extended literature on affordance theory (Treem & Leonardi, 2012, (Majchrzak, Faraj, Kane & Azad, 2013), social media (Kurre et al., 2012; Mazman & Usluel, 2010; Constine, 2017), and the social media affordances they offer (Cabiddu, Carlo, & Piccoli, 2014; Gibbs, Rozaidi, & Eisenberg, 2013; Majchrzak, Faraj, Kane, & Azad, 2013), previous literature does not connect social media affordance to social media engagement, which then leads to examining social media engagement and its influence on university student recruitment. This study found that the impact of social media engagement is independently significant to university student recruitment in some cases and significant when the metrics interacted with one another in some cases.

All of the above extend the theory and literature by addressing the gap on the impact of social media engagement on university student recruitment, more specifically Facebook engagement and its relation to student recruitment. This study extends the knowledge by testing Facebook social media engagement metrics for the first time in relation to university student

recruitment. Furthermore, this research contributes to the theory and literature by connecting social media affordance to student engagement and social media engagement.

6.2. Managerial Implications

This research has significant managerial implications for education marketing managers at public universities in Canada and around the world. This study guides education marketing managers in the competitive landscape of student recruitment locally, domestically and internationally by providing insights to the use of social media engagement in education marketing and the importance of social media engagement, content engagement, and social media popularity on university student recruitment.

Given the limited marketing staff and budget at most universities, this study determines how much effort education marketing managers should put into social media engagement when it comes to student recruitment and how much it matters. The study shows that the university social media engagement analyzed here, in particular, Facebook impressions, engagement, and likes have a significant influence on student applications.

Education marketing managers can use the findings of this study to shape their branding and marketing strategies in order to be effective. A robust and effective marketing strategy for education marketing requires digital engagement and social media engagement. Education marketing managers can now know for certain that social media engagement is important and has a significant impact on university student recruitment, and therefore, they can confidently incorporate social media engagement in their marketing strategies. Social media and the affordances offered by social media engagement play a key role in engaging with students to influence the behaviour of prospective students towards a university.

The study indicates, that while there are variations of influence and impact, when the metrics are tested separately as set out by the developed hypotheses, the study shows that when prospective students follow a university on Facebook, they are exposed to a university's social media content on Facebook, and then engage with that content, becoming more likely to consider the said university. One of the significant findings of this study shows that social media popularity matters the most when it comes to influencing prospective students and university student recruitment. The influence of university social media engagement on university student recruitment is significant in the case of the influence of university popularity on social media. In both universities, social media popularity has a significant influence on university student recruitment. Social media popularity engages and attracts more students to a university's Facebook page and influences their behaviour, raising the potential of prospective students to submit an application to the said university. This positive outcome for the university helps achieve student recruitment goals.

Another significant finding of this paper is the interaction between the university social media popularity and the university content engagement. The results show that when those two are combined, they have a significant influence on university student recruitment. For education marketing managers, this means there are positive outcomes for investing in engaging content creation and content promotion. There are two parts to this significance that lead to success. Education marketing managers need to invest in engaging content creation; however, posting content on social media, no matter how engaging, does not always reach all of the followers on social media. For example, if a university has 7 million followers on Facebook, not all 7 million followers will see the content posted by the said university. To provide more exposure to the content, the posts must be promoted (boosted) on Facebook. Once a post is promoted, based on

the marketing budget, more followers of the university Facebook page can see the content and engage with the said university.

Paid vs. Organic Social Media Engagement

An interesting observation in this study is the comparison of the statistical findings in relation to the social media marketing strategy of the universities analyzed here. For the period in which the data was collected, UNBC had a deliberate focus on paid social media engagement and marketing. The university invested in social media marketing for user acquisition (to gain more followers) and content engagement (to promote/boost content) on Facebook to increase social media engagement (UNBC, 2018). For the same period of time, VIU did not have an allocated budget for social media marketing and focused more on organic user and content engagement. This interesting contrast becomes evident in the results produced in this paper.

Based on the researcher's initial assumptions, user engagement plays a significant role in influencing the results. When UNBC invested in increasing the number of followers and content engagement, the user engagement increased resulting in an influence on the university student recruitment. However, in the case of VIU, although the social media popularity and content engagement appear to be connected, the lack of user engagement seems to directly relate to the lack of social media engagement influence on university student recruitment. This makes sense since user engagement is the main metric attributed to social media engagement. In other words, UNBC invested in increasing the university's followers and promoted content, as a result, an increased number of people were following UNBC, more people were seeing the content, therefore, the influence on the university student recruitment is evident.

If this assumption is true, education marketing managers need to dedicate time and budget to improve and increase social media user engagement, content engagement, and social

media popularity. In addition, social media engagement is evolving and Facebook changes its engagement algorithm regularly to create a better user experience. More so than before, users are served content posted by family and friends that is interesting and relevant to them as compared to content posted by businesses. This results in increased competition for engagement and becomes challenging for businesses (universities in this case) to achieve social media engagement organically. Therefore, in order to increase or maintain social media engagement, universities need to pay to play. Education marketing managers need to invest in paid social media engagement such as user engagement, content engagement and user acquisition (social media popularity).

Although paid social media engagement offers greater opportunity to increase enrolment, education marketing managers need to be cognizant of not over indulging their marketing resources solely on social media engagement and marketing. As any education marketing manager knows, it takes so many steps for a prospective student to apply to a university. The education marketing managers need to have a multi-channel marketing strategy to effectively establish brand authority and promote the university and its programming.

Education marketing managers need to become savvier in using social media engagement for student recruitment in order to increase impressions, engagement, and likes. To generate more impressions, there is a need to generate new and interesting content on a regular basis and subsequently pay to promote the posts. Or, in order to increase the Facebook page's popularity, there need to be efforts towards more user acquisition through paid social media campaigns focused on gaining more page likes and followers.

6.3. Limitations and Future Research

One of the limitations of this study is that the researcher made the assumption that all of the students who submitted applications to the aforementioned universities have engaged with the respective universities on Facebook. This is a reasonable assumption based on the popularity of the aforementioned social media platform and typical student behaviour; however, there is no way of confirming that in this study. Students sometimes use different aliases as social media identities compared to their actual names. Therefore, there is no reasonable way of confirming a connection between social media engagement, and a follower, to an application without extensive manual data checking or the student's permission, which was not in the scope of this study. Future research could look into studying this.

Some students do not have access to Facebook because either they do not use it or they are in a part of the world that cannot access Facebook, such as the Chinese and China's 'great firewall'. The Chinese government has cyber restrictions that block platforms like Facebook in China. Those students may be included in the applications that were used in this study, which may limit the results.

International students make up over 3.5 percent of the student population at VIU whilst the same population is less than one percent at UNBC. Based on this comparison, one can assume that the new applications for the period of data collection reflect this pattern. If this is true, there may be more Chinese students in the sample collated for VIU vs. UNBC and Chinese students do not have access to Facebook in China. The proportion of Chinese student applications in the data who did not have access to Facebook before applying to each respective university may affect the results and can cause noise in the outcome of the hypotheses. This may explain the results for H1 and H2 because both hypotheses were not supported by the statistical

results. However, in order to ensure this is the case, future research is needed to analyze student applications compared with Facebook Insights by country of origin for students.

Finally, if the student already knew about the respective university before applying and/or engaging on social media, they may have a slightly different perception than a student who did not. If a prospective student has previous awareness about a university, the impact of social media engagement becomes less of a factor in the university application decision making. If students consumed information about the respective universities from other mediums and channels of marketing and branding, such as web, print, in-person, and word of mouth, the impact of social media engagement becomes less of a factor in the university application decision making. The same goes for if a student has already communicated with a university representative such as a recruitment coordinator or an education agent, and the nature of the experience the student had in this instance then becomes a factor, therefore, the impact of social media engagement becomes less of a factor in student decision to apply.

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